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The Nation's Charter Report Card: A New Ranking of States by Charter Student Performance

Paul E. Peterson  and M. Danish Shakeel 

ABSTRACT

Five groups rank state charter school environments according to their laws, regulations, funding, and other characteristics, but none rank states by charter student performances on a national test. We rank states by demographically adjusted math and reading performances of charter students in 4th and 8th grade for the period 2009 to 2019 on the National Assessment of Educational Progress. State positions correlate (0.33) with standings for all public-school students. Overall charter standings correlate with subgroup rankings: Black (0.92), Hispanic (0.77), lower-income (0.95), lower-education (0.92), urban (0.97), non-urban (0.74). Nonprofit schools in networks outperform for-profit and stand-alone schools.

KEYWORDS

achievement; charter schools; equity; ranking; states

Introduction

Forty-six states and the District of Columbia (DC) give designated agencies, known as “authorizers,” the power to approve operation of public schools by nonprofit entities. The authorizers ask operators to sign contracts, known as “charters,” which grant them the authority to run publicly funded schools for a period, ordinarily limited to five years, but which can be extended by renewal. Students choose between charter schools and those operated by districts.


Minnesota enacted the first charter-school law in 1991. For more than a decade, charters were limited in number, with enrollment share reaching only 2% of all public enrollments by 2005. Since then, growth has nearly quadrupled (Wang et al., 2019). In 2022, nearly 7,800 charter schools, with enrollments increasing to approximately 3.7 million students, or 7.5% of all public-school students, were in operation (Sakariassen, 2023; White, 2022).

Research assessments of charter student performance on standardized tests vary widely, depending upon the time and place of the investigation. Some

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studies show negative or no better than null effects (Berends & Waddington, 2018; Han & Keefe, 2020; Slungaard Mumma, 2022). Others find positive impacts, particularly for students living in urban areas, and for students of color and from socioeconomically disadvantaged background (Betts & Tang, 2019; Chen & Harris, 2021; Cheng et al., 2017; Cohodes & Parham, 2021; Harris & Larsen, 2019; Jabbar et al., 2022). Recent research suggests improvement in charter performance over time (CREDO, 2023; Shakeel & Peterson, 2020). As discussed later, CREDO (2023) also finds considerable variation across many states when estimating the performance of charters relative to nearby district schools. However, no study has attempted to measure math and reading performances by state on the same standardized tests administered nationally to representative samples of charter students.

Since each state determines its own charter school laws, regulations, and funding levels, considerable variation in charter school practice and charter student performance across states is to be expected. Five nonprofit agencies have chosen to rank states according to various criteria, such as the perceived quality of their authorizing legislation, the flexibility of their regulatory framework, the adequacy of their funding levels, the charter share of public-school enrollments, and other educationally relevant “inputs.” But a state-by-state ranking of educational outcomes, such as the performances of charter students on the same set of national math and reading tests, has yet to be made available. In this paper, the Program on Education Policy and Governance (PEPG) at Harvard University ranks states by the math and reading performances of charter students in 4th and 8th grade for the period 2009 to 2019 on the National Assessment of Educational Progress (NAEP), a set of standardized tests administered under the auspices of an agency of the U.S. Department of Education. To comply with

Table 1. Individual background characteristics and other variables controlled when estimating adjusted scores on national assessment for educational progress.

Variable
Odd years (2009–2019)
Subject (math, reading)
Grades (4, 8)
Age on February 1 of testing year ^a
Ethnicity (white, Black, Hispanic, Asian American/Pacific Islander, American Indian/Alaska Native, unclassified)
Gender (male, female)
Free- or reduced-lunch eligible (not eligible, reduced-price lunch, free lunch)
Parental education level (did not finish high school (HS), graduated HS, some education after HS, graduated college) ^b
Student classified as English Language Learner (Limited English Proficiency (LEP))
Student classified as having a disability (Individualized Education Plan (IEP))
Books at home (0–10, 11–25, 26–100, >100)
Computer at home ^c
Locale (city, suburb, town, rural)
Charter opening year ^d

Note. ^a Date of birth is estimated as of the 15th day of the birth month. Ages more than two years from the mean weighted national age are recoded to the mean.

^bParental education level is only asked of students in grade 8.

^c2019 asked two questions (Have in home: 1) Desktop/laptop computer you can use; and 2) A tablet that you can use). We combined responses from the two questions as a proxy for computer.

^dData obtained from the National Alliance for Public Charter Schools (NAPCS).

federal privacy requirements, PEPG uses anonymized individual-level data made available to qualified researchers by the U.S. Department of Education and rounds the number of observations to ten. Charter scores are statistically adjusted by individual student background characteristics listed in [Table 1](#). The ranking is for all states for which adequate NAEP information on charter student performance is available.

Why rank student charter performance by state

Our main purpose in ranking states by the performance of their charter students is to focus public and policymaker attention on the provision of high-quality schools – the purpose of charter legislation from its very beginning. Joe Nathan (1989, p. 5), one of those who designed Minnesota’s charter law, said these new governance arrangements were to be “a critical element . . . [for] improving American education [They permit] the freedom educators want and the opportunity students need, while encouraging the dynamism which our public education system desires.” Freed from state regulations, district rules, and, in most cases, from collective bargaining constraints, charter schools have been, from their inception, expected to “serve as laboratories for new educational ideas. Without constraints ordinarily imposed by state laws and school district policies, they may try out new approaches. Those that succeed can be exported to other public schools for broader adoption” (Hassel, 1999, p. 7). Charter schools are also expected to increase competition for students among schools, which “create dynamics that will cause the main-line system to change so as to improve education for all students” (Kolderie, 1993, as quoted in; Hassel, 1999, p. 6).

Our second purpose is to supplement current state rankings of the charter school environment so as to focus attention on outcomes, not simply state policies and procedures. Current rankings are informative, but they do not provide direct information about how much students are learning, which ultimately is the general public’s and policymakers’ primary concern. Although currently available rankings document the variety of environments in which charter schools operate, they do not report student achievement measured by a national test common to public schools across the country.

The importance of ranking states with a common yardstick is best illustrated by the history of NAEP itself. In 1969, the federal government initiated nationwide tests in math and reading, but initially the law precluded the release of information that would enable rankings of student performances across schools, school districts, or states. State and district administrators objected that such information would ascribe differences in student achievement across governmental jurisdictions that could be a function of student family backgrounds. To obtain a consensus for a national testing program, NAEP proponents agreed to policies that limited data collection and reporting

to results for all students nationwide at ages 9, 13, and 17, or for broad categories of students (for example, gender, ethnicity, type of community) that do not correspond to any political jurisdiction. In other words, NAEP was purposefully designed to hide politically sensitive information about specific places even when it was promising to inform the public. Still, NAEP's repeated surveys of student performance on a common test caught public attention, giving it the moniker "the nation's report card."

In 1982, U. S. Secretary of Education Terrence Bell appointed a National Commission on Educational Excellence to assess the state of American education. When the Commission reported a "rising tide of mediocrity" threatening the country's well-being, it spurred bipartisan accountability movements in states as diverse as Arkansas, California, Florida, Massachusetts, North Carolina, and Texas (Peterson, 2010). Subsequently, in 1998, Congress reorganized the governance structure for NAEP, and a National Assessment Governing Board (NAGB) was explicitly assigned the responsibility of providing information on the educational performances of students for each state (Bourque, 2004; Finn, 2022; Shakeel & Peterson, 2022). In 2002, when President George W. Bush signed the No Child Left Behind (NCLB) law, the federal government gave further definition to NAEP's mission by requiring the collection and reporting of the performance of representative samples of students in math, reading, and other subjects in 4th, 8th, and 12th grades for each state.

To ensure representative samples for each state, NAEP currently collects data from over 100,000 individual students on tests administered bi-annually. NAEP informs the public of the ranking of states by the performance of students at public schools in math, reading, and other subjects (Chingos, 2015; Finn, 2022). These state rankings have fostered efforts to enhance student performance in nearly every state (Graham, 2005; Peterson, 2010; Peterson & West, 2003), with Mississippi the most recent instance of an apparently successful campaign to move itself up the performance ladder (Peeetz, 2023). In general, students – especially nonwhite students – have, until recently, registered steady gains in achievement since 1990, when NAEP began releasing state-specific performances (Hashim et al., 2023; Shakeel & Peterson, 2022).

The 1988 federal law that gives NAGB its current mandate predates the enactment of state charter-school legislation. NAEP indicates the sector of the school at which each student is tested in data sets available to qualified researchers. We use this information to identify charter student achievement on NAEP.

We present state rankings in the hope that the information will spur charter-school improvement in much the same way NAEP stimulated efforts to improve achievement more generally. Also, state rankings may generate further research on those factors that affect charter student performance.

Currently, the charter-school conversation includes debates as to whether authorizers should regulate schools closely or allow many, diverse flowers to bloom, whether charters should stand alone or be incorporated into charter school networks, and whether for-profit charters should be permitted. A state ranking of charter student performance will not answer such questions, but it could stimulate conversations and foster research that might do so.

Variation in state charter school policies and practices

Each state has its own distinctive set of charter school laws, policies, and practices. Diversity abounds in the number and type of authorizer, the manner in which authorizers exercise their responsibilities, per-pupil funding levels, and in many other respects.

