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National Charter School Study
Executive Summary
2013

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Table of Contents

Executive Summary 8
Methods and Data 9
Demographics 10
Update on the 16 States Covered in the 2009 Report..... 11
27-State Analysis..... 15
School-level Performance 22
Implications 24

Table of Figures

Figure 1: Overall Charter Impact Changes for 16 States – Reading.....	13
Figure 2: Overall Charter Impact Changes for 16 States – Math.....	13
Figure 3: Overall Charter School Effect by Number of Included Growth Periods	15
Figure 4: Impact with Black Students in Poverty	18
Figure 5: Impact with Black Students Not in Poverty	19
Figure 6: Impact with Hispanic English Language Learners.....	20
Figure 7: Impact with Hispanic Non-English Language Learners.....	21
Figure 8: Academic Growth of Charter Schools Compared to Their Local Markets.....	22
Figure 9: Simulated Impacts of Closure Scenarios on Charter Sector Performance – Reading.....	27
Figure 10: Simulated Impacts of Closure Scenarios on Charter Sector Performance - Math.....	28

Table of Tables

Table 1: Summary of Significant Charter Impacts by Student Group	17
Table 2: Number of Schools Closed Under Each Scenario	26

Table of Infographics Web Links

[Virtual Control Records](#)

[Interactive Map of Charter States](#)

[16-State Update School Groups](#)

[16-State Reading State Charter Impact Changes](#)

[16-State Math State Charter Impact Changes](#)

[27-State School Level Reading Quality](#)

[27-State School Level Math Quality](#)

[27-State Reading State Charter Impacts](#)

[27-State Math State Charter Impacts](#)

List of Acronyms

CREDO	Center for Research on Education Outcomes
ELLs	English Language Learners
FERPA	Family Education Records Privacy Act
TPS	Traditional Public School
VCR	Virtual Control Record

National Charter School Study

2013

Executive Summary

Charter schools continue to play a central role in education reform efforts across the United States. Charter school students now comprise more than four percent of the total public school population in the United States, a proportion that continues to grow every year. There are estimated to be over 6,000 charter schools serving about 2.3 million students in the current 2012-2013 school year.¹ This represents an 80 percent increase in the number of students enrolled in charter schools since CREDO released its first report on charter school performance in 2009, *Multiple Choice: Charter School Performance in 16 States*.

This report provides an updated and expanded view of charter school performance in the United States. All states that were included in the 2009 report have continued their participation: Arkansas, Arizona, California, Colorado (now expanded to include the entire state), the District of Columbia, Florida, Georgia, Illinois (also expanded to include the entire state), Louisiana, Massachusetts, Minnesota, Missouri, New Mexico, North Carolina, Ohio, and Texas. The participating state education departments that are new to the study include: Indiana, Michigan, Nevada, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Tennessee, and Utah. Together, the participating states educate over 95 percent of the nation's charter school students.

There are two different types of analysis presented in this report. First, picking up where *Multiple Choice* left off, current outcomes are reported from charter schools in the same 16 states covered in the 2009 report. The update examined how the original cohort of schools has fared since 2009 and how the sector in those states has evolved over time. The second set of analyses in the report is an expanded examination that includes all 27 partner states and examines student learning gains compared to that of equivalent students in traditional public schools (TPS). In addition to the overall, pooled impacts, subsequent analyses examined the effects by state, by schools and their network affiliations and by student subgroups.

¹ National Alliance for Public Charter Schools (2013). "Dashboard: A Comprehensive Data Resource from the National Alliance for Public Charter Schools." Washington, DC. Retrieved 12 January, 2013, from: <http://dashboard.publiccharters.org/dashboard/schools/page/overview/year/2012>

In the aggregate, both reading and math results in charter schools show improvement compared to the results reported in *Multiple Choice*. The analysis of the pooled 27 states shows that charter schools now advance the learning gains of their students more than traditional public schools in reading. Improvement is seen in the academic growth of charter students in math since 2009, to the extent that learning gains are now similar to those of students in traditional public schools.

Methods and Data

Our partnerships with the 27 individual states depend on negotiated data sharing agreements. Ninety-five percent of all charter school students are enrolled in these states. One common requirement across all the agreements was that the processing, analysis, and security of the student-level data meet the requirements of the Family Education Records Privacy Act (FERPA). This study was fully compliant with FERPA regulations as interpreted by each state providing data.

We used information provided by the states to create a matched student dataset with observations from 1,532,506 charter students and a matched comparison group of TPS students. Matching is done on the basis of a Virtual Control Record protocol, which creates a “virtual twin” for each charter student who is represented in the data. In theory, this virtual twin would differ from the charter student only in that the charter student attended a charter school. Following the VCR approach, a “virtual twin” was constructed for each charter student by drawing on the available records of traditional public school students with identical traits and identical or similar prior test scores who were enrolled in schools that the charter student would have attended if not at their charter school.² The matched data set included 86 percent of all tested charter students in the 27 states that participated in the study.

Most researchers agree that the best method of measuring school effectiveness is to look at how much schools aid student academic growth, independent of other possible influences. The central idea is that schools should be judged on their direct contribution to student academic progress. This necessarily takes into consideration the students’ starting scores on standardized tests as well as student characteristics which might influence academic performance. This approach forms the foundation of our study design.

This study followed the approach of the 2009 study: we looked at the academic growth of individual students as reflected in their performance on state achievement tests in both reading and math. To assure accurate estimates of school impacts, we use statistical methods to control for differences in student demographics and eligibility for categorical program support such as free or reduced-price lunch and special education status. Use of the virtual twin comparisons assures that we have two

² The majority of VCRs included only test scores which were exact matches. Non-exact matches must be within 0.1 standard deviations to be included as part of a VCR.

groups of students who are identical on all observable characteristics that need to be controlled with the exception that one group attended charter schools and the other TPS. In this way, we have designed the analysis so that differences in the academic growth between the two groups are a function of which schools they attended.

Throughout the analyses included in this study, we present the effect of attending charter schools in two ways. First we provide the difference in growth in terms of standard deviations. These are the actual outputs of the statistical methods used for the analyses. To make these results more accessible to the non-technical reader, we also include a transformation of the results to average days of learning.

