

Charter School Performance in California

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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 California 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 California for six years of schooling, beginning with the 2005-2006 school year and concluding in 2010-2011.

With the cooperation of the California Department of Education (CDE), CREDO obtained the historical sets of student-level administrative records. The support of CDE 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 CDE 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 in California. It is also an update to CREDO's first analysis of the performance of California's charter schools, which can be found on our website.¹ This 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 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 California 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 the legislation and public policy operate, 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 might have had in a traditional public school (TPS), the analysis shows that, on average, students in

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

California charter schools make larger learning gains in reading and learn less in mathematics. These results show overall improvement in charter school learning in both subjects. The improvement is driven by the gains of students at the schools that were included in the 2009 study who are, in more recent years, closing the learning gap in mathematics found in the earlier report. Further, California charter students attending schools in urban areas, those in elementary and middle schools, and those in schools administered by CMOs are making strong gains in both math and reading.

At the school level, 32 percent of the charter schools have learning gains that are significantly more positive than their local TPS options in reading, while 21 percent of charter schools have significantly lower learning gains. In math, 29 percent of the charter schools studied outperform their TPS peers and 37 percent perform worse.

Study Approach

This study of charter schools in California 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, 3, 4} 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 California 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 and geographic location. Answers to all these questions require that we ensure that the contribution of the schools – either the charter schools or the TPS 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 to be 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 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

² CREDO. *Multiple Choice: Charter School Performance in 16 States* (2009). <http://credo.stanford.edu>.

³ 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.

⁴ 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>.

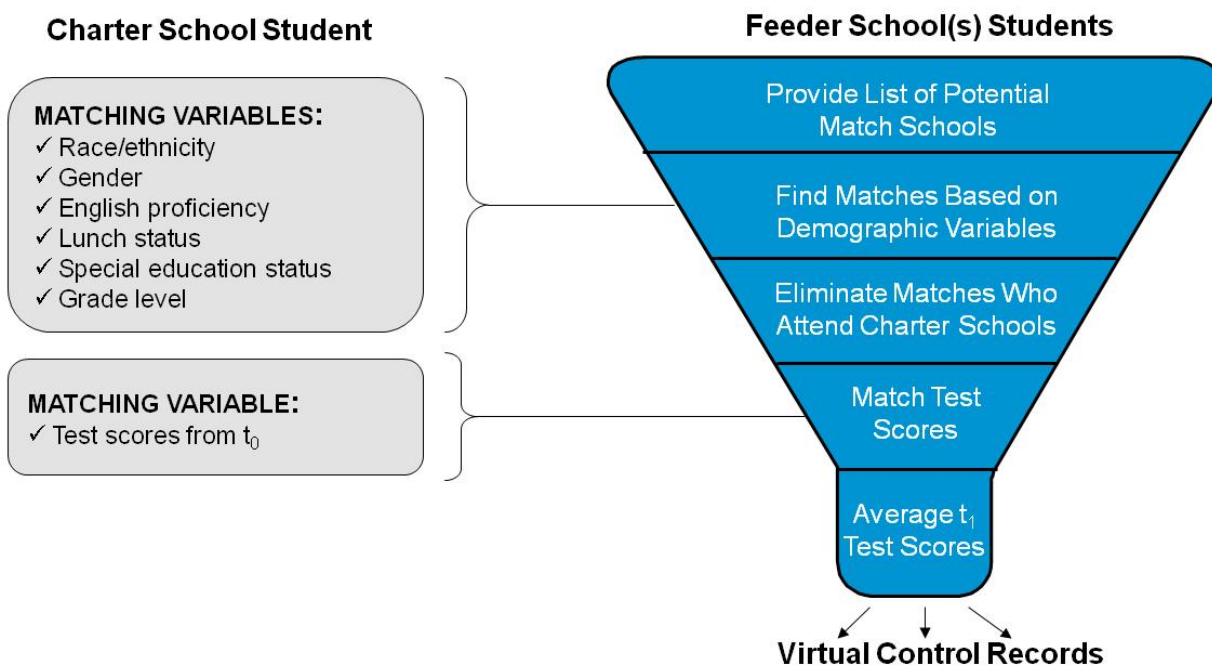
synthesis of their academic performance to use as the counterfactual to the charter school student's performance.

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 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 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 reported as the **average one-year growth** of charter school students, relative to their VCR-based comparisons.

With six years of student records in California, it is possible to create five periods of academic growth.⁵ 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 "2008" covers academic growth that occurred between the end of the 2006-2007 and the end of the 2007-2008 school years. Similarly, the time period denoted "2011" corresponds to the year of growth between the 2009-2010 and 2010-2011 school years.

With six years of data, and eleven tested grades (2nd – 11th) including end-of-course exams (EOCs), there are 66 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.

⁵ The National Charter School Study 2013 used only three growth periods in the state-level analyses. This means state-level effect sizes from this study and the National Charter School Study 2013 will not be identical.

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.⁶

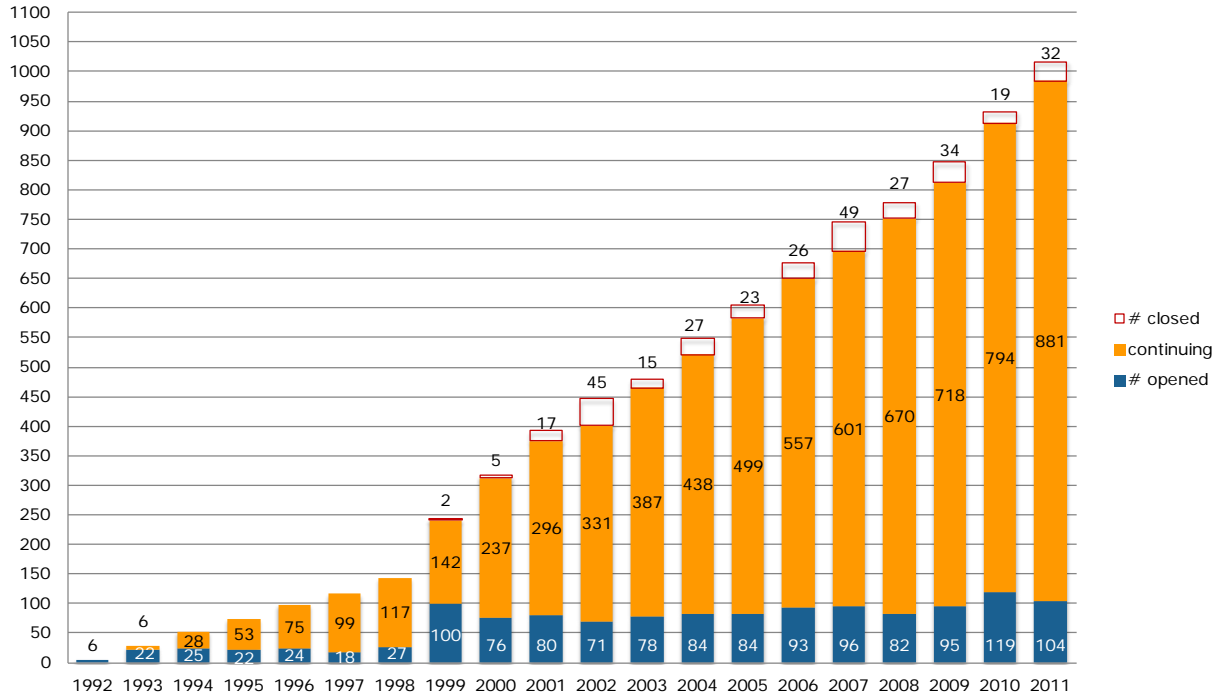
When scores are thus standardized into z-scores, every student is placed relative to his peers in his own state. A z-score of zero, for example, denotes a student at the 50th percentile in that state, while a z-score one standard deviation above that equates to the 84th percentile. Students who maintain 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.

⁶ 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.

California Charter School Demographics

The California charter school sector has grown markedly since its inception in 1991. Figure 2 below notes the new, continuing and closed charter school campuses from the fall of 1991 to the fall of 2011.

Figure 2: Opened and Closed Charter Campuses, 1991-2011



According to the National Center for Education Statistics (NCES), there were 918 charter schools open in California in the 2010-11 school year.⁷ 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 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 California's traditional public schools, the charters' feeder schools, and the charter schools themselves.

⁷ This is the most recent year available from the NCES Common Core of Data Public School Universe.

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

	TPS	Feeders	Charters
Number of schools	9207	6741	918
Average enrollment per school	633	749	387
Total number of students enrolled	5,831,615	5,050,340	376,344
Students in Poverty	56%	56%	62%
English Language Learners	24%	22%	17%
Special Education Students	9%	9%	6%
White Students	26%	27%	32%
Black Students	6%	7%	11%
Hispanic Students	52%	51%	44%
Asian/Pacific Islander Students	11%	11%	5%
Native American Students	0.7%	0.7%	1%

Because charter schools are not evenly distributed across the state, one would not necessarily expect charter school populations to parallel the demographics of the California TPS population as a whole. Table 1 bears this out: California charter schools have more students in poverty, more Black and White students and fewer Hispanic and Asian students in the charter population than the state as a whole.

The feeder school populations would be expected to more closely align demographically, but in California the feeder schools are more similar to the TPS than the charters in terms of students in poverty and Black, White and Hispanic students.

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 California’s charter school population is designated as special education compared to all TPS, and this proportion is also lower than that of the feeder TPS 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 both the feeder schools and statewide 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
California Charter Students	446,495		393,492	
% Matched	393,492	88%		
Black Students	49,969	11%	42,626	11%
Hispanic Students	198,394	44%	180,355	46%
White Students	151,618	34%	137,333	35%
Students in Poverty	227,500	51%	200,865	51%
Special Education Students	25,288	6%	16,124	4%
English Language Learners	58,749	13%	49,520	13%
Grade Repeating Students	25,521	6%	11,412	3%

NOTE: The appendix includes additional descriptive demographics.

