Exploratory Analyis of NAEP Data
Prepared for the National Assessment Governing Board

# Who Attends Charter Schools and How Are Those Students Doing?

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# ABSTRACT

This report examines what the National Assessment of Educational Progress (NAEP) can tell us about charter school enrollment and student performance compared to that of regular public schools. The study uses NAEP reading and mathematics data from 2011 and the earlier years when charter school data first became available (2003 for grade 4; 2005 for grade 8). The study finds that while charter schools still account for a relatively small percentage of overall public school enrollment (about 3%), this percentage is growing rapidly, particularly in large cities. A sizable jump was found in charter school enrollment for the black student subgroup.

In terms of achievement, there is a consistent pattern of higher average NAEP scores for regular public schools than for charters when we look at the nation as a whole. However, the closer we focus in on large cities, where most charter schools are located, the more the picture changes in favor of charter schools. In all large cities combined, student achievement is roughly even overall, but the black and Hispanic subgroups show higher scores in charter schools. When we examined four urban areas specifically (DC, Atlanta, Chicago, Milwaukee), students in charter schools significantly outperformed their peers in regular public schools in many of the subjects/grades analyzed. Charter school class sizes are smaller, and there is some evidence that charter school students receive more instructional time in some subjects. The report recommends making some changes to the NAEP Data Explorer interface and including data for research purposes in the Trial Urban District Assessment (TUDA) database that is representative of all charter schools located within each participating urban district.

# EXECUTIVE SUMMARY

Charter schools are independent public schools that operate with a large measure of autonomy from local districts. Students attend charter schools by choice. The schools themselves are exempt from many state and local rules but are subject to accountability standards established in their charters.

There has been considerable controversy over charter schools and whether they foster higher student achievement. In 2005, the National Center for Education Statistics (NCES) issued a study of America's charter schools based on the 2003 NAEP reading and mathematics assessments for 4th grade.[1] The study found that students in charter schools were generally lagging behind their counterparts in regular public schools. But the differences were statistically significant only for math, not for reading. Given the growth of charter schools since 2003, it is important to take a fresh look at what NAEP can tell us about charter school enrollment and student performance, based on 2011 data.

This report examines five questions using NAEP data:

- Who attends charter schools? How has charter school enrollment changed over the past decade?
- Does student achievement differ between charter schools and regular public school students? Has that changed since 2003?
- How do certain subgroups, such as low-income, black, and Hispanic students, perform in charter schools compared to regular schools?
- How does the performance of charter schools compare to that of regular public schools located within the same city?
- Are there important differences between charter and regular schools that are captured by the NAEP background data?

NAEP collects a rich set of student, teacher, and school responses to background questionnaires (referred to as "background variables") that can help in understanding the context for NAEP achievement results and give insights into how to improve them. We can use NAEP to address the charter school questions above because one of the background variables that has been collected since 2003 from each school in the NAEP sample is whether it is a charter or regular public school.

[1] For the 2003 charter school study, NAEP oversampled charter schools at grade 4 to make sure that the sample of charter school students was large enough to conduct the necessary analyses. In 2005, NAEP started assessing larger numbers of students and from that time forward, the NAEP sample included a representative sample of charter schools without having to oversample.

NAEP background questions are a potentially important but largely underused national resource (Smith et al., 2012). This is one of several exploratory analyses, commissioned by the National Assessment Governing Board (NAGB) to illustrate the usefulness of NAEP background data for helping to understand important education issues. However, there are limitations to this study. One cannot conclude from the results the causal effects of attending a charter school on student achievement. The study provides descriptive and correlational evidence and by itself does not prove causation.

## Who Attends Charter Schools

The National Center for Education Statistics (NCES, 2010) reports that from 2000 to 2010,[2] the number of students enrolled in public charter schools more than quadrupled--from 0.3 million to 1.6 million students. During this period, the percentage of all public schools that were charter schools increased from 2 to 5 percent, numbering 5,000 schools in 2010. At that time, about 55% of charter schools were located in cities, 21% were in suburban areas, 8% were in towns, and 16% were in rural areas. In some cities, charter schools serve a large proportion of students. For instance, in New Orleans more than half of all public school students attend charter schools, and in the District of Columbia, more than a third.

Questions have been raised about whether charter schools are appropriately serving students with disabilities. In response, the U.S. Government Accountability Office (GAO, 2012) conducted a study using federal data and found that charter schools enrolled a lower percentage of students with disabilities than traditional public schools. In school year 2009-2010, they found that approximately 11% of students enrolled in traditional public schools were students with disabilities compared to about 8% of students enrolled in charter schools.

This study, using NAEP 2011 data, finds that charter schools are playing an increasingly important role in American education, particularly in large cities and for certain subgroups. Charter school data go back to 2003 in grade 4; 2005 in grade 8; and are only available for 2009 in grade 12.

The main findings related to charter school enrollment are:

- Nationally, students attending charter schools account for a small slice of overall public school enrollment: about 3% in 2011 at grades 4 and 8. Still, this represents a significant increase, compared to 1% in 2003/05.

- Higher percentages of students living in large cities attend charter schools. For example, in grade 4, charter schools enrolled 3% of all large city students in 2003 and this grew to 6% in 2011.