Demographics

Charter schools and their feeder schools are educating more disadvantaged students than in 2009. Across the 27 states in this study, more than half of charter students live in poverty (54 percent), a greater share than the U.S. as a whole and an increase for charter schools from 2009. Since 2009, the proportion of Hispanic students in charters has begun to approach the proportion of black students. Compared to their feeders, charter schools enroll a lower percentage of white and Hispanic students and a higher percentage of black students. These shifts reflect growth in the proportion of disadvantaged parents that is aware, informed and comfortable exercising their options for school choice. The typical charter student arrives at a charter school with lower levels of education performance than was the case in 2009. At the same time, charter schools display wide variation in their students' starting levels; this reflects both differences in education quality across states and differences in state charter policies that detail the communities and students charter schools may serve.

Since part of the analysis focuses on the recent experience of the continuing charter schools that were studied in the 2009 report, it is also important to examine trends in the original 16 states as well as the performance trends of their VCRs (i.e., the twins matched to each charter student). The VCRs have the same demography as the charter students, including the same initial starting scores. But their schooling experience is different than what happens in charter schools, and thus becomes a separate influence in our analysis. Because we show charter school impacts in contrast to what students would otherwise learn in TPS, our impact measures fix the VCR score at zero and express charter performance in relation to it. In both reading and math, the VCRs have lower growth in the years since the 2009 report. This has important implications for our efforts to update the charter school impacts for the 16 states. Their recent performance will be measured relative to a lower baseline of VCR growth than was the case in the 2009 report.

Update on the 16 States Covered in the 2009 Report

Over the years since the original report, the charter sector has intensified its focus on academic quality. The effects of those efforts are evident in the ways student learning in charter schools has changed. It is fortunate that the 16 states that joined the original study have continued their membership in the research project. This creates the chance to compare their recent performance to the original results reported in 2009.

Three related comparisons are needed to tell the full story. The results reported in 2009 serve as the anchor for each comparison. For the main comparison, we look at the growth of all charter schools in the 16 states in the four available periods since the original report, ending with the 2010-2011 school year. We refer to these as the 2013 results. The remaining two comparisons involve the two distinct charter school groups within the 2013 results: continuing schools and new schools.

Continuing charter schools are all the schools that were included in the 2009 report. Some of the schools have closed, so the performance of the continuing schools can be compared to the 2009 results in two ways. Including the closed schools in the 2009 group shows whether the cohort has improved. Excluding the closed schools (and re-estimating the 2009 results for the remaining schools) permits us to see if the performance of the 2009 schools is different than their earlier measures.

Since the landscape in the original 16 states continues to change, the final comparison focuses on the newly opened or newly tested schools in the 16 states that were not included in the 2009 report; we refer to these as “new schools.” The performance of new schools is important, because it sheds light on whether there is systemic advance in the creation of strong schools. Because the new schools are young and relatively few in number, there are many more student records for the continuing schools than there are for the new schools. This means that the 2013 results will be heavily influenced by the continuing schools’ results.

The graphics in Figures 1 and 2 show the learning gains in reading and math for the 16 states reported in the 2009 report. There are two bars displayed for each subject. The first bar in each subject shows the results that were reported in the 2009 report. Across the 16 states, charter school students received about 7 fewer days of learning in reading and 22 fewer days in math per year. The second bar for each subject presents the current performance of the charter schools in the 16 states.

The 2013 group of schools includes the continuing and new charter schools. The continuing schools group lost about 8 percent of its schools due to closure since 2009. To highlight the separate contributions to the 2013 result, the contemporary performance for the two groups of schools is highlighted in the breakout box adjacent to the figure. In the continuing schools, students had about 7 more days of learning than their TPS counterparts in reading. In math, the learning gains improved, shrinking from 22 fewer days of learning to 7 fewer days of learning per year. Results for charter

students in new schools mirror the original 2009 findings. Students at new schools have learning gains in reading and math that are significantly lower than their TPS peers to the same degree. Because the continuing schools group is many times larger than the new schools group, their results dominate the 2013 findings.