Authorizer type

Those granted the power to authorize charter schools vary in type and number. At one extreme, three states – Illinois, Maryland, and Virginia – restrict this authority only to school districts, entities that compete with charters for market share. In 29 states the authority is granted to both school districts and other agents. In another 21 states general authority or more specialized authority is given to the state department or state board of education. Four of these states – Arkansas, Connecticut, Massachusetts, and Rhode Island – limit authorizing capacity only to this agency. Sixteen states allow charter authorization by one or more of the state’s higher education institutions either in general or special circumstances. Eighteen states grant the power to an independent state board established for this purpose, and three (Minnesota, Ohio, and Hawaii) enable a nonprofit organization to undertake this function. Seven states grant authorizing authority to a non-educational institution, such as the mayor’s office in a large city.

In most states, authorizing authority is given to more than one type of agent. Indeed, five states (Indiana, Hawaii, Missouri, Ohio, and Oklahoma) allow for four or more different types of agencies to authorize charters either in general or in special cases. Another five states allow authorizations by three different types.

In sum, no one authorizing strategy has become the industry standard. The closest to such a standard is to allow both local districts and one or more additional agents to authorize charters. But even that practice is marked almost as frequently by exceptions as by the rule.

Authorizer responsibilities

State laws typically assign a broad range of responsibilities to authorizers. They typically have the power to grant a charter to an applicant organization, to

monitor the adherence of the school to the expectations stated in its charter, to withdraw the charter if they determine performance is inadequate, and to decide periodically whether the charter is to be renewed. Schools can lose their charters for educational, financial, under-enrollment, or other reasons.

Authorizers vary in the way they exercise their responsibilities. Some (California, Massachusetts, Rhode Island, and California, for example) demand from applicants detailed assessments of need, in-depth information on potential board members, and extensive financial and educational plans. Others (Arizona, Nevada, and Florida) have much less restrictive requirements. Some require a charter for every school site, while others allow multiple campuses to operate under the direction of a single nonprofit board. Some allow boards to contract operations out to a for-profit or nonprofit agent, while others expect each nonprofit to operate its own stand-alone charter school. Most but not all charter schools are expected to hire licensed teachers or to expect them to receive a license within a year or two of employment.

Funding

Financing arrangements for charter schools also range widely. According to the National School Boards Association, charter revenues from state and federal funds are allocated in 28 states according to the same per-pupil formula as used for funds allocated to district schools (National School Boards Association, 2021). But in only nine of these 28 states are charters guaranteed funding from local property taxes and other district sources, an important source of revenue for district schools. Elsewhere, a hodge-podge of different state rules determines the revenue flow. Some states forbid revenues from local sources; in others, revenue varies with the agency authorizing the charter; in still others, the legislature allocates a lump sum to be divided among charter schools.

The National Alliance for Public Charter Schools (NAPCS) has calculated amounts received by charter schools from government entities in 27 states serving about half of all charter students for the period from school year 2006–07 through school year 2018–19 (Xu & White, 2022). The data come from the National Public Education Financial Survey administered by the U.S. Department of Education.¹ NAPCS reports that in these states, charters receive about 20% less revenue per pupil from local, state, and federal sources than the amount received by district schools. The disparity varies widely by state. As compared to school districts, charters had \$5,700 and \$10,000 less government revenue per pupil in Ohio and Connecticut but \$150 and \$5,500 more in Mississippi and South Carolina, respectively. Absolute levels of support also vary. Charters in DC received \$28,000 per pupil in 2019, making them the country's best-funded charter schools. Massachusetts, New Jersey, and South Carolina also fund charters at a relatively high level. Those receiving

the least amount of revenue per pupil are in Oklahoma, Idaho, and Nevada, none of which received as much as \$9,000 per pupil in 2019. Johnson et al. (2023) examined charter-school funding equity in 18 cities in 16 states using 2019–20 data. They found charter schools receive about 30%, or \$7,147 (2020 dollars), less funding per pupil than traditional public schools. Charters, like districts, receive grants and contributions from private donors and foundations, which are often used to fund start-up costs and capital expenditures, but charter revenue comes mainly from federal, state, or local government sources.

Enrollment share

Charter usage among the states also has a broad range. In DC, a majority of students attend charter schools. The share attending charters reaches 12% in Arizona, Florida, and California; 8% in Texas; and 7% in New York (White, 2022). At the other extreme, the number of charter students in 10 states is too small to obtain a precise estimate of student performances on NAEP tests, and five states do not have any charter students at all.

Management type

NAPCS classifies charter operators into three categories: free-standing, stand-alone schools, Charter Management Organizations (CMOs), and Education Management Organizations (EMOs). The first is the classic, independent charter school led by small teams of entrepreneurs, who are one of the thousand flowers expected to bloom – some to flourish, others to fade. According to NAPCS, the free-standing charter remained the dominant type of operator through the 2009–2019 period, with 55% of all NAEP-tested charter students attending this type of school.²

CMOs are defined as charter networks consisting of three or more schools. Some CMOs were formed by operators who expanded operations beyond their initial school either on their own initiative or at the instigation of donors and foundations seeking the expansion of what they perceived to be a successful school. Other CMOs were planned as a multi-school operation from the beginning. CMOs are responsible for many well-known charter school systems such as Achievement First, Aspire, BASIS, KIPP, Success for All, and Summit. Among charter students tested by NAEP, 23% were attending CMOs.

EMO charters contract educational operations to a for-profit vendor. Some of these services relate to management, back-office support, assistance with staffing, and hosting web platforms. Due to their for-profit IRS designation, EMOs are prohibited from receiving federal funds for charter school programs. EMOs are often larger than CMOs.

Schools that are part of an EMO network, serving 22% of all NAEP-tested students, are arguably the most controversial component of the charter sector.

Diane Ravitch, a progressive charter critic, argues that “our schools will not improve if we expect them to act like private, profit-seeking enterprises. Schools are not businesses; they are a public good” (2010, p. 227). In 2020, the Democratic Party platform proposed “a ban on charter schools run by for-profit entities” (Ujifusa, 2020).

Charter specialization

Many charter schools declare a special focus or mission. From 7,534 charter websites, White and Huang (2022) extract information indicating whether a charter has a particular curricular, pedagogical, or clientele focus. They find that 35% of schools, serving 34% of students, do not report any curricular specialization. But the remaining two-thirds offer one or more of a potpourri of options, including STEM (Science, Technology, Engineering and Math), art, language immersion, classical education, career and technical education, the international baccalaureate, and others. With regard to pedagogical approach, nearly 60% of charters do not indicate anything specific, but the rest identify themselves as offering options such as personal learning, high expectations, project learning, homeschool instruction, dual college, blended learning, hybrid instruction, or some other distinctive approach. A particular clientele is not mentioned by more than 90% of the charters, but the remainder imply a definite constituency by saying they are alternative schools, diverse-by-design schools, single-sex schools, or a school that serves drop-outs or another segment of the population. Websites may list multiple focal points across or within the three categories. Charter schools, judged by their website presentations, live up to their reputation as education laboratories.

Existing state rankings of charter schools and school choice programs

Five nonprofit interest groups with a strong interest in charters and school choice policy rank states by consistency with specific policy objectives: National Alliance for Public Charter Schools (NAPCS), Center for Education Reform (CER), EdChoice, Heritage, and Education Freedom Institute (EFI).

National Alliance for Public Charter Schools (NAPCS)

NAPCS, a broad-based, pro-charter advocacy group, ranks states according to the transparency of their charter-authorizing policies and overall support for the charter sector (Ziebarth, 2022). The multiple factors that comprise the group’s index include the following: transparency of the state’s application and review processes, performance-based contracts, comprehensiveness of authorizer monitoring of charters and data collection processes, clarity of renewal

processes, equitable funding levels vis-à-vis district schools, absence of limits on the numbers of schools and students, presence of authorizers other than school districts, authorizer accountability, autonomy of schools and their boards, exemption from collective bargaining agreements and other rules and regulations, and permission to operate full-time virtual charters (Ziebarth, 2022, pp. 4–5).

Center for Education Reform (CER)

The Center for Education Reform (CER) says it ranks states according to the following principles:

Charter school success depends on the policy environments Some state laws and regulations encourage diversity and innovation in the charter sector by providing multiple authorizers to support charter schools and allowing charters real operational autonomy Too many states, however, hamper charter schools with weak laws and needless regulations Overregulation and underfunding force charters to behave as district schools by another name. (Center for Education Reform, 2022)

Consistent with this view, CER ranks states by such considerations as the number of authorizers, authorizer independence from local and state governments, openness to charter expansion, charter autonomy, freedom to innovate, ability to recruit teachers free of licensing restrictions, and equity of funding vis-à-vis district schools.

EdChoice

EdChoice, originally named the Milton and Rose D. Friedman Foundation, advocates for an educational system that gives families the ability to choose whatever school, public or private, they prefer. EdChoice used the term Educational Choice Share to rank states based on the proportion of K–12 students in a state enrolled in an education savings account (ESA), school voucher, tax-credit ESA, or tax-credit scholarship program. For states that do not have such programs, the ranking is based on the share of students outside of a traditional public school (Catt, 2020).

