



credo

CENTER FOR RESEARCH ON EDUCATION OUTCOMES

National Charter School Study  
Supplementary Findings Appendix

**2013**

Table of Contents

Demographics..... 6  
16 States..... 12  
27 States..... 20

## Table of Figures

|   |    |
|---|----|
| Figure 1: Urban Charter Student Race/Ethnicity in 27 States .....                     | 7  |
| Figure 2: Suburban Charter Student Race/Ethnicity in 27 States .....                  | 8  |
| Figure 3: Town Charter Student Race/Ethnicity in 27 States .....                      | 8  |
| Figure 4: Rural Charter Student Race/Ethnicity in 27 States .....                     | 9  |
| Figure 6: Starting Deciles by Charter Student Group in 27 States.....                 | 11 |
| Figure 7: Reading Impacts by State for 2009 Schools and 2013 Continuing Schools ..... | 16 |
| Figure 8: Math Impacts by State for 2009 Schools and 2013 Continuing Schools .....    | 17 |
| Figure 9: Reading Impacts by State for 2009 Schools and 2013 New Schools .....        | 18 |
| Figure 10: Math Impacts by State for 2009 Schools and 2013 New Schools .....          | 19 |
| Figure 11: Reading and Math Starting Score for Charter Students .....                 | 23 |
| Figure 12: Charter Impact by Students' Starting Decile .....                          | 28 |

## Table of Tables

|  |    |
|--|----|
| Table 1: Charter Student Profiles by State .....   | 6  |
| Table 2: School Years and Growth Periods by State for 2009 Report and Now .....                          | 12 |
| Table 3: Number of Observations by Variable for 16 States .....  | 13 |
| Table 4: Percent of Charter School Closures by State for Schools from 2009 Report .....                  | 15 |
| Table 5: Number of Observations by Variable for 27 States (5 growth periods) .....                       | 20 |
| Table 6: Charter School Impact by Growth Period, Errors in Variables Regression .....                    | 22 |
| Table 7: Average Starting Scores by Race for Charter Students .....                                      | 23 |
| Table 8: Average Starting Scores by Charter Student Group .....  | 24 |
| Table 9: Average Achievement Level for Black Charter Students in Poverty by Year .....                   | 24 |
| Table 10: Average Achievement Level for Longitudinal Group of Black Charter Students in Poverty .....    | 25 |
| Table 11: Average Achievement Level for Hispanic Charter Students in Poverty by Year .....               | 25 |
| Table 12: Average Achievement Level for Longitudinal Group of Hispanic Charter Students in Poverty ..... | 25 |
| Table 13: Proportion of Charter Students with Exact VCR Matches on Starting Score by Decile .....        | 26 |
| Table 14: Racial Composition by Decile .....   | 27 |

## List of Acronyms

PI Pacific Islander

TPS Traditional Public School

VCR Virtual Control Record

## Demographics

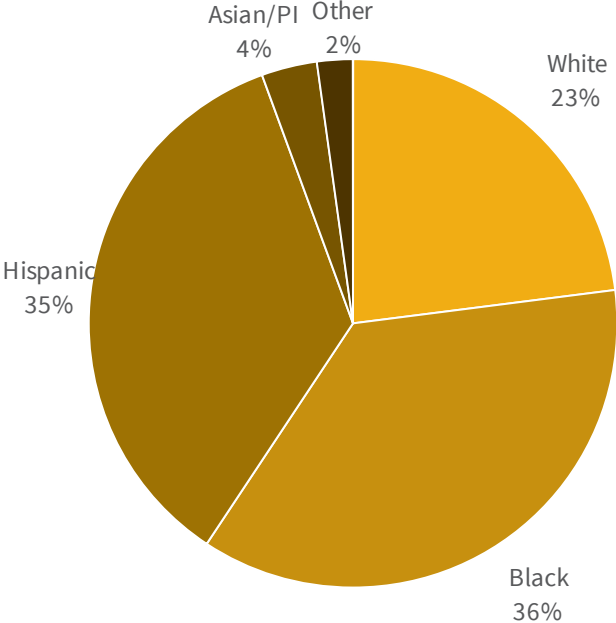
**Table 1: Charter Student Profiles by State**

| States                | White Students | Black Students | Hispanic Students | Special Education Students | English Language Learners | Students in Poverty |
|-----------------------|----------------|----------------|-------------------|----------------------------|---------------------------|---------------------|
| <b>27-State Total</b> | <b>37%</b>     | <b>27%</b>     | <b>30%</b>        | <b>6%</b>                  | <b>6%</b>                 | <b>55%</b>          |
| Arizona               | 59.5%          | 5.6%           | 29.8%             | 2.1%                       | 1.2%                      | 36.8%               |
| Arkansas              | 54.6%          | 42.5%          | 2.4%              | 4.9%                       | 0.5%                      | 50.9%               |
| California            | 35.8%          | 10.0%          | 46.0%             | 3.6%                       | 11.8%                     | 50.4%               |
| Colorado              | 61.8%          | 6.1%           | 28.1%             | 4.7%                       | 4.8%                      | 28.1%               |
| District of Columbia  | 1.9%           | 93.5%          | 4.5%              | 10.7%                      | 1.2%                      | 74.8%               |
| Florida               | 40.1%          | 20.4%          | 40.1%             | 7.2%                       | 1.6%                      | 48.4%               |
| Georgia               | 38.4%          | 46.1%          | 10.0%             | 7.3%                       | 3.6%                      | 50.2%               |
| Illinois              | 4.4%           | 63.4%          | 30.7%             | 9.9%                       | 4.1%                      | 89.2%               |
| Indiana               | 27.4%          | 63.5%          | 5.6%              | 10.0%                      | 1.8%                      | 72.5%               |
| Louisiana             | 13.5%          | 84.0%          | 1.5%              | 4.7%                       | 0.2%                      | 80.7%               |
| Massachusetts         | 54.2%          | 20.9%          | 20.5%             | 11.5%                      | 0.9%                      | 44.0%               |
| Michigan              | 34.1%          | 58.4%          | 4.9%              | 6.8%                       | 3.3%                      | 66.9%               |
| Minnesota             | 64.9%          | 22.4%          | 3.8%              | 11.1%                      | 4.7%                      | 45.5%               |
| Missouri              | 4.3%           | 89.2%          | 6.2%              | 8.0%                       | 4.5%                      | 89.7%               |
| Nevada                | 55.2%          | 26.1%          | 2.2%              | 4.1%                       | 0.8%                      | 23.3%               |
| New Jersey            | 8.4%           | 60.4%          | 28.9%             | 8.4%                       | 0.7%                      | 75.7%               |
| New Mexico            | 33.8%          | 1.1%           | 59.0%             | 9.1%                       | 9.7%                      | 51.4%               |
| New York              | 20.4%          | 15.0%          | 21.5%             | 8.7%                       | 2.6%                      | 18.1%               |
| New York City         | 2.7%           | 70.1%          | 8.9%              | 7.0%                       | 0.4%                      | 69.8%               |
| North Carolina        | 69.4%          | 62.3%          | 33.1%             | 10.3%                      | 3.1%                      | 84.1%               |
| Ohio                  | 39.7%          | 55.8%          | 2.6%              | 13.0%                      | 0.7%                      | 74.8%               |
| Oregon                | 85.4%          | 3.1%           | 6.8%              | 6.5%                       | 0.1%                      | 34.5%               |
| Pennsylvania          | 40.3%          | 46.8%          | 10.3%             | 11.9%                      | 1.5%                      | 64.2%               |
| Rhode Island          | 23.9%          | 20.1%          | 53.3%             | 9.5%                       | 2.2%                      | 70.7%               |
| Tennessee             | 1.5%           | 97.1%          | 1.4%              | 5.5%                       | 0.3%                      | 59.7%               |