- While all of the subgroups analyzed showed significant increases in charter school enrollment since 2003, the most notable jump was for the black subgroup. For example,

[2] 2010 is the most current year for which NCES charter school enrollment data are available.

in the large cities, the percentage of grade 4 black students attending charter schools grew from 4% in 2003 to 12% in 2011. The percentage of black low-income students attending charter schools in the large cities is roughly similar to that of black students in general.

- There are also differences in the student compositions of charter and regular public schools. Both nationally and in the large cities, charter student bodies include a significantly larger proportion of black students than regular public schools. Regular schools have significantly larger proportions of white students.

- In grade 4, a larger proportion of the charter school student body was low-income in 2011, compared to regular schools. A similar pattern can be seen at grade 8, but the difference between charter and regular schools is not significant.

- In the large cities, in grade 4, regular schools had a significantly larger percentage of Hispanic students in their student bodies in 2011. In grade 8 the same was true in 2005, but by 2011, the Hispanic composition of the two types of schools became more even.

- Also in the large cities in 2011, regular schools had significantly higher rates of enrollment for students with disabilities at grades 4 and 8, and English language learners at grade 4.

## Achievement of Charter School Students

An earlier NCES study (2005) comparing student achievement in charter and non-charter public schools using 2003 NAEP data, found that charter school performance lagged behind that of regular schools in 4th grade math, and was about the same in 4th grade reading. That study noted that when comparing the performance of charter and regular public school students, it is important to compare students who share a common characteristic. For example, in math, 4th grade charter school students as a whole did not perform as well as their public school counterparts. However, the math performance of white, black, and Hispanic 4th graders in charter schools was not measurably different from the performance of 4th graders with similar racial/ethnic backgrounds in other public schools.

More recently, Betts and Tang (2011) conducted a meta-analysis of several rigorous studies that used either experimental (lottery) or student-level growth based methods to infer the causal impact of attending a charter school on student performance. From this set of studies, Betts and Tang concluded that charter elementary schools, on average, outperformed traditional public schools in reading and in math, and charter middle schools were doing better in math. Their analysis found no substantial difference in math or reading achievement between traditional and charter high schools or in reading achievement at the middle school level.

The main findings from our analysis of NAEP achievement data are:

- At the national level, there is a consistent pattern of higher average NAEP scores for regular public schools than for charter schools. This pattern is apparent in all grade/subjects analyzed: grades 4, 8 and 12 in reading, math, and science.

- NAEP scores in grades 4 and 8 reading and math have increased between 2003/05 and 2011, in both regular public and charter schools, with larger gains for charter schools. The gains for regular public schools tend to be statistically significant, while a similar amount of growth for charter schools does not, probably because of the small charter school sample size.

- Focusing on large cities, average NAEP scores for charter and regular schools were similar, both in 2003/05 and 2011. The only significant difference was in grade 4 math in 2003, in favor of regular public schools. By 2011 this difference had disappeared.

- However, the findings tend to favor charter schools when one focuses on black, Hispanic, and low-income students within the large cities. In many subject/grade combinations students in these subgroups in charter schools performed significantly better in 2011 than those in regular public schools. By contrast, in 2003/2005 these subgroups performed similarly in charter and regular schools, and in one case (low-income students in grade 4 math), the regular schools were ahead.

- The performance of black low-income students attending charter schools in large cities is particularly striking. This group has shown a large increase in scores. In 2011their achievement was significantly higher than that of similar students in regular large-city schools in grade 8 reading and grades 4 and 8 math.

- In the large cities, the only significant subgroup findings in favor of regular schools in 2011 were for Asians (in grade 4 math) and whites (in grade 4 reading).

- When we look more closely at a few large urban districts, the 2011 results clearly favor charter schools. In the four cities where NAEP data permitted comparisons (DC, Atlanta, Chicago and Milwaukee), students in charter schools significantly outperformed their peers in regular public schools in many of the subjects/grades analyzed. In those four districts, there are no subjects/grades where regular schools significantly outperformed charter schools.

Why do we find that charter schools underperform regular public schools nationally, but outperform them in large cities? One possible explanation is that at the national level, NAEP results for regular public schools include a wide range of schools, including many high-performing suburban schools in high-income communities. If the purpose is to compare charter and regular schools, the fairest way is to compare them within similar locations. The location where charter school enrollment is most concentrated is the large cities. As noted above, 6% of large city grade 4 students and 8% of large city grade 8 students attend charter schools, compared to 3% at each grade nationally. Making comparisons within large cities increases the likelihood that the regular and charter schools are serving similar populations of students.

**Other Factors Related to Instruction**

There are hundreds of variables collected from students, teachers, and school administrators each time NAEP is administered and very little of those data get used by researchers. For this exploratory study, we compared charter and regular public schools on a few policy-relevant factors (time spent on core subjects, class size, and teacher qualifications), to give a flavor of the kinds of information that are potentially available. These analyses were run for grades 4 and 8 in large cities.

The main findings are that in the large cities:

- Grade 8 charter school students get significantly more time per week of language arts instruction. Grade 8 charter school students may also be getting more instruction in math, although the finding is not significant.

- Class sizes tend to be larger in regular schools than in charter schools.

- Significantly more teachers in regular public schools have a major in the subject they teach.

- More grade 8 math teachers in charter schools entered the teaching profession through an alternate certification program.

- Teachers in regular schools have more years of teaching experience than teachers in charter schools.