Heritage foundation

Heritage takes positions on a broad range of education policies. It takes the view that “parent choice in education is a necessary, but insufficient, solution for families who want to help their children succeed in school and in life.” Its Education Freedom Index combines scores from four sub-indices labeled as follows: 1) school choice, 2) regulatory freedom, 3) transparency, and 4) spending (Heritage, 2022). The school choice subindex consists of various

measures of private-school choice, charter-school availability, homeschooling, and public-school choice. The regulatory subindex measures flexibility of teacher licensing laws, nonuse of Common Core tests, and scarcity of diversity officials. The transparency subindex is based upon information about parent access to school information, parent participation in board meetings, and the timing of school board elections. The spending subindex includes measures of per-pupil expenditure, the association between per-pupil expenditures and student achievement on NAEP, the teacher-to-non-teacher ratio, and the size of the state's unfunded teacher pension liabilities.

Education Freedom Institute (EFI)

EFI, a pro-choice, nonprofit think tank, “exists to research, document and report the benefits” of school choice by “using objective data” (Education Freedom Institute, 2021). Consistent with this mission, EFI ranked states for their charter-school ecosystems based on accessibility and academic performance (Scafidi & Wearne, 2021). The EFI index relies on charter share of state public-school enrollments in 2018–19, percentage of public-school students living in zip codes with a charter school, and increase in charter enrollment share over the prior year. In addition, two performance indicators make use of state tests assembled by the Stanford Education Data Archive (SEDA) (Reardon et al., 2021): student growth (change in performance in grades 4 through 8 from level attained in prior grade in previous year for period 2010–18); cohort change (change in average performance of cohorts of students in these grades from prior year for the period 2010–18). Use of the SEDA data to rank states by charter student performance has important limitations. (See discussion in Appendix.)

Relationships among existing state indexes

Most of the indicators used by these five ranking agencies measure policy inputs rather than educational outcomes – with the exception of the EFI index, which relies on two measures from SEDA. Otherwise, they focus on state laws, choice share of enrollments, state regulations, authorizing policies and practices, fiscal policies, and other similar factors that affect charter operations.³ In [Table 2](#) we show the relationship among the summary indices of each of the five agencies, the Heritage school-choice subindex, and the two indices by EFI that measure achievement on state tests.

None of the relationships in [Table 2](#) come close to showing a perfect correlation with one another.⁴ On the contrary, the average relationship across all interest group indexes is modest (coeff. = 0.16), which implies little consensus as to what is the best charter-school policy. More to the point of this

Table 2. Intercorrelations of state rankings by interest group indices of state charter and school-choice policies and by PEPG charter student performance.

Ranking organization	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NAPCS (1)	1.00								
CER (2)	0.68	1.00							
EdChoice (3)	0.11	0.07	1.00						
Heritage (4)	0.40	0.45	-0.03	1.00					
Heritage (school choice) (5)	0.32	0.47	-0.15	0.72	1.00				
EFI (6)	0.14	0.08	0.24	0.19	0.17	1.00			
EFI (student growth) (7)	0.11	0.11	0.05	0.07	0.32	0.69	1.00		
EFI (cohort change) (8)	-0.23	-0.04	-0.14	0.05	0.06	0.62	0.28	1.00	
PEPG (9)	0.19	0.06	-0.19	-0.06	-0.08	0.00	0.19	-0.03	1.00

Note. Source of rankings: NAPCS (Ziebarth, 2022, p. 3), Center for Education Reform (2022), EdChoice (Catt & Swaminathan, 2023), Heritage (2022), EFI (Scafidi & Wearne, 2021, p. 33). PEPG ranks are shown in Table 4.

paper, none of the indices rank states by the performance of their charter students on the same set of nationally administered tests.

NAEP data and measurement issues

To provide such a ranking, PEPG orders states according to charter student performances on NAEP tests administered to representative samples of tested 4th and 8th grade students between 2009 and 2019.⁵ States are ranked according to average test scores adjusted for demographic characteristics of the test-takers. (Table A2 ranks states by charter-school performances unadjusted for background characteristics.) In addition, PEPG orders state performances of subgroups of charter students, defined by gender, race and ethnicity, household income, parental education, and location of charter school.

Twenty-four NAEP tests in reading and math were administered to probability samples of students in 4th and 8th grade between 2009 and 2019 (Table A1).⁶ The number of NAEP observations on any one test is insufficient to estimate state averages precisely, so we use grade and subject fixed effects to estimate mean charter performances in 35 states and DC for all NAEP tests over the period. Inasmuch as tests are psychometrically linked across grade levels and from one administration of the test to the next, tests in each subject may be placed on a common scale. We include year fixed effects to adjust for any change in average student performance nationwide due to shifts in test design or in charter student performance from one test to the next.

To obtain a representative sample for each state, each survey wave includes over 100,000 observations of public-school students in both district and charter sectors (Chingos, 2015; Jones & Olkin, 2004; Mosher, 2004; Mullis, 2004; Shakeel & Peterson, 2022). The number of tested charter students varies between 3,630 and 7,990 per test, depending on the subject, grade, and testing year (Table A1). The number of test observations varies from as few as 20 in Alabama to as many as 19,210 in DC

NAEP obtains a representative sample of students for each state from schools with students from varying demographic backgrounds. Survey weights make use of demographic characteristics to make results representative of the true underlying population. The number of charter students included in NAEP results is not affected by the size of the school-age population in a state, but it is affected by the charter share of total public-school enrollments. We combine observations from 24 surveys over an 11-year time span. The sampling frame is drawn separately for each survey, reducing the chances that sampling frame is driving results. Any unrepresentativeness of charter schools occurring in a particular survey does not unduly affect the results if it is offset by sampling frames in the other surveys. Although systematic bias could occur, that would require repetitive biases across numerous samples. If only a few observations of charter test scores are to be found in the pooled sample, it is excluded from the rankings. Specifically, estimates are excluded if their standard error exceeds a 0.099 threshold. Five states did not have charter schools (Nebraska, North Dakota, Montana, South Dakota, and Vermont) during this period, and ten had too few NAEP-tested students to permit precise estimation of the state's standing (Alabama, Iowa, Kansas, Kentucky, Maine, Mississippi, Washington, Virginia, West Virginia, and Wyoming).

PEPG ranks states by adjusted charter student performances, which control for the demographic characteristics listed in [Table 1](#). As Chingos (2015, pp. 4–5) observes when constructing a similar ranking of public schools by achievement on NAEP tests, “The statistical adjustment for student demographics . . . means that states are judged by how well their students do relative to students with similar characteristics across the country.”

To include all observations in the regressions, we employ dummy variable adjustment for the missing data for these key background characteristics: parents' education, limited English proficiency, disabled, Free and Reduced Lunch (FRL), books at home, and computer at home.⁷ We proxy the starting year of a charter school, which is unspecified for about 32% of the observations, from the first year students at school are tested. Parents' education is not asked of 4th grade students, who are excluded from the PEPG rankings by parental education.

NAEP data do not permit value-added or growth measurements of student performance, which others have used to estimate changes in student performance from one grade to the next (Chetty et al., 2014a, 2014b; Goldhaber, 2015; Koedel et al., 2012). Although growth measurements are sometimes used to evaluate teacher or principal performance (Chetty et al., 2014a, 2014b; Cullen et al., 2021; Goldhaber, 2015), NAEP cannot be used for that purpose, as students are never purposefully tested twice and the tests themselves are administered only to 4th and 8th graders. One cannot assume that a cohort in 8th grade is identical to one tested four years previously in 4th grade. Shifts between charter and district schools and

migration across state lines undermine the validity of any such assumption. Instead, we measure performance levels but adjust for observable background characteristics.

One cannot extrapolate from student performances in math and reading to performances in other subjects, such as science, civics, or social studies (Arold & Shakeel, 2023). Nor do these data contain information about charter students' character, grit, mind-set, social engagement, emotional well-being, or physical fitness (Jackson, 2018). Some argue that standardized tests do not even provide reliable or valid information about student capacities in the subjects being tested (Jacob & Levitt, 2003; Koretz, 2017). That can be true for any given individual. A student's test performance may fluctuate with testing conditions, physical health, or stress experienced when taking a test. But random fluctuations among individual performances typically cancel one another out, making test results increasingly reliable and predictive as the number of observations increases. By combining results from 24 tests over an 11-year period, the chances of obtaining reliable results are greatly enhanced.

One indicator of the validity of standardized tests for large groups is the degree to which they predict future life outcomes. Research shows that scores on standardized tests predict high-school graduation rates, college attendance, college graduation, earnings as an adult, the chances of teenage pregnancy, the likelihood of incarceration, and other outcomes (Altonji & Mansfield, 2011; Chetty et al., 2014a, 2014b; Dynarski et al., 2013; Goldhaber & Özek, 2019; Hanushek, 2009; Heckman et al., 2006; Jackson et al., 2016; Murnane et al., 2000). Also, test-score performances in 8th grade are strong predictors of a country's economic growth rate (Hanushek & Woessmann, 2008, 2012). If standardized tests are meaningless, they would not predict these future outcomes.

The use of standardized tests to assess the performances of teachers, principals, or district leaders is a valid concern when they are high-stakes exams – that is, when either the student or those in charge of administering the test are to be judged by the results (Koretz, 2017). Test results can be skewed by excessive test-preparation, feeding students nutritious breakfasts on test day, discouraging low-performing students from taking the test, and helping students with the answers (Jacob & Levitt, 2003).