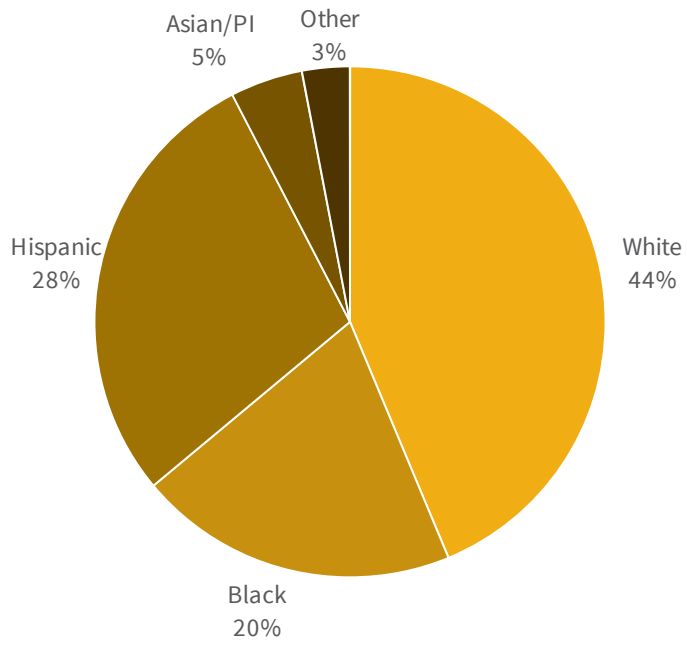
| States | White Students | Black Students | Hispanic Students | Special Education Students | English Language Learners | Students in Poverty |
|--------|----------------|----------------|-------------------|----------------------------|---------------------------|---------------------|
| Texas  | 16.1%          | 21.4%          | 59.2%             | 6.9%                       | 7.2%                      | 68.5%               |
| Utah   | 90.7%          | 0.4%           | 7.0%              | 1.4%                       | 1.3%                      | 24.5%               |

The following pie charts contain the proportion of charter students in each race/ethnic group for the 27 states by location: urban, suburban, town and rural areas.

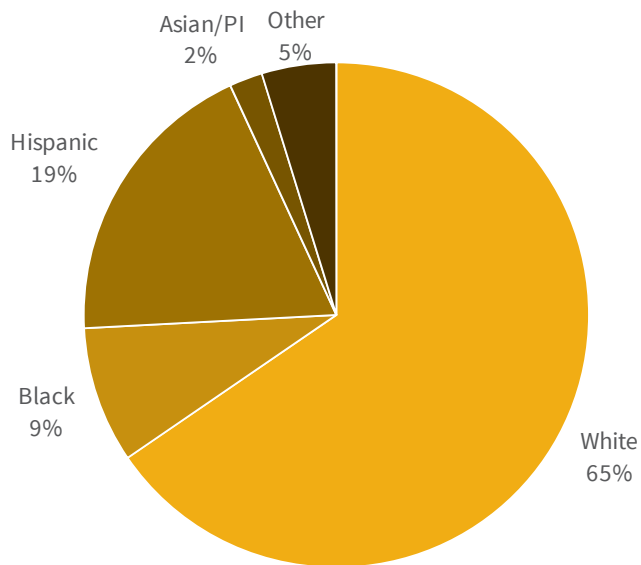
**Figure 1: Urban Charter Student Race/Ethnicity in 27 States**  
*n = 257,724*