For this analysis, a total of 393,492 charter school students (with 792,408 observations across five growth periods) from 994 charter schools are followed for as many years as data are available.⁸ The students are drawn from Grades 2 – 11, since these are the continuous grades that are covered by the state achievement testing program for reading and math. High school students are included for math whenever they take the end-of-course exam sequence in consecutive years, e.g., Algebra I in 9th grade and Algebra II in 10th grade. An identical

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

number of virtual comparison records are included in the analysis. In California, it was possible to create virtual matches for 88 percent of the tested charter school students in both reading and math. This high proportion assures that the 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

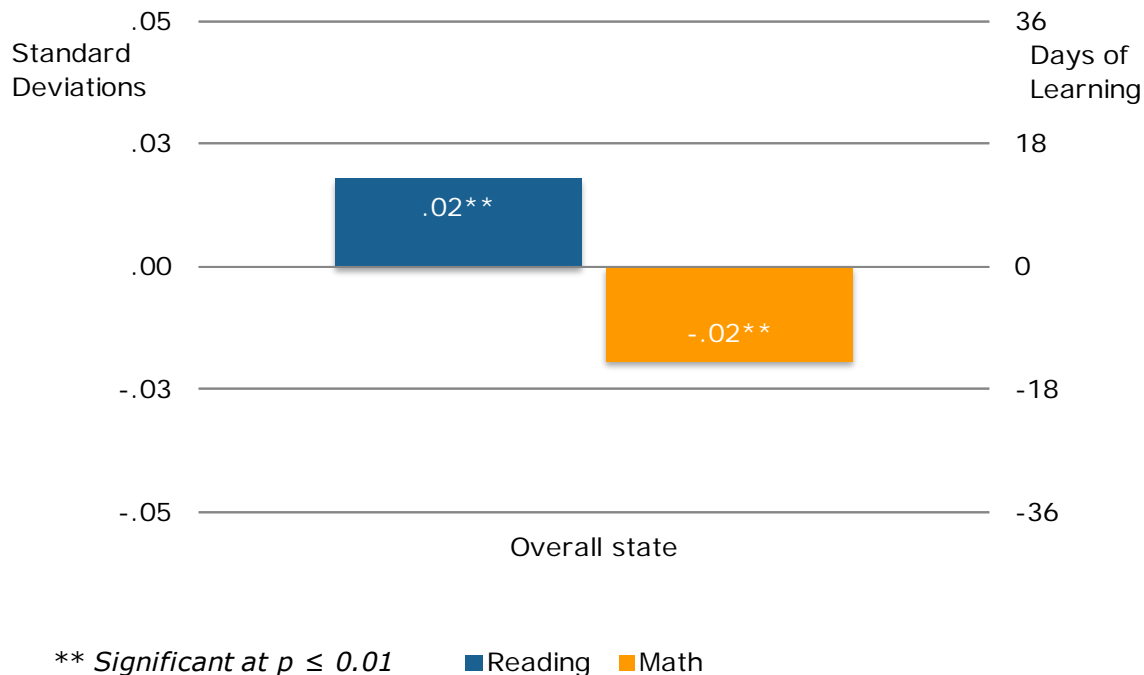
⁸ Schools that have opened recently or that have only recently begun serving tested grades will not have enough years of data to compute five growth periods.

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, as can be seen in Table 2 above by the large number of students included in each student group.

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 comparison VCR peers from the feeder schools nearby. The results appear in Figure 3. On average, students in California charter schools learned significantly more than their virtual counterparts in reading but significantly less in mathematics.

Figure 3: Average Learning Gains in California Charter Schools, 2007-2011 Compared to Gains for VCR Students



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.⁹

Table 3: Transformation of Average Learning Gains¹⁰

Growth (in standard deviations)	Gain (in days of learning)
0.00	0
0.05	36
0.10	72
0.15	108
0.20	144
0.25	180
0.30	216
0.35	252

Using the results from Figure 4 and the transformations from Table 3, per year of schooling, we can see that, on average, charter students in California gain an additional 14 days of learning in reading over their TPS counterparts, but lag behind their counterparts by 14 days of learning in math.

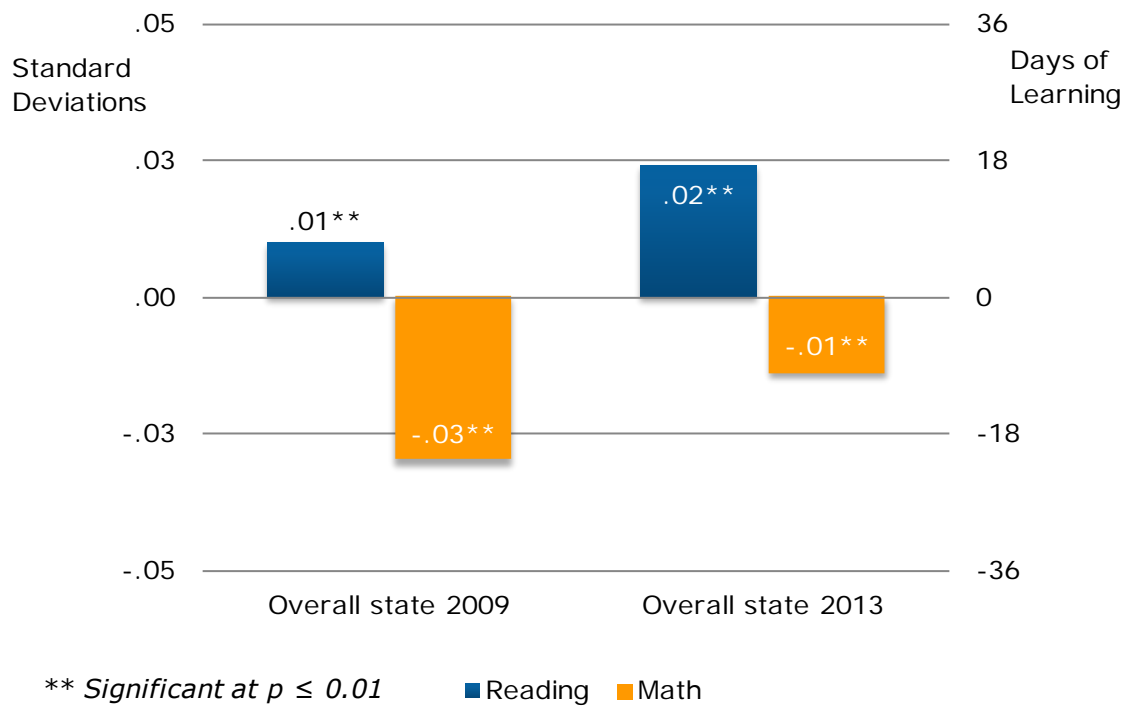
⁹ Hanushek, Eric A. and Steven G. Rivkin. Teacher quality. In *Handbook of the Economics of Education*, Vol. 2, ed. EA Hanushek, F Welch, (2006): 1051–1078. Amsterdam: North Holland.

¹⁰ Note: One month of learning constitutes 20 school days of learning.

Charter School Impact with 2009 Cohort

Because the charter school market is dynamic, many schools have opened and others have closed since the previous report. To create an apples-to-apples comparison between the two reports, the subset of schools from the 2009 report were re-analyzed using only data released since the previous report. Both these and the 2009 results are shown in Figure 4.¹¹

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



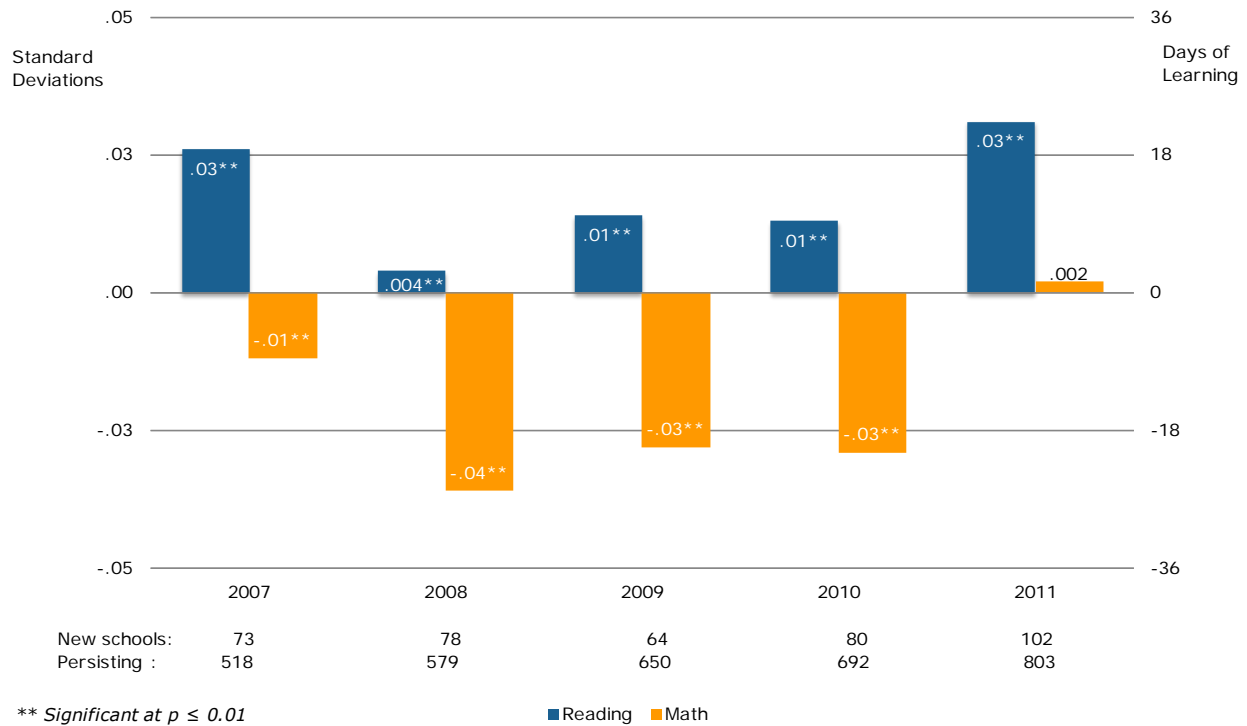
As in the current report, students from the 2009 charter school cohort learned significantly more than their TPS counterparts in reading and less in math. Reading gains in 2009 were equivalent to about seven additional days of learning for California charter school students. In math, charter students lagged by 22 days of learning in 2009. Charter students at these same schools in more recent growth periods have increased their learning gains in reading – to about 14 more days of learning than TPS peers. In addition, the gap in math learning gains has narrowed to about seven days of learning.