## Strengthening NAEP Data and the *Data Explorer*

The main way that members of the public and education researchers access NAEP data is through the online *NAEP Data Explorer*. It is a powerful tool and, with practice, researchers can conduct a wide variety of analyses. However, the interface is not as user-friendly as it could be. One of the purposes of this exploratory study was to identify ways that the NAEP background data could be improved. We offer these suggestions based on our experience:

- Refine the online Data Explorer to make it as intuitive and efficient possible.

- Find a better way to search the variables and filter those available in a given year.

- Take stock of background variables that may no longer be relevant and consider reinstating some that are still of interest.

Charter schools are likely to continue to grow in importance. They surely will be the focus of future research. These schools are serving ever-larger numbers and percentages of students—

particularly minority and low-income students. The large urban districts are where studies of charter schools should be focused. So finally we suggest:

- Find a way to include results for all charter schools within the geographic boundaries of an urban district in the TUDA dataset, for research purposes.

# Who Attends Charter Schools and How Are Those Students Doing?

# DATA AND FINDINGS

## I. Who Attends Charter Schools?

### Proportion of Public School Students Attending Charter Schools

How large of a role do charter schools play in American public education? The percentages of all public school students attending charter schools are shown in **table 1a**. These figures are based on the NAEP mathematics sample in each grade. Charter school data go back to 2003 in grade 4; 2005 in grade 8; and are only available for 2009 in grade 12.

The main findings are:

- Students attending charter schools account for a small slice of overall public school enrollment: just 3% in 2011. However, the percentage of public school students attending charter schools has increased significantly over the past decade. In grade 4, the percentage rose from 1% in 2003 to 3% in 2011, and the same was true in grade 8 from 2005 to 2011.

- While all of the subgroups analyzed showed significant increases in charter school enrollment, the most notable jump was for the black subgroup. In grade 4, the percentage of black public school students attending charter schools increased from 2% in 2003 to 7% in 2011. In grade 8, the percentage of black students enrolled in charter schools rose from 3% in 2005 to 6% in 2011.

Table 1a. National percentage of public school students attending charter schools, by grade and subgroup, for earliest year in which charter school data are available and 2011 (based on NAEP mathematics sample)

| | National Grade 4 | | National Grade 8 | | National Grade 12 |
|---|---|---|---|---|---|
| | **2003** | **2011** | **2005** | **2011** | **2009** |
| All Students | 1 | 3* | 1 | 3* | 2 |
| White | 1 | 2* | 1 | 2* | 1 |
| Black | 2 | 7* | 3 | 6* | 4 |
| Hispanic | 1 | 3* | 1 | 4 | 3 |
| Asian/Pacific Islander | 1 | 2* | 1 | 2 | 1 |
| Students with disabilities | 1 | 2* | 2 | 3* | 3 |
| English language learner | 1 | 2* | 2 | 3 | 5 |
| Low-income (free/ reduced price lunch) | 1 | 3* | 2 | 3* | 3 |

*The difference between base year and 2011 is statistically significant at the .05 level.

Most charter schools are located in urban areas, so it is not surprising that charter schools serve larger proportions of students in large cities than is the case nationally, as shown in **table 1b**. Grade 12 results are not shown because they cannot be disaggregated for large cities. For this analysis, we further disaggregated the data for the black low-income group.

The main findings regarding charter school enrollment in the large cities are:

- The percentage of public school students attending charter schools in the large cities has grown significantly. In grade 4, charter schools enrolled 3% of all large city students in 2003 and this grew to 6% in 2011. In grade 8, charter schools enrolled 5% of students in 2005 which grew to 8% in 2011.

- There has been an especially large increase in the percentage of black students attending charter schools in large cities. In 2003, 4% of black public schools students in large cities attended charter schools; in 2011 that figure rose to 12%. In grade 8 the percentage went from 8% in 2005 to 13% in 2011.

- The percentages of black low-income students attending charter schools in large cities are roughly similar to that of black students in general. Again, there was significant growth in charter school enrollment for this subgroup between 2003 and 2011.

Table 1b. Percentage of large city students attending charter schools, by grade and subgroup, for earliest year in which charter school data are available and 2011 (based on NAEP mathematics sample)

| | Large Cities Grade 4 | | Large Cities Grade 8 | |
|---|---|---|---|---|
| | **2003** | **2011** | **2005** | **2011** |
| All Students | 3 | 6* | 5 | 8* |
| White | 2 | 5* | 4 | 5 |
| Black | 4 | 12* | 8 | 13* |
| Hispanic | 2 | 4* | 3 | 8 |
| Asian/Pacific Islander | # | 2* | 2 | 6 |
| Students with disabilities | 2 | 5* | 5 | 6 |
| English language learner | 2 | 3* | 3 | 9 |
| Low-income (free/ reduced price lunch) | 2 | 6* | 4 | 9* |
| Black low-income | 3 | 11* | 5 | 12* |

* The difference between base year and 2011 is statistically significant at the .05 level.
# Rounds to 0

## Student Composition of Charter Schools Compared to Regular Public Schools

**Tables 1c and 1d** provide another perspective on who attends charter schools. These tables show differences in the student composition of charter and regular public schools, addressing questions such as: Is the student body at charter schools made up of larger or smaller percentages of low-income students than at regular public schools?

The main findings from table 1c are:

- Nationally, charter student bodies include significantly larger proportions of black students than regular public schools. Regular public schools have larger proportions of white students. This was true in grades 4 and 8 in 2003/05, and was still the case in 2011.