**Figure 2: Suburban Charter Student Race/Ethnicity in 27 States**  
*n = 106,252*

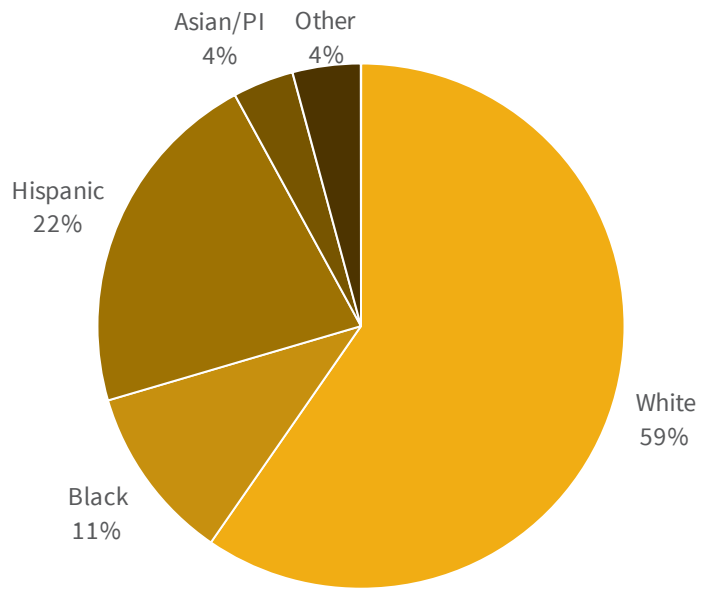


**Figure 3: Town Charter Student Race/Ethnicity in 27 States**  
*n = 29,403*

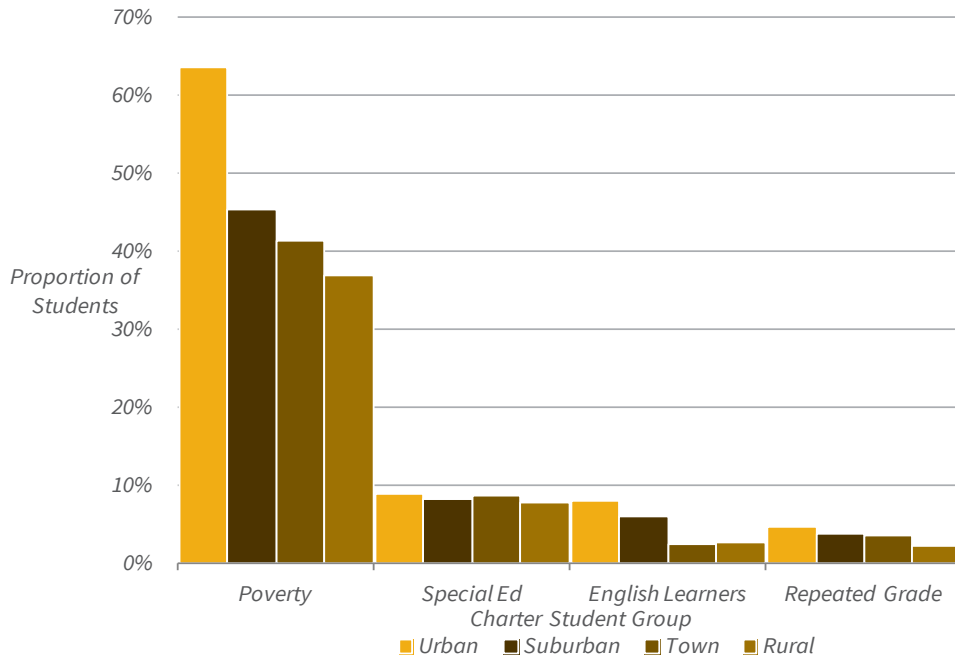




**Figure 4: Rural Charter Student Race/Ethnicity in 27 States**  
*n = 63,761*

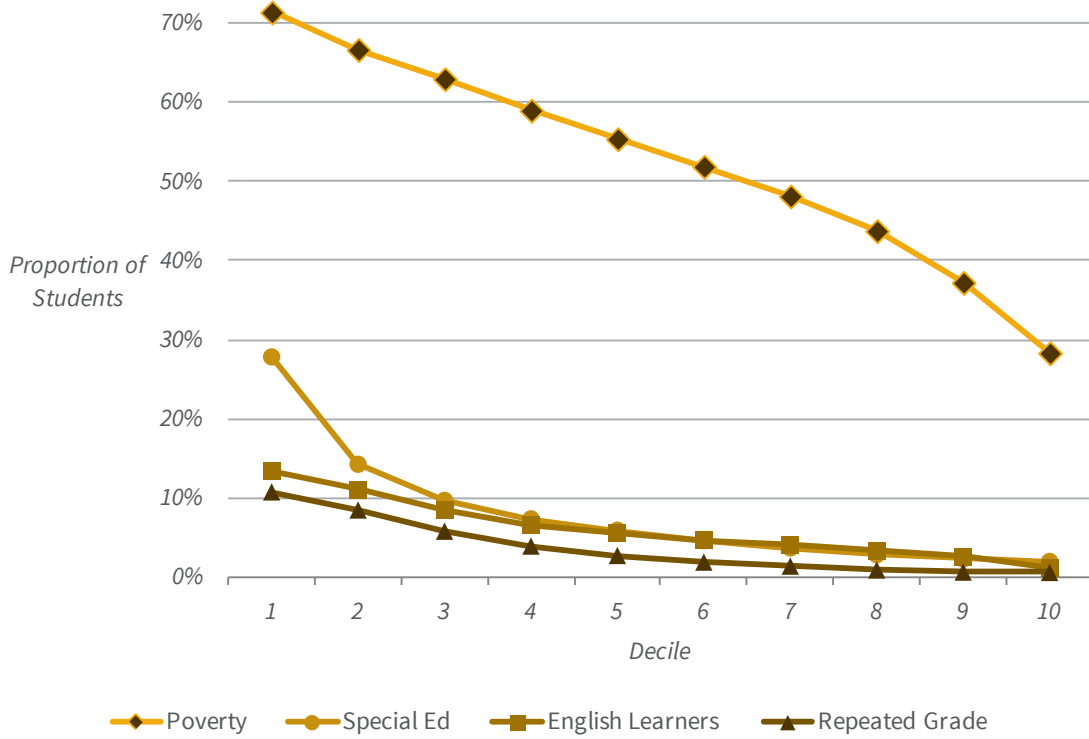


**Figure 5: Charter Student Groups by Location in 27 States**



The figure above shows the proportion of charter students in each location who belong to each student group. For example, 64 percent of urban charter students are in poverty, while 37 percent of rural charter students are in poverty.

Figure 6: Starting Deciles by Charter Student Group in 27 States



The figure above shows the proportion of students in each decile who belong to each student group. For example, 71 percent of charter students in decile 1 are in poverty, while 28 percent of students in decile 10 are in poverty. Decile 1 represents the lowest-achieving 10 percent of all students in a state (both charter and traditional public schools), while decile 10 represents the highest-achieving 10 percent of students in a state.

## 16 States

**Table 2: School Years and Growth Periods by State for 2009 Report and Now**

| State                | 2009 Report           |                    |                | Now                   |                    |                |
|----------------------|-----------------------|--------------------|----------------|-----------------------|--------------------|----------------|
|                      | Beginning School Year | Ending School Year | Growth Periods | Beginning School Year | Ending School Year | Growth Periods |
| Arkansas             | 2003-04               | 2007-08            | 4              | 2007-08               | 2010-11            | 3              |
| Arizona              | 2004-05               | 2007-08            | 3              | 2007-08               | 2010-11            | 3              |
| California           | 2005-06               | 2007-08            | 2              | 2007-08               | 2010-11            | 3              |
| Colorado (Denver)    | 2003-04               | 2007-08            | 4              | 2007-08               | 2010-11            | 3              |
| District of Columbia | 2005-06               | 2007-08            | 2              | 2007-08               | 2010-11            | 3              |
| Florida              | 2000-01               | 2007-08            | 7              | 2007-08               | 2010-11            | 3              |
| Georgia              | 2003-04               | 2007-08            | 4              | 2007-08               | 2010-11            | 3              |
| Illinois (Chicago)   | 2004-05               | 2007-08            | 3              | 2007-08               | 2010-11            | 3              |
| Louisiana            | 2000-01               | 2007-08            | 7              | 2007-08               | 2010-11            | 3              |
| Massachusetts        | 2004-05               | 2006-07            | 2              | 2006-07               | 2010-11            | 4              |
| Minnesota            | 2004-05               | 2007-08            | 3              | 2007-08               | 2010-11            | 3              |
| Missouri             | 2005-06               | 2007-08            | 4              | 2007-08               | 2010-11            | 3              |
| New Mexico           | 2004-05               | 2007-08            | 3              | 2007-08               | 2010-11            | 3              |
| North Carolina       | 2002-03               | 2006-07            | 4              | 2006-07               | 2010-11            | 4              |
| Ohio                 | 2004-05               | 2007-08            | 3              | 2007-08               | 2010-11            | 3              |
| Texas                | 2002-03               | 2006-07            | 4              | 2006-07               | 2010-11            | 4              |

