



## Thirty Years of Charter Schools: What Have We Learned?

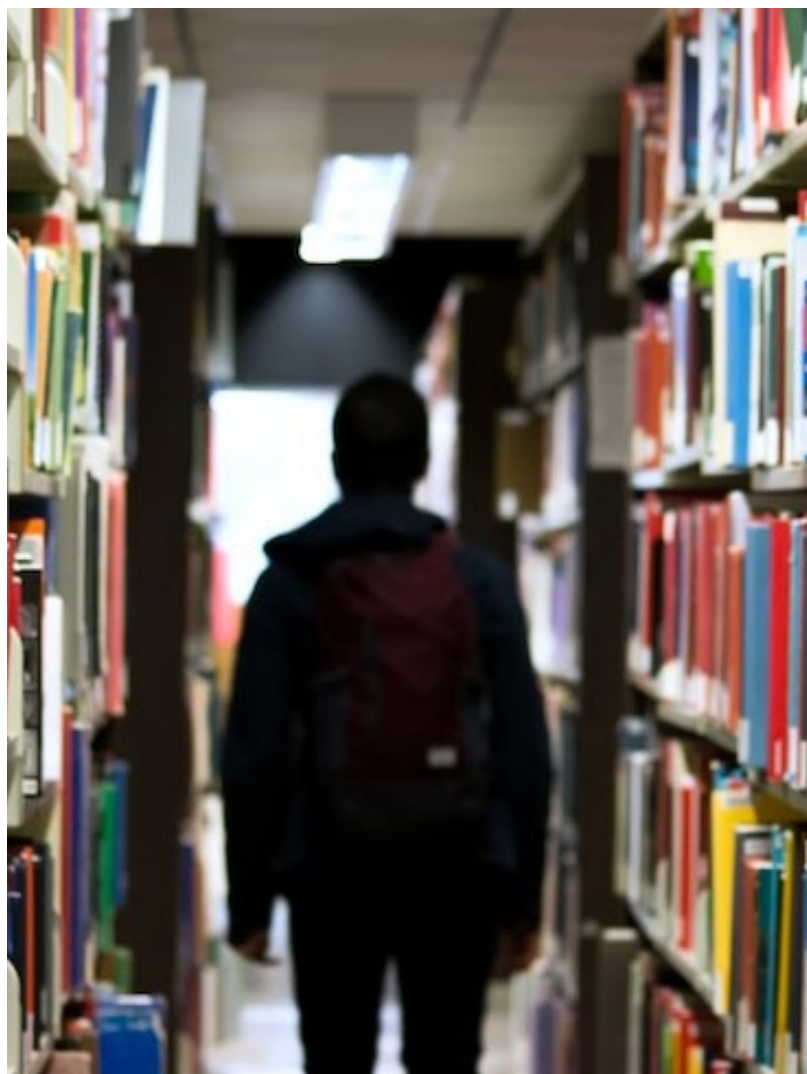
Policy Brief | November 2023

### Executive Summary

The past three decades have seen charter schools emerge as a prominent and controversial alternative to traditional public schools. In *Thirty years of charter schools: What does lottery-based research tell us?*, [Sarah Cohodes \(University of Michigan\)](#) and [Susha Roy \(RAND\)](#) summarize 40 studies that have used lottery research designs to analyze how charter schools affect student outcomes.

Most studies show that charter school attendance improves student academic achievement and boosts enrollment in a four-year college. But the evidence is mixed on gains elsewhere, including longer-term outcomes like college completion and earnings. Charter school practices vary substantially, with urban “high expectations, high support” schools generating the strongest improvement in student academic performance. Low-income, non-white students with lower baseline academic achievement tend to benefit the most from charter attendance.

Future studies should identify the drivers of charter school success; reach more broadly across the nation and include more suburban and rural settings; and delve more deeply into non-academic and long-term outcomes.