- In grade 4, charter student bodies included a significantly larger percentage of low-income students in 2011. A similar pattern can be seen at grade 8, but the difference between charter and regular schools is not significant.

Table 1c. At the national level, percentages of students attending charter and regular schools that fall into various subgroups (based on NAEP mathematics sample)

| | National Grade 4 | | | | National Grade 8 | | | |
|---|---|---|---|---|---|---|---|---|
| | 2003 | | 2011 | | 2005 | | 2011 | |
| | Charter | Regular public | Charter | Regular public | Charter | Regular public | Charter | Regular public |
| White | 45 | 58* | 35 | 53* | 40 | 60* | 34 | 54* |
| Black | 31* | 17 | 37* | 15 | 37* | 16 | 32* | 15 |
| Hispanic | 20 | 19 | 22 | 24 | 17 | 17 | 28 | 22 |
| Asian/Pacific Islander | 2 | 4* | 3 | 5* | 3 | 5 | 4 | 6 |
| Students with disabilities | 8 | 11* | 9 | 12* | 13 | 10 | 10 | 11 |
| English language learners | 9 | 9 | 9 | 11 | 6 | 6 | 7 | 6 |
| Low-income (free/ reduced price lunch) | 42 | 44 | 59* | 52 | 45 | 39 | 57 | 47 |

*The difference between the percentages for charter and regular public schools is statistically significant at the .05 level.

The findings for large cities, displayed in table 1d, are:

- As with the national picture, large city charter schools have larger proportions of black students, although at grade 8 in 2011, the difference is not statistically significant.

- In grade 4, regular schools in the large cities had a significantly larger percentage of Hispanic students in their student bodies in 2011. In grade 8 the same was true in 2005, but by 2011, the Hispanic composition of the two types of schools became more even.

- In the large cities, regular public schools had a higher rate of enrollment for students with disabilities in 2011, and at grade 4, the difference was significant.

- In large cities, regular public schools had significantly larger proportions of English language learners at grade 4 in 2003 and 2011.

Table 1d. In large cities, percentages of students attending charter and regular schools that fall into various subgroups (based on NAEP mathematics sample)

| | Large Cities Grade 4 | | | | Large Cities Grade 8 | | | |
|---|---|---|---|---|---|---|---|---|
| | 2003 | | 2011 | | 2005 | | 2011 | |
| | Charter | Regular public | Charter | Regular public | Charter | Regular public | Charter | Regular public |
| White | 17 | 22 | 16 | 20 | 22 | 24 | 12 | 21* |
| Black | 51* | 33 | 53* | 25 | 53* | 31 | 41 | 25 |
| Hispanic | 29 | 36 | 27 | 45* | 20 | 36* | 41 | 44 |
| Asian/Pacific Islander | 1 | 7* | 2 | 8* | 4 | 8* | 5 | 9 |
| Students with disabilities | 8 | 10 | 9 | 11* | 11 | 10 | 8 | 11* |
| English language learner | 13 | 20* | 12 | 22* | 9 | 13 | 12 | 11 |
| Low-income (free/ reduced price lunch) | 67 | 69 | 73 | 74 | 49 | 63* | 72 | 69 |
| Black low-income | 35 | 28 | 41* | 22 | 26 | 23 | 31 | 20 |

*The difference between the percentages for charter and regular public schools is statistically significant at the .05 level.

## II. Student Achievement in Charter and Regular Public Schools

This section begins with a comparison of NAEP achievement in charter and regular public schools at the national level. We then focus in on performance in the large cities, the location where charter school enrollment is most concentrated. Finally, we compare achievement in charter and regular schools in a few particular urban districts where NAEP data permitted comparisons.

### Achievement for All Students

Are students in charter schools reaching higher levels of achievement than students in regular public schools? **Table 2a** presents the results for students overall in grades 4 and 8, and **table 2b** shows the results for grade 12. The main findings:

- At the national level, there is a consistent pattern of higher average NAEP scores for regular public schools than for charter schools. This pattern is apparent in all subject/grade combinations and years analyzed. In some cases, such as grade 4 math, the regular schools' scores are significantly higher.

- Grade 12 math and reading scores were significantly higher in regular public schools than in charter schools in 2009, the only year for which data are available.

- In science, regular schools also posted significantly higher scores at all grade levels in 2009.

- NAEP scores in grades 4 and 8 reading and math have increased between 2003/05 and 2011, in both regular public and charter schools, with larger gains for charter schools. Not shown in table 2a is that the gains for regular public schools tend to be statistically significant, while a similar amount of growth for charter schools does not, probably because of the small charter school sample size.

