

Charter School Performance in Illinois

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Acknowledgements

This report, *Charter School Performance in Illinois*, is part of a larger set of studies on charter school effectiveness that CREDO is conducting. CREDO gratefully acknowledges the support of the Joyce Foundation for supporting this portion of the research. All results and opinions expressed in this report, however, belong to CREDO.

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Introduction

Across the country, charter schools occupy a growing position in the public education landscape. Heated debate has accompanied their existence since their start in Minnesota two decades ago. Similar debate has occurred in Illinois as well, with charter advocates extolling such benefits of the sector as expanding parental choice and introducing market-based competition to education. Little of that debate, however, is grounded in hard evidence about their impact on student outcomes. This report contributes to the discussion by providing evidence for charter students' performance in Illinois for four years of schooling, beginning with the 2008-2009 school year and concluding in 2011-2012.

With the cooperation of the Illinois State Board of Education (ISBE), CREDO obtained the historical sets of student-level administrative records. The support of ISBE staff was critical to CREDO's understanding of the character and quality of the data we received. However, it bears mention that the entirety of interactions with ISBE dealt with technical issues related to the data. CREDO has developed the findings and conclusions independently.

This report provides an in-depth examination of the results for charter schools across the state. It is also an update to CREDO's first analysis of the performance of Illinois charter schools, which can be found at our website.¹ The first analysis was comprised solely of charter schools in Chicago, while this report expands the analysis to include charter schools across the state. This report has two main benefits. First, it provides a rigorous and independent view of the performance of the Illinois charter schools. Second, the study design is consistent with CREDO's reports on charter school performance in other locations, making the results amenable to being benchmarked against those nationally and in other states.

The analysis presented here takes two forms. We first present the 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 Illinois would realize from a year of enrollment in a charter school. The second set of findings is presented at the school level. Because schools are the instruments on which legislation and public policy works, it is important to understand the range of performance for the schools. These findings look at the performance of students by school and present school average results.

Compared to the educational gains that charter students would have had in a traditional public school (TPS), the analysis shows on average that students in

¹ CREDO. Charter School Performance in Illinois (2009). <http://credo.stanford.edu>

Illinois charter schools make larger learning gains in both reading and mathematics. At the school level, about 20 percent of the charter schools have significantly more positive learning gains than their TPS counterparts in reading, while 21 percent of charter schools have significantly lower learning gains. In math, 37 percent of the charter schools studied outperform their TPS peers and 21 percent perform worse.

Study Approach

This study of charter schools in Illinois focuses on the academic progress of their enrolled students. 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, other outcomes of interest, such as character development or non-cognitive skills, cannot compensate. Furthermore, current data limitations prevent the inclusion of non-academic outcomes in this analysis.

This statewide analysis uses the Virtual Control Record (VCR) methodology that has been used in previous CREDO publications.² 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 Illinois outperform their 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, geographic location and so on. Answers to all these questions require that we ensure that the contribution of the schools – either the charter schools or the traditional public schools – is isolated from other potentially confounding influences. For this reason, these analyses include an array of other variables whose purpose is to prevent the estimate of charter schooling from being tainted by other effects. In its most basic form, the analysis included controls for student characteristics: standardized starting score, race/ethnicity, special education and lunch program participation, English proficiency, grade level, and repeating a grade.

To create a reliable comparison group for our study, we attempted to build a VCR for each charter school student. A VCR is a synthesis of the actual academic experience of students who are identical to the charter school students, except for

² CREDO. *Multiple Choice: Charter School Performance in 16 States* (2009). Davis, Devora H. and Margaret E. Raymond. Choices for Studying Choice: Assessing Charter School Effectiveness Using Two Quasi-experimental Methods. *Economics of Education Review* 31, no. 2 (2012): 225-236. For the interested reader, links to these reports are available at <http://credo.stanford.edu>.

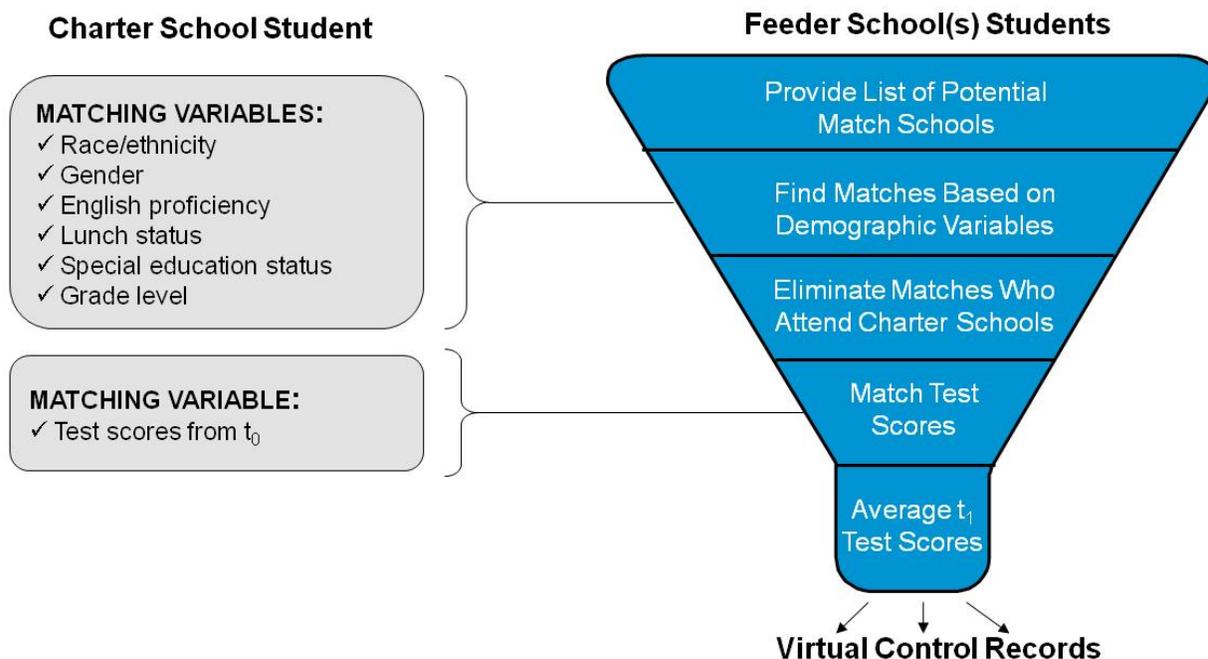
the fact that they attend a TPS that the charter school students would have attended if not enrolled in their charter school. We refer to the VCR as a 'virtual twin' because it takes the experience of multiple 'twins' and creates a single synthesis of their academic performance to use as the counterfactual 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 a "feeder school." Once a TPS qualifies as a feeder school, all the students in the school become potential matches for a student in a particular charter school. All the student records from all the feeder schools are pooled – this becomes the source of records for creating the virtual match. Using the records of the students in those schools 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 Illinois 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 gains a charter student would have realized if he or she had attended one of the traditional public schools that would have enrolled the charter school's students. The VCR 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 analysis, 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 measured as the average one-year growth of charter schools, relative to the VCR-based comparison.

With four years of student records in Illinois, it is possible to create three periods of academic growth. One growth period needs a "starting score", (i.e., the achievement test result from the spring of one year) and a "subsequent score",

(i.e., the test score from the following spring) to create a growth score. 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 "2010" covers academic growth that occurred between the end of the 2008-2009 and the end of the 2009-2010 school years. Similarly, the time period denoted "2012" corresponds to the year of growth between the 2010-2011 and 2011-2012 school years.

With four years of data, and six tested grades (3rd - 8th), there are 24 different sets of data each for reading and math; each subject-grade-year group of scores has slightly different mid-point averages and distributions. Growth scores could not be calculated for high schools, since testing data exists for only one grade level in that grade span (grade 11). Without additional performance data such as end of course exams, we are not able to estimate the effectiveness of high schools.

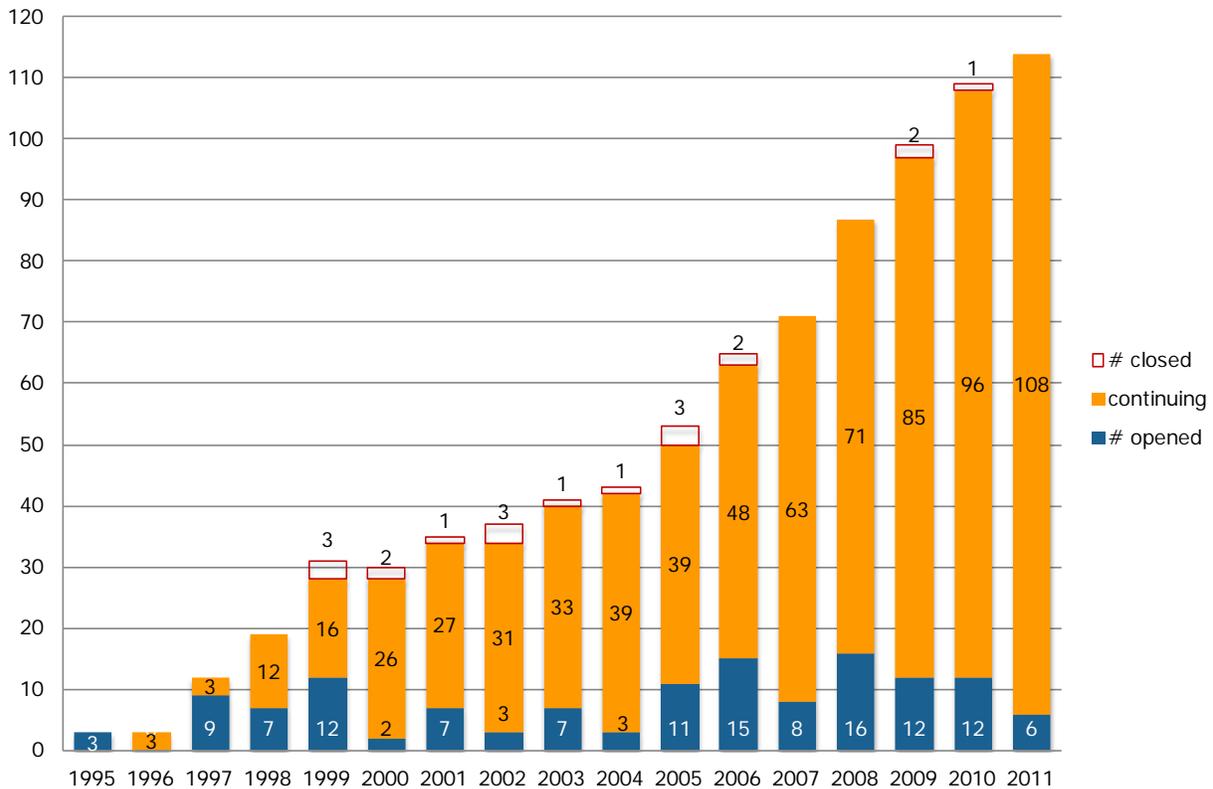
The analysis is helped by transforming the test scores for all these separate tests into a common measurement. All test scores have been converted to "bell curve" standardized scores so that year-to-year computations of growth can be made.³ When scores are thus standardized into z-scores, every student is placed relative to his peers in Illinois. A z-score of zero, for example, denotes a student at the 50th percentile in the state, 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.