¹¹ The previous CREDO report covered the school years 2005-06 through 2007-08.

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 five growth periods. Results are shown in Figure 5 along with the number of newly opened and persisting schools for each growth period.¹²

Figure 5: Impact by Growth Period, 2007-2011



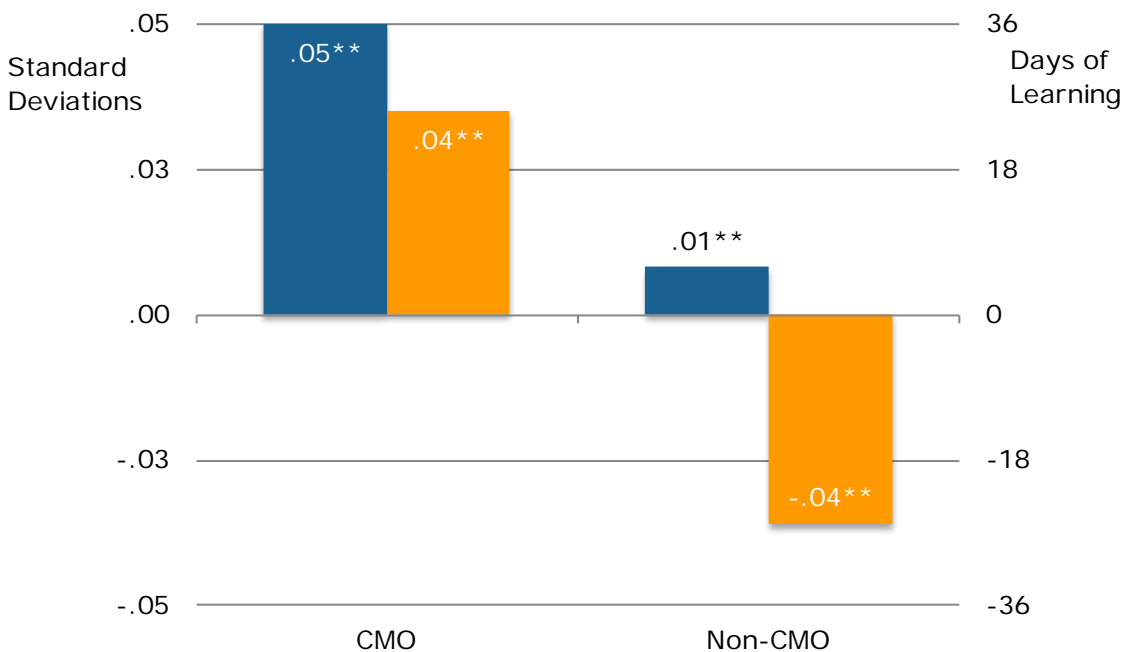
In reading, charter students in California learned significantly more than their virtual peers in all five of the periods analyzed. Math is quite a different picture, showing a lag for all but the most recent growth period ending in 2011. In 2011, math growth is similar at charters and TPS. Remarkably, 397 schools with students in tested grades were opened in the period from 2007 – 2011, and 175 schools were closed in the same time period. The strong showing of the new schools for the last growth period accounts for some of the improvement in that period.

¹² 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.¹³

Figure 6: Impact by CMO Affiliation



** Significant at $p \leq 0.01$ ■ Reading ■ Math

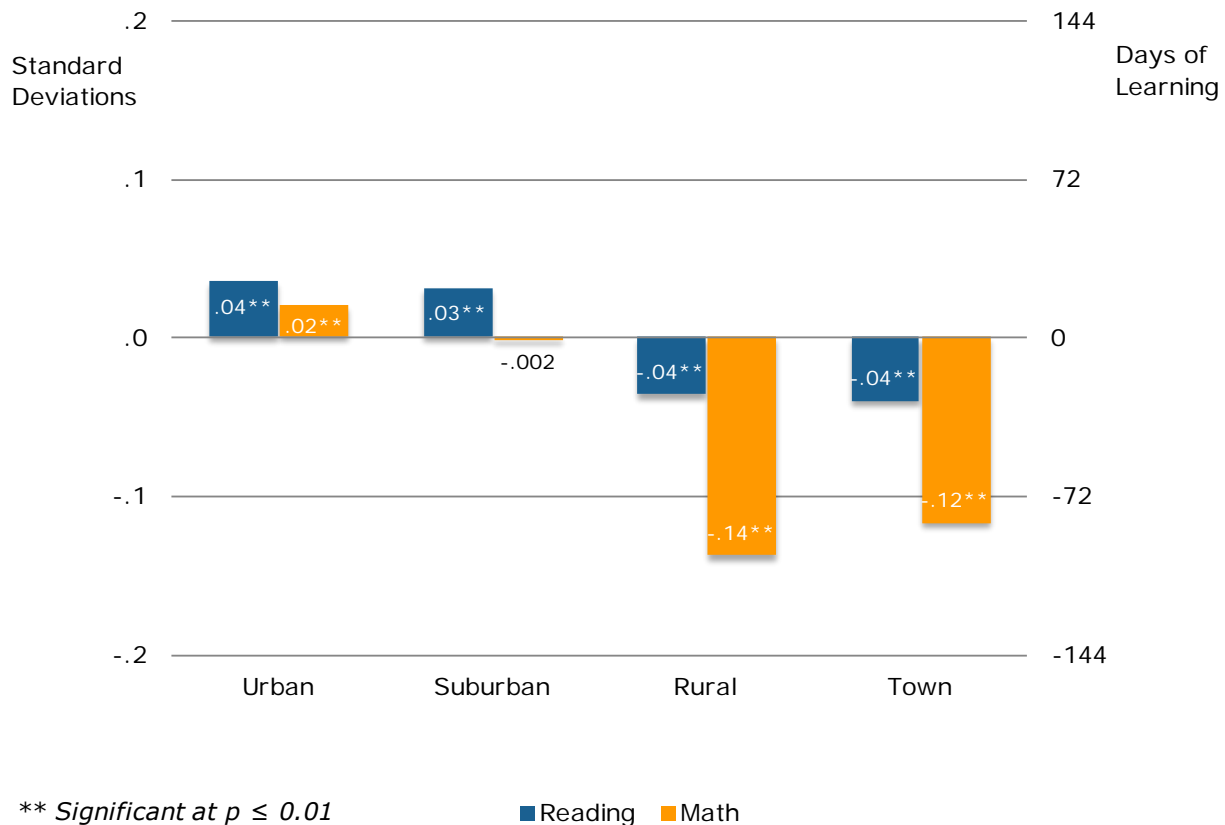
Students attending charter schools affiliated with a CMO have better learning gains than TPS students in both reading and math. The positive impact is equivalent to about 36 additional days of learning in reading and 28 more days in math. The results for CMO-affiliates also are significantly better in both reading and math than for charter schools that are not part of a CMO. Charter students at non-affiliated schools have better learning gains in reading than TPS – by about seven additional days. However, students at charter schools that are not part of a CMO lag behind their TPS counterparts by 29 days of learning in math.

¹³ Approximately 25% of California students attend schools affiliated with a CMO.

Charter School Impact by Location

Although charter schools in urban areas receive the bulk of media attention, charter schools can and do choose to serve other locales. Differences in location may correlate to different average charter school effects. The results in Figure 7 represent the disaggregated impacts for urban, suburban and rural charter schools as well as those in towns.¹⁴

Figure 7: Impact by School Location



Students enrolled in urban charter schools in California learn significantly more in both math and reading each year compared to their peers in TPS. The benefit for urban charter students is 29 additional days of learning in reading and 14 more days of learning in math. Students in suburban charter schools have better learning gains than their TPS counterparts in reading but similar gains in math. Students in rural and town charter schools, however, learn significantly less than

¹⁴ Approximately 52% of California charter students attend school in an urban setting, 26% in suburban schools, 17% in rural areas and 5% in towns.