Figure 1: Overall Charter Impact Changes for 16 States – Reading

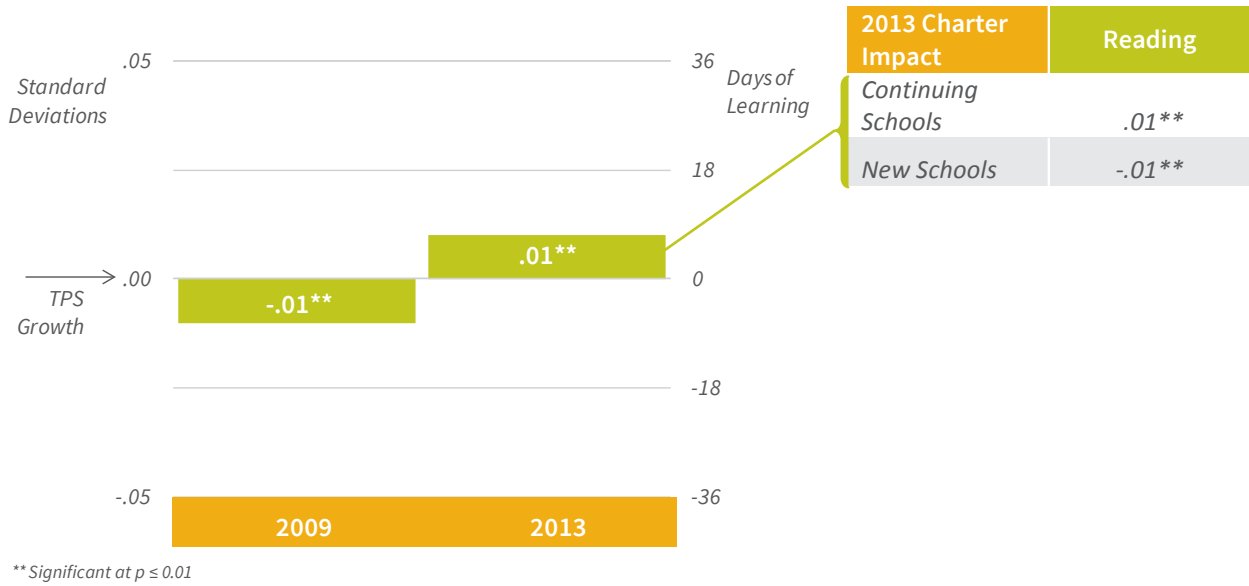
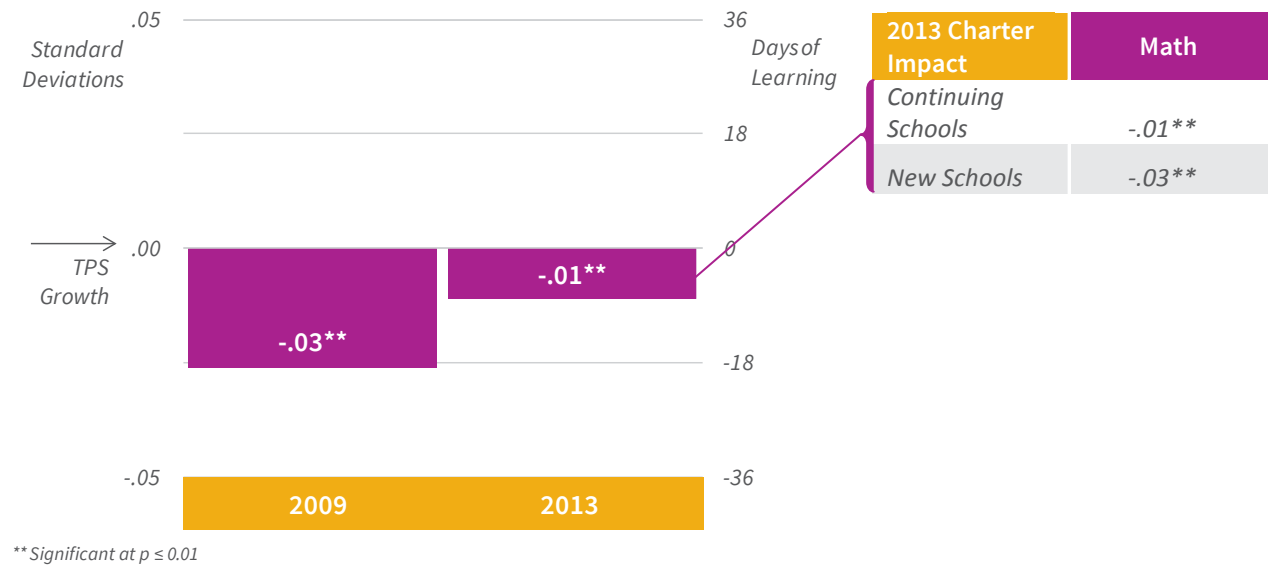


Figure 2: Overall Charter Impact Changes for 16 States – Math



The results in Figures 1 and 2 present the charter school impacts as a positive or negative deviation from the level of performance of their VCRs. This means that for every bar in the graphic, the VCR effect is set to zero so that the charter effect can be described in relation to it. This is the standard way of measuring charter school impacts. It bears noting, however, that the nominal level of VCR performance is actually lower in the more recent time periods than it was in 2009. This trend tempers the results in different ways. In reading, it means that the relative gain for the continuing schools is offset by the absolute decline in VCR performance, and the new schools' negative result is in comparison to a more negative reference point than was the case back in 2009. In math, the results are affected in the same way: since the VCRs results have fallen compared to 2009, the current impact of the continuing schools starts from a lower point; in absolute terms the current learning for the continuing schools is at the same level as their original results. As with reading, the VCR learning gains for the new schools are lower than was the case for the original 2009 schools, so the same charter school comparison starts from a lower absolute level, yielding absolute learning outcomes in charters that trail the original 2009 results.

The 16-state analysis was able to demonstrate advances for charter school students on a number of fronts. For the continuing schools, their results improved over the 2009 results for the following student groups:

- Black students in reading and math
- Hispanic students in reading and math
- Poverty students in reading and math
- English Language Learners in reading and math
- Special education students in reading and math

Though the learning gains for the new charter schools in the 16 states were smaller than for TPS across the board, the charter school students in those schools posted the superior learning performance compared to the 2009 report:

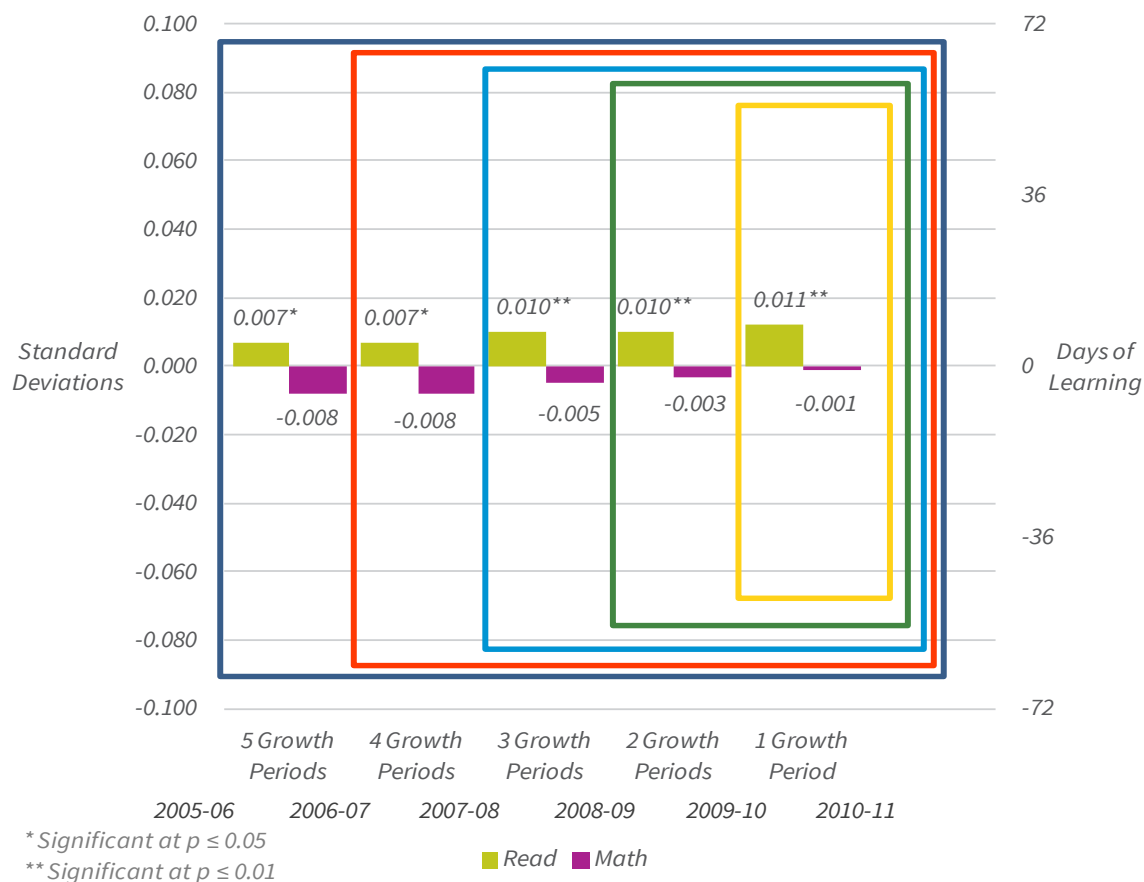
- Hispanic students in reading
- Poverty students in math
- English Language Learners in reading and math