³ 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 fell below the original average score are expressed as negative numbers and those that were larger are given positive values. These new values are assigned so that in every subject-grade-year test, 68 percent of the former scores fall within a given distance, known as the standard deviation.

Illinois Charter School Demographics

The Illinois charter school sector has grown markedly since its inception in 1995. Figure 2 below notes the new, continuing and closed charter school campuses from the fall of 1995 to the fall of 2011.

Figure 2: Opened and Closed Charter Campuses, 1995-2011



According to the National Center for Education Statistics (NCES), there were 43 charter schools open in Illinois in the 2009-2010 school year.^{4,5} Because charter schools are able to choose their location, the demographics of the charter sector may not mirror that of the TPS sector as a whole. Further, charter schools create a degree of sorting through their offer of different academic programs and alternate school models. In addition, parents and students who choose to attend charter schools select schools for a variety of reasons such as location, school safety, small

⁴ This is the most recent year available from the NCES Common Core of Data Public School Universe.

⁵ There is a mismatch between the NCES number of charter schools in 2009 and number of campuses in Figure 2. Some charter schools in Illinois have multiple campuses that share one school ID number. In our analysis we have used campus IDs as the unit of school analysis.

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 Illinois traditional public schools, the charters' feeder schools, and the charter schools themselves.

Table 1: Demographic Comparison of Students in TPS, Feeders and Charters

	TPS	Feeders	Charters
Number of schools	4362	618	43
Average enrollment per school	472	610	842
Total number of students enrolled	2,060,340	376,985	36,201
Students in Poverty	44%	82%	71%
English Language Learners	7%	13%	6%
Special Education Students	13%	13%	10%
White Students	53%	15%	5%
Black Students	18%	42%	62%
Hispanic Students	21%	39%	31%
Asian/Pacific Islander Students	4%	3%	1%
Native American Students	0.23%	0.15%	0.10%

Table 1 above shows that charter schools have more students in poverty, more Black and Hispanic students, and fewer Whites and Asians than the public schools of Illinois as a whole. The feeder school populations would be expected to more closely align demographically, but even here there are differences. Charter schools enroll greater shares of Black students and a smaller share of students are Hispanic, White or Asian compared to the feeder schools. Feeder schools have slightly higher proportions of students living in poverty.

There has been considerable attention paid to the share of students in charter schools who are receiving Special Education services or who are English Language Learners. As shown in Table 1, a lower proportion of Illinois charter school population is designated as special education compared to all TPS, and this proportion is also lower than that of the feeder school population. The cause of this difference is unknown. Parents of children with special needs may believe the TPS sector is better equipped to educate their children and therefore will be less likely to opt out for a charter. An alternate possibility is that charter schools and traditional public schools have different criteria for making referrals for assessment or categorizing students as needing special education.

The profile for English Language Learners also shows that, in the aggregate, charter schools enroll a smaller share than the feeder schools, and roughly the same as

found statewide in TPS. As with Special Education students, it is not possible to discern the underlying causes for these figures.

Table 2: Demographic Composition of Charter Students in the Study

Student Group	All Charter Students Tested		Matched Charter Students	
	Number	Percent	Number	Percent
Illinois Charter Students	20,349		18,689	
% Matched	18,689	92%		
Black Students	12,297	60%	11,613	62%
Hispanic Students	6,281	31%	5,797	31%
White Students	1,102	5%	929	5%
Students in Poverty	17,570	86%	16,601	89%
Special Education Students	2,261	11%	1,829	10%
English Language Learners	1,226	6%	958	5%
Grade Repeating Students	292	1%	141	1%

NOTE: The appendix includes additional descriptive demographics.

For this analysis, a total of 18,689 charter school students (with 32,943 observations across three growth periods) from 65 charter school campuses are followed for as many years as data are available.⁶ The students are drawn from Grades 3 – 8, since these are the continuous grades that are covered by the Illinois achievement testing program for reading and math. An identical number of virtual comparison records are included in the analysis. In Illinois, it was possible to create virtual matches for 92 percent of the tested charter school students in both reading and math. This proportion assures that the

A Roadmap to the Graphics

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; the absence of stars means that the schooling effect is not statistically different from zero.

Comparisons of the **performance of similar student subgroups** contain an additional test of the absolute difference between the charter school subgroup and their comparison VCRs. Where a charter school student subgroup has learning gains that are statistically significantly different, the bars have a gradient shade.

⁶ Schools that have opened recently or that have only recently begun serving tested grades will not have three growth periods of experience to include.

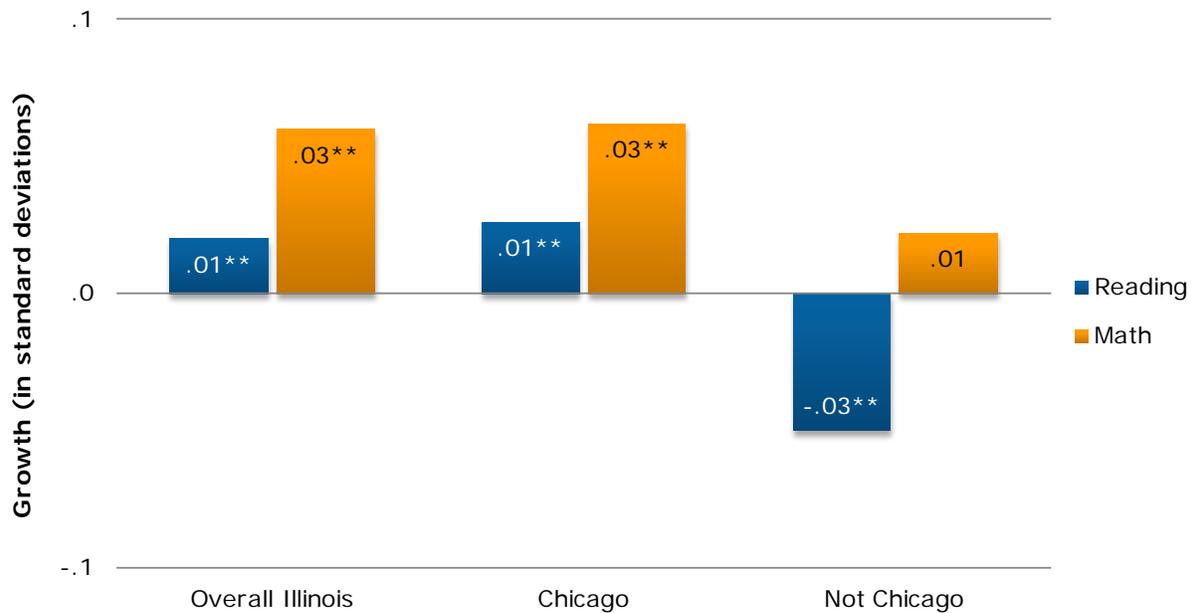
results reported here can be considered indicative of the overall performance of charter schools in the state.

The total number of observations is large enough to be confident that the tests of effect will be sensitive enough to detect real differences between charter school and TPS student performance at the statistically acceptable standard of $p < .05$. This is also true for each student subgroup examined, with the possible exception of grade-repeating students which has only 141 students, as shown in Table 2 above.

Overall Charter School Impact

First, we examine whether charter schools differ overall from traditional public schools in how much their students learn, holding other factors constant. To answer this question, we average the pooled performance for all charter school students across all the growth periods and compare it with the same pooled performance of the VCRs. The result is a measure of the typical learning of charter school students in one year compared to their VCR peers from the feeder schools nearby. The results appear in Figure 3. On average, students in Illinois charter schools learned significantly more than their virtual counterparts in reading and mathematics.

Figure 3: Average Learning Gains in Illinois Charter Schools, 2010-2012 Compared to Gains for VCR Students in Each Charter Schools' Feeder TPS



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

When we investigate the learning impacts of Chicago charter schools separately, we find that their results are equivalent to the overall Illinois results in both reading and math. This is because the majority of Illinois charter schools are in Chicago. Compared to Chicago and the state as a whole, charter schools outside Chicago do worse in reading and receive no significant gains or losses in math. However, the charter school student observations outside Chicago are only about 9 percent of the overall matched charter student observations.