Table 2a. National NAEP achievement in charter and regular public schools, for earliest year in which charter school data are available and 2011

| | National 2003 (grade 4) or 2005 (grade 8) | | National 2011 | | Change 2011 – 2003/2005 | |
|---|---|---|---|---|---|---|
| | **Charter** | **Regular Public** | **Charter** | **Regular Public** | **Charter** | **Regular Public** |
| **Grade 4 Reading** | 212 | 217 | 218 | 220 | 6 | 3 |
| **Grade 8 Reading** | 255 | 260* | 261 | 264 | 6 | 4 |
| **Grade 4 Math** | 228 | 234* | 237 | 240* | 9 | 6 |
| **Grade 8 Math** | 268 | 278* | 281 | 283 | 13 | 5 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

Table 2b. National grade 12 and science results for charter and regular public schools, 2009

| | National 2009 | |
|---|---|---|
| | **Charter** | **Regular Public** |
| **Grade 12 Reading** | 276 | 287* |
| **Grade 12 Math** | 138 | 153* |
| **Grade 4 Science** | 139 | 149* |
| **Grade 8 Science** | 141 | 149* |
| **Grade 12 Science** | 137 | 149 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

Focusing on the results for large cities (grade 12 data are not available), tables **2c and 2d** show that:

- Average NAEP scores for charter and regular public schools in large cities generally similar, both in the base year and 2011. The only significant difference was in grade 4 math in 2003, in favor of regular public schools. By 2011, that difference disappeared.

- Both charter and regular schools showed growth over the years in all subjects/grades analyzed.

Table 2c. Large city NAEP achievement in charter and regular public schools, for earliest year in which charter school data are available and 2011

| | **Large Cities 2003 (grade 4) or 2005 (grade 8)** | | **Large Cities 2011** | | **Change 2011 – 2003/2005** | |
|---|---|---|---|---|---|---|
| | **Charter** | **Regular Public** | **Charter** | **Regular Public** | **Charter** | **Regular Public** |
| **Grade 4 Reading** | 201 | 204 | 210 | 211 | 9 | 7 |
| **Grade 8 Reading** | 251 | 250 | 254 | 255 | 3 | 5 |
| **Grade 4 Math** | 216 | 224* | 232 | 233 | 16 | 9 |
| **Grade 8 Math** | 264 | 265 | 275 | 274 | 11 | 9 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

Table 2d. Large city NAEP science results, 2009

| | **Large Cities 2009** | |
|---|---|---|
| | **Charter** | **Regular Public** |
| **Grade 4 Science** | 130 | 135 |
| **Grade 8 Science** | 132 | 134 |

## Achievement by Subgroup

Up to this point, results have been in favor of regular public schools. But as discussed in part I of this report, the populations of students who attend charter and regular public schools differ. Therefore, it is important, when comparing achievement across these two types of schools, to compare like groups to one another. Then one can address question such as: In large cities, are low-income students who attend charter schools performing better than their low-income peers in regular public schools?

**Tables 2e and 2f** display achievement broken down by subgroup for reading and math in grades 4 and 8, the subjects/grades with the most complete data. The main findings for subgroups at the national level are:

- In several subject/grade combinations, a subgroup performed significantly better in regular public schools in 2003/05; but by 2011 that subgroup performed similarly in both charter and regular schools. This was true of low-income students in grade 4 reading and math; and black students and students with disabilities in grade 8 math.

- Hispanic students used to perform similarly in charter and regular schools in 2003/05; but in 2011 they performed significantly better in grade 4 reading and grades 4 and 8 math in charter schools. The same pattern emerged for ELLs in grade 4 reading.

- Asian students were the one subgroup that performed significantly better in regular public schools in 2011, in grades 4 and 8 math.

- In both charter and regular schools, almost all subgroups showed growth in scores from 2003/05 to 2011, in all subject/grade combinations.

Table 2e. National subgroup achievement in charter and regular public schools, for earliest year in which charter school data are available and 2011

| | National 2003 (grade 4) 2005 (grade 8) | | National 2011 | | Change 2011 – 2003/2005 | |
|---|---|---|---|---|---|---|
| | **Charter** | **Regular Public** | **Charter** | **Regular Public** | **Charter** | **Regular Public** |
| **Grade 4 Reading** | | | | | | |
| White | 227 | 227 | 232 | 230 | 5 | 3 |
| Black | 195 | 197 | 206 | 205 | 9 | 8 |
| Hispanic | 201 | 199 | 212* | 205 | 11 | 6 |
| Asian/Pacific Islander | 224 | 225 | 226 | 234 | 2 | 9 |
| Students with disabilities | 180 | 184 | 184 | 186 | 4 | 2 |
| English language learners | 183 | 186 | 195* | 188 | 12 | 2 |
| Low-income (free/reduced lunch) | 195 | 201* | 208 | 207 | 13 | 6 |
| **Grade 8 Reading** | | | | | | |
| White | 271 | 269 | 274 | 272 | 3 | 3 |
| Black | 239 | 242 | 251 | 247 | 12 | 5 |
| Hispanic | 252 | 245 | 255 | 251 | 3 | 6 |
| Asian/Pacific Islander | 268 | 270 | 272 | 275 | 4 | 5 |
| Students with disabilities | 228 | 226 | 235 | 230 | 7 | 4 |
| English language learners | 235 | 224 | 231 | 223 | -4 | -1 |
| Low-income (free/reduced lunch) | 243 | 247 | 253 | 251 | 10 | 4 |
| **Grade 4 Math** | | | | | | |
| White | 242 | 243 | 251 | 249 | 9 | 6 |
| Black | 214 | 216 | 224 | 224 | 10 | 8 |
| Hispanic | 219 | 221 | 234* | 229 | 15 | 8 |
| Asian/Pacific Islander | 248 | 246 | 243 | 256* | -5 | 10 |
| Students with disabilities | 209 | 214 | 218 | 218 | 5 | 4 |
| English language learners | 211 | 214 | 222 | 219 | 11 | 5 |
| Low-income (free/reduced lunch) | 216 | 222* | 229 | 229 | 13 | 7 |
| **Grade 8 Math** | | | | | | |
| White | 284 | 288 | 296 | 293 | 12 | 5 |
| Black | 248 | 254* | 266 | 262 | 18 | 8 |
| Hispanic | 270 | 261 | 277* | 269 | 7 | 8 |
| Asian/Pacific Islander | 287 | 295 | 287 | 303* | 0 | 8 |
| Students with disabilities | 235 | 244* | 254 | 249 | 19 | 5 |
| English language learners | 251 | 244 | 254 | 243 | 3 | -1 |
| Low-income (free/reduced lunch) | 255 | 262 | 271 | 269 | 16 | 7 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