In the case of NAEP, such efforts to skew test scores are minimized, as these tests are a quintessential example of a low-stakes test. NAEP tests are never used to evaluate the performance of any individual, whether student, teacher, or administrator. They pose questions to only representative samples of students, not entire classrooms or schools. To further ensure anonymity, no test-taker answers more than a fifth of the questions on the test. Results are not released by government agencies for individuals, classrooms, teachers, schools, school districts, nor for charter schools. Given all these precautions, NAEP results are unlikely to be deliberately pushed in one direction or another.

In each state, NAEP draws representative samples of all public-school students from both the district and charter sectors. However, it does not stratify data collection by sector. To obtain an estimate of charter performances, we assume that when the number of observations of test performance is sufficiently large to provide precise estimates, the sampling design need not be stratified by sector to obtain representative samples of either charter or district students.

Shown in [Table 3](#) is the weighted distribution of students by various background percentages. The weighted sample is evenly divided by

Table 3. Unweighted and weighted distributions of student background characteristics and number of observations for each characteristic.

Category	Unweighted	Weighted	N
<i>Ethnicity</i>			
White	0.287	0.315	41,820
Black	0.390	0.300	56,890
Hispanic	0.243	0.311	35,360
Asian	0.048	0.043	6,980
Native American	0.010	0.006	1,420
Unclassified	0.022	0.024	3,280
<i>Gender</i>			
Male	0.494	0.495	71,920
Female	0.506	0.505	73,810
<i>Free and Reduced Lunch status</i>			
Free lunch	0.536	0.519	78,140
Reduced-price lunch	0.049	0.059	7,090
Not eligible	0.381	0.380	55,480
Missing	0.034	0.042	5,030
<i>Parent's education level</i>			
Did not finish High School (HS)	0.064	0.074	4,780
Graduated HS	0.147	0.145	10,920
Some ed after HS	0.151	0.151	11,250
Graduated college	0.444	0.452	33,030
Missing	0.194	0.178	14,470
<i>Locale</i>			
City	0.643	0.555	93,740
Suburb	0.216	0.299	31,540
Town	0.047	0.050	6,790
Rural	0.094	0.096	13,660
<i>English language learner</i>			
Yes	0.077	0.093	11,180
No	0.923	0.907	134,520
Missing	0.000	0.000	30
<i>Student disability</i>			
Yes	0.119	0.118	17,280
No	0.881	0.882	128,430
Missing	0.000	0.000	20
<i>Books in home</i>			
0–10	0.136	0.143	19,780
11–25	0.229	0.230	33,410
26–100	0.306	0.317	44,590
>100	0.255	0.259	37,100
Missing	0.074	0.050	10,850
<i>Computer in home</i>			
Yes	0.726	0.723	105,860
No	0.194	0.220	28,290
Missing	0.079	0.057	11,580

Note: Table displays unweighted and weighted distribution across demographic categories in the NAEP charter sample. Parents' education is not collected at grade 4.

gender. The distribution by race and ethnicity is 32% white, 30% Black, 31% Hispanic, and 4% Asian and Pacific Islanders. Fifty-eight percent of NAEP test-takers are deemed eligible for free or reduced lunch, 38% are not, and information is missing for 4%. Thirty-seven percent of 8th-grade test-takers say they their parent does not have a college degree, 45% say that at least one parent completed college, and information is missing for 18% of test-takers. Fifty-six percent were tested at a charter school located in a city, 30% in a suburb, 5% in a small town, and 10% in a rural area.

Empirical strategy

We standardize achievement within each grade, subject, and year combination. Equation (1) estimates unadjusted charter student performances (for results, see Table A2), and equation (2) estimates adjusted charter student performance by state, relative to others:

$$achievement_{is} = \beta_0 + \beta_s State_s + g_i + y_i + t_i + \varepsilon_{is} \quad (1)$$

$$achievement_{is} = \beta_0 + \beta_s State_s + g_i + y_i + t_i + X_i' \gamma + c_i + \varepsilon_{is} \quad (2)$$

for student i in state s . g_i , y_i , and t_i represent grade, year, and subject fixed effects. c_i represents charter school's opening year. X_i are student-level controls listed in Table 1.⁸ Equation (2) is also used to estimate subgroup performances.

We use equation (3) to analyze the association between charter school characteristics (such as management type, authorizer type, charter specialization, and whether charters operate in a state having collective bargaining laws) and achievement at the national level:

$$achievement_{i} = \beta_0 + \beta_k char_k + g_i + y_i + t_i + X_i' \gamma + c_i + \varepsilon_{is} \quad (3)$$

where $char$ represents the charter characteristic analyzed. For the analysis of management type and authorizer type, $char$ is categorical, whereas for charter specialization it is continuous. For collective bargaining, $char$ incorporates state-level identification, and standard errors are clustered at the state level.

Ranking states by charter student performance

To place all tests on a common scale, average scores for each state are reported in standard deviations (sd) that indicate with a plus or minus sign the distance of the state score from the average score for all charter students over the period. Average 4th- and 8th-grade achievement on NAEP between 2005 and

2017 differs by 1.23sd, which implies that 0.31sd is equivalent to one year's worth of learning (see Shakeel & Peterson, 2020, pp. 612–13). By this measure, average differences across states are extremely large. Scores of students in the highest and lowest ranked states for the period 2009 through 2019 differed from one another by 0.83sd, approximately three years' worth of learning. State scores are estimated with an error term that varies with the number of observations available for the state. In the text, "se" follows in parentheses or brackets the student scores expressed in "sd." For simplicity of presentation, tables give a higher rank to the one with the higher observed score even though the confidence intervals for the scores of some states overlap one another, especially when standard errors are larger.⁹ Readers are encouraged to focus on the general ranking of a state rather than a specific placement.

Sufficient data are available to rank 35 states and DC. Table 4, column (1) shows the rank PEPG gives to the state named in column (2). Column (3) gives the estimated score relative to that of other states in standard deviations (sd). A positive score indicates average performance in the state is higher than the average for all charter performances, which is set to zero. A negative score indicates state performance falls below average. Column (4) reports the standard error (se) of the estimate.

Overall state ranking

As can be seen in Table 4, the seven highest ranked states are as follows: Alaska (0.32sd [0.04]), Colorado (0.24sd [0.01]), Massachusetts (0.23sd [0.02]), New Hampshire (0.20sd [0.07]), New York (0.17sd [0.01]), Oklahoma (0.15sd [0.03]) and New Jersey (0.13sd [0.02]). Three of the top-ranked states – Alaska, New Hampshire, and Oklahoma – have a limited number of test scores, so their standings are less precisely estimated.

The five low-ranking states, ordered from bottom upward are as follows: Hawaii (–0.54 [0.03]), Tennessee (–0.33 [0.02]), Michigan (–0.31[0.01]), Oregon (–0.25 [0.02]), and Pennsylvania (–0.21[0.01]).

Similar standings are observed when math and reading performances are ranked separately (Table A3).

Race and ethnic heterogeneity

Data are sufficient for PEPG to rank the adjusted achievement of Black charter students in 28 states and the District of Columbia (Table 5). Its ranking for Black charter students is highly correlated (coeff. = 0.92) with the overall ranking (Table 6). Three of the five states in the overall ranking – Massachusetts, Colorado, and New York – also rank among the top five in Black charter performance. The other two – Alaska and New Hampshire – have too few observations to be ranked on this scale. Oklahoma and Rhode

Table 4. Ranking of states on average adjusted 4th and 8th grade performances of charter students on national assessment of educational progress, 2009–2019.

Rank	State	Coefficient	SE
1	Alaska	0.321	0.042
2	Colorado	0.237	0.012
3	Massachusetts	0.232	0.015
4	New Hampshire	0.197	0.066
5	New York	0.171	0.011
6	Oklahoma	0.150	0.033
7	New Jersey	0.131	0.015
8	Florida	0.090	0.007
9	Utah	0.076	0.015
10	Rhode Island	0.056	0.039
11	Georgia	0.054	0.014
12	Louisiana	0.048	0.014
13	Delaware	0.047	0.026
14	Arkansas	0.024	0.029
15	Texas	0.016	0.007
16	North Carolina	−0.012	0.011
17	Idaho	−0.027	0.025
18	Illinois	−0.035	0.015
19	Connecticut	−0.053	0.033
20	DC	−0.061	0.018
21	Indiana	−0.081	0.019
22	Minnesota	−0.105	0.014
23	Arizona	−0.115	0.009
24	Maryland	−0.115	0.021
25	California	−0.126	0.006
26	Missouri	−0.127	0.024
27	Ohio	−0.128	0.010
28	Wisconsin	−0.137	0.017
29	Nevada	−0.171	0.021
30	South Carolina	−0.201	0.024
31	New Mexico	−0.202	0.023
32	Pennsylvania	−0.214	0.010
33	Oregon	−0.246	0.021
34	Michigan	−0.311	0.008
35	Tennessee	−0.328	0.022
36	Hawaii	−0.537	0.030

Note. Estimates are adjusted for covariates displayed in Table 1. Table displays predicted coefficient and standard error (SE) for each state. Scores standardized to place all tests on a common scale. Positive score indicates above average state performance. Negative score indicates below average state performance. Estimates use survey weights. Imprecise estimates with standard error >0.099 for Alabama, Iowa, Kansas, Maine, North Dakota, Virginia, and Wyoming have been excluded for Tables 4–5, 7–11, and A2–A9. Very similar results are obtained when fixed effects for charter school’s opening year is excluded from the estimating equation (correlation between two rankings = 0.99).