The data is analyzed in units of standard deviations of growth so that the results will be statistically correct. Unfortunately, these units do not have much meaning for the average reader. Transforming the results into more accessible units is challenging and can be done only imprecisely. Therefore, Table 3 below, which presents a translation of various outcomes, should be interpreted cautiously.⁷

Table 3: Transformation of Average Learning Gains

Growth (in standard deviations)	Gain (in months of learning)
0.00	0.0
0.05	1.8
0.10	3.6
0.15	5.4
0.20	7.2
0.25	9.0

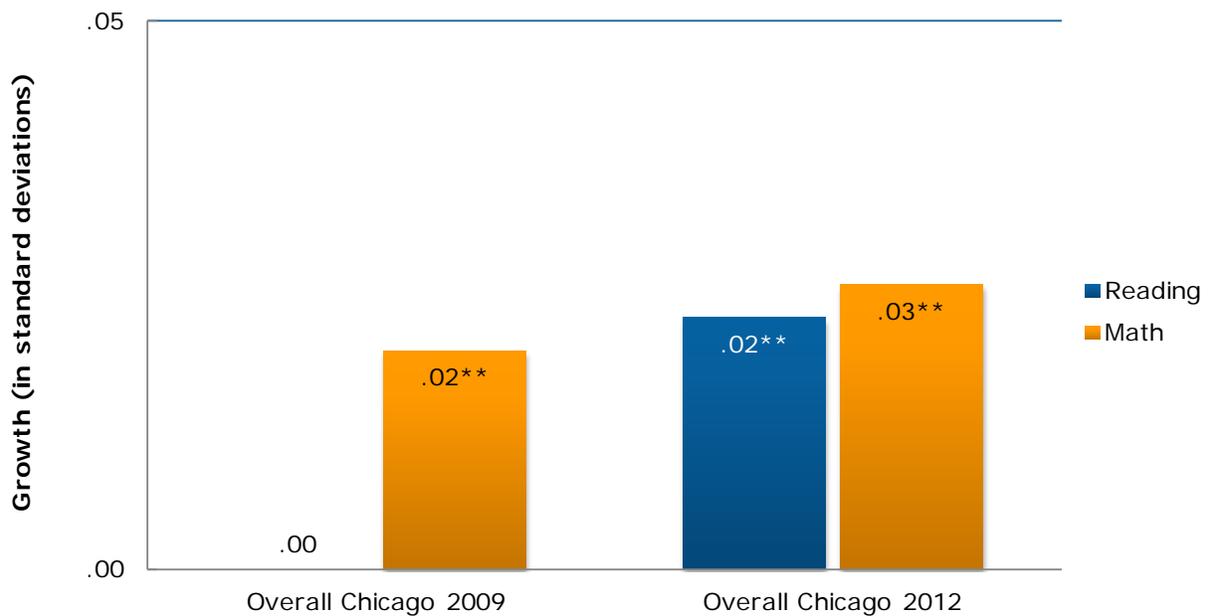
Using the results from Figure 3 and the transformations from Table 3, per year of schooling, we can see that, on average, charter students in Illinois gain an additional about two weeks of learning in reading over their TPS counterparts. In math, the advantage for charter students is about one month of additional learning in one school year.

⁷ Hanushek, Eric A. and Steven G. Rivkin. Teacher quality. In *Handbook of the Economics of Education*, Vol. 2, ed. EA Hanushek, F Welch, (2006): 1051–1078. Amsterdam: North Holland.

Charter School Impact with 2009 Cohort

Because the charter school market is dynamic, new schools have opened since the previous report. To create an apples-to-apples comparison between the two reports, the subset of schools from the 2009 report was re-analyzed using only data released since the previous report. Both these and the 2009 results are shown in Figure 4.

Figure 4: Original and Updated Impacts with the 2009 Charter School Cohort



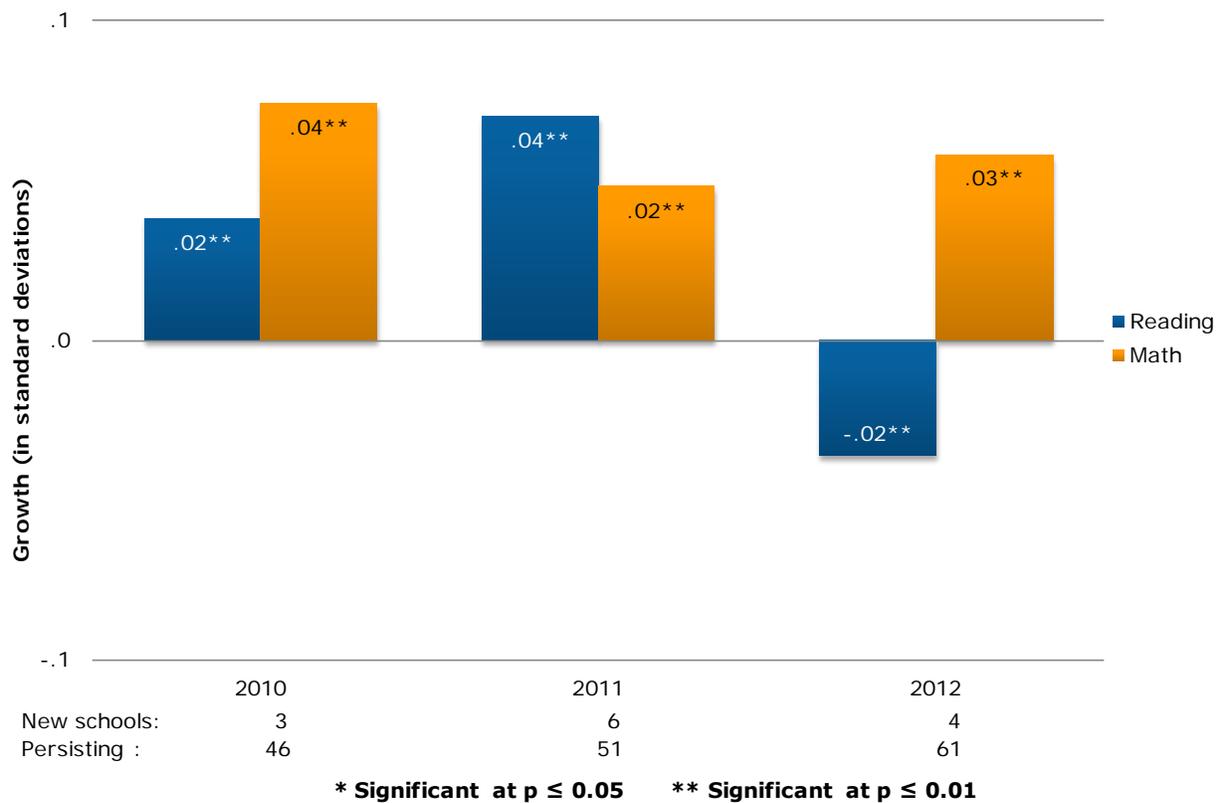
* Significant at $p \leq 0.05$ ** Significant at $p \leq 0.01$

In the previous report, students from the 2009 charter school cohort learned the same in reading and significantly more in math compared to their TPS counterparts. Charter students at these same schools in more recent growth periods learn significantly more than their TPS peers in both reading and math. The updated effect sizes are larger than the first report in reading and are slightly larger in math.

Charter School Impact by Growth Period

To determine whether performance remained consistent over all the periods of this study, the average charter school effects were disaggregated into the three growth periods. Results are shown in Figure 5 along with the number of newly opened and persisting schools for each growth period.⁸

Figure 5: Impact by Growth Period, 2010-2012



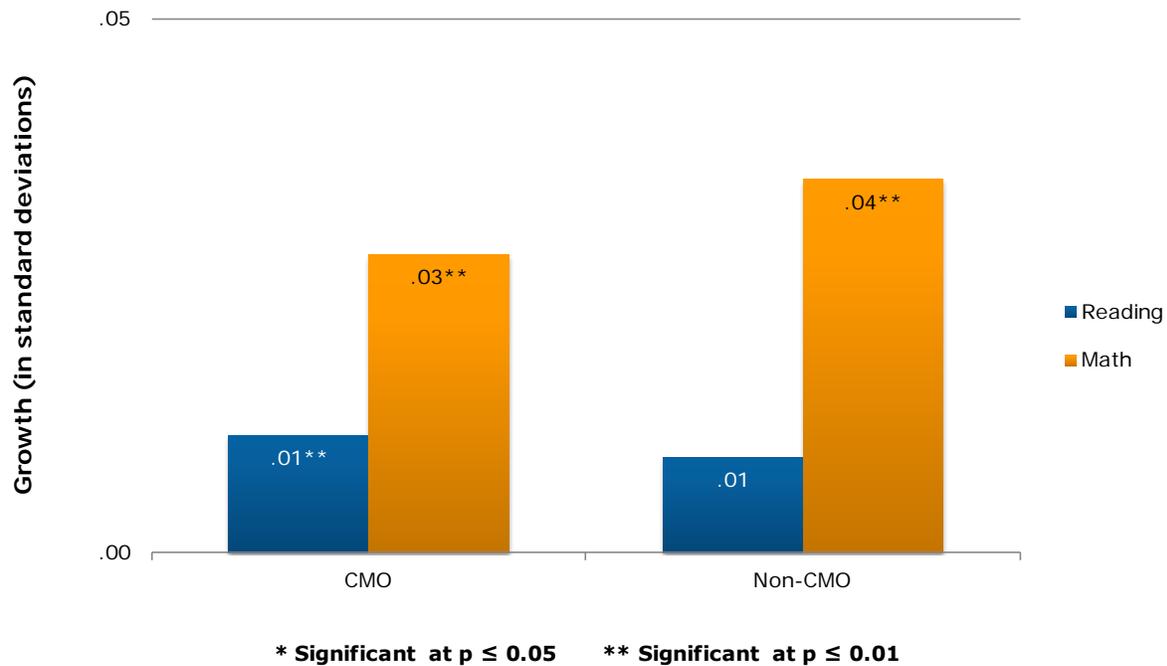
In reading, charter students in Illinois learned significantly more than their virtual peers in two of the three periods analyzed. The results are positive and significant for all three periods in math. The only year in which the charter impact on reading was negative and significant is 2012. Investigating the 2012 results further revealed that while new charter schools partially account for the results, the performance of persisting schools declined in 2012 compared to previous growth periods.