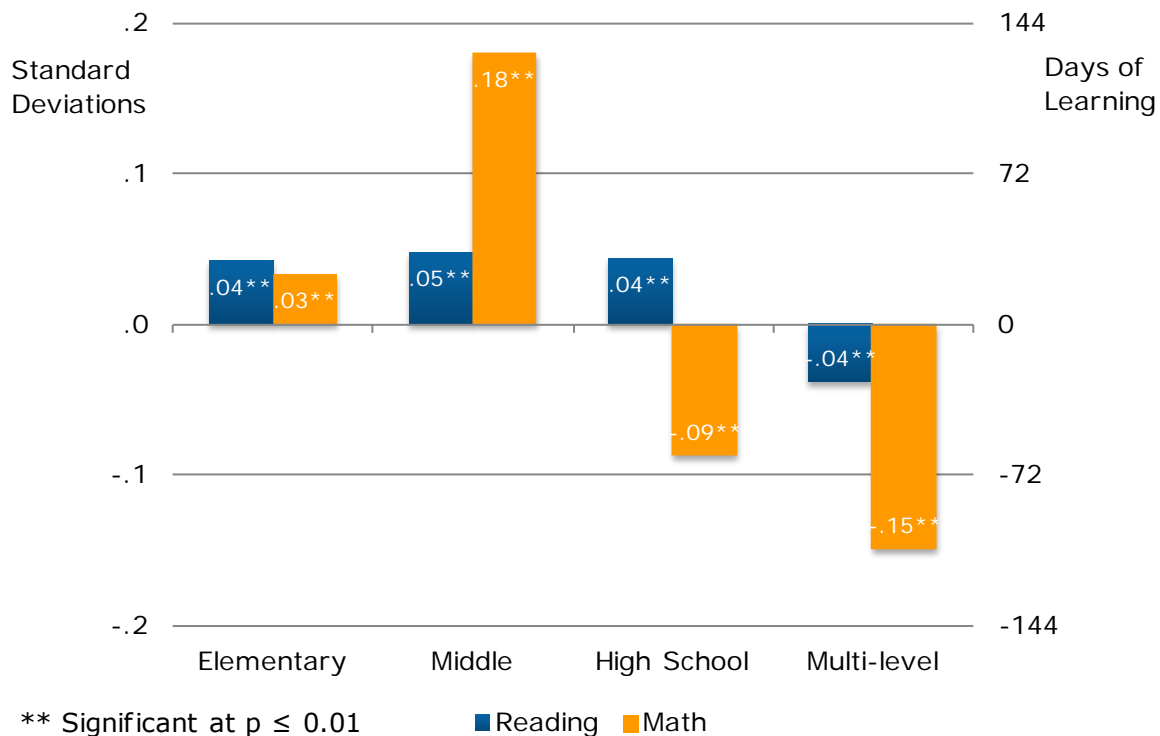
their TPS peers in both reading and math. Rural charter students lag TPS by 29 days of learning in reading and 101 learning days in math. Charter students in towns have 29 fewer days of learning in reading and 86 fewer days in math than TPS peers.

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.

This study examined the outcomes of students enrolled in elementary, middle, high and multi-level schools. The results appear in Figure 8.

Figure 8: Impact by School Level

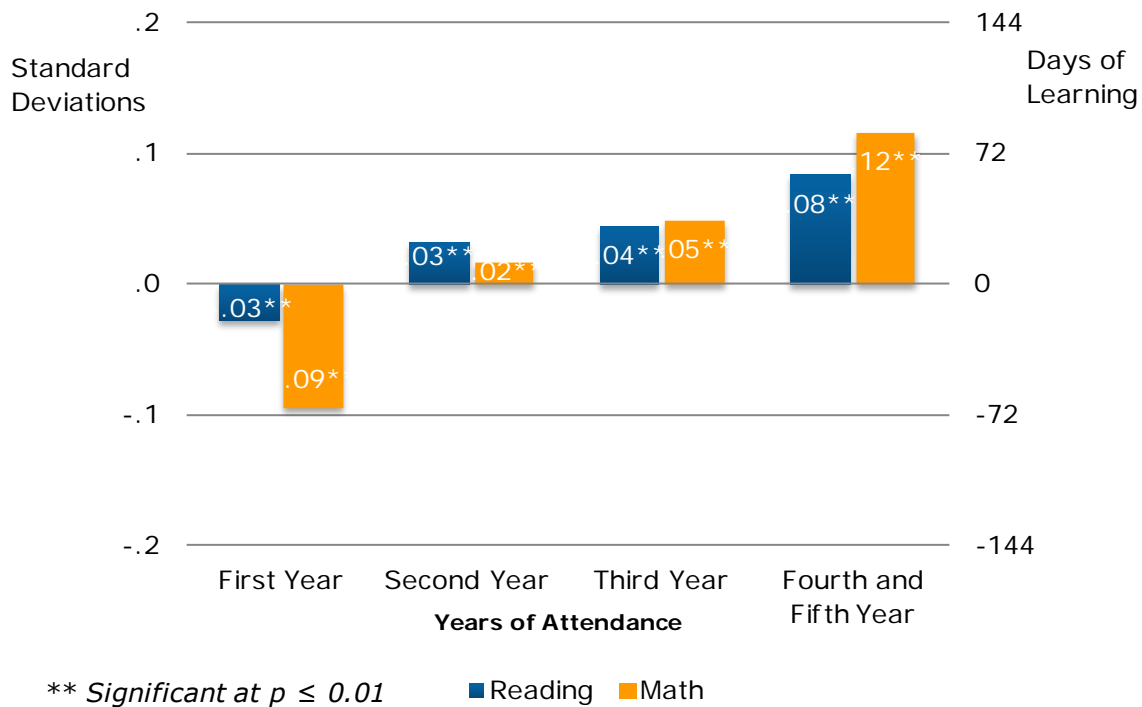


The results show that when disaggregated, there are striking differences between learning gains in charter students depending on the level of school. In reading, learning gains are positive and significant for elementary, middle and high schools but not multi-level schools. In math, charter students show significant gains when compared to their TPS counterparts in elementary and middle schools. However, students in high schools and multi-level charter schools lag behind their TPS peers in math. Unfortunately, more than half of the charter students in California attend high schools or multi-level schools, so their lack of growth has a large impact on the overall math results. The largest gains in both subjects are found in charter middle schools with 36 more days of learning in reading and 130 additional learning days in math.

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 2006-2007 and 2010-2011. 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 9.

Figure 9: Impact by Students' Years of Enrollment



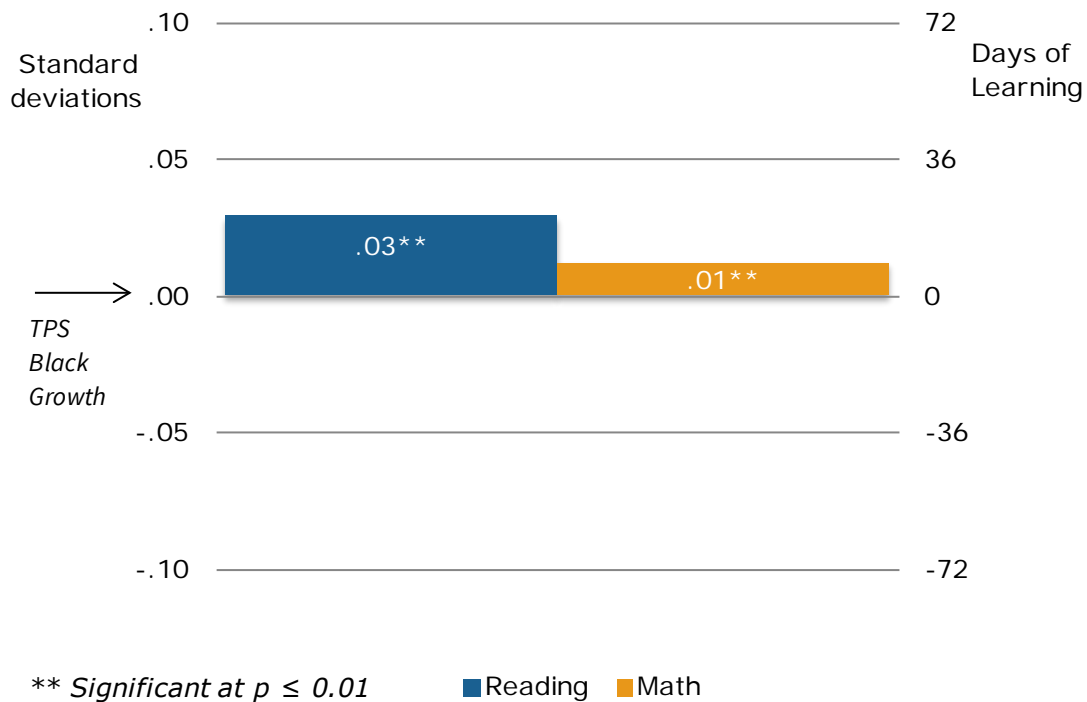
The results show that, in California, new charter school students have an initial lag in reading and math learning compared to their counterparts in traditional public schools. Charter school students in their first year have 22 fewer days of learning in reading; in math, the gap is 65 days of learning. After the first year, however, California charter students have better learning gains than their TPS peers each year they attend charters. Indeed, by the fourth year of attendance, charter students have an additional 58 days of learning in reading and 86 more days in math than TPS students. The findings show that the typical student has acceleration in learning as they persist in charter schools.¹⁵

¹⁵ The gains in Figure 9 are total values and are not cumulative. This means the total difference in math for a third year charter student is .05 **not** -.02 (the sum of -.09 +.02 +.05).