Considering that the new cohort of schools in the 16 states serves a dramatically larger share of students in poverty (61% compared to 49% in the original 2009 cohort) and more Hispanic students (42% compared to 30% in the 2009 report), the improvements in the new charter schools in the 16 states affect their largest student constituencies.

27-State Analysis

The 27 states in our study provide the widest angle view of the charter school sector to date. Across multiple measures, the students in these charter schools have shown both improved quality over the results from 2009 and an upward trend in their performance over the past five years. Figure 3 presents the learning impacts for the average charter student in the 27 states. We present the findings as a nested array of growth periods. As the number of growth periods decreases, the results refer to more recent times.

Figure 3: Overall Charter School Effect by Number of Included Growth Periods



Overall Performance The average charter school student now gains an additional 8 days of learning each year in reading, compared to the loss of 7 days each year reported in 2009. In math, charter students in 2009 posted 22 fewer days of learning; now that gap is closed so their learning each year is on par with their peers in traditional public schools. These results reflect an average of the latest three growth periods (Spring 2008 – Spring 2011). When the average growth is examined for different periods over time, the performance trend in both reading and math improves. In the most recent period (the growth period from Spring 2010 to Spring 2011), learning gains in reading are more positive than in any earlier period, though all five views are positive and significantly better than TPS. Average charter learning gains in math do not differ significantly from VCR performance in any of the periods studied. This means that for math learning in charter schools is no different on average than learning in TPS.

State Differences As with the 2009 report, the amount an average charter student learns each year varies widely across states. State differences in overall education quality and geographic targeting of charter schools help to explain these differences. In reading, charter school students on average have significantly stronger growth than TPS students in 16 of the 27 states evaluated. Reading growth is weaker for charter students in eight states and similar in three states. In math, 12 state charter sectors have stronger growth than TPS, 13 states have weaker growth, and two have growth that is similar to TPS. Eleven states deserve mention as the states where charter school performance outpaced TPS growth in both subjects: the District of Columbia, Illinois, Indiana, Louisiana, Massachusetts, Michigan, Missouri, New Jersey, Upstate New York, Rhode Island and Tennessee. State differences are important to keep in mind when considering the state-specific student growth results, since the same magnitude of learning gains could have very different overall effects in a state with an already-high level of school quality compared to the same gains in a state with lower overall school performance. Large advantages for charter school students relative to TPS matter more in states with lower overall education performance. Because the base of performance is lower, the same-sized gain represents a larger move forward in absolute terms, whereas in high-performing states, it would have less of an overall impact.

Performance for Different Student Groups Policymakers across the country are concerned about the academic fate of all students but have a particular interest in what happens to groups with greater educational challenges. These challenges are either by virtue of students' family background (such as living in poverty or being an English language learner) or because their race or ethnicity is associated historically with barriers to education (as in the case of black and Hispanic students) or because they require additional education resources, as with students receiving special education services. In many states, legislation enabling charter schools explicitly ties their educational mission to larger social justice aims, thereby increasing the focus on the learning outcomes of such students in charter schools.

Within every student subgroup, the growth of individual students ranges from outstanding to dismal. By looking at the average learning impacts for each student group, it is possible to see how the group

fares in charter schools compared to how their twins grew in TPS. Across student subgroups, the prevailing achievement gap is reinforced by smaller increments of learning for disadvantaged students compared to their white and non-poverty peers. An exception to the pattern is seen in Asian students. The results of the analysis of student learning by subgroup appear in Table 1. Notwithstanding the persistent achievement gaps between most student subgroups and white or non-poverty students (regardless of where they enroll), black students, students in poverty and English language learners received significantly more days of learning each year in charters than their virtual twin in TPS in both reading and math. Hispanic students overall fared the same in charter schools as did their twins in TPS. White students had inferior learning gains in both reading and math in charters, and Asian students had similar learning gains in reading and fared worse in math.

Within the black and Hispanic student groups, the analysis showed that students with multiple challenges -- blacks and Hispanics in poverty or Hispanics who were English language learners -- gained a substantial learning advantage in charter schools compared to their twins in TPS. Those same benefits, however, generally were not enjoyed by their minority peers who were not in poverty or were not English language learners, with the exception of a stronger gain in reading for Hispanics who were not English language learners. Special education students posted similar gains in reading but gained more days of learning in math.