⁸ Note: These numbers report only charters with tested students, so they are a subset of the counts on figure 2, Opened and Closed Charter Campuses.

Charter School Impact by CMO Affiliation

The growth of charter management organizations (CMOs), which directly operate charter schools within a network of affiliated schools, has accelerated in recent years. Figure 6 below shows the charter impacts for students at schools that are part of a CMO and schools with no CMO affiliation.

Figure 6: Impact by CMO Affiliation

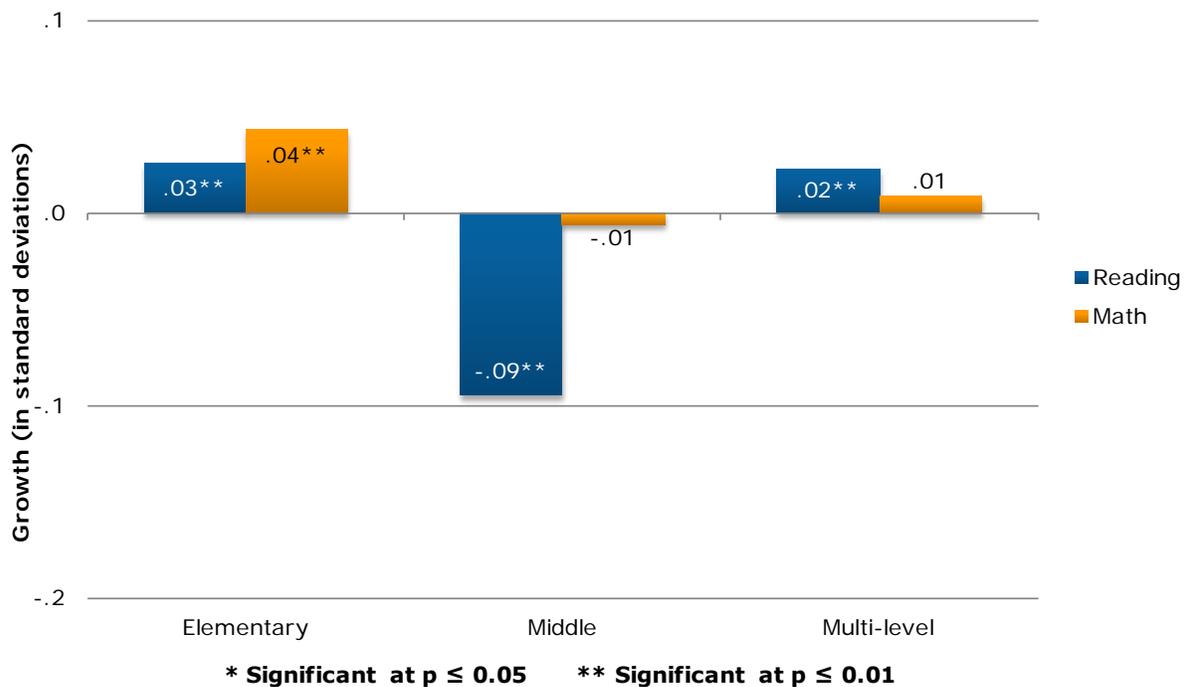


The results show that in reading, students in CMO-affiliated charter schools learn significantly more than their TPS counterparts, but students in charter schools not-affiliated with a CMO receive no learning gains or losses compared to their TPS counterparts. Regardless of CMO affiliation, students in charter schools learn significantly more than their TPS peers in math. The non-CMO result is slightly more positive in math than the CMO result, but the difference is not statistically significant.

Charter School Impact by School Level

The flexibility and autonomy enjoyed by charter schools allows them to choose which grade levels to serve, with many charter operators deciding to focus on particular ages while others seek to serve a broader range of students. For example, multi-level charter schools serve grade ranges larger than traditional elementary, middle or high schools, such as a combination of middle and high school grades. These school levels are tracked by the National Center for Education Statistics, which allows us to disaggregate charter school impacts for different grade spans.

Figure 7: Impact by School Level



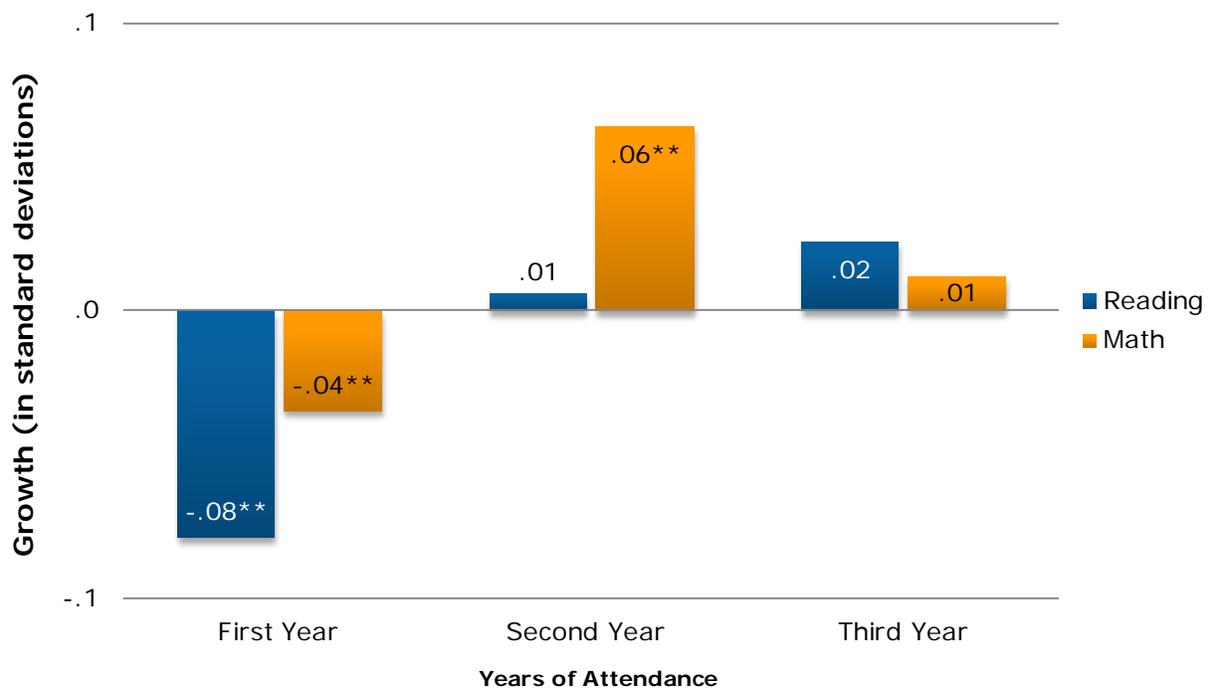
This study examined the outcomes of students enrolled in elementary, middle and multi-level schools, as shown in Figure 7 above. On average, charter students learn significantly more than their virtual counterparts in both reading and math in elementary schools. Students enrolled in middle schools have significantly lower growth in reading. In math, middle and multi-level schools receive no significant learning gains or losses compared to their TPS counterparts. Only about 11 percent of the charter school population attends a middle school, while the balance attends either an elementary or multi-level school. This is why the statewide results are

positive and significant in both subjects; they are being driven by the positive elementary and multi-level school results.

Charter School Impact by Students' Years of Enrollment

Student growth in charter schools may change as students continue their enrollment over time. To test this, students were grouped by the number of consecutive years they were enrolled in charter schools. In this scenario, the analysis is limited to the charter students who enrolled for the first time in a charter school between 2009-2010 and 2011-2012. Although the number of students included will be smaller, it is the only way to make sure that the available test results align with the years of enrollment. For this reason, the results of this analysis should not be contrasted with other findings in this report. This question examines whether the academic success of students who enroll in a charter school changes as they continue their enrollment in a charter school. The results are shown below in Figure 8.

Figure 8: Impact by Students' Years of Enrollment



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

The results suggest that new charter school students see initial losses in both reading and math compared to their counterparts in traditional public schools. In the second year of attendance, the losses in reading disappear and we see a positive and significant learning gains in math compared to TPS. In the third year, charter student learning gains are similar to their TPS peers in both reading and math.