The findings tend to favor charter schools the more we focus in on large cities and subgroups within the large cities. The main findings from **Table 2f** are:

- In 2011, the Hispanic subgroup performed significantly higher in charter schools than in regular schools. This was true in grade 4 reading, and in grades 4 and 8 math.

- Black students in large cities performed similarly in charter and regular schools in the base year of our analysis (2003/05). But in 2011, achievement for black students was significantly higher in charter schools in grade 8 reading and grade 4 math.

    - A similar pattern was found for the black-low-income subgroup. In 2011, achievement for this group was significantly higher in charter schools in grade 8 reading, and grades 4 and 8 math. The black low-income group in charter schools showed a striking increase in scores between 2003/05 and 2011.

    - The only significant findings in favor of regular schools in 2011 were for the Asian subgroup (grade 4 math) and the white subgroups (grade 4 reading).

Table 2f. Large city subgroup achievement in charter and regular public schools, for earliest year in which charter school data are available and 2011

| | Large Cities 2003 (gr 4) and 2005 (gr 8) | | Large Cities 2011 | | Change 2011 – 2003/2005 | |
|---|---|---|---|---|---|---|
| | **Charter** | **Regular** | **Charter** | **Regular** | **Charter** | **Regular** |
| **Grade 4 Reading** | | | | | | |
| White | 220 | 226 | 225 | 233* | 5 | 7 |
| Black | 193 | 193 | 206 | 201 | 13 | 8 |
| Hispanic | 202 | 197 | 210* | 203 | 8 | 6 |
| Asian/Pacific Islander | ‡ | 223 | 211 | 225 | ‡ | 2 |
| Students with disabilities | 175 | 175 | 177 | 177 | 2 | 2 |
| English language learners | 181 | 184 | 189 | 187 | 8 | 3 |
| Low-income (free/reduced lunch) | 192 | 197 | 205 | 203 | 13 | 6 |
| Black low-income | 189 | 191 | 203 | 199 | 14 | 8 |
| **Grade 8 Reading** | | | | | | |
| White | 269 | 270 | 273 | 273 | 4 | 3 |
| Black | 241 | 239 | 250* | 244 | 9 | 5 |
| Hispanic | 253 | 243 | 251 | 248 | -2 | 5 |
| Asian/Pacific Islander | ‡ | 266 | 269 | 270 | ‡ | 4 |
| Students with disabilities | 223 | 213 | 226 | 221 | 3 | 8 |
| English language learners | 239 | 220 | 227* | 219 | -12 | -1 |
| Low-income (free/reduced lunch) | 243 | 243 | 250 | 248 | 7 | 5 |
| Black low-income | 233 | 237 | 250* | 242 | 17 | 5 |
| **Grade 4 Math** | | | | | | |
| White | 230 | 243* | 249 | 251 | 19 | 8 |
| Black | 210 | 212 | 227* | 221 | 17 | 9 |
| Hispanic | 217 | 219 | 232* | 228 | 15 | 9 |
| Asian/Pacific Islander | ‡ | 246 | 231 | 249* | ‡ | 3 |
| Students with disabilities | 199 | 204 | 205 | 210 | 6 | 6 |
| English language learners | 209 | 211 | 219 | 219 | 10 | 8 |
| Low-income (free/reduced lunch) | 212 | 217* | 228 | 227 | 6 | 10 |
| Black low-income | 207 | 210 | 225* | 219 | 18 | 9 |
| **Grade 8 Math** | | | | | | |
| White | 286 | 288 | 292 | 295 | 6 | 7 |
| Black | 250 | 250 | 267 | 260 | 17 | 10 |
| Hispanic | 272 | 258 | 278* | 267 | 6 | 9 |
| Asian/Pacific Islander | 295 | 289 | 281 | 297 | -6 | 8 |
| Students with disabilities | 233 | 230 | 247 | 238 | 14 | 8 |
| English language learners | 250* | 238 | 256 | 239 | 6 | 1 |
| Low-income | 256 | 256 | 272* | 265 | 16 | 9 |
| Black low-income | 244 | 246 | 265* | 257 | 21 | 11 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

## Achievement for Selected Urban Districts

NAEP reports results for a number of large school districts, referred to as the Trial Urban District Assessment (TUDA). Due to a policy change in 2009, charter schools within the geographic boundaries of an urban district, but operated independently of the district and not included in the district's Adequate Yearly Progress (AYP) report under NCLB, are no longer included in the NAEP results for TUDA districts. School districts vary in terms of whether the charter schools within their boundaries are included in the district's AYP results.

**Table 2g** presents results for several districts with charter school data available. Results are shown for all students and the low-income subgroup. Other subgroups (e.g., black, Hispanic) are not included because samples were not large enough to meet NAEP reporting standards.