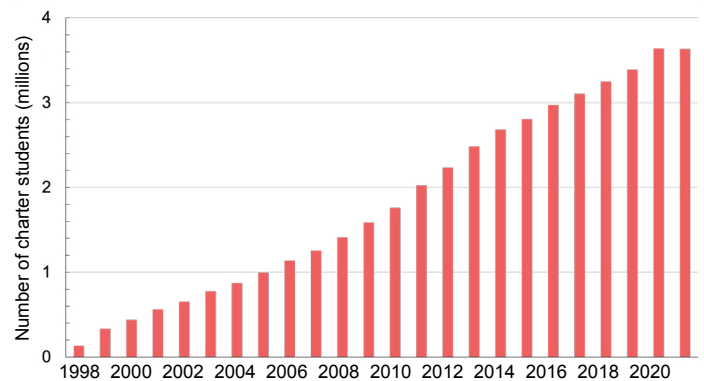
## Key Highlights

- Attending an oversubscribed charter school, on average, **increases a student's academic achievement**, likelihood of attending a four-year college, and civic participation.
- The **quality of charter schools varies substantially**, with some of the most effective programs concentrated in urban areas and adhering to a “high expectations, high support” instructional model. **Suburban and rural charter schools are less likely to improve performance** than those in cities.
- Students who are **non-white, are low income**, and arrive with **lower baseline academic achievement benefit the most** from charter schools.
- The **evidence is limited and mixed** as to whether attending a charter school benefits students through **college and beyond**.
- **Sparse evidence exists on behavioral and health outcomes**, and existing findings are inconclusive.
- Future research should target the **drivers of high-quality** charter schools; explore more **geographical regions**, particularly suburban and rural areas; use more **recent data**; and examine **non-academic and long-term** outcomes.

## Background

The first charter school was approved in 1991. Since then, the charter sector has grown considerably and now operates in 45 states, educating 3.7 million students, or 7 percent of all K-12 students in the United States (see Figure 1).<sup>1</sup> Charter schools are free, open to all, and funded by taxpayer dollars. They are independently run public schools that enjoy greater freedom than traditional public schools. Charter schools, for example, can set their own curriculum, instructional methods, and hiring practices. Due to this flexibility, charter schools are often called “laboratories of innovation.”

**Figure 1: Growth in the charter sector since 1998**



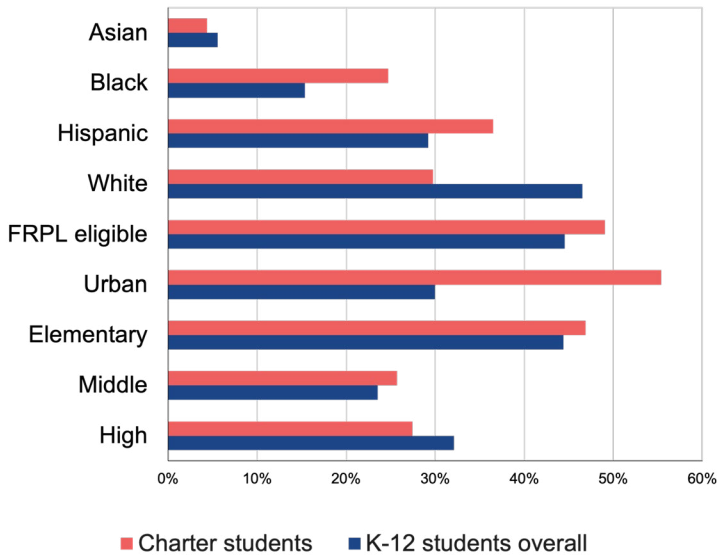
Charter schools operate under a “charter” agreement with an authorizing body and must adhere to accountability standards. Nationwide, local school districts make up nearly 90 percent of authorizers; other authorizers include state education agencies, independent boards, universities, mayors and municipalities, and non-profit organizations.<sup>2</sup> Often, the schools belong to a non-profit charter management organization (CMO) that standardizes practices and policies.

Charter school models vary widely. Many were launched to align with a particular thematic focus, such as civics, college preparation, or STEM. A minority of charter schools are virtual or for-profit.<sup>3</sup> Some charter schools supplement public funding with grants and private donations.



On average, charter schools serve a higher share of low-income, non-white students than their traditional public school counterparts. Charter school students are also more likely to live in urban areas (see Figure 2). When applications exceed capacity, charter schools generally hold a lottery to admit students.

**Figure 2: Characteristics of charter students relative to all K-12 students**



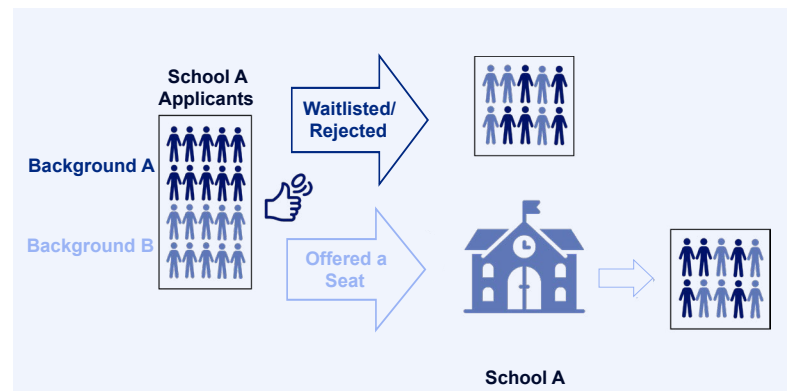
As the charter sector has expanded, it has received increasing attention from researchers, policymakers, and the general public. Advocates cite research demonstrating improved student outcomes; the role of charters as engines of innovation; an accountability system that allows for the swift shutdown of ineffective schools; and an incentive structure that encourages both charter schools and their traditional counterparts to improve quality as they compete for students. Critics contend that charter schools pull high-performing students away from traditional public schools (“cream skimming”); drain the traditional public school sector of financial resources; teach to the test to meet accountability standards; operate with excessive teacher turnover; and emphasize harsh disciplinary practices. In addition, because students have to opt into charter schools, less-informed families may be deterred by the administrative and procedural barriers to enrollment.<sup>4</sup> Given these debates, research is critical to ensure that policymakers, practitioners, and ultimately families can make evidence-based decisions.