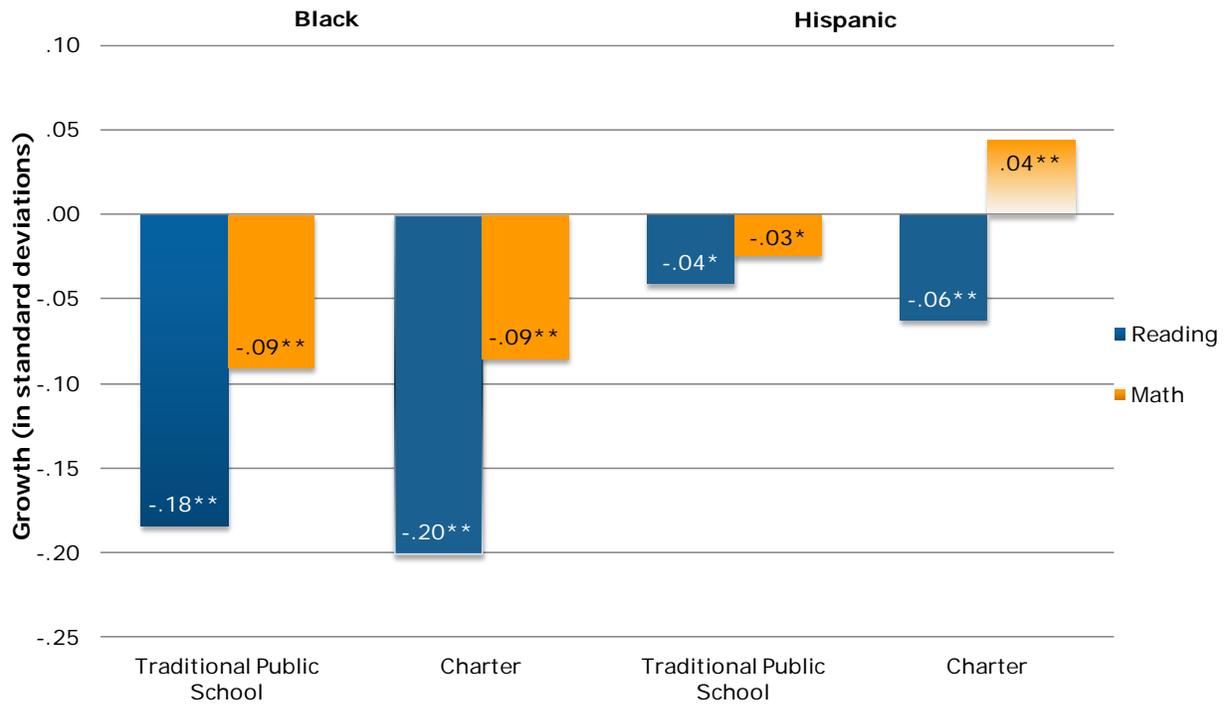
Charter School Impact by Race/Ethnicity

Attention in US public education to achievement differences by racial and ethnic backgrounds has increased since the passage of the *No Child Left Behind* Act in 2001. The effectiveness of charter schools across ethnic and racial groups is especially important given the proportion of charter schools that are focused on serving historically underserved students. The impact of charter schools on the academic gains of Black and Hispanic students is presented in Figure 9 below.

The graph displays two distinct comparisons, described below:

- The first comparison displays the performance of TPS students in the subgroups of interest relative to the "average white student in TPS;" in this comparison, the white student does not qualify for subsidized school meals, Special Education services or English Language Learner support and is not repeating a grade. The values that appear in each vertical bar indicate the magnitude of difference from this comparison student, and the stars indicate the level of statistical significance. Thus, 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.
- A second comparison tests whether the learning gains in the charter school student subgroup differs significantly from their peers in the same student subgroup in their feeder TPS. Where the difference is significant, the charter school bar has gradient shading.

Figure 9: Impact with Black and Hispanic Students



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

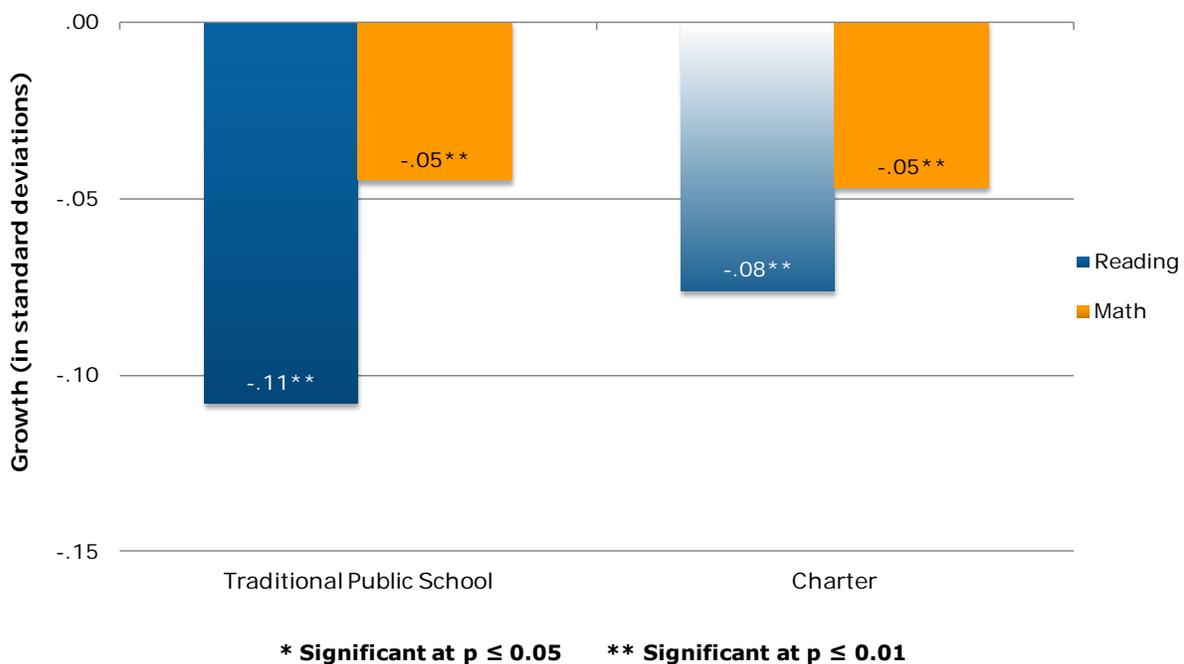
On average, Black and Hispanic students in both TPS and charter schools have significantly smaller learning gains in reading than those of average white students in TPS, the baseline of comparison. Black and Hispanic students enrolled in charter schools receive no significant benefit or loss in reading from charter school attendance compared to their counterparts in traditional public schools.

Black and Hispanic students in TPS have significantly smaller learning gains in math than those of white students in TPS, the baseline of comparison. However, Hispanic students in charter schools have significantly higher growth than both white and Hispanic students in TPS. In other words, Illinois charter schools have erased the learning gap and are closing the achievement gap for Hispanic students in math.

Charter School Impact with Students in Poverty

Much of the motivation for developing charter schools aims at improving education outcomes for students in poverty. The enrollment profiles of charter schools across the country underscore this fact; in Illinois, 71 percent of charter students are eligible for subsidized school meals, a proxy for low-income households. Thus, the impact of charter schools on the learning of students in poverty is important in terms of student outcomes and as a test of the commitment of charter school leaders and teachers to address the needs of this population. Figure 10 presents the results for students in poverty. In this graph, the comparison student is a student who pays full price for school meals in TPS, a proxy for not being in poverty.

Figure 10: Impact with Students in Poverty

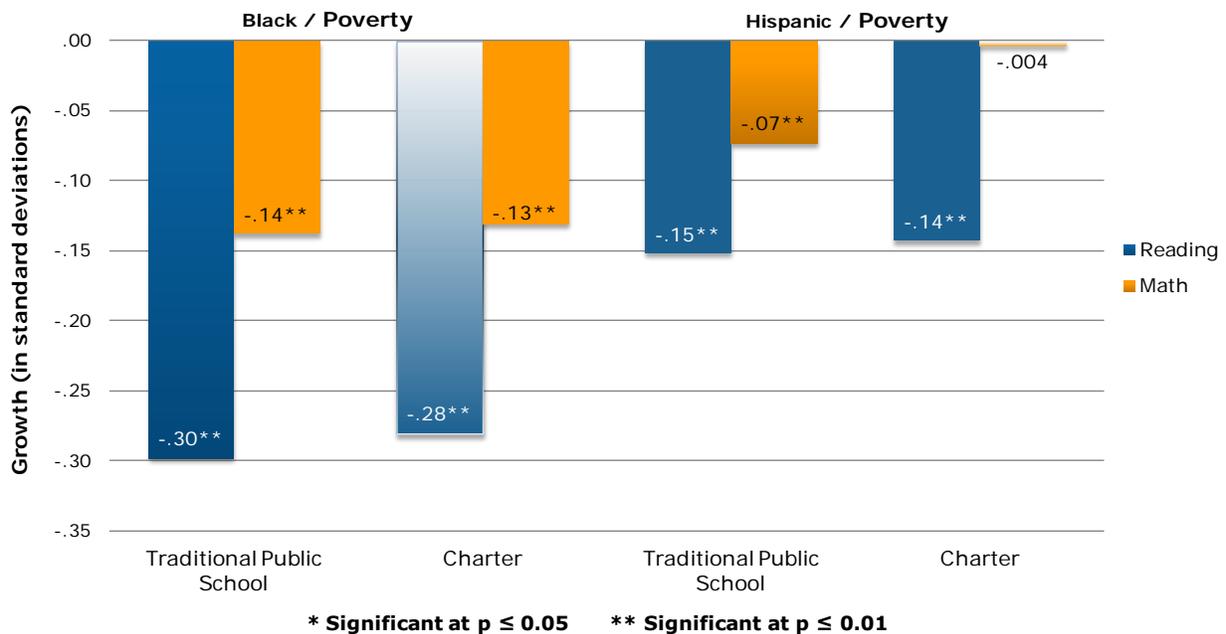


As shown in the figure above, in Illinois, students in poverty perform significantly worse than their non-poverty peers regardless of whether they attend a TPS or a charter. However, students in poverty who are enrolled in charter schools perform significantly better in reading compared to students in poverty in TPS. Charter students in poverty have similar learning gains in math as their TPS peers in poverty.