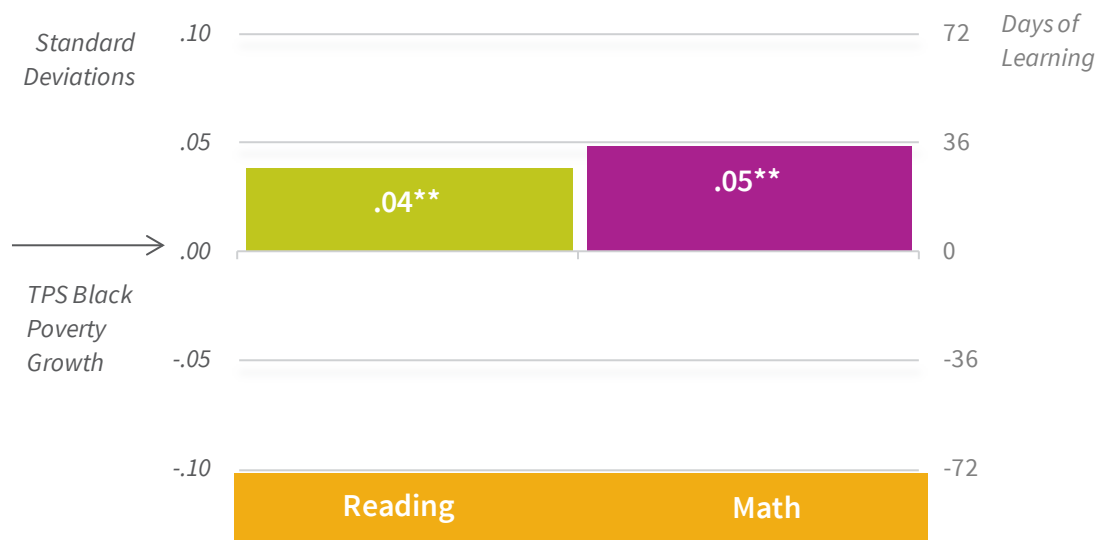
Table 1: Summary of Significant Charter Impacts by Student Group

Student Group	Reading	Math
White	Negative	Negative
Black	Positive	Positive
Black Poverty	Positive	Positive
Black Non Poverty	Similar	Similar
Hispanic	Similar	Similar
Hispanic Poverty	Positive	Positive
Hispanic Non Poverty	Negative	Negative
Hispanic ELL	Positive	Positive
Hispanic Non ELL	Positive	Similar
Asian	Similar	Negative
Students in Poverty	Positive	Positive
English Language Learners (ELL)	Positive	Positive
Special Education	Similar	Positive

Looking back to the demographics of the charter school sector in the 27 states, charter school enrollment has expanded among students in poverty, black students, and Hispanic students. These are precisely the students that, on average, find better outcomes in charter schools. These findings lend support to the education and social policies that focus on education as the mechanism to improve life chances for historically underserved students. Charter schools are especially beneficial learning environments for these students, as the following graphics illustrate in greater detail.

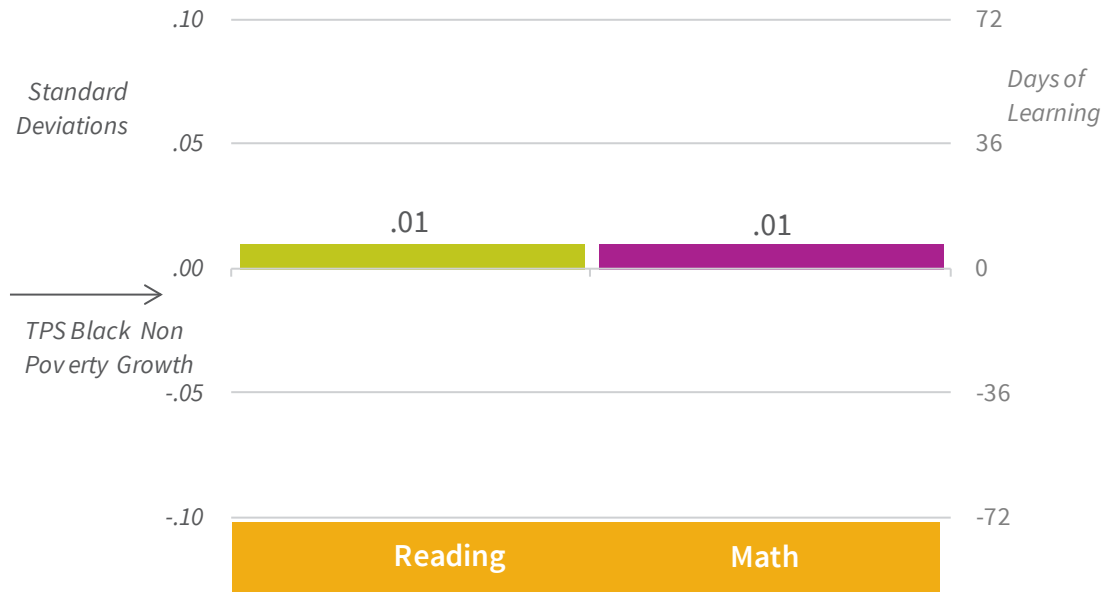
As seen in Figures 4 and 5, the learning gains for black students enrolled in charter schools differ markedly by whether they live in poverty. Students who are black and in poverty benefit more from charter school enrollment than black students not in poverty, relative to their TPS counterparts.

Figure 4: Impact with Black Students in Poverty



** Significant at $p \leq 0.01$

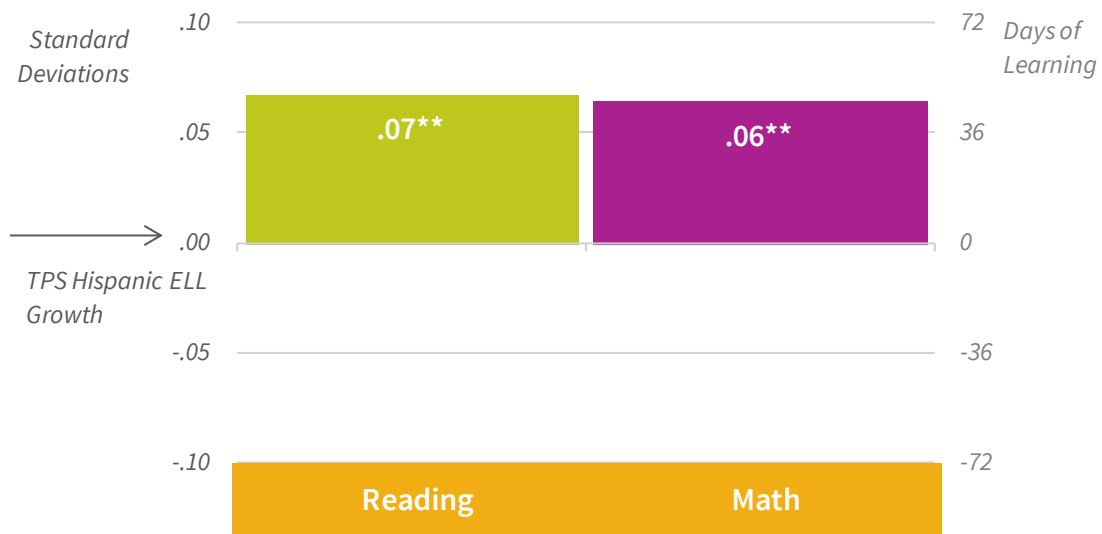
Figure 5: Impact with Black Students Not in Poverty



The learning gains for black students who are not in poverty do not differ significantly between TPS and charter schools. There are stronger results for black students in poverty. Black students in poverty who attend charter schools gain an additional 29 days of learning in reading and 36 days in math over their TPS counterparts. This shows the impact of charter schooling is especially beneficial for black students in poverty.