**Table 3: Number of Observations by Variable for 16 States**

| Variable               | 2009 Schools Now | New Schools | Both Cohorts |
|------------------------|------------------|-------------|--------------|
| Charter                | 1,198,974        | 226,656     | 1,425,630    |
| Black                  | 522,550          | 122,394     | 645,230      |
| Hispanic               | 896,758          | 185,858     | 1,082,044    |
| Asian/Pacific Islander | 96,606           | 13,599      | 112,126      |
| Native American        | 10,354           | 0           | 11,604       |
| Multi-ethnic           | 32,528           | 4,533       | 37,852       |
| Is Special Ed          | 137,572          | 22,666      | 161,524      |
| Is English Learner     | 169,210          | 40,798      | 209,896      |
| Is in Poverty          | 1,322,606        | 276,520     | 1,598,016    |
| Repeated Grade         | 62,740           | 9,066       | 73,440       |
| Arizona                | 153,652          | 17,982      | 171,634      |
| Arkansas               | 14,704           | 7,192       | 21,896       |
| California             | 810,348          | 130,992     | 941,340      |
| Colorado               | 15,866           | 4,328       | 20,194       |
| DC                     | 34,498           | 6,522       | 41,020       |
| Florida                | 286,920          | 50,914      | 337,834      |
| Georgia                | 103,530          | 26,214      | 129,744      |
| Illinois               | 26,562           | 13,596      | 40,158       |
| Louisiana              | 56,074           | 16,288      | 72,362       |
| Massachusetts          | 78,740           | 7,894       | 86,634       |
| Minnesota              | 35,790           | 5,720       | 41,510       |
| Missouri               | 29,680           | 2,546       | 32,226       |
| New Mexico             | 14,744           | 2,374       | 17,118       |
| North Carolina         | 91,616           | 8,688       | 100,304      |
| Ohio                   | 103,312          | 9,746       | 113,058      |
| Texas                  | 402,362          | 127,730     | 530,092      |
| grade_01               | 98               | 6           | 104          |
| grade_02               | 8,996            | 1,264       | 10,260       |

| Variable     | 2009 Schools Now | New Schools | Both Cohorts |
|--------------|------------------|-------------|--------------|
| grade_03     | 89,434           | 17,988      | 107,422      |
| grade_04     | 273,398          | 52,052      | 325,450      |
| grade_05     | 297,738          | 55,854      | 353,592      |
| grade_06     | 354,616          | 79,752      | 434,368      |
| grade_07     | 361,012          | 65,300      | 426,312      |
| grade_08     | 348,644          | 50,274      | 398,918      |
| grade_09     | 232,010          | 54,476      | 286,486      |
| grade_10     | 239,882          | 45,654      | 285,536      |
| grade_11     | 173,048          | 27,014      | 200,062      |
| grade_12     | 19,072           | 3,678       | 22,750       |
| Observations | 2,397,948        | 453,312     | 2,851,260    |

**Table 4: Percent of Charter School Closures by State for Schools from 2009 Report**

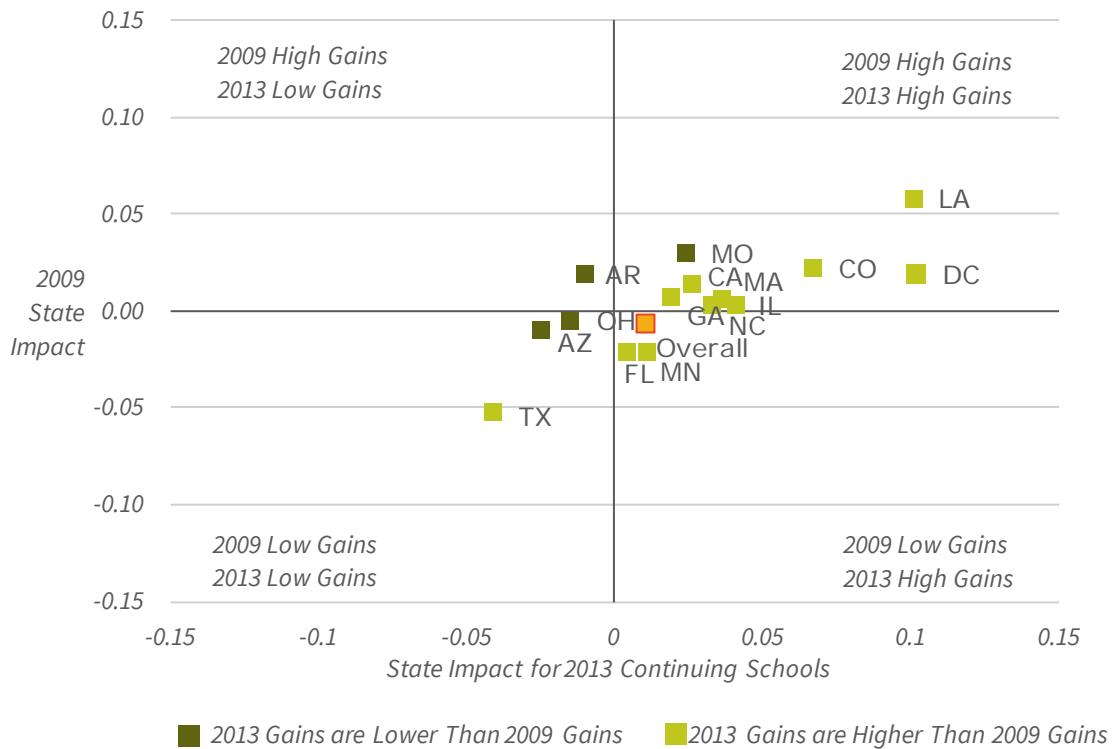
| State                   | Closures  |
|-------------------------|-----------|
| Arkansas                | 14%       |
| Arizona                 | 7%        |
| California              | 6%        |
| Colorado (Denver)       | 17%       |
| District of Columbia    | 23%       |
| Florida                 | 7%        |
| Georgia                 | 21%       |
| Illinois (Chicago)      | 3%        |
| Louisiana               | 8%        |
| Massachusetts           | 4%        |
| Minnesota               | 6%        |
| Missouri                | 19%       |
| New Mexico              | 2%        |
| North Carolina          | 4%        |
| Ohio                    | 9%        |
| Texas                   | 9%        |
| <b>Pooled 16 States</b> | <b>8%</b> |

Figure 7 below locates each of the 16 states in the 2009 report in two dimensions – their 2009 reading impacts and their current performance with the same schools. Each quadrant of the chart represents a different combination of starting and ending points; for example, the bottom right quadrant consists of states that had lower reading gains (relative to TPS) in 2009 but whose contemporary performance is better than TPS.