Charter School Impact with Race/Ethnicity and Poverty

The most academically needy students in public education are those who are both living in poverty and are a racial or ethnic minority that has been historically underserved. These students represent the most challenging 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 charter schools on the academic gains of Black students living in poverty and Hispanic students living in poverty is presented in Figure 11 below.

Figure 11: Impact with Black and Hispanic Students in Poverty



Black students in poverty in both TPS and charter schools have smaller gains in reading and math than those of the average non-poverty white TPS student, the baseline of comparison. Black students in poverty who are enrolled in charter schools show significantly better performance in reading compared to Black students in poverty in TPS. However, Black students in poverty have similar learning gains in math whether they attend a TPS or charter.

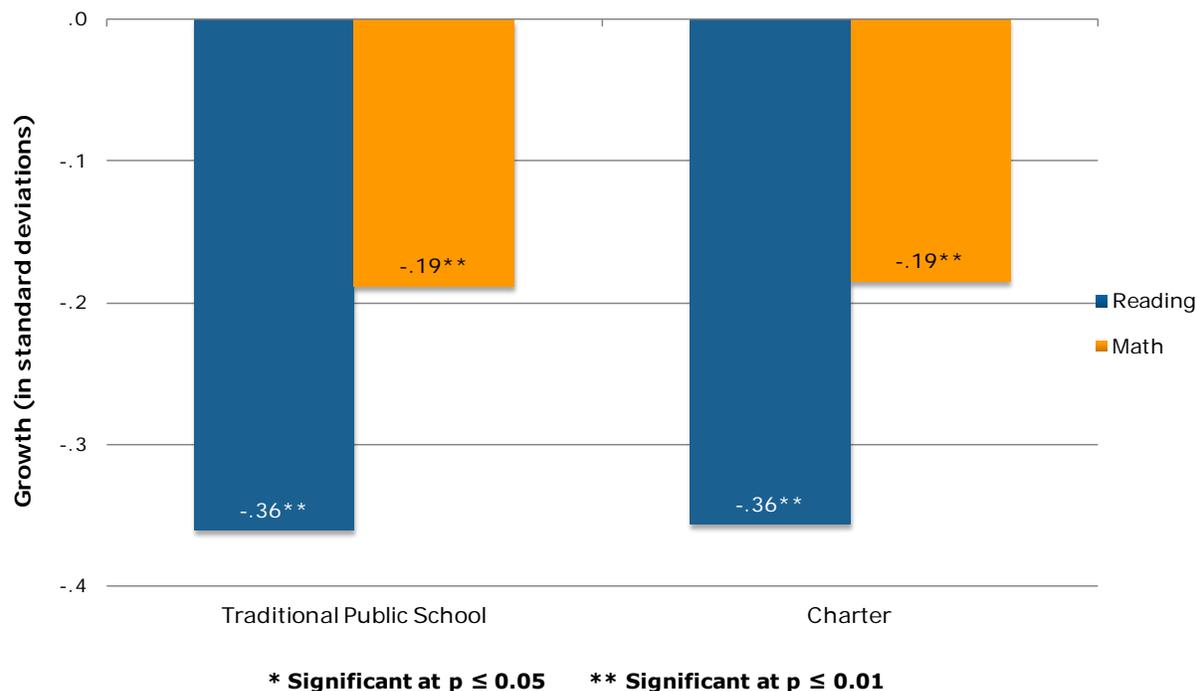
In reading, Hispanic students in poverty have similar learning gains whether they attend a TPS or charter. In math, Hispanic charter students in poverty have significantly higher learning gains than their TPS peers. Moreover, Hispanic charter students in poverty have similar learning gains as non-poverty white TPS students. This means that there is no learning gap for Hispanic charter students in poverty.

Charter School Impact with Special Education Students

The demographic comparisons in the CREDO national charter school report released in 2009 indicated that across the charter sector, schools serve fewer Special Education students than the traditional public schools both in number of students and as a proportion of their enrollment. In some cases, this is a deliberate and coordinated response with local districts, based on a balance of meeting the needs of the students and a consideration of cost-effective strategies for doing so. In Illinois, the overall proportion of charter school students who are Special Education is 10 percent, compared to 13 percent in TPS State wide and in the charter schools' feeder schools. Although this difference is not large in Illinois, anecdotal evidence suggests that TPS and charters may differ in their criteria for designating students as needing to be assessed for special education services; this topic has been flagged for future study on student enrollments.

It is especially difficult to compare the outcomes of Special Education students, regardless of where they enroll. The most serious challenge rests on the small numbers of Special Education students. Consequently, there is tremendous variation when all categories are aggregated, a necessary and messy requirement for comparison purposes. Of all the facets of the current study, this one deserves the greatest degree of skepticism. With this cautionary note, the results are presented in Figure 12 below.

Figure 12: Impact with Special Education Students



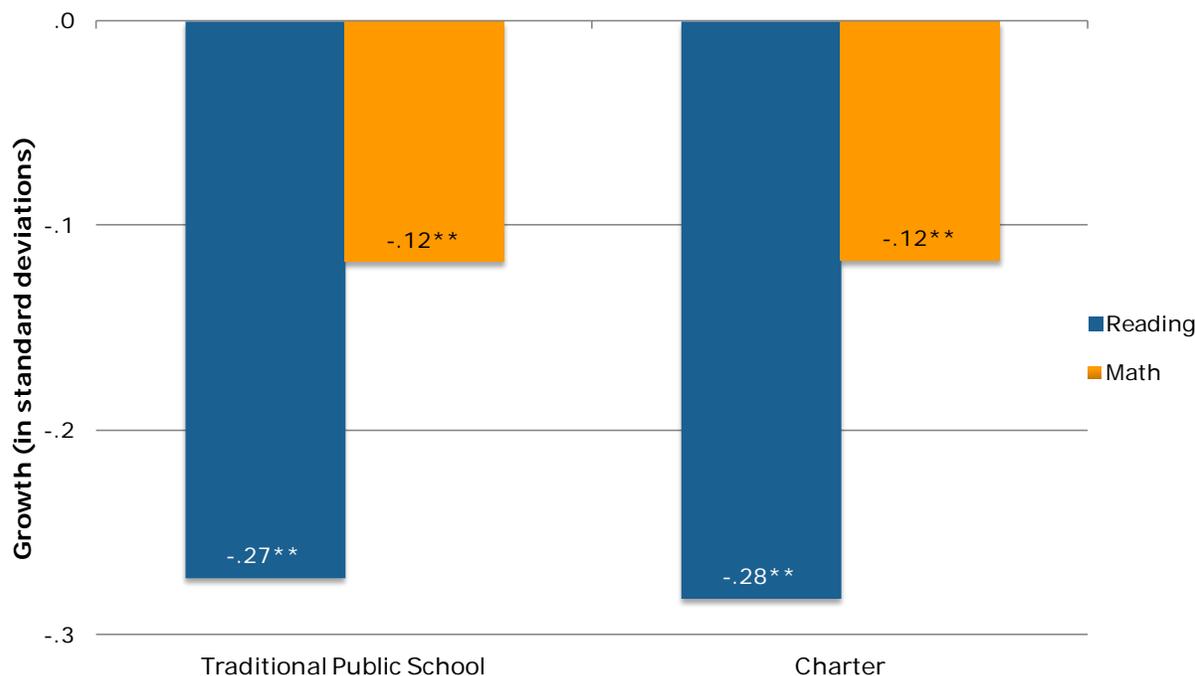
Special Education students enrolled in both TPS and charter schools perform significantly worse than students not receiving special education services. In Illinois, Special Education students have similar learning gains whether they attend a charter or TPS.

Charter School Impact with English Language Learners

Students who enroll in school without sufficient English proficiency represent a growing share of public school students. Their success in school today will greatly influence their success in the world a decade from now. Since their performance as reflected by National Assessment of Education Progress lags well behind that of their English proficient peers, their learning gains are a matter of increasing focus and concern nationally and in Illinois.

The comparison of learning gains of charter school English Language Learners and their TPS counterparts appears in Figure 13. The baseline of comparison is the typical learning gains of the comparison peers in traditional public schools who are proficient in English.

Figure 13: Impact with English Language Learners



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

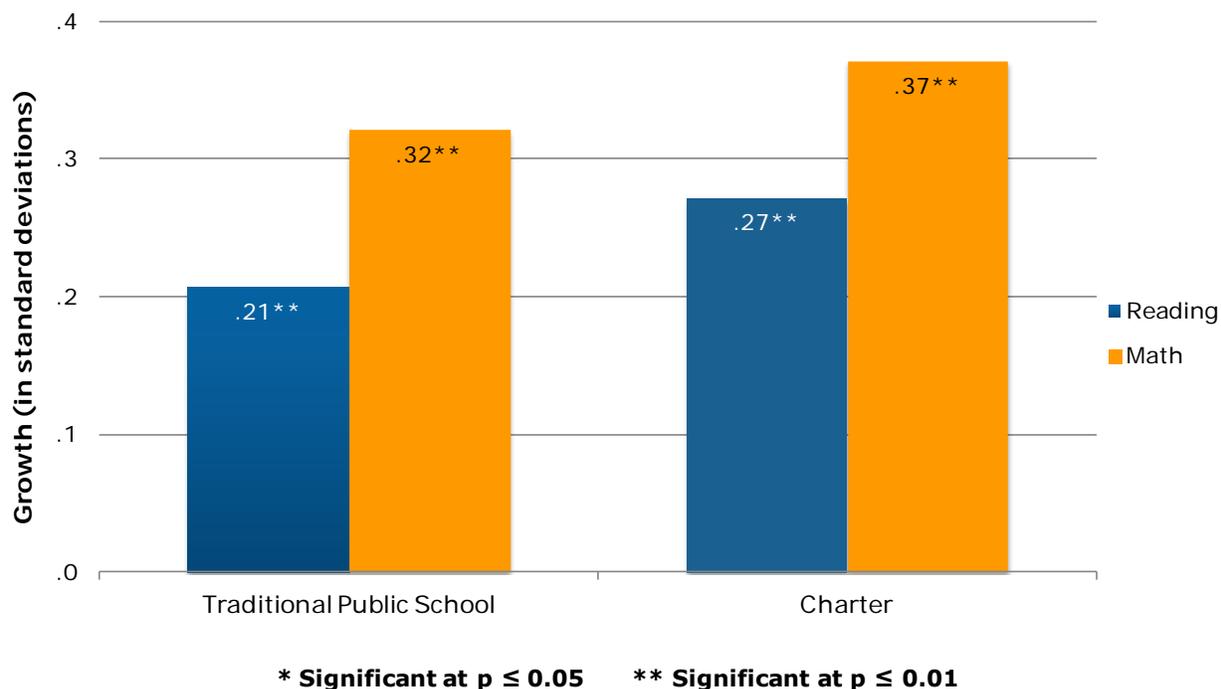
English Language Learner students in both TPS and charter schools learn significantly less than native/fluently English speakers in both reading and math. There are no significant differences in performance for English Language Learners between the TPS and charter sectors.