Island rise to positions three and four. Those showing the lowest performances, ordered from the bottom, are Michigan, Tennessee, Wisconsin, Pennsylvania, and South Carolina. The lowest three had similarly low rankings in the overall scale.

For 31 states and DC, PEPG has sufficient information to rank Hispanic charter student performance (Table 7), which are somewhat less well correlated with the overall ranking (0.77), as can be seen in Table 6. In this ranking

Table 5. Ranking of states on average adjusted 4th and 8th grade performances of black charter students on national assessment of educational progress, 2009–2019.

Rank	State	Coefficient	SE
1	Massachusetts	−0.035	0.025
2	Colorado	−0.121	0.039
3	Oklahoma	−0.182	0.063
4	Rhode Island	−0.192	0.080
5	New York	−0.193	0.012
6	Florida	−0.223	0.013
7	New Jersey	−0.238	0.017
8	Georgia	−0.302	0.020
9	Louisiana	−0.307	0.015
10	Arizona	−0.327	0.027
11	Connecticut	−0.361	0.037
12	North Carolina	−0.375	0.020
13	Texas	−0.414	0.014
14	Illinois	−0.438	0.017
15	Delaware	−0.450	0.035
16	DC	−0.472	0.017
17	Indiana	−0.473	0.023
18	Arkansas	−0.493	0.045
19	Ohio	−0.494	0.011
20	Minnesota	−0.508	0.025
21	California	−0.516	0.014
22	Maryland	−0.534	0.021
23	Nevada	−0.597	0.042
24	Missouri	−0.602	0.025
25	South Carolina	−0.604	0.036
26	Pennsylvania	−0.607	0.013
27	Wisconsin	−0.664	0.026
28	Tennessee	−0.717	0.020
29	Michigan	−0.784	0.010

Note. We do not control for the variable used to classify the specific subgroup in question. See Table 4. Imprecise estimates for Alaska, Hawaii, Idaho, New Hampshire, New Mexico, Oregon, and Utah excluded.

Table 6. Coefficients of correlation among state rankings of performances of all charter students and subgroups on national assessment of educational progress, 2009–2019.

Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Overall (1)	1.00											
White (2)	0.84	1.00										
Black (3)	0.92	0.74	1.00									
Hispanic (4)	0.77	0.62	0.64	1.00								
Male (5)	0.99	0.84	0.93	0.75	1.00							
Female (6)	0.99	0.83	0.89	0.76	0.96	1.00						
FRL eligible (7)	0.95	0.75	0.91	0.73	0.94	0.94	1.00					
FRL not eligible (8)	0.92	0.90	0.78	0.75	0.90	0.91	0.79	1.00				
First generation (9)	0.92	0.75	0.86	0.80	0.90	0.93	0.88	0.85	1.00			
Parents with college degree (10)	0.93	0.78	0.85	0.76	0.91	0.92	0.82	0.90	0.90	1.00		
City (11)	0.97	0.76	0.90	0.78	0.95	0.96	0.92	0.88	0.91	0.93	1.00	
Suburban Town Rural (12)	0.74	0.79	0.67	0.46	0.72	0.75	0.69	0.73	0.61	0.62	0.60	1.00

Note. All correlations are based on adjusted state rankings based on the variables listed in Table 1. Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Indiana, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Texas, and Wisconsin contribute to this table.

Table 7. Ranking of states on average adjusted 4th and 8th grade performances of Hispanic charter students on national assessment of educational progress, 2009–2019.

Rank	State	Coefficient	SE
1	Louisiana	0.161	0.066
2	Oklahoma	0.060	0.050
3	Colorado	0.058	0.025
4	Florida	0.037	0.013
5	Massachusetts	0.012	0.034
6	New York	−0.018	0.025
7	Arkansas	−0.050	0.086
8	New Jersey	−0.067	0.032
9	Missouri	−0.086	0.068
10	Indiana	−0.095	0.079
11	Rhode Island	−0.102	0.057
12	Ohio	−0.105	0.055
13	Utah	−0.115	0.043
14	Illinois	−0.127	0.030
15	Texas	−0.128	0.010
16	Delaware	−0.141	0.096
17	North Carolina	−0.153	0.044
18	Wisconsin	−0.168	0.046
19	Maryland	−0.190	0.082
20	Georgia	−0.218	0.033
21	Minnesota	−0.242	0.046
22	DC	−0.270	0.060
23	Idaho	−0.276	0.094
24	Nevada	−0.302	0.048
25	California	−0.306	0.010
26	Michigan	−0.310	0.033
27	Connecticut	−0.329	0.072
28	Arizona	−0.349	0.017
29	New Mexico	−0.382	0.035
30	Oregon	−0.388	0.065
31	Tennessee	−0.482	0.089
32	Pennsylvania	−0.527	0.024

Note. See notes to Tables 4 and 5. Imprecise estimates for Alaska, Hawaii, New Hampshire, and South Carolina excluded.

Louisiana secures the top rank, followed by, in order, Oklahoma, Colorado, Florida, and Massachusetts to comprise the top five. Lowest performances are recorded in Pennsylvania, Tennessee, Oregon, New Mexico, and Arizona.

The standings for the white subgroup in 33 states and DC are quite well correlated with the overall ranking (coeff. = 0.84). DC and Massachusetts hold the top two positions (Table 8). Alaska, New Jersey, Colorado, and Delaware are the next four. Oregon, South Carolina Michigan, Nevada and Illinois have the lowest rankings.

Gender

Rankings for boys and girls are highly correlated at the 0.96 level. However, Ohio and Minnesota both differ by at least six positions in the PEPG standings (Tables A9, A10). Ohio ranks 21st for boys but 28th for girls, while Minnesota ranks 28th for boys but 22nd for girls.

Table 8. Ranking of states on average adjusted 4th and 8th grade performances of white charter students on national assessment of educational progress, 2009–2019.

Rank	State	Coefficient	SE
1	DC	0.703	0.090
2	Massachusetts	0.695	0.028
3	Alaska	0.590	0.054
4	New Jersey	0.580	0.054
5	Colorado	0.578	0.017
6	Delaware	0.576	0.042
7	New Hampshire	0.570	0.078
8	Rhode Island	0.532	0.098
9	Arkansas	0.497	0.043
10	Georgia	0.489	0.026
11	Missouri	0.473	0.069
12	New York	0.470	0.053
13	Maryland	0.467	0.053
14	Louisiana	0.466	0.029
15	Florida	0.446	0.011
16	North Carolina	0.429	0.016
17	Idaho	0.421	0.028
18	Minnesota	0.417	0.023
19	Indiana	0.401	0.037
20	Utah	0.401	0.019
21	Wisconsin	0.379	0.027
22	Hawaii	0.366	0.058
23	Oklahoma	0.354	0.080
24	Pennsylvania	0.332	0.021
25	Arizona	0.321	0.015
26	Ohio	0.312	0.023
27	California	0.308	0.013
28	Texas	0.302	0.025
29	New Mexico	0.300	0.041
30	Illinois	0.259	0.095
31	Nevada	0.239	0.033
32	Michigan	0.237	0.016
33	South Carolina	0.233	0.034
34	Oregon	0.219	0.025

Note. See notes to Tables 4 and 5. Imprecise estimates for Connecticut and Tennessee excluded.

Income (eligibility for free and reduced lunch status)

PEPG is able to rank performances of charter students from lower-income households for DC and 34 states. Rankings are based on eligibility for participation in the free and reduced lunch program. The rankings adjust for all other student background characteristics.

As shown in Table 9, the ranking of states by performances of charter students from lower-income households is highly associated (coeff. = 0.95) with the general ranking. Alaska, Massachusetts, Colorado, New York, and Oklahoma are the five highest-ranking states, (Table 9). At the other end of the scale, Hawaii, Michigan, Tennessee, Oregon, and South Carolina form the bottom tier.

Rankings for adjusted performances of charter students from higher-income households (making them ineligible for participation in the free or reduced lunch program) are possible for DC and 35 states (Table A4).

Table 9. Ranking of states on average adjusted 4th and 8th grade performances of lower-income charter students on national assessment of educational progress, 2009–2019.