In the 2009 results, there were six states with significantly positive charter school impacts in reading compared to their TPS peers: Arkansas, California, Missouri, Colorado (Denver), Louisiana and the District of Columbia. An additional four states had positive results that were not significantly different from TPS: Massachusetts, Georgia, North Carolina and Illinois (Chicago). These 10 states can be found in the top half of the figure below. Only two of these 10 states had a decline in charter impact in the current time period – Arkansas and Missouri. The charter impact in Arkansas went from significantly positive to negative but not significantly different from TPS. Missouri’s charter impact declined slightly but remained positive relative to TPS. The remaining six states had lower learning gains at charters

relative to TPS in 2009: Arizona, Florida, Minnesota, New Mexico, Ohio and Texas. (In one of these states, Ohio, the original result was negative but not significantly different from TPS.) Two of these states, Arizona and Ohio, had worse impacts in the current period for the schools that were included in the 2009 report. Three states with negative charter impacts for reading in the original time period had positive impacts in the current time period – Florida, Minnesota, and New Mexico.

**Figure 7: Reading Impacts by State for 2009 Schools and 2013 Continuing Schools**



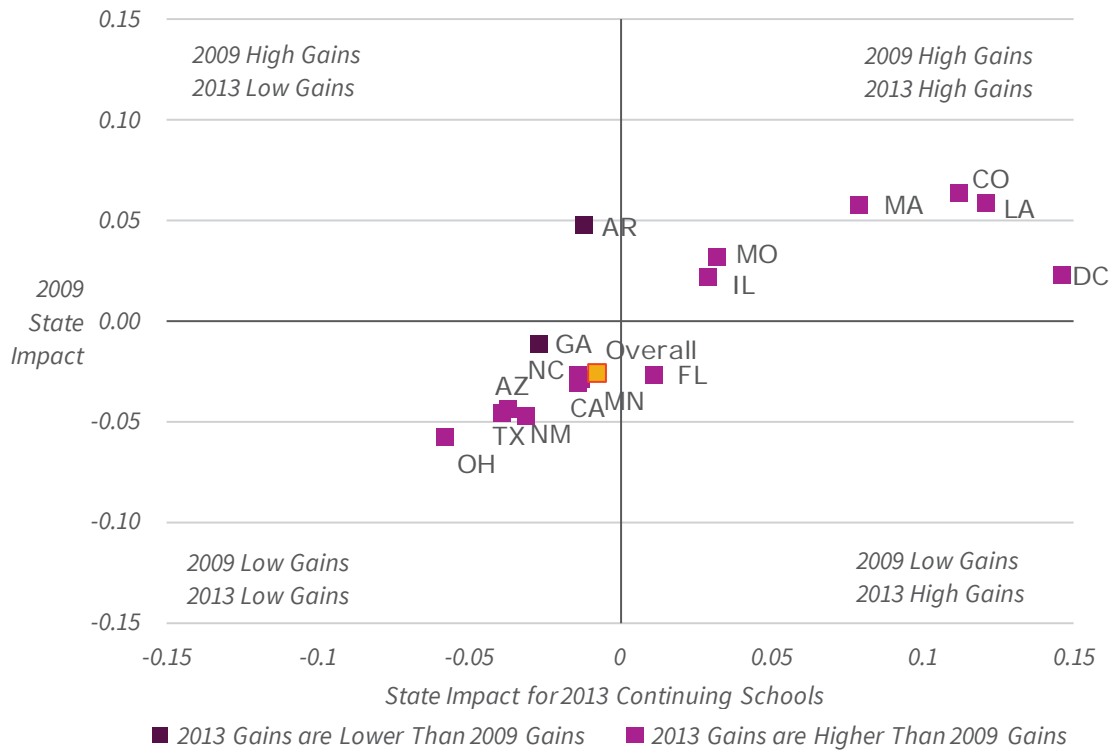
In math, all states except Georgia and Arkansas maintained or improved their charter performance with 2009 schools, as shown in Figure 8 below. Florida was the only state with a negative charter impact in the first time period that improved to a positive charter impact with the same schools in the current period. Another notable state is the District of Columbia, which had a large improvement in math learning gains from the original to the current time period.

Most of the 16 states had improved charter impacts relative to TPS from the original to the current time period with the 2009 schools. Just four states – Arkansas, Arizona, Missouri, and Ohio – saw declines in charter performance in reading and only two states – Arkansas and Georgia – had declines in math. Although the improvement in most states was modest, these findings indicate that the majority of existing charter schools in these states can maintain or even improve slightly their performance over



time. School closures help to explain part of this result, a practice that was associated with several of the high-performing states.