Charter School Impact with Grade-Repeating Students

This study examined the outcomes of students who were retained. Often a highly charged topic, the underlying premise is that additional time in grade can help students by remediating deficits and shoring up grade-level competencies. Existing research on the outcomes of students who have been retained is limited.

Retention practices differ widely across the country and between the charter and TPS sectors. The fact that retained charter students have the lowest match rate (48 percent) of any subgroup in our study suggests that charter schools are more likely to retain academically low-performing students. The results of learning gains following retention appear in Figure 14 below.

Figure 14: Impact with Grade-Repeating Students



The retained students included in the analysis have higher learning gains than non-retained students in math and reading. Although the impacts for retained students at charters are higher than their TPS counterparts, there is no significant difference in learning gains between retained students in charter schools and retained students in TPS. This is because grade-repeating students are a small group of students, and their learning gains in their repeating year are highly varied.

Charter School Impact by Student’s Starting Decile

A general tenet of charter schools is a commitment to the education and development of every child. Further, many charter schools, including several in Illinois, have as part of their mission a specific emphasis on serving students who have not thrived academically in TPS and whose early performance is well below average. We examined the performance of charter schools to see if they produced equivalent results across the spectrum of student starting points and in relation to the results observed for equivalent students in TPS.

To do this, for charter school students and their VCRs, their baseline achievement test scores in reading and math were disaggregated into deciles. In this analysis,

the base of comparison is the average academic growth of the TPS students in Decile 5, which corresponds to students in the 50th to 60th percentiles in the State. Student achievement growth in each decile for charter school students and their VCRs was then compared. The results appear in Figures 15 and 16 below.

Figure 15: Impact by Students' Starting Decile – Reading

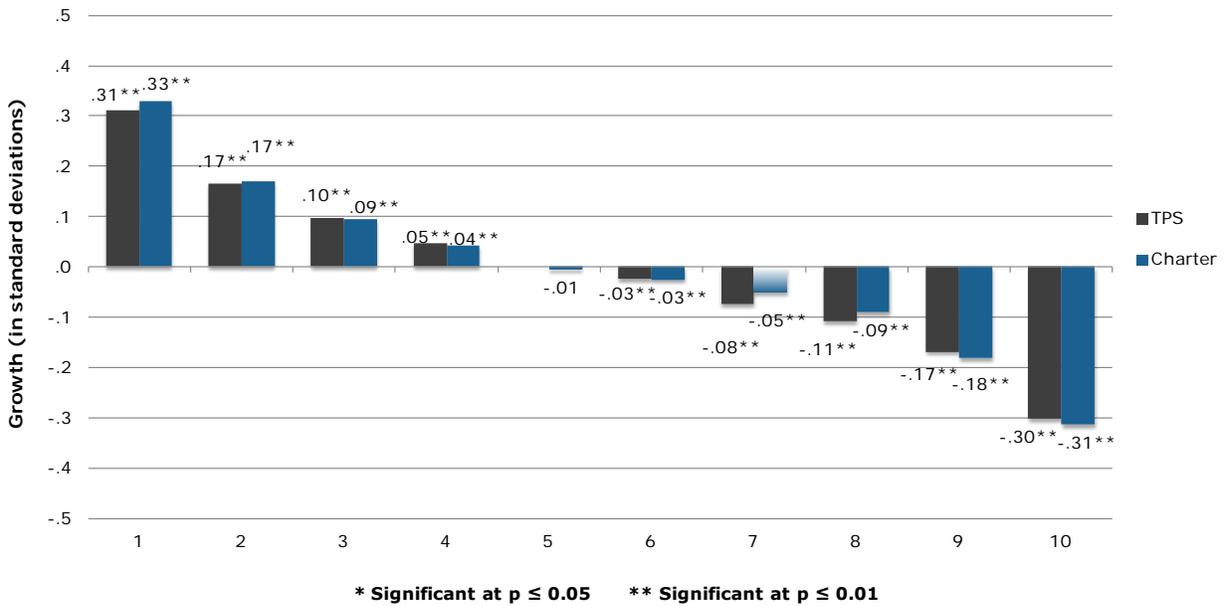
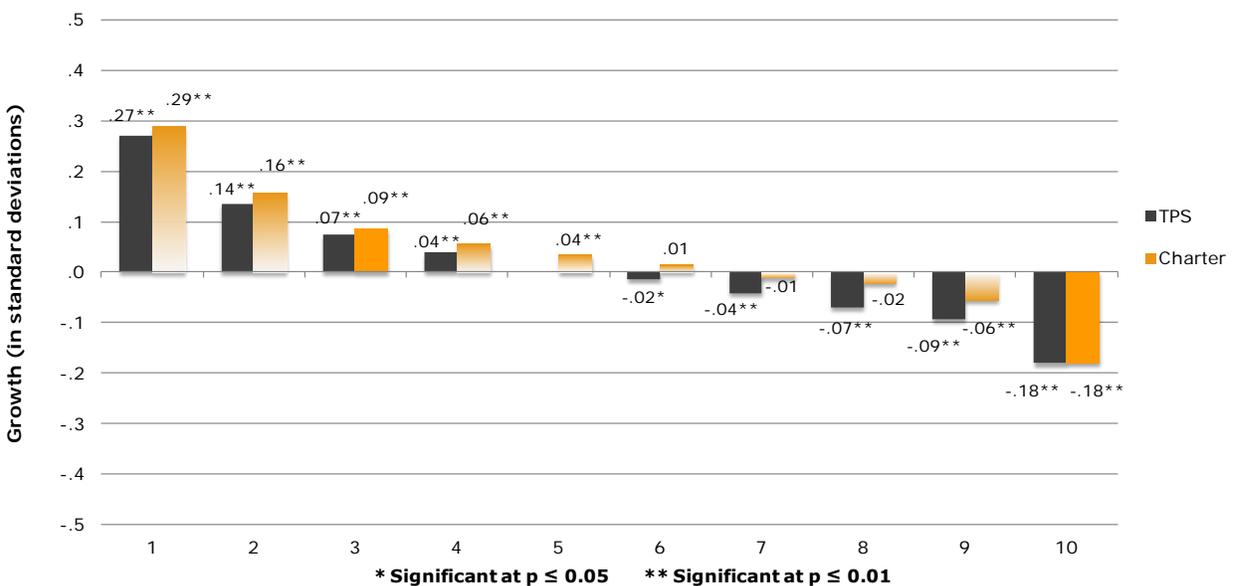


Figure 16: Impact by Students' Starting Decile – Math



Both figures demonstrate the expected “S”-shaped curve to the results. The overall curve reflects the typical pattern of larger learning gains for students with lower prior scores and larger learning losses for students with higher starting scores, a phenomenon known as “regression to the mean.” Here, the relative magnitudes are important: Do charter schools produce relatively better growth results than TPS within each decile? If so, the charter curve would have larger gains on the low end and smaller losses on the high end of the distribution.

For students in Illinois, Figure 15 show that charter schools do better than TPS in decile 7 in reading. The performance of charter students in reading is equivalent to the gains produced in TPS in all other deciles. In math, as shown in Figure 16 charter schools do better than TPS in the lower deciles, with the exception of decile 3. In addition, charter students outperform their TPS counterparts in all upper deciles with the exception of decile 10.

School-level Analysis

Comparative School-level Quality While the numbers reported above represent the average learning gains for charter school students across the state, the pooled average effects tell only part of the story. Parents and policymakers are also interested in school-level performance. In order to determine the current distribution of charter school performance, the average effect of charter schools on student learning over the two most recent growth periods (2011 and 2012) is compared to the experience the students would have realized in their local traditional public schools.⁹ The performance of the VCR students associated with each charter school comprises this measure of the local educational market. This analysis provides an average contribution to student learning gains for each charter school. This measure is called the school's effect size; as for the overall and by-period impacts, it is expressed in standard deviations of growth.

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 test of the school impact. This is because some charter schools elect to open with a single grade and mature one grade at a time. Our criteria for inclusion was at least 60 matched charter student records over the two years, or, for new schools with only one year of data, at least

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 2011 and 2012 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 about 46% 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 50% of schools to achieve between the 30th and 70th percentiles. Therefore, if schools were randomly distributed, we would expect about 6% in any small square and about 25% of the schools to appear in the middle four squares.