Charter School Impact by Race/Ethnicity

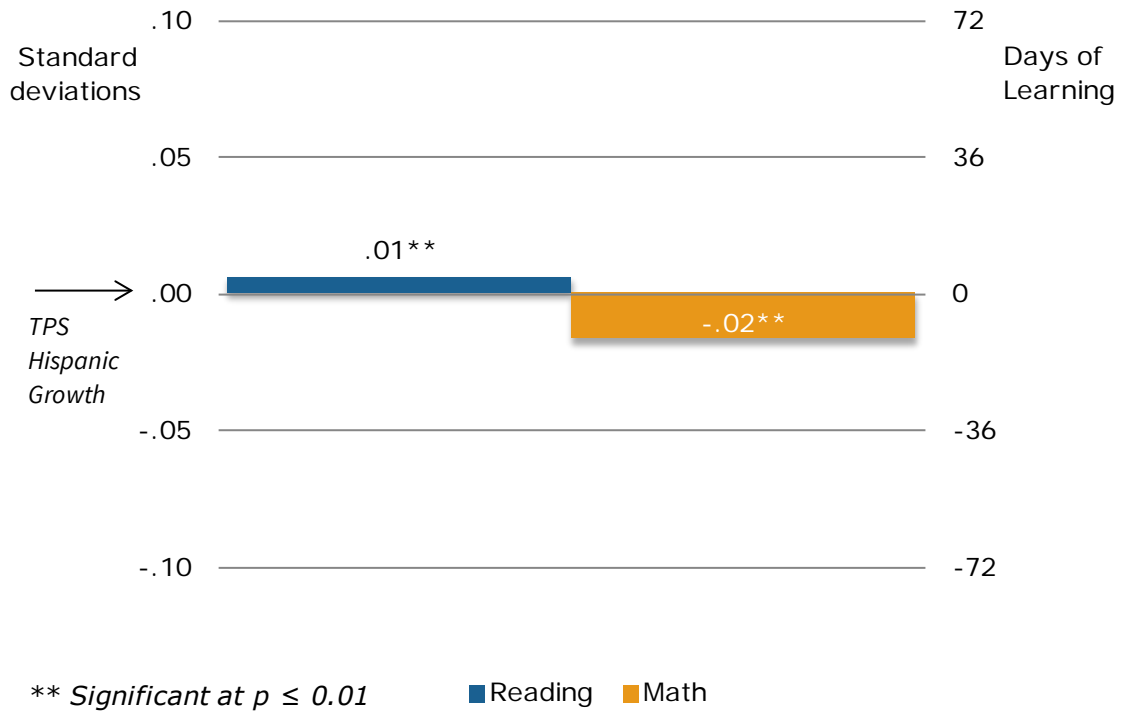
Attention in US public education to achievement differences by racial and ethnic backgrounds has increased since the passage of the *No Child Left Behind* Act in 2001. The effectiveness of charter schools across ethnic and racial groups is especially important given the proportion of charter schools that are focused on serving historically underserved students. The impact of charter schools on the academic gains of Black, Hispanic, Asian and White students are presented in Figures 10 through 13 below.

Figure 10: Impact with Black Students



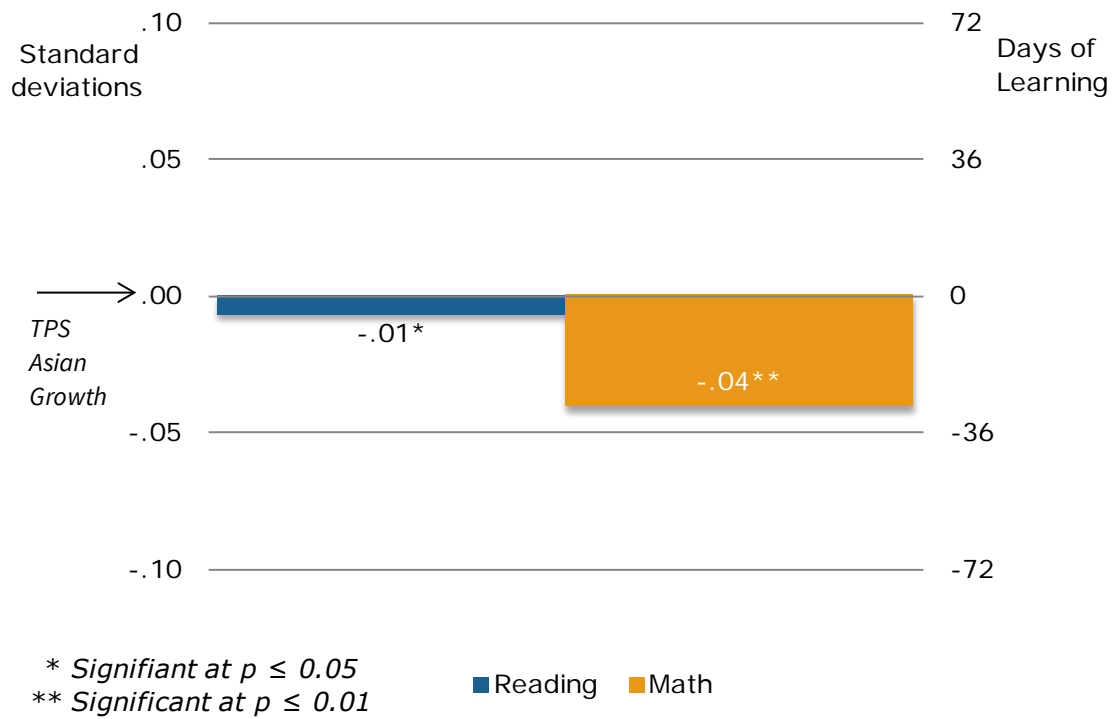
On average, Black students enrolled in charter schools show significantly better performance in reading and math compared to Black students in traditional public schools. Black charter students gain 22 more days of learning in reading. In math, they gain seven days.

Figure 11: Impact with Hispanic Students



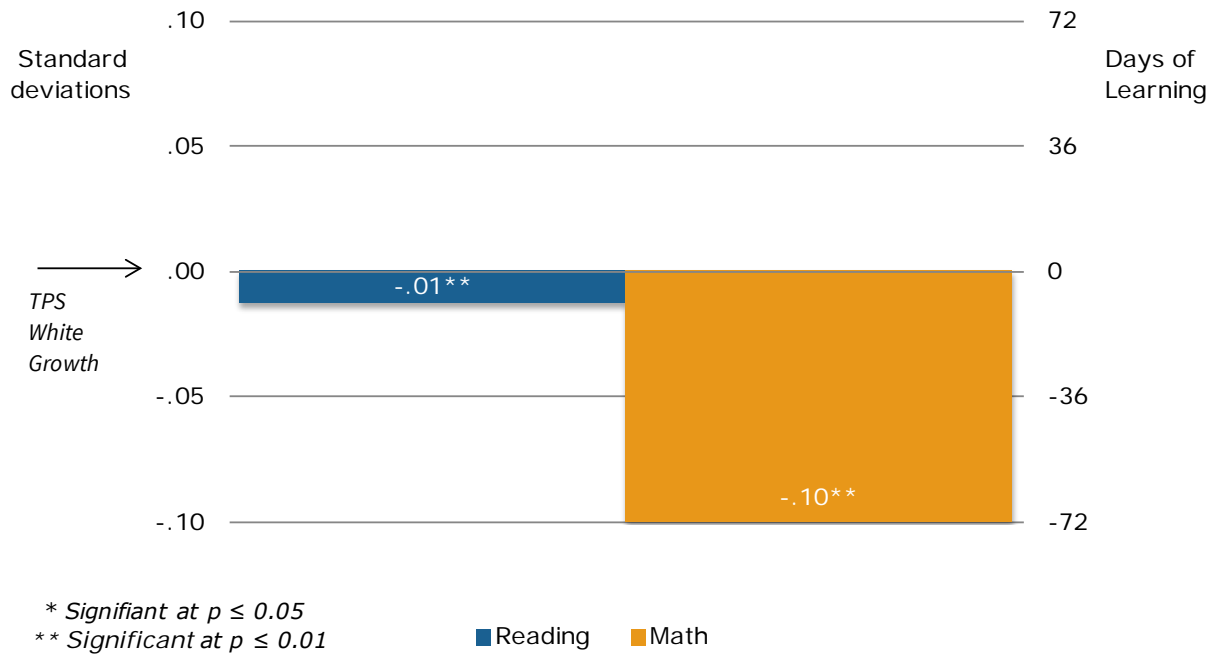
In reading, Hispanic students in charter schools have about seven more days of learning than Hispanic students in TPS. However, Hispanic charter students have 14 fewer days of learning in math than their TPS peers.

Figure 12: Impact with Asian Students



In California, six percent of charter students are Asian. Compared to their counterparts in TPS, Asian charter school students have about seven fewer days of learning in reading and 29 fewer days in math.

Figure 13: Impact with White Students

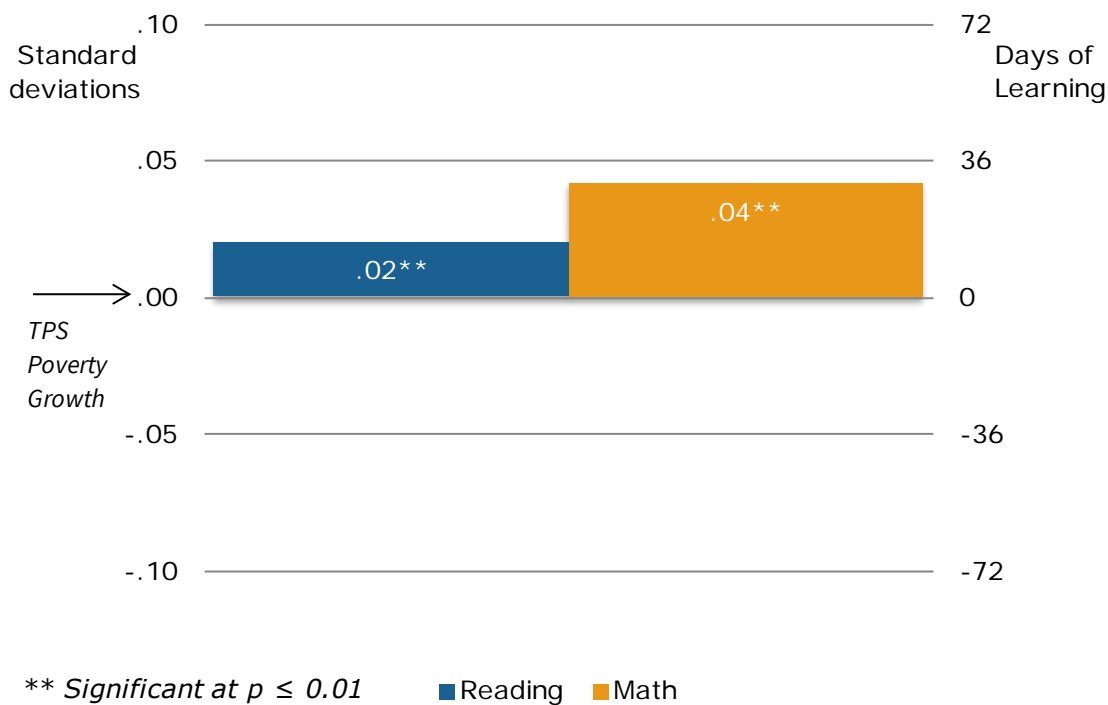


As shown in Figure 13, White students attending charter schools have fewer days of learning in reading and math than White students at TPS in California. The gap in reading is seven days of learning. In math, White charter students have 72 fewer days of learning than their TPS counterparts.