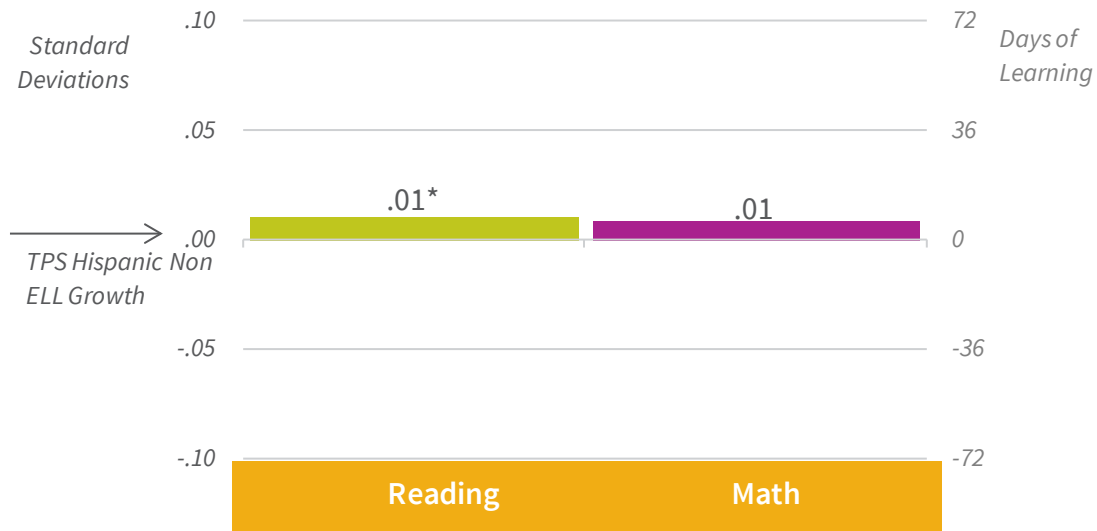
Another group with noteworthy results consists of students who are Hispanic and English language learners. Figure 6 presents their learning impacts. The learning gains for students who are Hispanic but not English language learners are shown in Figure 7.

Figure 6: Impact with Hispanic English Language Learners



** Significant at $p \leq 0.01$

Figure 7: Impact with Hispanic Non-English Language Learners



* Significant at $p \leq 0.05$

The differences in growth for Hispanic non-ELL students in charters versus TPS are small, amounting to 7 additional days of learning in reading and no significant difference in days of learning in math for charter school students. There are larger differences between charter schools and TPS for Hispanic ELL students. The difference in reading amounts to 50 additional days of learning for Hispanic ELL students attending charters compared to Hispanic ELL students at TPS. We find similarly large effects in math with Hispanic ELL students who attend charters at 43 days of additional learning compared to Hispanic TPS students. These results indicate that charter schools provide a much stronger impact for Hispanic students who are English language learners than for Hispanic students who are native or fluent English speakers.

The two preceding graphics raise a point about charter schools and who they best serve. As the population attending charter schools evolves, the need for increased nuance in the evaluation of charter school performance is necessary to identify not only who is best helped in the charter school setting but also which operators are managing to those results. The opportunity to extend their impacts to other students would improve their outcomes and in turn make positive contributions to the overall performance of the sector.

School-level Performance

Beyond the overall and state-by-state findings, the world of charter school performance has several more layers to unpack. Parents and policymakers are especially interested in school-level performance.

In order to determine the current school-level charter performance, the average effect of charter schools on student learning over the two most recent growth periods (2010 and 2011) was compared to the experience the students would have realized in their local traditional public schools.³ The performance of the VCR students associated with each charter school provided the comparison measure of the local educational experience for each charter school. The outcome of interest is the average yearly contribution to student learning gains for each charter school. The measure is expressed relative to the counterfactual gains that were posted by each charter school students' VCRs.

Figure 8: Academic Growth of Charter Schools Compared to Their Local Markets



³ We chose to base the school-level analysis on the two most recent growth periods in this analysis for two reasons. First, we wanted to base the results on a contemporary picture of charter school performance. Second, the 2-growth period time frame made it possible to include the newest schools and still ensure that performance for all the schools included the same amount of data, thereby creating a fair test for all.

Figure 8 shows the performance of charter schools relative to the TPS in their market. Based on our analyses, we found 25 percent of schools had significantly stronger growth than their TPS market counterparts in reading, 56 percent were not significantly different and 19 percent of schools had weaker growth. In math, the results show that 29 percent of charter schools had stronger growth than their TPS market counterparts, 40 percent had growth that was not significantly different, and 31 percent had weaker growth. These results were an improvement over those in the 2009 report.

High Level Summary of Findings

Taken together, the demographic comparisons, the then-and-now analysis of the 16 states covered in the first national study and the cross-sectional view of current charter school performance in 27 states provide a lot of detail about the opportunities for student learning in charter schools today. The key findings of the analyses include the following high-level points:

1. Progress in the charter school sector has been slow and steady, so the average charter school student gains 8 more days of learning in reading compared to their local TPS options and makes the same learning gains in math as their TPS counterparts. These results improve on the performance reported in the 2009 CREDO study.
2. The fraction of charter schools that outperform their local TPS alternatives is 25% of charter schools in reading and 29% in math. This marks an improvement since 2009 when 17% of charter schools outperformed their local TPS in math. The fraction that performed worse declined slightly in math (31% down from 37% in 2009) and in reading accounted for 19% of charter schools.
3. Despite these improvements, there remain worrying numbers of charter schools whose learning gains are either substantially worse than the local alternative or are insufficient to give their students the academic preparation they need to continue their education or be successful in the workforce.
4. Charter school students have markedly different learning gains across the 27 states, even after taking into consideration differences in student characteristics.
5. As a group, the charter schools that were studied in the 2009 study showed modest improvements relative to TPS in the intervening years. The rise was aided by the closure of poorly performing charter schools and by declining performance of the TPS comparisons over the same period. New schools in these same states entered the analysis with performance that looked similar to the original group of schools in the previous study.
6. Enrollment and persistence in charter schools is especially helpful for some students, particularly students in poverty, black students, and English language learners all of whom post significantly higher learning gains in both reading and math. Hispanic students are on par with their TPS peers in both reading and math. For students with multiple designations (such

as being black and in poverty), the impacts of charter schooling are especially positive and noteworthy.