⁹ We chose to include only the two most recent growth periods in this analysis for two reasons. First, we wanted a highly relevant contemporary distribution of charter school performance. Second, using only two periods of data ensured that all schools' effect sizes were measured fairly; they are all based on one or two periods of data instead of one period for some schools and three periods for others.

30 matched charter records. Of our total sample of 65 schools with reading test scores in 2011 and 2012, 4 schools had an insufficient number of individual student records to calculate a representative school-wide average growth score. Of 65 schools with math test scores in 2011 and 2012, 3 had an insufficient number. Table 4 below shows the breakout of performance for the Illinois charter schools that meet our criteria for inclusion by having a sufficient number of charter student records.

Table 4: Performance of Charter Schools Compared to Their Local Markets

Subject	Significantly Worse		Not Significant		Significantly Better	
	Number	Percent	Number	Percent	Number	Percent
Reading	13	21.3%	36	59.0%	12	19.7%
Math	13	21.0%	26	41.9%	23	37.1%

In reading, about 20 percent of charter schools perform significantly better than their traditional public school market, while 37 percent perform significantly better in math. Both of these results are better than the national average proportion of better-performing charters (17%).¹⁰ The lowest school effect size in reading was -0.39 standard deviations of growth, while the highest effect size was 0.23. The gap between the lowest and highest effect sizes was larger in math; they were -0.48 and 0.65, respectively. A larger proportion of charter schools were not significantly different from their market in reading than in math.

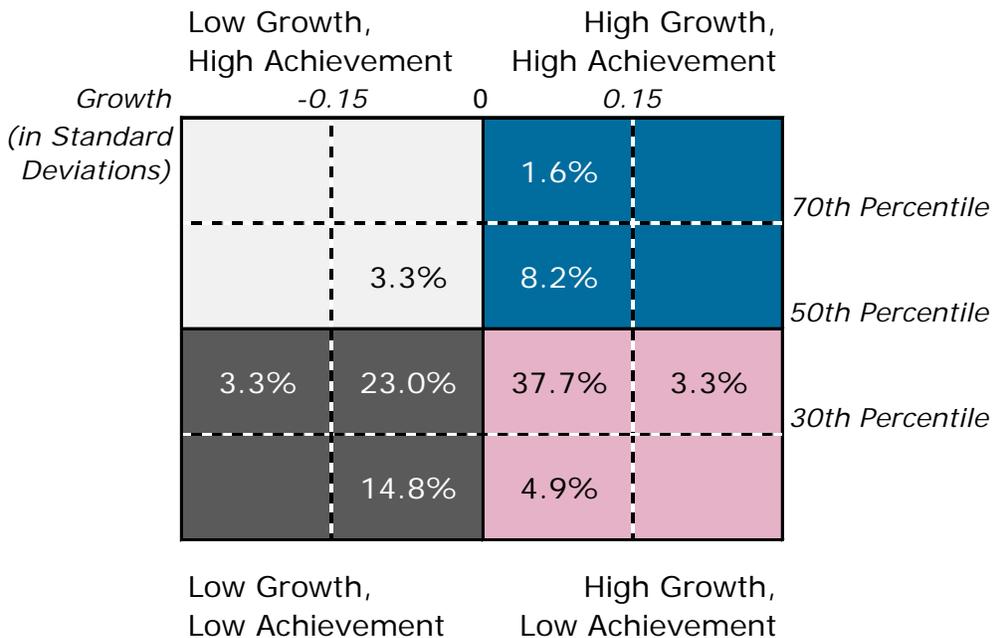
Impact of Growth on Achievement While the impacts of charter schools on academic growth relative to their local competitors is instructive, it is necessary to take a wide-angle view to determine how well these students are being prepared. Because many of the students served by charter schools start at low levels of achievement, it is vital to understand how well their academic growth advances them in absolute achievement. To do this, each school's average growth is placed in the context of their average achievement level compared to the rest of the state, as in Tables 5 and 6 below. For growth, we use the effect sizes discussed above. The school's average achievement level is the mean achievement of the students over the same two periods covered by the effect size (2011 and 2012).¹¹ The 50th percentile indicates statewide average performance for all public school students

¹⁰ CREDO. *Multiple Choice: Charter School Performance in 16 States* (2009). <http://credo.stanford.edu>.

¹¹ Average achievement was computed using students' z-scores from the end of the growth period (e.g., spring 2011 and spring 2012), and the resulting school-level mean was then converted into a percentile.

(traditional and charter). A school achievement level above the 50th percentile indicates that the school performs above the state wide average.

Table 5: Reading Growth and Achievement



In Illinois, 34 of the 61 charter schools (about 56 percent) had positive average growth in reading, regardless of their average achievement (this percentage is the sum of the squares in the blue and purple quadrants, the right half of the table). About 10 percent of charters had positive growth and average achievement above the 50th percentile of the Illinois (i.e., the total for the blue quadrant on the top right). About 87 percent of charters perform below the 50th percentile of achievement (the sum of the gray and purple in the lower portion of the table). Of concern is the nearly 41 percent of charters in the lower left gray quadrant, which represents low growth and low achievement.

Table 6: Math Growth and Achievement

Growth (in Standard Deviations)	Low Growth, High Achievement		High Growth, High Achievement		
	-0.15	0	0.15		
			1.6%		70th Percentile
		1.6%	3.2%	4.8%	50th Percentile
		21.0%	41.9%	4.8%	30th Percentile
	3.2%	12.9%	4.8%		
	Low Growth, Low Achievement		High Growth, Low Achievement		

For math, 38 of the 62 charter schools (61 percent) had positive average growth, as seen in the orange and pink quadrants. Over 9 percent of charters had positive growth and average achievement above the 50th percentile (the top right, orange quadrant). About 89 percent of charters have achievement results below the 50th percentile of the state (the sum of lower half of the table). Over 51 percent of Illinois charters have positive growth and achievement below the 50th percentile in the state, as seen in the lower right, pink quadrant. If those schools continue their trends of positive academic growth, their achievement would be expected to rise over time.

Synthesis and Conclusions

Based on the findings presented here, the typical student in Illinois charter schools gains more learning in a year than his TPS counterparts, amounting to about two weeks of additional gains in reading and about a month in math. These positive results are also found in Chicago, where the majority of Illinois charter students are educated.

A portion of Illinois charter schools appear to outpace TPS in how well they support academic learning gains in their students in both reading and math. Twenty percent of Illinois charters outpace the learning impacts of TPS in reading, and 37 percent do so in math. About 21 percent of charter schools have academic growth that is significantly worse than TPS for reading and math.

The student-to-student and school-to-school results show charter schools to be performing fairly well relative to the local alternatives. The larger question of whether charter schools are helping students achieve at high levels is also important. Nearly 41 percent of Illinois charter schools have below-average growth and below-average achievement in reading, and the same is true for nearly 37 percent of the charter schools in math. Students in these schools will not only have inadequate progress in their overall achievement but will fall further and further behind their peers over time.

The share of underperforming charter schools is offset, however, by the majority of charter schools that are either already achieving at high levels or are in positions to reach those levels. In both reading and math a majority of charter schools have academic growth that is above their market average. For reading, the proportion is about 56 percent and for math it exceeds 61 percent. Should these trends continue, the share of schools that currently lag the statewide average for absolute achievement would be expected to decline. These absolute improvements are achievable in Illinois.

Table 7 presents a summary of the results.

Table 7: Summary of Statistically Significant Findings for Illinois Charter Schools Compared to the Average Learning Gain for VCR

	Reading	Math
Illinois Charter Students	Positive	Positive
Chicago Charter Students	Positive	Positive
Charters in 2010	Positive	Positive
Charters in 2011	Positive	Positive
Charters in 2012	Negative	Positive
CMO Affiliated Charters	Positive	Positive
Non-CMO Affiliated Charters		Positive
Elementary Charter Schools	Positive	Positive
Middle Charter Schools	Negative	
Multi-Level Charter Schools	Positive	
First Year Enrolled in Charter School	Negative	Negative
Second Year Enrolled in Charter School		Positive
Hispanic Charter School Students		Positive
Charter School Students in Poverty	Positive	
Black Charter School Students in Poverty	Positive	
Hispanic Charter School Students in Poverty		Positive

Note: When an entry is blank, that result was not significant.

Appendix

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

Student Group	Matched Charter Students	
	Reading	Math
Illinois Charter Students	32,900	32,985
Students in Chicago	30,099	30,145
Students in Charters in 2010	8,799	8,835
Students in Charters in 2011	11,235	11,244
Students in Charters in 2012	12,866	12,906
Students in CMO-Affiliated Charters	24,129	24,129
Students in Non-CMO Affiliated Charters	8,771	8,856
Students in Elementary Schools	21,431	21,571
Students in Middle Schools	3,651	3,647
Students in Multi-level Schools	7,441	7,390
Students First Year Enrolled in Charter School	6,551	6,562
Students Second Year Enrolled in Charter School	2,988	2,966
Students Third Year Enrolled in Charter School	646	644
Black Students	20,508	20,460
Hispanic Students	10,362	10,451
White Students	1,498	1,528
Students in Poverty	29,410	29,434
Black Students in Poverty	18,808	18,711
Hispanic Students in Poverty	9,897	9,978
Special Education Students	3,166	3,262
English Language Learners	1,508	1,590
Grade Repeating Students	201	184

Student Group	Matched Charter Students	
	Reading	Math
Students in Decile 1	4,512	4,749
Students in Decile 2	4,147	5,202
Students in Decile 3	3,993	4,710
Students in Decile 4	4,365	4,145
Students in Decile 5	3,415	3,879
Students in Decile 6	3,716	3,001
Students in Decile 7	3,442	2,825
Students in Decile 8	2,796	2,047
Students in Decile 9	1,599	1,610
Students in Decile 10	915	817