Charter School Impact with Students in Poverty

Much of the motivation for developing charter schools aims at improving education outcomes for students in poverty. In California, 62 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 14 presents the results for students in poverty.

Figure 14: Impact with Students in Poverty

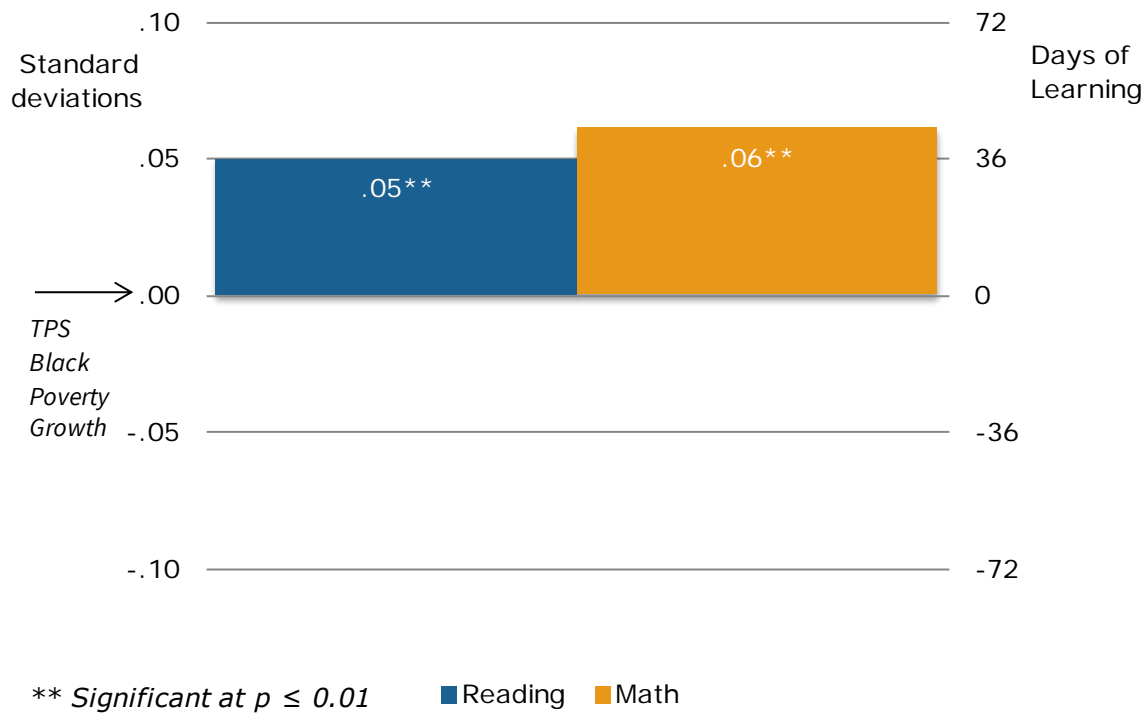


Students in poverty who are enrolled in charter schools perform significantly better both in reading and in math compared to students in poverty in TPS. Charter students in poverty have growth equivalent to 14 more days of learning in reading and 29 more days of learning in math than their TPS peers.

Charter School Impact with Race/Ethnicity and Poverty

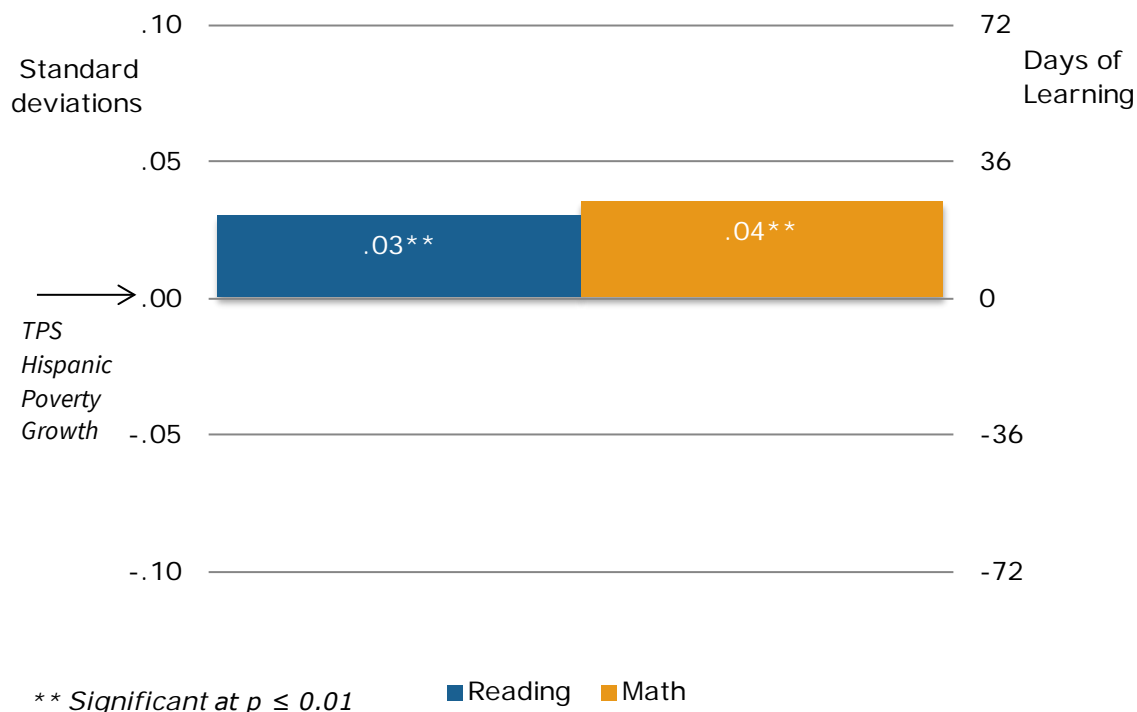
The most academically needy students in public education are those who are both living in poverty and a member of a racial or ethnic minority that has been historically underserved. These students represent the most challenging subgroup, and their case has been the focus of decades of attention. Within 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 are presented in Figures 15 and 16 below.

Figure 15: Impact with Black Students in Poverty



Black students in poverty who are enrolled in charter schools show significantly stronger growth in reading and math compared to Black students in poverty in TPS. Black charter students in poverty have 36 more days of learning in reading and 43 more days of learning in math than their counterparts in TPS.

Figure 16: Impact with Hispanic Students in Poverty



In both reading and math, Hispanic students in poverty in charter schools have better learning gains than Hispanic students in poverty at TPS. This amounts to 22 additional days of learning in reading and 29 additional days in math for the charter students.

Charter Impacts in Context For many students groups, the impact of attending a charter school in California is positive. However, these results need to be considered in the context of the academic learning gaps between most student populations and the average White TPS student in the study. For example, Black students in poverty experience positive benefits from attending charter schools, which lead to stronger growth than their Black TPS peers. However, even with this boost, Black students in poverty at charters still have lower learning gains than White students at TPS.

Table 4 below displays the relative growth of students in various subgroups compared to White TPS students. A negative number means the student group has fewer days of learning than White students attending TPS. This yearly learning gap increases the achievement gap over time. Positive values in the table represent

additional days of learning for the student group compared to the average White TPS student. Over time, these learning gains reduce the achievement gap.

Table 4: Relative Growth of Student Groups Compared to White TPS Students

Student Group	Reading	Reading Days of Learning	Math	Math Days of Learning
TPS Black	-.14**	-101	-.20**	-144
Charter Black	-.12**	-86	-.19**	-137
Charter Black Poverty	-.18**	-130	-.24**	-173
Charter Black Non-Poverty	-.11**	-79	-.21**	-151
TPS Hispanic	-.05**	-36	-.08**	-58
Charter Hispanic	-.05**	-36	-.10**	-72
Charter Hispanic Poverty	-.09**	-65	-.13**	-94
Charter Hispanic Non-Poverty	-.09**	-65	-.16**	-115
TPS White	.00	0	.00	0
Charter White	-.01**	-7	-.10**	-72
TPS Asian	.07**	50	.13**	94
Charter Asian	.06**	43	.09**	65

Regardless of whether they attend a charter or TPS, Black students have significantly lower learning gains than White TPS students in both reading and math. This is also true for Hispanic students, although the learning gap is not as large as for Black students. Asian students at both TPS and charter schools have better learning gains than White students in TPS.