Implications

We hold an enduring interest in finding ways to improve the knowledge and eventual life outcomes for America's children. To that end, the quality of schooling must be improved. The findings presented in this report lay the foundation for drawing a number of implications about the drive for quality in the charter school sector. They draw on the large scope of the present analysis and prevalent patterns in the evidence. The implications address both sides of the foundational mantra of charter schools "Flexibility for Accountability."

- 1. Moving the needle for 2 million students is no small feat.** We see slow and steady progress in the performance of the charter sector. The dialogue as a community of educators, policy-makers, community members, and a growing fraction of parents and students has affirmed the predominant value of the charter school enterprise to be academic quality. In state rooms, board rooms and classrooms, the importance of ensuring strong growth for charter school students has colored the debate and the decisions that followed. Several charter-related organizations, including operators, authorizers, funders, charter support organizations and national groups, have taken on the challenge of assuring quality in the sector, in some cases against their own self-interest. That effort and commitment is reflected in the growth results in this report. For the future charter sector to attain higher performance, more work is needed. Efforts to expand the role of parents as consumers and advocates for high-quality education are essential; only when large numbers of families are fully vested and engaged will there be sufficient clout to realize the goal of high quality seats for all charter school students.
- 2. Careful where you set your aim.** The charter sector is getting better on average, but not because existing schools are getting dramatically better; it is mainly driven by opening higher-performing schools and by closing those that underperform. Our analysis suggests that the standards of performance are set too low, as evidenced by the large number of underperforming charter schools that persist. The point here is that, as with students, setting and holding high expectations is an important feature of school policies and practices. More focus is required of authorizers and charter school governing boards to set high performance and accountability standards and hold charter schools to them.
- 3. Get smart from the start.** The quality of the sector at any point in time is largely determined by who is permitted to obtain a charter. The first part of the bargain, "Flexibility," ought to be treated as a privilege. Moreover, it is necessary to move beyond the assertion that it is hard to discern quality before a school opens and begin to build evidence about what plans, what models, what personnel attributes, and what internal systems provide the appropriate signals

that lead to high-performing schools. A body of expertise in "picking winners" is vital to the long-run success of the sector.

4. **Charter sector or charter sectors?** The results point to large strides in some locations and with some of our most needy students. But there appear to be distinct "sub-sectors" with very different outcomes. As the availability of and access to performance data becomes more widespread, it becomes easier to discern the differences across schools in who they serve and how well they serve them. This implies the need for parallel development of more nuanced charter school selection and renewal practices based, we hope, on consideration of both the school's contribution to academic progress and also to the absolute achievement and readiness of their students.
5. **Use the force.** We saw in the cohort of original schools in the 16 states (those whose results were reflected in the 2009 report) that the average performance of the group rose when 8 percent of the group that was underperforming closed. Clearly, the path to a robust charter sector does not lie entirely through closure, but its use has increased to good effect since the 2009 report. It is important to stress that the impact of poorly performing schools extends beyond the unfortunate students enrolled there; the political sensitivity of school choice leaves the door to criticism open when underperforming schools are allowed to continue. The license to close bad schools is the insurance policy the sector possesses. There is no doubt that care is needed in how closures are handled. But equally obvious is that allowing the closure option to rest unexercised will lead to atrophy of what we have come to view as the singular and unique feature of charter schools. Much like representative democracy, it is critical that when needed, people can "throw the rascals out."
6. **Through a Glass Darkly.** Since it will take a while before the charter sector as a whole is able to ground its charter selection decisions in evidence-based knowledge, the use of the option to close schools represents the strongest available tool to improve overall sector quality for the time being.

To illustrate the sector shifts that would result from stronger policies about closures, we have created a set of five closure scenarios. Each decision rule seems to have surface plausibility as a means to improving the sector, though we take no stand on any of them. The aim here is to illustrate the impact of closures and the range of quality shifts that could be realized.

- A. Every charter school with **growth** less than -0.4 standard deviation units is dropped.
- B. Every charter school with **significantly lower growth than TPS** (i.e., every school in the darkest section of the quality curve regardless of absolute performance) is dropped.
- C. Every charter school in the **bottom 10% of schools by growth and quality level** is dropped. In other words, start at the bottom of the quality curve and move to the right, dropping schools with significantly worse growth than TPS until you reach 10% of the total charters.
- D. Every charter school with **achievement** less than -0.4 standard deviations is dropped.