Rank	State	Coefficient	SE
1	Alaska	0.068	0.085
2	Massachusetts	0.030	0.022
3	Colorado	-0.053	0.021
4	New York	-0.086	0.013
5	Oklahoma	-0.096	0.037
6	Florida	-0.123	0.010
7	Utah	-0.124	0.027
8	New Jersey	-0.136	0.018
9	North Carolina	-0.190	0.022
10	Rhode Island	-0.196	0.046
11	Idaho	-0.228	0.049
12	Louisiana	-0.241	0.016
13	Texas	-0.256	0.008
14	Delaware	-0.259	0.045
15	Illinois	-0.266	0.017
16	Georgia	-0.278	0.018
17	Connecticut	-0.298	0.039
18	Nevada	-0.342	0.039
19	Indiana	-0.350	0.024
20	Arkansas	-0.351	0.037
21	DC	-0.387	0.021
22	California	-0.421	0.009
23	Ohio	-0.431	0.011
24	Minnesota	-0.443	0.019
25	Missouri	-0.445	0.026
26	Maryland	-0.454	0.028
27	Arizona	-0.461	0.014
28	Wisconsin	-0.467	0.022
29	New Mexico	-0.489	0.032
30	Pennsylvania	-0.527	0.012
31	South Carolina	-0.531	0.035
32	Oregon	-0.596	0.032
33	Tennessee	-0.599	0.026
34	Michigan	-0.643	0.010
35	Hawaii	-0.959	0.046

Note. See Tables 4 and 5. Imprecise estimate for New Hampshire excluded.

They, too, are highly associated with the general ranking (coefficient = 0.92). The top three on the higher-income list – Massachusetts, Colorado, and Alaska – are the same top three on the lower-income standings. Georgia (4) and Arkansas (5) come next, but they both had lower ranks – 16th and 20th positions, respectively – on the standings for lower-income students.

Parental education

Parental education is available from NAEP only for students in 8th grade, as 4th grade students were not asked to answer this question. Rankings by the achievement of “first generation” charter students, who report that neither parent has a college degree, are available for DC and 33 states (Table A5). The scores are once again well correlated (coeff. = 0.92) with the general ranking.

The top five go, in order, to Massachusetts, Oklahoma, New York, Louisiana, and Colorado. The lowest-ranking states, from bottom upward, are Hawaii, Michigan, Oregon, Pennsylvania, and Nevada.

An only slightly different pattern emerges for charter students whose parents had received a college degree (Table A6). The relationship with the general ranking continues to be very high (coeff. = 0.93). Colorado, Massachusetts, New Jersey, and Louisiana appear again among the top five. Those in the five-lowest tier in the “first generation” ranking do not rise above that tier for students with a college educated parent.

Charter location

In 34 states and DC, PEPG has a sufficient number of observations to estimate achievement levels for students tested in city charters (Table A7), which constitute 56% of all tested charter students (Table 3). Given the concentration of low-income households within cities, it is not surprising to find rankings similar to those reported for lower-income students shown in Table 9. The top four positions are held by the same states in both tables.

A ranking is available in 30 states for performances of those tested in suburbs, towns, and rural areas (Table A8). Thirty percent of tested charter students live in suburbs, 5% in towns, and 10% in rural areas (Table 3). These non-city observations are grouped together to obtain an adequate number of observations. The association of the state ranking for this diverse subgroup with the overall PEPG ranking is nonetheless moderately high (coeff. = 0.74). The top five positions are held by Alaska, Colorado, Massachusetts, New Hampshire, and Delaware. Ranked from the bottom are Hawaii, Oregon, Michigan, Ohio, and New Mexico.

Discussion

These rankings bring multiple questions to mind. Is there a regional configuration to the rankings? Do racial and ethnic disparities vary by states? What policies are associated with better student outcomes? To these and other questions we now turn.

Regional variation

The ranking reveals, to some extent, a regional pattern. Among the 10 top-ranked states, five have borders that touch the Atlantic Ocean: Massachusetts (3), New Hampshire (4), New York (5), New Jersey (7), and Rhode Island (10). Connecticut, (19) is the exception. Public schooling began in New England and the Mid-Atlantic states, and those regions more than hold their own with the advent of the charter innovation in public education.

Perhaps more surprising – at least for some – are the relatively high rankings attained by states of the Old Confederacy. Southern education suffered for many decades from the trauma of the Civil War, Jim Crow segregation, economic stagnation, and poorly funded schools. But with the passage of the Civil Rights Act of 1964, the Voting Rights Act of 1965, and the embracement of education as the primary vehicle for Lyndon Johnson’s war on poverty, southern governors, including three education-minded future presidents – Jimmy Carter, Bill Clinton, and George W. Bush – battled for school reforms and greater investment in the next generation. The state charter student standings suggest that southern education reform has succeeded, at least in part. Florida (8), Georgia (11), Louisiana (12), Arkansas (14), Texas (15) and North Carolina (16) all are situated in the top half of the ranked states. Only South Carolina (30) and Tennessee (35) are not.

The industrial belt appears oddly unreceptive to charter student achievement. Illinois (18) Indiana, (21), Minnesota (22), Ohio (27), Wisconsin (28), Pennsylvania (32), and Michigan (34) all rank at or below the mid-point of the rankings. Depending on one’s point of view, one may blame the migration of manufacturing to the South and overseas, or the rise of public-sector collective bargaining in the 1970s, or the opioid crisis, or other factors, but effective charter schools have not found it easy to establish themselves in the country’s heartland.

Nor should we overlook the low performances of charters on the West Coast. Neither Oregon (33) nor California (25) come close to living up to their reputation as well-springs of innovation.

Hawaii’s very low adjusted performance (–0.54) is skewed downward by the way ethnic background was classified by NAEP in 2009, the classification scheme used for [Table 4](#). In 2009 and in all predecessor years, NAEP incorporated the indigenous Hawaiian population and other Pacific Islanders into the broad Asian category. In 2011, NAEP began reporting results separately for indigenous Hawaiians and Pacific Islanders, an important change, as 40% of Hawaiian charter students tested between 2011 and 2019 were identified as either indigenous Hawaiians or from the Pacific Islands. If rankings adjust for Hawaiian or Pacific Island background (for the period 2011–19), Hawaii’s score improves, though the state still ranks second from the bottom, just above Tennessee, with a score of –0.35sd.¹⁰

Alaska’s high ranking for charter-school student achievement may seem surprising given its rank of 46th out of 50 states for all public-school students ([Table 12](#)). It is possible that results are skewed in some way by the challenge of controlling for Alaska’s distinctive indigenous population. But Hoxby (2004) found Alaska charter schools among the top three states in an analysis conducted on scores in 2003. PEPG’s analysis shows Alaska’s charter achievement in the seventh position when no adjustments are made for background characteristics.

Charter schools in the prairie and mountain states that formed the post-Civil War frontier show the greatest diversity. Colorado (2), Oklahoma (6), and Utah (9) are among the highest-ranking states; Idaho (17) falls roughly at the mid-point; and Arizona (23) is below it, with Nevada (29) and New Mexico (31) approaching the bottom of the rankings. Each state has a distinctive cultural heritage, well reflected in the breadth of the states' rankings.

Racial and ethnic gaps

States vary in the degree to which the performances of white charter students exceed those of Black and Hispanic ones (Tables 10, 11). We calculate these differences after adjusting for the other background characteristics in Table 1.¹¹ Oklahoma, Arizona, New York, Florida, and Illinois have a Black-white gap of nearly two-and-one-half additional years' worth of learning. Although that gap is serious, it is still noticeably less than the disparity of three-and-one-half additional years' worth of learning in DC, Missouri, Wisconsin, Delaware, Michigan, and Maryland.

Table 10. Ranking of states on white-black differences in adjusted 4th and 8th grade performances of charter students on national assessment of educational progress, 2009–2019.

Rank	State	White-Black gap	SE
1	Oklahoma	0.536	0.102
2	Arizona	0.648	0.031
3	New York	0.663	0.054
4	Florida	0.669	0.017
5	Illinois	0.697	0.097
6	Colorado	0.699	0.043
7	Texas	0.716	0.024
8	Rhode Island	0.724	0.127
9	Massachusetts	0.730	0.038
10	Louisiana	0.773	0.033
11	Georgia	0.791	0.033
12	North Carolina	0.804	0.026
13	Ohio	0.806	0.025
14	New Jersey	0.818	0.057
15	California	0.824	0.019
16	Nevada	0.836	0.053
17	South Carolina	0.837	0.050
18	Indiana	0.874	0.044
19	Minnesota	0.925	0.034
20	Pennsylvania	0.939	0.025
21	Arkansas	0.990	0.062
22	Maryland	1.001	0.057
23	Michigan	1.021	0.019
24	Delaware	1.026	0.055
25	Wisconsin	1.043	0.037
26	Missouri	1.075	0.073
27	DC	1.175	0.092

Note. Alaska, Connecticut, Hawaii, Idaho, New Hampshire, New Mexico, Oregon, Tennessee, and Utah are excluded due to lack of sufficient observations for both ethnic groups.

Table 11. Ranking of states on white-Hispanic differences in adjusted 4th and 8th grade performances of charter students on national assessment of educational progress, 2009–2019.

Rank	State	White-Hispanic gap	SE
1	Oklahoma	0.294	0.094
2	Louisiana	0.305	0.072
3	Illinois	0.386	0.100
4	Florida	0.409	0.017
5	Ohio	0.417	0.060
6	Texas	0.430	0.021
7	New York	0.488	0.059
8	Indiana	0.496	0.087
9	Utah	0.516	0.047
10	Colorado	0.520	0.030
11	Nevada	0.541	0.058
12	Michigan	0.547	0.037
13	Arkansas	0.547	0.096
14	Wisconsin	0.547	0.053
15	Missouri	0.559	0.097
16	North Carolina	0.582	0.047
17	Oregon	0.607	0.070
18	California	0.614	0.016
19	Rhode Island	0.634	0.113
20	New Jersey	0.647	0.063
21	Maryland	0.657	0.098
22	Minnesota	0.659	0.051
23	Arizona	0.670	0.023
24	New Mexico	0.682	0.054
25	Massachusetts	0.683	0.044
26	Idaho	0.697	0.098
27	Georgia	0.707	0.042
28	Delaware	0.717	0.105
29	Pennsylvania	0.859	0.032
30	DC	0.973	0.108

Note. Alaska, Connecticut, Hawaii, New Hampshire, South Carolina, Tennessee and Utah are excluded due to lack of sufficient observations for both ethnic groups.