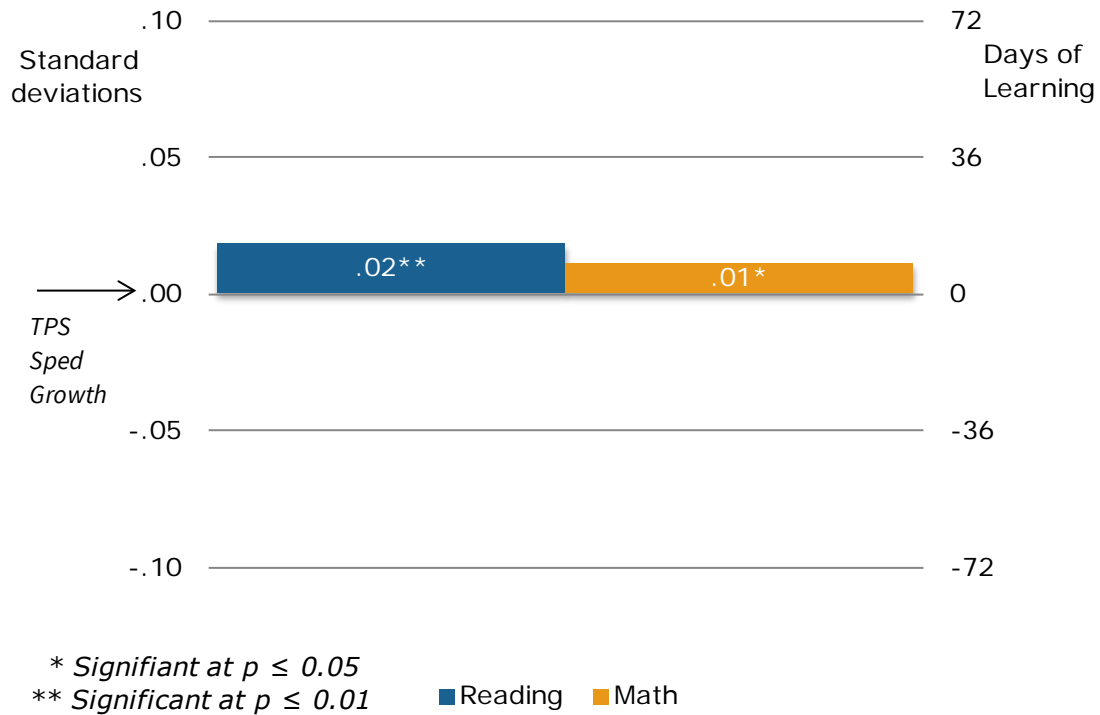
Charter School Impact with Special Education Students

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 California, the overall proportion of charter school students who are Special Education is six percent, compared to nine percent in TPS statewide and in the charter schools' feeder schools. Research by the Center for Reinventing Public Education in New York City suggests that TPS and charters may differ in their criteria for designating students as needing to be assessed for special education services.¹⁶

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 17 below.

¹⁶ Winters, Marcus A. *Why the Gap? Special Education and New York City Charter Schools* (2013). Seattle, WA: Center on Reinventing Public Education.
<http://www.crpe.org/publications/why-gap-special-education-and-new-york-city-charter-schools>

Figure 17: Impact with Special Education Students



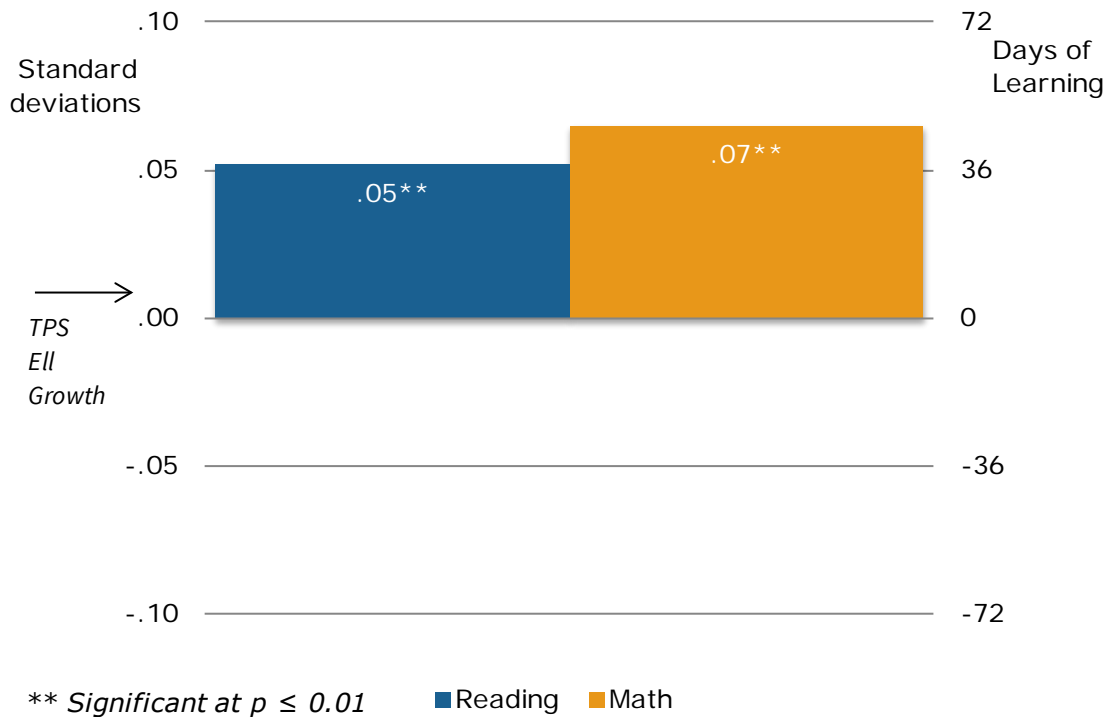
In charter schools in California, Special Education students show benefits from charter school attendance compared to their counterparts in TPS in both reading and math. Charter school students receiving special education services have 14 more days of learning in reading and seven more days in math than their TPS peers.

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 California.

The comparison of learning gains of charter school English Language Learners and their TPS counterparts appears in Figure 18. The baseline of comparison is the typical learning gains of English language learners in traditional public schools.

Figure 18: Impact with English Language Learners



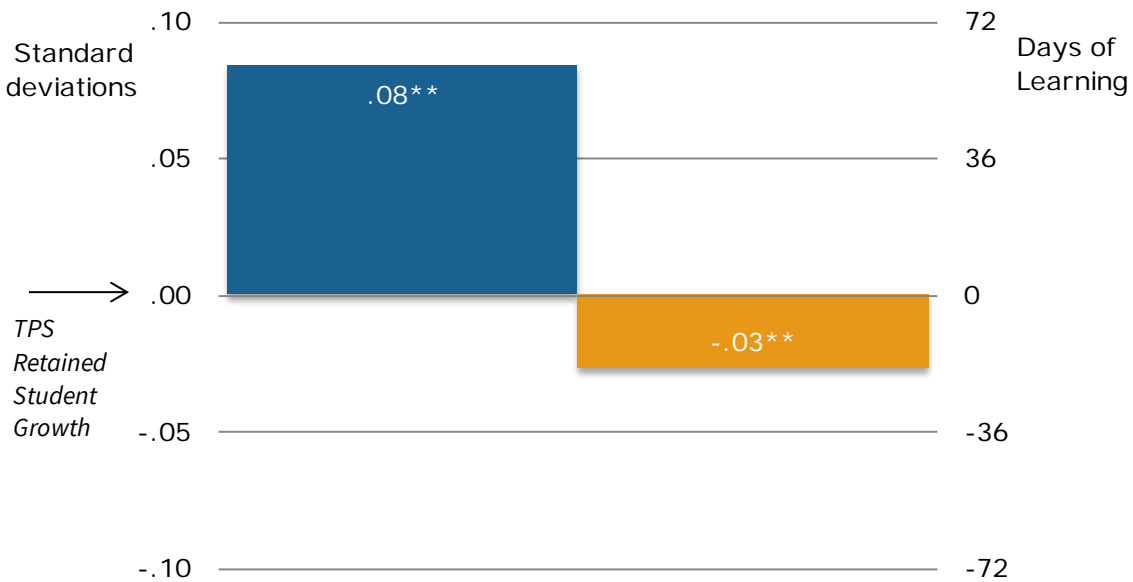
English Language Learners in charter schools have significantly better results in both reading and math than ELL students in TPS. The benefit for ELL charter students amounts to 36 days of learning in reading and 50 days of learning in math.

Charter School Impact with Grade-Repeating Students

This study examined the outcomes of students who were retained in grade. 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 (45 percent) of any subgroup in our study suggests that charter schools are more likely to retain academically low-performing students.

Figure 19: Impact with Grade-Repeating Students



** Significant at $p \leq 0.01$ ■ Reading ■ Math

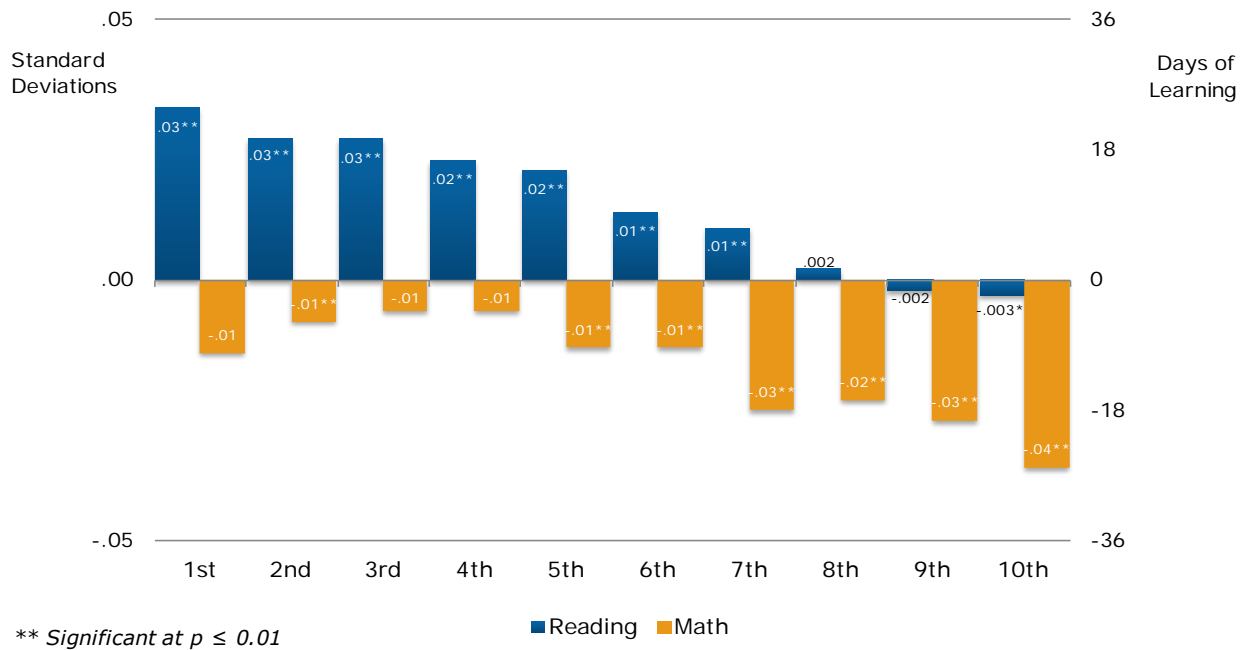
Retained students at charter schools learned significantly more in reading and less in math than their peers in TPS. Charter students repeating a grade have 58 more days of learning in reading than TPS students repeating a grade. In math, retained charter students have 22 fewer days of learning than similar TPS students.