The findings are:

- Within the four cities analyzed, the pattern is clear that students in charter schools significantly outperform their peers in regular public schools.

- There was no subject/grade in any of the cities analyzed where regular schools scored significantly higher than charter schools.

Why do charter schools underperform regular public schools nationally, but outperform them in large cities? At the national level, NAEP results for regular public schools include a wide range of schools, including many high-performing suburban schools in high-income communities. If the purpose is to compare charter and regular schools, the fairest way is to compare them within similar locations. As noted above, charter school enrollment is most concentrated in large cities: 6% of large city grade 4 students and 8% of large city grade 8 students attend charter schools, compared to 3% at each grade nationally. Making comparisons within large cities increases the likelihood that regular and charter schools are serving similar populations of students.

Table 2g. For selected urban districts, NAEP 2011 subgroup achievement in charter schools (CH) and regular public schools (RP)

| | DC | | Atlanta | | Chicago | | Milwaukee | |
|---|---|---|---|---|---|---|---|---|
| | CH | RP | CH | RP | CH | RP | CH | RP |
| **Grade 4 Reading** | | | | | | | | |
| All students | 200 | 201 | 216 | 211 | 214* | 202 | 214* | 193 |
| Low-income (free/reduced lunch) | 195* | 188 | 207 | 200 | 213* | 199 | 208* | 188 |
| **Grade 8 Reading** | | | | | | | | |
| All students | 249* | 237 | 264* | 252 | 254 | 253 | 237 | 238 |
| Low-income (free/reduced lunch) | 245* | 228 | 262* | 246 | 257* | 249 | 234 | 234 |
| **Grade 4 Math** | | | | | | | | |
| All students | 222 | 222 | 233* | 228 | 235* | 223 | 233* | 218 |
| Low-income (free/reduced lunch) | 218* | 211 | 223 | 218 | 234* | 220 | 228* | 215 |
| **Grade 8 Math** | | | | | | | | |
| All students | 267* | 255 | 274* | 265 | 269 | 270 | 257 | 254 |
| Low-income (free/reduced lunch) | 262* | 246 | 270* | 259 | 270 | 267 | 255 | 250 |

*****The difference between charter and regular public schools is statistically significant at .the 05 level.

## III. Other School Factors

In this section we compare charter and regular public schools on several school factors other than student achievement: time spent on core subjects, class size, and teacher qualifications. The NAEP background data also include many questions about instructional content and methods that are more subject-specific and are not addressed in this report.

These analyses were conducted for large cities rather than at the national level because, as demonstrated in earlier parts of this report, that is where the majority of charter schools are located and it is more meaningful to compare charter and regular schools serving similar populations of students in similar locations. We do not present results for particular school districts, as we did in part II, because of insufficient data at the district level.

### Time Spent on Core Subjects

Do charter and regular schools located in large cities differ in the amount of time that they spend on core subjects? **Table 3a** displays the 2011 results for large cities:

- A significantly higher percentage of regular school teachers reported spending less than five hours a week on grade 8 language arts. Overall, it appears that charter school students are getting more instruction in grade 8 language arts.

- A significantly higher percentage of regular school teachers reported spending 5-7 hours a week on grade 4 math. A higher percentage of regular school than charter school teachers reported spending more than 7 hours a week in that subject but the difference is not significant.

- There is suggestive evidence (large differences but not statistically significant) that charter school students are getting more instruction in grade 8 math.

Table 3a. In large cities, percentages of teachers reporting various amounts of time spent per week on language arts and math instruction, 2011

| | **Less than 5 hrs/week** | | **5-6.9 hrs/week** | | **7 or more hrs/week** | |
|---|---|---|---|---|---|---|
| | Charter | Regular Public | Charter | Regular Public | Charter | Regular Public |
| Grade 4 Language Arts | 11 | 11 | 13 | 9 | 76 | 80 |
| Grade 8 Language Arts | 19 | 35* | 47 | 34 | 34 | 30 |
| Grade 4 Math | 13 | 9 | 39 | 52* | 49 | 40 |
| Grade 8 Math | 35 | 46 | 35 | 37 | 30 | 17 |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

## Class Size

The NAEP background questionnaire asks teachers how many students are in the class being assessed. **Table 3b** shows that:

- Class sizes tend to be larger in regular schools than in charter schools. Significantly more regular school teachers reported having more than 26 students in their classes in grade 4 language arts and grade 8 math.

Table 3b. Percentages of teachers in large cities reporting various numbers of students in their classes, 2011

| | 18 or fewer students | | 19-25 students | | 26 or more students | |
|---|---|---|---|---|---|---|
| | Charter | Regular Public | Charter | Regular Public | Charter | Regular Public |
| Grade 4 Language Arts | 24 | 11 | 40 | 42 | 35 | 47* |
| Grade 4 Math | 20 | 12 | 42 | 42 | 38 | 46 |
| Grade 8 Language Arts | 10 | 9 | 40 | 29 | 49 | 62 |
| Grade 8 Math | 12 | 7 | 51 | 32 | 37 | 61* |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

## Teacher Qualifications

**Table 3c** presents findings regarding the qualifications of math teachers, and table 3d presents findings for English/language arts teachers:

- In large cities, significantly more students in regular public schools have teachers with a major in the subject being taught, whether it is math (grade 4 and 8) or English/language arts (grade 8).