States with the least divergence in white-Hispanic scores are Oklahoma, Louisiana, Illinois, Florida, and Ohio, where scores differ by about a one-and-a-third years' worth of learning. The largest gaps are for DC, Pennsylvania, Delaware, Georgia, Idaho, and Massachusetts, where they are two to three times as large as in Oklahoma.

Oklahoma and Florida can take pride in showing less disparity between white charter students and both Black and Hispanic ones. By contrast, DC and Delaware have exceptionally large white-Black and white-Hispanic gaps within their charter sector.

Comparisons with NAEP public-school rankings

Charter student performance may be affected by factors that shape the state-wide learning environment, such as social support for learning, talents of those entering the teaching profession, and a myriad of other factors. If so, then PEPG's standings can be expected to be strongly correlated with the scores of all public-school student scores on the NAEP test. To see whether that is the

Table 12. Ranking of PEPG-ranked states on average adjusted 4th and 8th grade performances of public-school students on national assessment of educational progress, 2009–2019 by urban institute.

Rank	State	Score
1	Massachusetts	256.542
2	Texas	254.542
3	New Jersey	254.375
4	Florida	253.458
5	Colorado	253.333
6	North Carolina	253.000
7	Delaware	252.917
8	Maryland	252.042
9	Connecticut	251.125
10	Pennsylvania	250.792
11	Ohio	250.750
12	Indiana	250.708
13	Minnesota	250.458
14	New York	250.458
15	Illinois	250.250
16	South Carolina	250.208
17	New Hampshire	250.125
18	Wisconsin	248.458
19	Oregon	248.000
20	Louisiana	247.958
21	Oklahoma	247.792
22	Missouri	247.667
23	Arizona	247.625
24	California	247.417
25	Georgia	247.292
26	Rhode Island	247.208
27	Nevada	247.167
28	Arkansas	247.125
29	Idaho	246.917
30	New Mexico	246.708
31	Tennessee	246.458
32	Utah	245.708
33	Alaska	245.583
34	Michigan	244.333
35	Hawaii	237.458

Note. The scores have been pooled together for 2009–2019 using the “adj_raceclunclpspedageenlang” variable available at https://apps.urban.org/features/naep/data/NAEP_fulldata.xlsx

Source: Chingos et al. (2019).

case, we compare PEPG standings to those given by the Urban Institute (2020) for all student performances at all public schools for the same period. The comparison is especially appropriate because the Urban Institute adjusts for student performances on the same exam at the individual level in the same way for essentially the same background characteristics as PEPG does for charter performances (Chingos et al., 2019).

The Urban Institute’s state ranking (Table 12) for all public students is only modestly associated (coeff. = 0.33) with PEPG’s ranking. Massachusetts, New Jersey, Florida, and Colorado have similar rankings on both: 1st, 3rd, 4th, and 5th on the Urban Institute ranking; on PEPG’s ranking, Colorado and

Massachusetts have 2nd and 3rd places, and New Jersey, and Florida hold the 7th and 8th spots, respectively.¹² At the other end, California sits at the 24th position in both standings. But if the positions for these states are similar, other states differ wildly. Texas, Pennsylvania, and Indiana are located in positions 2, 10, and 12, on the Urban Institute ranking, but, on PEPG's standings, they drop to positions 15, 31, and 20, respectively. Conversely, Oklahoma is in 6th place and Utah is ranked 9th in the PEPG standings, but they fall to positions 21 and 32, respectively, on the Urban Institute's. In short, a positive but only modest relationship exists between the two sets of rankings. Charter-school performances are not simply a function of the educational environment of the state as a whole.

Ranking by changes in student performance relative to district students

The Center for Research on Education Outcomes (CREDO) ranks 29 states by differences on state tests between charter and districts schools in student performance for the period 2014 to 2019 (CREDO, 2023). See Table A12. CREDO estimates charter student performances adjusted for background and prior-year test scores relative to comparably adjusted performances of students at nearby district schools within the same state.¹³ This average *difference* approach to assessing charter performance diverges significantly from the PEPG yardstick, which ranks states by average *level* of charter student performance, adjusted for student background.

CREDO rankings would nonetheless resemble the ones reported by PEPG if district student achievement were the same throughout a state and the country as a whole. Under such circumstances, charter-district differences would vary only with the level of charter performances. But since student achievement at district schools ranges widely, CREDO rankings are affected as much by scores at district schools as by scores at charters. When charters are located near high-performing district schools, charters must match or exceed sizable gains to avoid negative scores by CREDO – even if charter student performance exceeds the statewide charter average. Conversely, if student gains at a nearby district school are minimal, charters can appear to be fulfilling their mission even if students at the charter school score below the statewide charter average.

These are not merely hypothetical possibilities. CREDO generally finds a charter advantage in precisely the circumstances one expects district schools to be performing inadequately. The study also finds charter schools underperforming in situations where district schools are likely to be performing fairly well. For example, CREDO (pp. 53–54) finds that Black students at charter schools “had 35 days more growth in a school year in reading and 29 days in math” relative to comparable students in nearby district schools, and Hispanic students “grew an extra 30 days in reading and 19 additional days in math.” Meanwhile, white charter students do no better in reading at charter

schools than those at district ones, and they perform worse in math by 24 days. CREDO (pp. 60–61) also finds better outcomes for charters in cities than suburbs. Specifically, “urban charter school students had an additional 29 days of growth per year in reading and 28 additional days in math.” In suburbs, charters did not perform significantly better than district schools in math, and their “stronger growth in reading” amounted to only 14 days.

These findings could indicate that Black, Hispanic, and urban students attend higher-quality charter schools than those available to white and suburban ones. But an alternative interpretation is the more likely one: white and suburban students have access to higher-quality district schools than those available to Blacks, Hispanics, and city residents.

CREDO’s state ranking is useful for those who wish to compare charters to nearby district schools. But it does not order states by the performance levels of charter students, as does PEPG. Indeed, the association between PEPG’s overall standings and CREDO’s math (coeff. = 0.26) and reading (coeff. = 0.31) is modest. Some states do receive similar ratings on the CREDO math ranking and the PEPG ranking: Massachusetts (CREDO: 5; PEPG: 2), New York (CREDO:2; PEPG:3), New Jersey (CREDO: 8; PEPG 4), and California (CREDO: 17; PEPG: 18). But rankings for other states differ sharply: Florida (CREDO: 21; PEPG: 5), Michigan (CREDO: 9; PEPG: 27), and Tennessee (CREDO: 6; PEPG: 28).¹⁴

In sum, PEPG and CREDO are measuring charter performances in alternate ways. CREDO assesses states by *differences* between charter and nearby district schools. PEPG orders states by average *level* of charter student achievement adjusted for demographic background.

Charter policies and student outcomes

Are state policies and practices associated with charter student achievement? To offer some insights, PEPG estimates the relationship between charter achievement and the five interest-group indices of choice policy discussed above (Table 2). NAPCS’s index has the strongest relationship (coeff. = 0.19) with PEPG’s standings, perhaps because the index focuses on the quality of the authorizing and monitoring processes (Table 6). But even its index is a weak predictor of a state’s charter student achievement level. CER (coeff. = 0.06) and Heritage (coeff. = –0.06) rankings are not significantly related to PEPG’s ranking by charter achievement levels.

The connection between per-pupil funding and student performance in public schools is not well understood. Observational research shows a weak association, if any, between state per-pupil expenditures and student performance (Hanushek, 1986). But recent quasi-experimental research suggests that spurts in funding driven by court-ordered school finance reforms have positive impacts on education outcomes for some students (Jackson et al.,

2016; Lafortune et al., 2018) but see negative impacts on efficiency (Lastra-Anadón & Peterson, 2023). In theory, higher per-pupil expenditure is more likely to translate into higher achievement in charter as compared to district schools because charters compete for enrollments. In practice, only an insignificant relationship (coeff. = 0.06) between PEPG's standings and revenue per charter pupil is observed in the 24 states for which revenue information is available (Xu & White, 2022) (Table A13). But until information is available from more states and experimental analyses are conducted, the subject remains wide open for further discussion and research. We also find no higher levels of achievement (coeff. = 0.04) in states with a larger percentage of public school students attending charters (Catt & Swaminathan, 2023).