E. Every charter school in the **bottom 10% of achievement** is dropped.

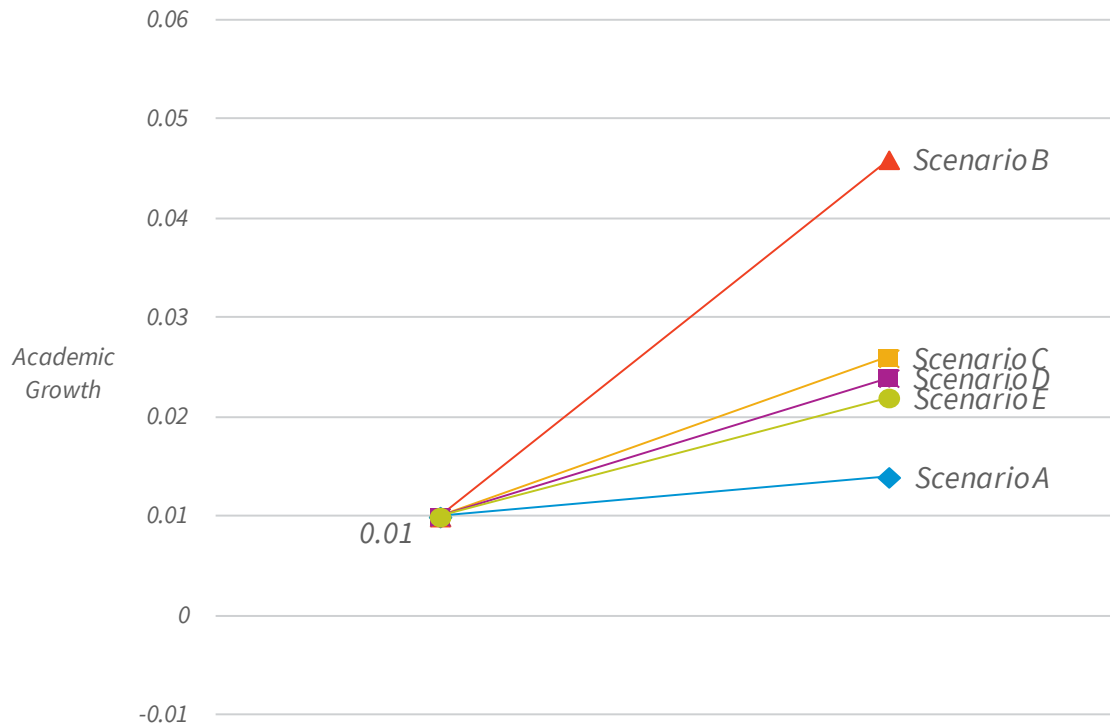
The criteria for closure differ -- some sort on academic growth, some on persistently low achievement and others on underperformance relative to the local TPS alternatives. In all cases, the assumption is that students from the closed schools would transfer to an average charter school. Table 2 below displays the alternative criteria for closure and shows how many schools would be affected nationally based on their reading or math performance.

Table 2: Number of Schools Closed Under Each Scenario

Scenario	Reading	Math
A Growth less than -0.4 standard deviation units	70	100
B Significantly lower growth than TPS	667	1,046
C Bottom 10% of schools by growth and quality level	342	338
D Achievement less than -0.4 standard deviation units	475	589
E Bottom 10% of achievement	342	338

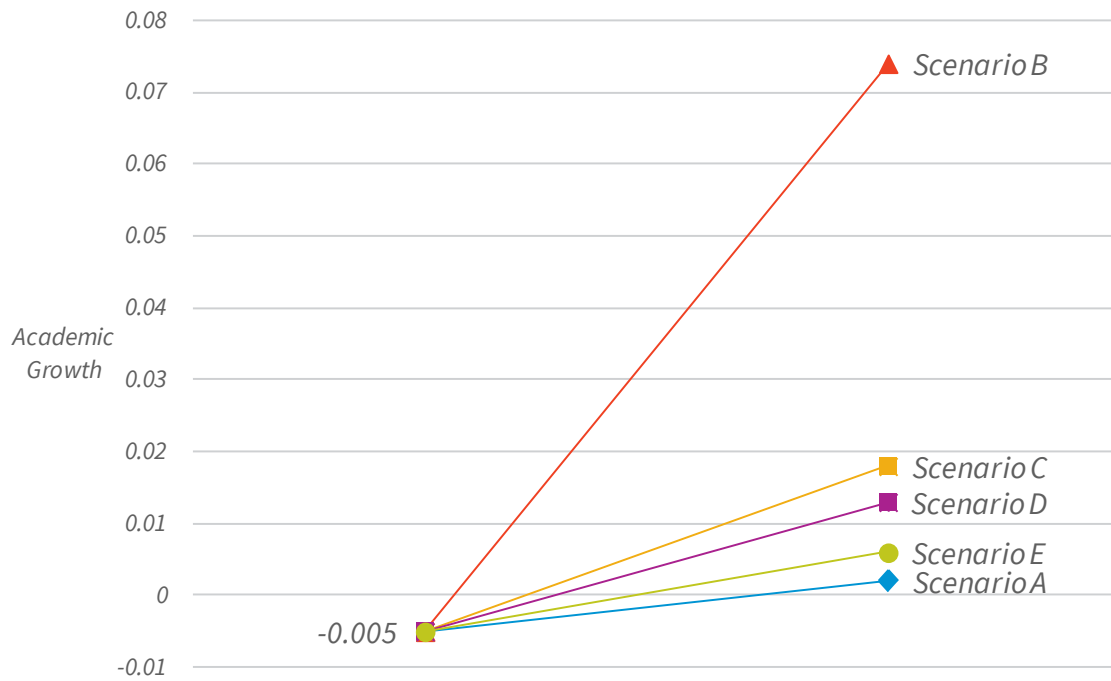
The range of impacts of each scenario on the overall quality of the charter sector is striking. Figure 9 below maps the current measure of charter school impact in reading to the resulting value under each scenario. From the current sector-wide average level of quality of .01 standard deviations of growth, every closure scenario results in an increase in average growth. The new average levels of growth range from .016 standard deviations (which equates to 12 days of learning) under Scenario A to nearly .05 standard deviations under Scenario B, a substantial gain of 36 more days of learning per year than in comparable TPS.

Figure 9: Simulated Impacts of Closure Scenarios on Charter Sector Performance – Reading



The effects are even more dramatic in math, as shown in Figure 10. Recall that the overall performance of the sector is similar to TPS in math, across states and over time: the level reported here is $-.005$ standard deviations of average yearly growth relative to comparable TPS. Three of the five “drop” scenario causes an improvement in the overall quality of the sector, raising the average growth of the sector higher than in comparable TPS. The new measures of average growth for the sector range from $.002$ standard deviations (about 1 day of extra learning per year) under Scenario A to nearly $.08$ standard deviations (about 58 days of extra learning per year) under Scenario B.

Figure 10: Simulated Impacts of Closure Scenarios on Charter Sector Performance - Math



The purpose of these scenarios is not to advocate for any particular approach. Rather, the scenarios make obvious the fact that the impact on quality that accompanies closure is more dramatic and enduring than efforts to improve the current stock of schools. The glimpse of what the future holds provided by these scenarios should quicken the collective resolve to use closure policies where charter schools are clearly underperforming. If the commitment to quality is to be fully realized, everyone needs to put the interest of students first and use all the resources at their disposal to ensure the best possible student outcomes.