- Significantly more grade 8 students in charter schools are taught by math teachers who entered the teaching profession through an alternate certification program.

- Significantly more students in regular public schools have teachers with more than 10 years of teaching experience than those in charter schools. Significantly more charter school students are taught by teachers with less than 4 years of teaching experience. This is true at grades 4 and 8, for both math and reading.

Table 3c. Percentages of students in large cities whose teachers have various qualifications, based on NAEP **math** teacher questionnaire, 2011

| | Grade 4 Math | | Grade 8 Math | |
|---|---|---|---|---|
| | **Charter** | **Regular Public** | **Charter** | **Regular Public** |
| Alternate certification program | 18 | 18 | 47* | 30 |
| Certified by NBPTS | 12 | 13 | 10 | 11 |
| Major in math | 4 | 9* | 16 | 21* |
| Major in math education | 16 | 21 | 13 | 17 |
| Years taught | | | | |
| 0-4 years | 40* | 16 | 43* | 19 |
| 5-9 years | 30 | 28 | 31 | 30 |
| 10-19 years | 23 | 36* | 21 | 33* |
| 20+ years | 7 | 20* | 5 | 18* |

*The difference between charter schools and regular public schools is statistically significant at the .05 level.

Table 3d. Percentages of students in large cities whose teachers have various qualifications, based on NAEP **reading** teacher questionnaire, 2011

| | Grade 4 Reading | | Grade 8 Reading | |
|---|---|---|---|---|
| | **Charter** | **Regular Public** | **Charter** | **Regular Public** |
| Alternate certification program | 23 | 16 | 26 | 25 |
| Certified by NBPTS | 12 | 13 | 10 | 15 |
| Major in English | 6 | 6 | 39 | 45 |
| Major in reading language arts | 5 | 6 | 10 | 20* |
| Years taught | | | | |
| 0-4 years | 37* | 16 | 43* | 18 |
| 5-9 years | 35 | 26 | 36 | 27 |
| 10-19 years | 21 | 37* | 13 | 35* |
| 20+ years | 7 | 21* | 9 | 20* |

*****The difference between charter schools and regular public schools is statistically significant at the .05 level.

## IV. Strengthening the NAEP Data and the *Data Explorer*

One of the purposes of this exploratory study was to identify ways that the NAEP background data could be made more useful. So in this final section, we offer some suggestions based on our experience using the NAEP data, not only on this project, but in our past research.

The main way that researchers access the NAEP data are through the online *NAEP Data Explorer*. It is a powerful tool and, with practice, researchers can conduct a wide variety of analyses. However, the interface is not as user-friendly as it could be. Many of the actions necessary to conduct certain analyses are not intuitive, and it is only after trial-and-error (or with the help of a more-experienced colleague) that one discovers how to retrieve the data or carry-out the desired analyses. It would be worthwhile to take the steps necessary to refine the Data Explorer, so that research projects could be conducted as intuitively and efficiently as possible. Perhaps this could be done by gathering some experienced users of the Data Explorer together with programmers who develop the website, to have a brainstorming session on ways to improve the interface. We are starting out with a good tool, so there is no need to reinvent it—simply to refine it and work through some of the kinks that exist.

One major difficulty for the user is sorting through the hundreds of background variables listed in the Data Explorer to find the few of interest. The majority of background questions listed in the Data Explorer were asked in earlier years but are no longer asked. So the researcher must scroll through hundreds of variables which are no longer relevant or for which data are no longer available. It would be helpful if, once the researcher checks the years of interest, only those variables available for that year (or years) show up on the screen.

The background variables are also not organized as well as they could be. The responses from the school, teacher, and student-level questionnaires are often mixed together. If one is interested in time spent on instruction in a certain subject, it is necessary to scroll through dozens of variables to find that question, unless one happens to know that it is under the heading of "Instructional Content and Practice" and then under the subheading "Classroom Management" (not at all intuitive). One option might be to add a search bar to the program, so that the user could type in a key word and find relevant variables that way.

We realize that NCES regularly reviews the background variables, but it still seems that there is some redundancy and areas where useful information is missing. Some questions may be out of date, such as whether a student has a set of encyclopedias at home. Other background variables seem overly detailed, such as some of those in the area of teacher professional development. There are also old questions that could be reinstated, such as those regarding school climate—school safety, parent involvement, gang activity, discipline—that are still clearly relevant and of interest to education stakeholders.

Finally, we ran into a specific problem when trying to research charter schools, related to the TUDA data. Due to a policy change in 2009, charter schools within the geographic boundaries of an urban district, but operated independently of the district and not included in the district's AYP report under NCLB, are no longer included in the NAEP results for TUDA districts. School districts vary in terms of whether the charter schools within their boundaries are included in the

district's AYP results. While we understand why districts would not want charter schools included in their results, it makes it impossible to compare charter and non-charter performance within most major cities where large numbers of charter schools are located. In this study we found a clear pattern of charter schools outperforming regular schools in the four cities that had sufficient data. It would be desirable to find a way to include an option for including non-district-governed charter schools in an urban district's results, solely for research purposes (not for general TUDA reporting). After all, charter schools are likely to continue to grow in importance and be the focus of research. These schools are serving ever-larger numbers and percentages of students—particularly minority and low income students—and the large urban districts are where they should be studied.

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