For all charter students, regardless of state, PEPG estimates the relationship between achievement and type of authorizer (Table 13).¹⁵ Students score higher (0.09sd) on NAEP tests if the authorizer is the state board of education (or its equivalent) rather than a local school district. Students also score higher at state-authorized schools than at those authorized by an alternative statewide authorizer (0.10sd) or by a higher education institution (0.19sd) or by some other type of authorizer such as a municipal government or a nonprofit entity created specifically for the purpose (0.15sd). These estimates cannot be interpreted as showing a causal connection between type of authorizer and student outcomes, as these are observational estimates. That said, scores are adjusted for student demographic background, and state departments of education have decades of experience at overseeing educational systems throughout a state, an advantage not matched by any other type of authorizer. The least effective authorizers appear to be higher education institutions and other types of authorizers without experience in educational management. Students at charters authorized by these agencies score substantially lower than those authorized by local school districts. Lack of authorizing and monitoring experience appears to be a minus, not the plus it receives in some interest group indices.

NAPCS also divides charter schools into three broad types: standalone charters, those that are part of a nonprofit charter network, and for-profit charter schools. It defines a nonprofit charter network as a Charter Management Organization (CMO) if not defined as a for-profit by the Internal Revenue Service (IRS), and if it provides services to at least 3 charter schools, which must serve at least 300 students. Additionally, a CMO must be a unique entity separate from the schools themselves. Education Management Organizations (EMOs) have a for-profit IRS designation. Charter Management Organizations (CMOs) have a nonprofit IRS designation. If a school is a standalone school without an affiliation with a CMO or EMO, it is considered a "freestanding" school. When we apply NAPCS definitions, the average score of students tested at charters that are part of a CMO network is found to be 0.11 to 0.16sd higher than the average score of those attending

Table 13. Charter school characteristics and adjusted 4th and 8th grade performances of charter students on national assessment of educational progress, 2009–2019.

Variable	Coefficient	SE
<i>Authorizer type</i>		
Local Education Agency (school district)	–0.094	0.006
Independent Charter Board	–0.103	0.011
Higher Education Institution	–0.187	0.008
Others	–0.146	0.012
Baseline category: State Education Agency		
<i>Management type</i>		
EMO	–0.059	0.007
CMO	0.105	0.007
Baseline category: Freestanding		
<i>Specialized Charter school foci and models</i>		
Share of student in specialized schools within a district	0.085	0.013
<i>Collective bargaining</i>	–0.072	0.046

Note. See footnotes 12, 13, and 14. Each estimate controls for covariates but not for charter characteristics or environment. N for each estimation as follows: authorizer type = 98820, management type = 98180, specialization = 64430, collective bargaining = 145,730.

a freestanding or for-profit charter (Table 13). Networked charters may benefit from the assistance of their partners, or, perhaps, successful charters are either self-motivated or encouraged by foundations and donors to expand operations beyond two schools. On the other hand, PEPG finds that students tested at an EMO charter score, on average, $-0.06sd$ lower than those attending a freestanding charter. However, this finding, is not robust to models that include other charter policy characteristics. See discussion below. EMOs may launch charters where circumstances are more problematic, or they may find operations more challenging when faced with heavy political criticism and threats of closure and government regulation, or the profit motive may, indeed, be inconsistent with higher student performance.

White and Huang (2022) calculate the proportion of students within a district who are attending a charter school with a special focus, whether it be curriculum, pedagogy, or clientele to be served. A one percentage point increase in the proportion of students attending specialized charter schools in a district is associated with a $0.09sd$ increase in achievement level (see Table 13).¹⁶ Hence, districts with a larger share of students attending specialized charter schools have higher test scores on average.

Achievement outcomes for charters in states with and without collective bargaining laws show no statistically significant differences (Table 13). Also, estimated number of years charter school has been in operation is not significantly correlated with student achievement.

To test the robustness of our findings we ran a joint model in equation (3) with charter authorizer type, management type, share of student in specialized schools within a district, share of charter enrollment, and charter funding levels in a state. We also made dummy variable adjustment to this model to include all observations in the regression. Results are robust (not reported),

except that in this model we observe students at for-profit schools performing at a level similar to that of freestanding schools.

Future research

We encourage experimental and quasi-experimental research on charter school performance that can supplement the descriptive analysis provided here. We also recommend further research on potential moderators that may be producing variation in charter performance across states (Hamlin & Li, 2021). For example, we observe a weak positive relationship across states between funding levels and student achievement, but the sample does not include all states with charter schools and the analysis is only descriptive. We also recommend analyses that estimate the impact on achievement of the ethnic and social background composition of the school. Using data available from White and Huang (2022), we show that the degree of specialization at a school may affect achievement, but this topic, too, is ripe for further exploration. In the absence of NAEP data on the performance of students who attend virtual schools, we are unable to explore that increasingly important topic. Other research shows negative impacts of virtual school attendance on student performance (CREDO, 2023; Fitzpatrick et al., 2020; Hamlin et al., 2023), but, given the increase in virtual schooling since the Covid pandemic, this topic is worthy of more intensive investigation.

Conclusions

The findings reported here are limited to an eleven-year period that ends in 2019, the eve of a pandemic so severe that policymakers in many states closed both charter and district schools for more than a year, a catastrophic event adversely affecting the academic, social, and emotional lives of an entire generation. The results provide a baseline against which future measures of charter performance in the aftermath of that event may be compared. Still, the PEPG rankings are not the last word on charter school quality. We are unable to track year-by-year trends in charter quality within each state, as the number of charter-student test observations for any given year are too few for precise estimation. Also, these rankings are based on assessments of student performances in 4th and 8th grade. No information can be given as to charter contributions to early childhood and pre-school education, or to learning in high school or career and technical training programs. Finally, PEPG data is observational, not experimental, so causal inferences are not warranted.

In exchange for these limitations, PEPG provides, *for the first time*, a state-by-state ranking of charter educational outcomes. In contrast to prior rankings of states by their charter and school-choice policies, PEPG assesses charter student achievement, adjusted for individual demographic characteristics, at

grades 4 and 8, by state, on a common set of tests designed under the auspices of an agency of the U. S. government.

Notes

1. Revenue flow for charters enrolling the other half of the states cannot be parsed from the Financial Survey, because charter revenues for charter and district schools are not distinguished when both operate within the framework of a school district.
2. These calculations are ours based on data obtained from NAPCS. Observations are weighted by the survey weights in NAEP to make them representative of the true population.
3. Heritage includes in its summary measure an indicator of the degree to which state expenditure affects student test score performance.
4. Correlation coefficient is rank-by-rank for cardinal data, Pearson-r for interval data (per-pupil revenues, enrollment share, test scores).
5. Charter student performance by state may be calculated from state tests curated by the Stanford Education Data Archives (SEDA). See Appendix for the reasons we prefer the use of NAEP tests rather than state tests for comparing charter student performances across states.
6. Students are also tested in 12th grade, but there are too few observations of charter-school 12th-grade students in NAEP to rank states precisely by performances in this grade.
7. We coded missing as “9” and then created a dummy for the missing identification (for each variable). The dummy for missingness for each variable is introduced as a control in the regressions. Thus, regressions lose no observations due to missing data.
8. We took the average of all plausible values for each nationally representative sample for a subject/year/grade combination. 2009 has five plausible values, whereas other years have 20 plausible values. For each regression we employ the STATA 17 postestimation command “margins” to estimate predicted effect size and standard errors for the states in the model. All regressions use survey weights used by NAEP to obtain state representative samples. We exclude states with standard error > 0.099 . If fewer than 26 states can be observed with adequate precision in a subgroup analysis, state rankings are not provided.
9. Differences between states are statistically significant when the absolute value of t-ratio is less than 1.96. T-ratios for the difference between scores of any two states can be calculated by dividing the difference between state scores by the square root of the sum of squares of the standard errors (se) of the respective states.
10. Results for this analysis not displayed.
11. Standard errors of the ethnic gaps by state are calculated as the square root of the sum of the squares of standard errors of the two ethnic groups being compared.
12. PEPG rank number for a state may be slightly different in this text than in [Table 4](#), as the comparison with Urban Institute rank is made here is for only 35 of the 36 jurisdictions listed in [Table 4](#). Urban Institute rankings exclude DC.
13. Inclusion of virtual schools in CREDO’s study could account for some of the differences between CREDO and PEPG rankings. Roughly 7% of CREDO’s charter observations are from virtual schools, whose students are compared to those attending brick-and-mortar schools. CREDO observes lower performances for virtual students than the comparison group. States with a higher density of virtual enrollments could have a lower CREDO ranking than they would have received had virtual schools been excluded from the study. NAEP does not report whether a tested student attends a virtual school, but its sampling

design appears to be structured around brick-and-mortar schools, as no virtual school indicator is included in its restricted data set, and in other test surveys NAEP indicates that it does not sample virtual school students (National Center for Education Statistics, 2008).

14. PEPG rank number for a state may be slightly different in this text than in Table 4, as the comparison with CREDO is made here is for only 28 of the 36 jurisdictions listed in Table 4.
15. NAPCS divides authorizers into the following types: LEA = local education agency; SEA; state education agency, ICB = independent charter board; HEI = higher education institution (i.e., college/university); Others (NEG = Non-Educational Governmental agency or NEG (i.e., municipal or mayoral offices) and NPO = nonprofit organizations).
16. White and Huang (2022) extract from the website for whether a charter school operating in 2018–19 was specializing by curriculum, pedagogy or group served. They calculated the share of charter students in a district who are attending a specialized school. We merge that district level variable with charter student performance on NAEP by school district for each subject, grade, and year combination. We assume specialization rate is constant across all NAEP years.

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