The growth of the charter sector and its ever-changing instructional practices further increase the need for studying how charter schools impact

student learning and their longer-term well-being. This review summarizes lottery studies to highlight what we know and don’t know about charter school performance.

Lottery studies are the most rigorous research design available to pinpoint how charter schools *causally* affect student learning. Charter schools must admit students using a lottery when *oversubscribed* (i.e., they have more applicants than seats available). At the time of the admissions decision, lottery winners and losers are, on average, similar on both observable dimensions (e.g., test scores) and unobservable dimensions (e.g., ambition). Any difference in the long-term outcomes of the lottery winners and losers can then be attributed to attending the charter school. Figure 3 illustrates the charter school lottery process.

**Figure 3: The charter school lottery process**



This figure provides a simplified illustration of the charter school lottery process. When schools are oversubscribed, applicants are randomly offered seats or waitlisted. This randomization allows researchers to make apples-to-apples comparisons between students with the same background who applied to the same school(s) and either attended a charter school or were denied admission.

Lottery studies have several limitations. First, charter schools must be oversubscribed to be included in the study. Oversubscription could be more common in settings that are not generalizable to all charter schools—for example, charter schools might be more oversubscribed in large, urban areas, where the majority of current charter lottery-based research takes place. Furthermore, even within the same district, oversubscribed charter schools may fundamentally differ from those that are not—for example, their high demand may reflect higher quality. Therefore, while a lottery study shows the causal effect of attending an oversubscribed charter school, those results may not be comparable to the

## Study Inclusion Criteria

This publication summarizes a review of 40 papers that study charter schools using lottery-based research designs. To narrow their focus, the researchers only included studies that:

- Estimate the impact of charter school programs on academic, behavioral, health, civic, or labor market outcomes;
- Use lottery methods or other forms of random assignment;
- Have appeared in peer-reviewed journals, working papers, government publications, or independently-published white papers after 2000; and
- Study charter schools in the United States and enroll students in K-12.

impact of attending a rural charter school or an urban charter that is not oversubscribed. In research parlance, lottery studies may have limited *external validity*—the ability to predict outcomes for charter schools that don't match the specific circumstances in the study.

### Understanding Impact

It can be challenging to understand the impact of charter schools in different contexts and on various outcome measures. Student performance on standardized tests is a commonly studied outcome, but different standardized tests use different scoring systems: A difference of one point or ten points can mean vastly different things depending on the test. For this reason, many studies included in this review measure impact in a unit known as *standard deviations*. Standard deviations offer a measure of spread that allows us to compare the general impact of charter schools on different outcomes.<sup>5</sup>

A simplified interpretation of standard deviations in percentile terms is shown in Table 1 below.<sup>6</sup>

The availability of quality non-charter school options can complicate drawing conclusions from study results. One 2023 study showed that in Chicago, contrary to many people's expectations, attending selective, traditional public schools *negatively* impacted students' outcomes.<sup>7</sup> Many students not admitted to selective schools attended high-performing charter schools instead. As a result, the students who got into selective schools performed worse than those who attended the high-performing charter schools. In academic terms, the *counterfactual*—what happens to students who do not receive a charter school seat—is an important factor in determining charter impacts.

**Table 1: Interpreting standard deviations**

Effect Size	Interpretation
0.10 standard deviations	50th percentile to 54th percentile
0.20 standard deviations	50th percentile to 58th percentile
0.30 standard deviations	50th percentile to 62nd percentile
0.40 standard deviations	50th percentile to 66th percentile

## Findings

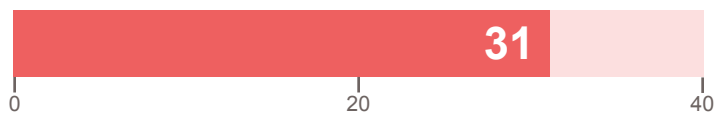
This review includes 40 lottery-based studies that analyze the effects of charter schools in the United States. The following topics are included:

- **Math/ELA standardized test scores**
- **College preparation**
- **College enrollment and persistence**
- **Behavior, health, and civic engagement**
- **Differential impacts on different student groups**

### Charter schools boost student performance on math and ELA standardized tests, with varying impacts across regions and school models.