**Figure 8: Math Impacts by State for 2009 Schools and 2013 Continuing Schools**

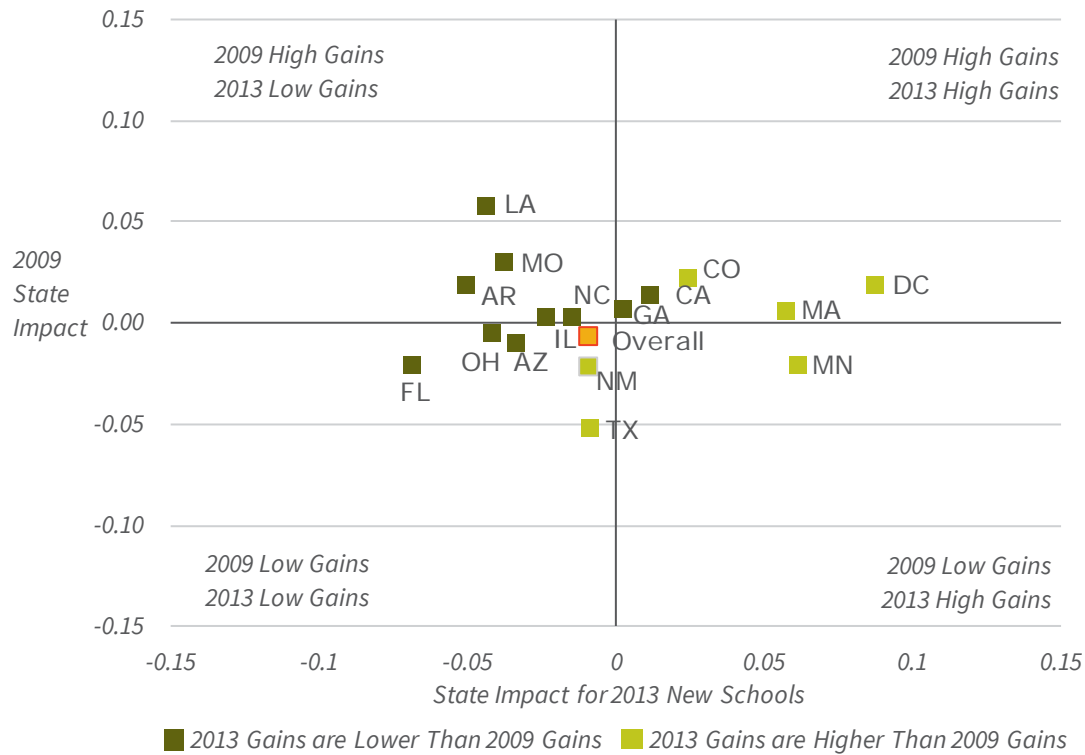


Another way to answer the question of whether state charter impacts improve over time is to consider how new charter school impacts differ from the 2009 results. One could speculate that differences between these two groups could be a function of changes in authorizing. If the authorizing focus has shifted toward quality, newer schools would be expected to have more positive impacts than older schools. One could also speculate that the differences between the new charter school impacts and the 2009 schools follow from differences in the cohorts. The new charter schools have lower starting scores – and their VCRs have lower growth – than the 2009 schools. Both of these factors could be related to charter impacts for these new schools.

Figure 9 below compares the state charter impacts in reading; each state’s location reflects their 2009 reading impacts and the current performance of the new schools. In contrast to the comparison of the 2009 and continuing school results, the direction of changes between the two school groups is preponderantly negative. Looking at the 10 states with positive effects in 2009, five have negative charter impacts in the new schools, and an additional two of the ten have smaller positive charter impacts for the new schools. There were six states with negative charter impacts in 2009. The learning

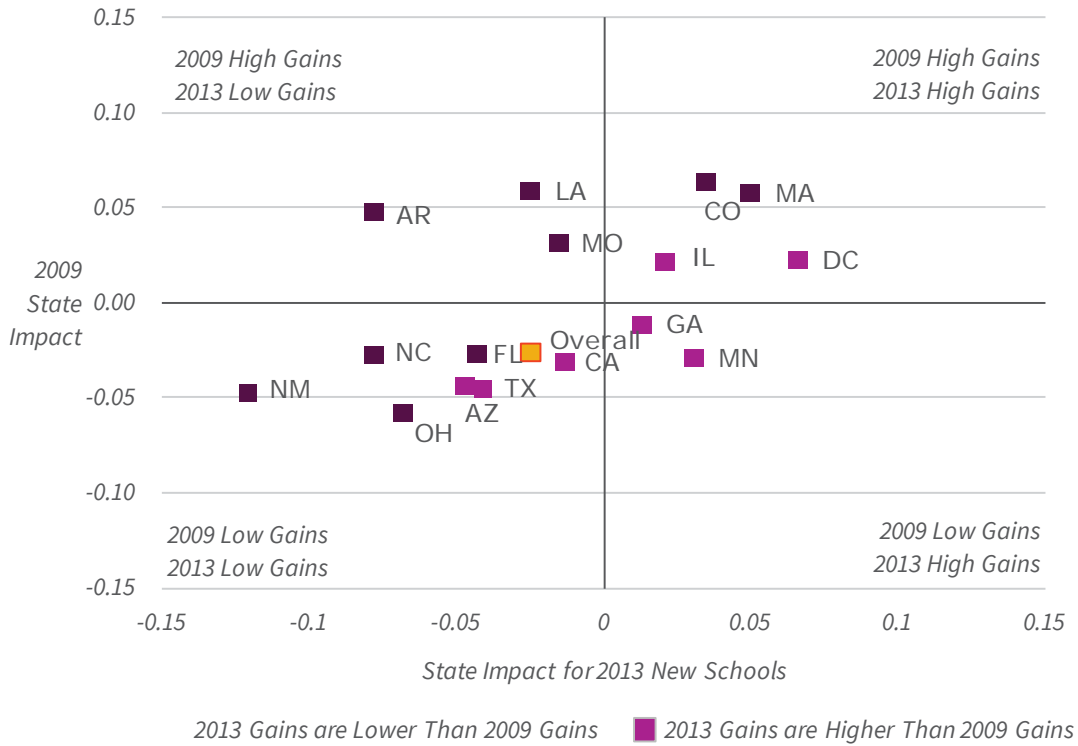
impacts in the new schools got worse in three of these states. In three states, the new charter schools have impacts that are better than the 2009 results. There are three additional states that bear mention for the large positive change from the 2009 results to the new schools – the District of Columbia, Massachusetts, and Minnesota. Despite these few positive examples, generally the newer schools in the majority of the original 16 states are not delivering performance as strong as was noticed four years ago in the original cohort of schools.

**Figure 9: Reading Impacts by State for 2009 Schools and 2013 New Schools**



Shown in Figure 10 is the comparison of charter impacts for 2009 schools and new schools in math. As with the reading results, the majority of state charter impacts in math are lower for new schools than they were for the 2009 schools. There were seven states with positive charter impacts originally, but only four of these have positive results for new charters. Of the nine states with negative charter impacts for 2009, five of them have similar or better learning gains for the new charter schools. Two of these states – Georgia and Minnesota – have positive impacts for new charters.

**Figure 10: Math Impacts by State for 2009 Schools and 2013 New Schools**



In summary, newer charter schools have lower quality than the existing charters in the majority of the 16 states. If this pattern continues with future new schools, the higher-performing 2009 cohort will become a smaller proportion of the sector in these states and charter sector quality will degrade over time. Lower-quality new schools are not the rule everywhere, however. These exceptions imply that it is possible to build a strong quality focus, consistently applied, into the authorizing process.