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 California, 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. To determine whether this emphasis translates into better learning gains, we examined the learning gains for charter students across the spectrum of starting points and in relation to the results observed for equivalent students in TPS.

To do this, for charter school students and their VCRs, baseline achievement test scores in reading and math were disaggregated into deciles. For example, Decile 5 corresponds to students in the 40th to 50th percentiles in the state. Student achievement growth in each decile for charter school students and their VCRs was then compared. The results appear in Figure 20 below.

Figure 20: Impact by Students' Starting Decile



For students in California, Figure 20 shows that charter schools do better than TPS in the first seven deciles in reading. In math, the charter students have similar

learning gains as TPS students for the first, third and fourth deciles but lag behind the TPS students the remaining deciles.

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 (2010 and 2011) is compared to the experience the students would have realized in their local traditional public schools.¹⁷ 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-year impacts, it is expressed in standard deviations of growth.

As noted in Table 1, charter schools are generally smaller than their corresponding feeder schools. In addition, 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

A Note about Tables 6 and 7

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 2010 and 2011 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.

¹⁷ 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 five periods for others.

tested students in a school is sufficient to provide a stable test of the school impact. 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 30 matched charter records. Of our total sample of 994 schools with reading test scores in 2010 and 2011, 175 schools had an insufficient number of individual student records to calculate a representative school-wide average growth score. Of 989 schools with math test scores in 2010 and 2011, 206 had an insufficient number. Table 5 below shows the breakout of performance for the California charter schools which meet our criteria for inclusion by having a sufficient number of charter student records.

Table 5: Performance of Charter Schools Compared to Their Local Markets

Subject	Significantly Worse		Not Significant		Significantly Better	
	Number	Percent	Number	Percent	Number	Percent
Reading	174	21.2%	381	46.5%	264	32.2%
Math	292	37.3%	262	33.5%	229	29.2%

In reading, 32 percent of charter schools perform significantly better than their traditional public school market, while 29 percent perform significantly better in math. Both of these results are better than the national average proportion of better-performing charters (25% in reading and 29% in math).¹⁸ The lowest school effect size in reading was -0.67 standard deviations of growth, while the highest effect size was 0.63. The gap between the lowest and highest effect sizes was larger in math; they were -0.74 and 1.00, 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 6 and 7 below. For growth, we use the effect sizes discussed above. The school’s average achievement level is the mean achievement of the students

¹⁸ Cremata, Edward et al. *National Charter School Study 2013* (2013). <http://credo.stanford.edu>.

over the same two periods covered by the effect size (2010 and 2011).¹⁹ 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 performs above the statewide average.

Table 6: Reading Growth and Achievement

Growth (in Standard Deviations)	Low Growth, High Achievement		High Growth, High Achievement		
	-0.15	0	0.15		
	0.0%	1.3%	8.4%	1.7%	70th Percentile
	0.1%	11.5%	17.6%	6.5%	50th Percentile
	3.5%	15.3%	13.9%	5.1%	30th Percentile
	5.6%	6.2%	3.1%	0.1%	
	Low Growth, Low Achievement		High Growth, Low Achievement		

In California, 462 of the 819 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 34 percent of charters had positive growth and average achievement above the 50th percentile of the state (i.e., the total for the blue quadrant on the top right.)

About 53 percent of charters perform below the 50th percentile of achievement (the sum of the gray and purple in the lower portion of the table). Approximately one in five of California 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.

¹⁹ Average achievement was computed using students' z-scores from the end of the growth period (e.g., spring 2010 and spring 2011), and the resulting school-level mean was then converted into a percentile.

Of concern, however, are the 31 percent of charters in the lower left gray quadrant, which represents low growth and low achievement.

Table 7: Math Growth and Achievement

Growth (in Standard Deviations)	Low Growth, High Achievement		High Growth, High Achievement		
	-0.15	0	0.15		
	0.3%	1.4%	2.9%	4.0%	70th Percentile
	3.3%	8.2%	10.3%	10.1%	50th Percentile
	12.5%	11.0%	8.9%	6.1%	30th Percentile
	12.8%	5.6%	2.2%	0.4%	
	Low Growth, Low Achievement		High Growth, Low Achievement		

For math, 352 of the 783 charter schools (45 percent) had positive average growth, as seen in the orange and pink quadrants. Over 27 percent of charters had positive growth and average achievement above the 50th percentile (the top right, orange quadrant). About 60 percent of charters have achievement results below the 50th percentile of the state (the sum of lower half of the table). Of great concern are the 42 percent of schools which are in the lower left brown quadrant, which represents low growth and low achievement.

Synthesis and Conclusions

California charter schools reflect the large, dynamic mosaic that is California. Students at urban charters, students of poverty, elementary and middle school students all benefit from their attendance at charter schools. California authorizers may be having a crucial affect in that new schools are showing especially strong growth.

A substantial share of California charter schools appear to outpace TPS in how well they support academic learning gains in their students in both reading and math. About 32 percent of California charters outpace the learning impacts of TPS in reading, and 29 percent do so in math. Still, 21 percent of charter schools have results that are significantly worse than TPS for reading and 37 percent of charter schools in math are underperforming.²⁰

The student-to-student and school-to-school results show charter schools in certain sectors to be performing well relative to the local alternatives. The larger question of whether charter schools are helping students achieve at high levels is also important. Thirty percent of California charter schools have below-average growth and achievement in reading, and the same is true for 42 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 in the state over time.

The share of underperforming charter schools is balanced somewhat, however, by the proportion of charter schools that are achieving at high levels. For reading, the proportion is over 47 percent, and for math it exceeds 40 percent. Should these trends continue, the share of schools that currently lag the state average for absolute achievement would be expected to decline. These absolute improvements are within sight in California.

Table 8 presents a summary of the results.

²⁰ It is statistically inappropriate to group the “not significantly different” schools with either the higher or lower performing groups when discussing these results.

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

	Reading	Math
California Charter Students	Positive	Negative
Charters in 2007	Positive	Negative
Charters in 2008	Positive	Negative
Charters in 2009	Positive	Negative
Charters in 2010	Positive	Negative
Charters in 2011	Positive	Similar
Students in Charters operated by CMOs	Positive	Positive
Urban Students	Positive	Positive
Suburban Students	Positive	Similar
Rural Students	Negative	Negative
Town Students	Negative	Negative
Elementary Charter Schools	Positive	Positive
Middle Charter Schools	Positive	Positive
High Charter Schools	Positive	Negative
Multi-Level Charter Schools	Negative	Negative
First Year Enrolled in Charter School	Negative	Negative
Second Year Enrolled in Charter School	Positive	Positive
Third Year Enrolled in Charter School	Positive	Positive
Fourth and Fifth Year Enrolled in Charter School	Positive	Positive
Black Charter School Students	Positive	Positive
Hispanic Charter School Students	Positive	Negative
White Charter School Students	Negative	Negative
Asian Charter School Students	Negative	Negative
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	Positive	Positive
Special Education Charter School Students	Positive	Positive
Retained Charter School Students	Positive	Negative

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
California Charter Students	784,487	676,761
Students in Charters in 2007	107,349	90,157
Students in Charters in 2008	138,862	118,474
Students in Charters in 2009	157,169	135,284
Students in Charters in 2010	175,390	151,730
Students in Charters in 2011	205,717	181,116
Students in Charters operated by CMOs	201,698	162,029
Students in Urban Schools	408,590	358,256
Students in Suburban Schools	208,244	170,534
Students in Town Schools	40,263	34,428
Students in Rural Schools	127,390	113,543
Students in Elementary Schools	210,577	211,582
Students in Middle Schools	120,843	118,875
Students in High Schools	208,435	152,193
Students in Multi-level Schools	244,632	194,111
Students First Year Enrolled in Charter School	242,890	203,155
Students Second Year Enrolled in Charter School	103,669	83,282
Students Third Year Enrolled in Charter School	42,428	32,138
Students Fourth Year Enrolled in Charter School	6,981	5,592
Black Students	80,582	68,165
Hispanic Students	357,856	311,239
White Students	278,976	241,886
Asian Students	47,634	41,259
Students in Poverty	395,576	341,791
Black Students in Poverty	51,091	44,360
Hispanic Students in Poverty	258,116	228,108
Special Education Students	28,194	24,252
English Language Learners	89,534	79,405
Grade Repeating Students	20,817	9,067

Student Group	Matched Charter Students	
	Reading	Math
Students in Decile 1	83,331	51,545
Students in Decile 2	72,919	75,574
Students in Decile 3	62,121	65,081
Students in Decile 4	60,558	55,578
Students in Decile 5	64,220	56,995
Students in Decile 6	67,444	58,734
Students in Decile 7	80,582	69,046
Students in Decile 8	96,467	79,272
Students in Decile 9	127,679	107,453
Students in Decile 10	69,166	57,483