## 27 States

**Table 5: Number of Observations by Variable for 27 States (5 growth periods)**

| Variable                  | Observations |
|---------------------------|--------------|
| Charter                   | 2,425,146    |
| Black                     | 1,325,254    |
| Hispanic                  | 1,498,842    |
| Asian or Pacific Islander | 104,794      |
| Native American           | 16,973       |
| Multi-Ethnic              | 52,135       |
| Is Special Ed             | 297,481      |
| Is English Learner        | 273,357      |
| Is In Poverty             | 2,645,962    |
| Repeated Grade            | 96,470       |
| Urban                     | 257,724      |
| Suburban                  | 106,252      |
| Rural                     | 63,761       |
| Town                      | 29,403       |
| Arizona                   | 255,960      |
| Arkansas                  | 29,910       |
| California                | 1,368,218    |
| Colorado                  | 236,224      |
| DC                        | 60,464       |
| Florida                   | 503,584      |
| Georgia                   | 185,890      |
| Illinois                  | 40,158       |
| Indiana                   | 56,166       |
| Louisiana                 | 96,810       |
| Massachusetts             | 103,730      |
| Michigan                  | 345,188      |
| Minnesota                 | 58,166       |
| Missouri                  | 45,204       |

| Variable                     | Observations |
|------------------------------|--------------|
| Nevada                       | 25,778       |
| New Jersey                   | 33,094       |
| New Mexico                   | 27,002       |
| New York                     | 47,640       |
| New York City                | 82,044       |
| North Carolina               | 120,718      |
| Ohio                         | 168,508      |
| Oregon                       | 42,738       |
| Pennsylvania                 | 176,574      |
| Rhode Island                 | 8,478        |
| Tennessee                    | 22,780       |
| Texas                        | 618,524      |
| Utah                         | 90,742       |
| grade_01                     | 208          |
| grade_02                     | 17,178       |
| grade_03                     | 237,426      |
| grade_04                     | 652,022      |
| grade_05                     | 704,780      |
| grade_06                     | 818,040      |
| grade_07                     | 789,390      |
| grade_08                     | 658,556      |
| grade_09                     | 390,128      |
| grade_10                     | 346,064      |
| grade_11                     | 207,106      |
| grade_12                     | 29,394       |
| Total Number of Observations | 4,850,292    |

The table below presents the charter school impact – relative to the TPS comparison – **separately** for each of the five growth periods included in the study. As with the results presented in the report, these results indicate that charter performance is improving over time.

**Table 6: Charter School Impact by Growth Period, Errors in Variables Regression<sup>1</sup>**

| Subject | Period |         |         |         |        |
|---------|--------|---------|---------|---------|--------|
|         | 2007   | 2008    | 2009    | 2010    | 2011   |
| Reading | .008** | -.002   | .009**  | .009**  | .012** |
| Math    | -.010* | -.019** | -.009** | -.006** | -.001  |

\* Significant at  $p \leq 0.05$

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

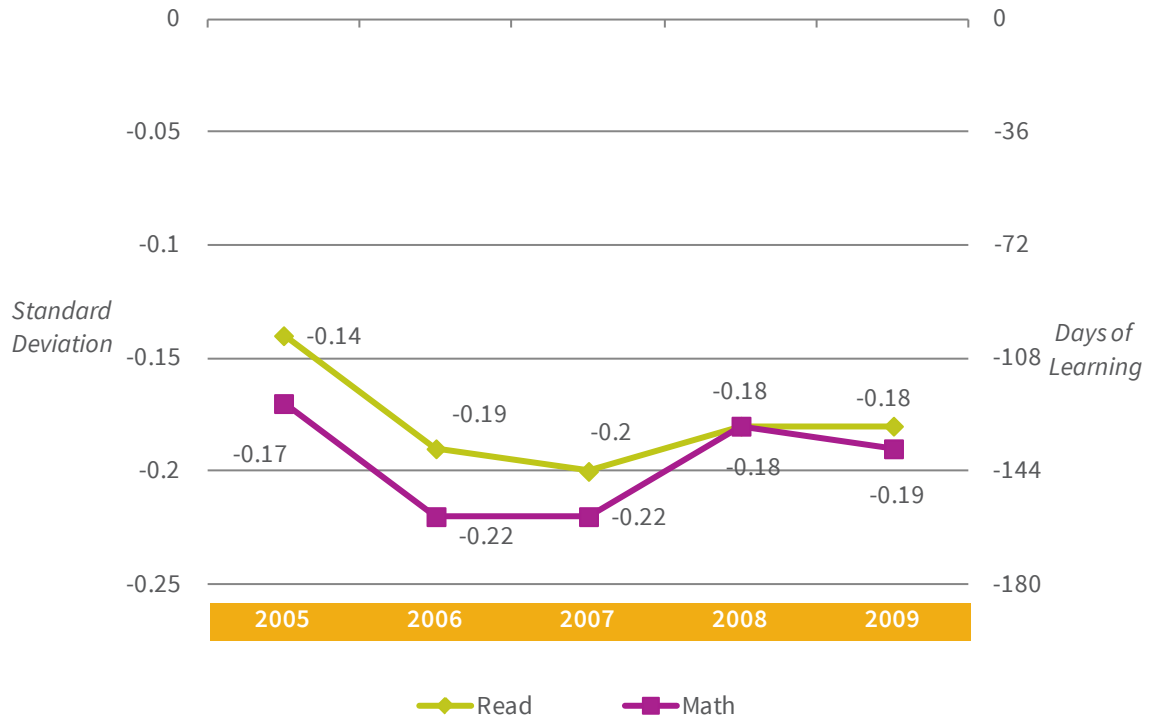
To identify changes in the entering students, below, we examine the average starting score for charter students in their first year as a charter student for each growth period in the study. This group will include some students who have been in a charter school for multiple years, but are in their first tested year in a charter school. Since this is the case in every growth period examined, the inclusion of these students should not skew the results of this analysis.

Figure 11 below shows the starting scores by year and subject of charter students in their first year in the data set. While there was some flux in the average starting score, the general trend in scores has remained stable since 2005. This suggests that, on a national level, changes in the performance of charter schools are not the result of enrolling higher-performing individuals over time.

---

<sup>1</sup> The error in variables regression is an alternative specification which was run as a specification check to the OLS with clustered standard errors.

**Figure 11: Reading and Math Starting Score for Charter Students**



**Table 7: Average Starting Scores by Race for Charter Students**

| Student Group | Overall |       | Non-Poverty |       | Poverty |       |
|---------------|---------|-------|-------------|-------|---------|-------|
|               | Reading | Math  | Reading     | Math  | Reading | Math  |
| White         | 0.28    | 0.19  | 0.40        | 0.31  | -0.05   | -0.13 |
| Black         | -0.38   | -0.48 | -0.12       | -0.26 | -0.45   | -0.55 |
| Hispanic      | -0.22   | -0.20 | 0.03        | -0.01 | -0.31   | -0.26 |
| Asian         | 0.45    | 0.64  | 0.68        | 0.79  | 0.00    | 0.32  |

**Table 8: Average Starting Scores by Charter Student Group**

| Student Group                 | Reading | Math  |
|-------------------------------|---------|-------|
| Students in Poverty           | -0.31   | -0.34 |
| English Language Learners     | -0.91   | -0.66 |
| Special Education Students    | -1.05   | -1.02 |
| Students who Repeated a Grade | -0.84   | -1.03 |

Tables 9 through 12 below provide an alternative view of the performance of the most disadvantaged students in our data, black and Hispanic students living in poverty. The charter effect sizes contained in the body of this report provide the best measure of the “value add” that charters provide their students compared to traditional public schools. However, these effect sizes are not necessarily additive and thus their cumulative impact is unknown. By looking at the average performance of each subgroup compared to their state’s average score by year, we can see whether charter schools are raising the absolute level of achievement for their students. An average zcore of 0 implies that the subgroup has reached educational parity with the average student in their state.

Tables 9 and 11 provide average z-scores for all students in both subjects by year. The primary advantage of this measure is that it looks at the performance of all students in the subgroup of interest. However, this includes students who have only spent one or two years in charter schools, not allowing much time for their cumulative impact to be seen. Tables 10 and 12 also provide average z-scores in both subjects by year, but these are limited to only students with either four or five growth periods in charter schools. This is a better measure of the cumulative impact of charter schools on their students. However, students that persist in charters for five or more years are not necessarily representative of the broader charter student population.

**Table 9: Average Achievement Level for Black Charter Students in Poverty by Year**

| Year | Reading | Math |
|------|---------|------|
| 2005 | -.43    | -.54 |
| 2006 | -.45    | -.53 |
| 2007 | -.44    | -.51 |
| 2008 | -.41    | -.48 |
| 2009 | -.40    | -.46 |



**Table 10: Average Achievement Level for Longitudinal Group of Black Charter Students in Poverty**

| Year | Reading | Math |
|------|---------|------|
| 2005 | -.38    | -.47 |
| 2006 | -.39    | -.44 |
| 2007 | -.38    | -.41 |
| 2008 | -.33    | -.37 |
| 2009 | -.28    | -.32 |

**Table 11: Average Achievement Level for Hispanic Charter Students in Poverty by Year**

| Year | Reading | Math |
|------|---------|------|
| 2005 | -.27    | -.24 |
| 2006 | -.26    | -.23 |
| 2007 | -.25    | -.21 |
| 2008 | -.23    | -.17 |
| 2009 | -.22    | -.16 |

**Table 12: Average Achievement Level for Longitudinal Group of Hispanic Charter Students in Poverty**

| Year | Reading | Math |
|------|---------|------|
| 2005 | -.13    | -.05 |
| 2006 | -.13    | -.06 |
| 2007 | -.11    | -.04 |
| 2008 | -.08    | -.02 |
| 2009 | -.03    | -.03 |

For the table and figure below, students are grouped according to their initial scores on their baseline state achievement tests. The achievement tests for each state, year and subject are divided into 10 equal groups (known as deciles), and the students' starting scores are sorted accordingly. Decile 1 represents the lowest-achieving 10 percent of all students in a state (both charter and traditional public schools), while decile 10 represents the highest-achieving 10 percent of students in a state.

**Table 13: Proportion of Charter Students with Exact VCR Matches on Starting Score by Decile**

| Decile | Reading | Math   |
|--------|---------|--------|
| 1      | 38.17%  | 32.30% |
| 2      | 43.41%  | 38.27% |
| 3      | 48.51%  | 42.69% |
| 4      | 52.89%  | 45.20% |
| 5      | 57.62%  | 48.13% |
| 6      | 60.45%  | 50.00% |
| 7      | 64.09%  | 52.66% |
| 8      | 65.80%  | 55.97% |
| 9      | 62.47%  | 56.85% |
| 10     | 55.85%  | 48.37% |

Table 14 shows the racial composition of each decile. The values represent the percentage of students in each decile from the various race/ethnicity groups. Hispanic students are evenly distributed across the deciles, although they are slightly underrepresented in the top decile. White and Asian students make up an increasing percentage of the upper deciles, especially the top achieving decile. Black students make up a disproportionately large percentage of the lower deciles and a disproportionately small part of the upper decile. The dearth of black students in the top decile is so strong that the percentage of the top decile made up of Asian students, 11 percent, is higher than the percentage of the top decile made up of black students, 10 percent, even though black students make up a much larger portion of the entire data set.

**Table 14: Racial Composition by Decile**

| Decile | White | Black | Hispanic | Asian/PI | Other |
|--------|-------|-------|----------|----------|-------|
| 1      | 21%   | 43%   | 32%      | 1%       | 2%    |
| 2      | 24%   | 38%   | 33%      | 2%       | 3%    |
| 3      | 28%   | 35%   | 32%      | 2%       | 3%    |
| 4      | 32%   | 32%   | 31%      | 2%       | 3%    |
| 5      | 35%   | 28%   | 31%      | 3%       | 3%    |
| 6      | 39%   | 25%   | 31%      | 3%       | 3%    |
| 7      | 41%   | 21%   | 31%      | 4%       | 3%    |
| 8      | 44%   | 17%   | 31%      | 5%       | 3%    |
| 9      | 48%   | 13%   | 29%      | 8%       | 3%    |
| 10     | 56%   | 10%   | 20%      | 11%      | 3%    |

A key breakout for understanding the impact of charter schools on the achievement gap was decomposition by achievement decile. Regardless of the starting point of a charter student, the charter school must be capable of promoting learning gains. It is therefore important to policy discussions to investigate if charter schools have a stronger impact on students along different points of the achievement range.

For this analysis, students were assigned to a decile based on their performance on their state test using each student's first test score in the data set. This was the same base test score that was used in the matching process. These analyses were conducted separately in both reading and math. The final results allow for an evaluation of the differential impacts of charter school attendance on the growth of students with different levels of academic achievement.

In reading, the analysis shows that charter students have significantly stronger growth than their traditional public school (TPS) peers for all five of the lower deciles. The values ranged from 14 to 24 days of additional learning. Students in the five upper deciles have similar growth relative to their counterparts in TPS. The results show that charter students and their TPS counterparts have identical growth in eight of the ten deciles in math. Growth in two of the higher deciles was 9 to 18 fewer days of learning for charter students than for students at TPS.

Figure 12: Charter Impact by Students' Starting Decile