Most lottery studies have found that charter schools increased student performance on math and English language arts (ELA) standardized test scores, with larger effects on math performance. This finding has been replicated across the United States, including in Boston, Chicago, the Denver area, Los Angeles, Newark, New York City, and Washington D.C.<sup>8</sup> Many improvements occurred in standardized tests administered to elementary and middle schoolers, an encouraging finding given that high school may be too late for effective educational interventions. The large positive effects of charter schools on test scores are often found at “high expectations, high support” charter schools. Usually located in urban settings, they are distinguished by smaller class sizes, frequent testing, longer school days, strict discipline, high academic expectations, and data-driven feedback for teachers. For example, a 2011 study found that attending Boston charter middle schools, most of which follow the “high expectations, high support” model, increased student achievement on average by 0.42 standard deviations in math and 0.25 standard deviations in ELA.<sup>9</sup>

#### Supporting literature



#### Suburban and rural charter schools

Suburban and rural charter schools are less likely to increase student performance than urban charter schools. For example, a 2015 study of 33 charter middle schools in 13 states found slightly negative effects of attending a charter school on student test

scores.<sup>10</sup> About two-thirds of the schools analyzed in this study were in suburban or rural settings. The difference in impact by geographic setting could stem from variations in the quality of the charter sector and of non-charter options, and/or the composition of the student population applying to charter schools.

#### Teaching to the test

One critique of charter schools is that they “teach to the test,” stressing test-taking skills at the expense of providing a well-rounded education. Few lottery studies have examined this, but one from Boston found that charter school students performed better than traditional public school students across all subjects, including those rarely part of the standardized testing regime.<sup>11</sup>

#### Math/ELA Test Score Impacts

While charter school impacts on test scores are promising in urban settings, policymakers and others should be cautious when generalizing the implications to other geographies. In addition, the “high expectations, high support” model has changed in recent years, de-emphasizing student discipline in response to criticism of harsh practices.<sup>12</sup> Given that the most recent data used in research is from 2015, future work should examine if the changes to this model have increased, decreased, or maintained the historical “high expectations, high support” test performance. Additional work should also focus on non-urban charter schools to surface the differences in the impact of charters across a greater variety of settings.

#### Charter school attendance improves college preparation, but evidence of on-time high school graduation is mixed.

A critical question in education policy is whether improvements in short-term outcomes, such as standardized test scores, translate into long-term student success. College preparation measures such as Advanced Placement (AP) exam scores and SAT/ACT scores may offer early insights into students’ life trajectories. In addition, many charter schools—such as those belonging to the Knowledge Is Power Program (KIPP), a large national CMO—place an

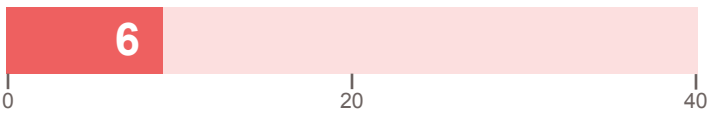
explicit focus on college preparation.<sup>13</sup> Given this emphasis, several studies examine college readiness, high school graduation rates, and related outcomes.

### College preparation

Few lottery studies examine academic outcomes beyond math and ELA scores. The studies that do exist find that charter school attendance improves college preparation outcomes: for example, increasing the likelihood of sitting for and performing well on an AP exam and increasing SAT/ACT scores (see Table 2 for a summary of the impacts on academic outcomes).

Six papers examined a broader set of academic measures linked to college readiness, including high school exit exams, college-prep course participation, merit-aid eligibility, high school grade point average, and the likelihood of taking a calculus class.<sup>14</sup> In general, charter schools improve these outcomes, though one study found that they had no impact on GPAs or AP course-taking.<sup>15</sup>

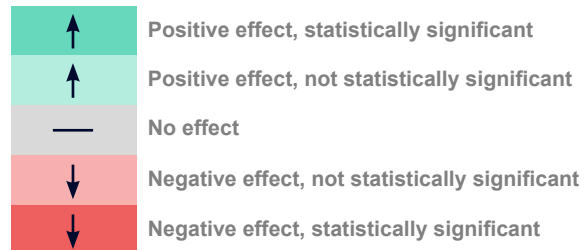
### Supporting literature



**Table 2: Lottery-based impacts of charter schools on college preparation**

Paper	State	Sample enrollment year	No. of schools	SAT score	AP score	Take AP	On-time high school graduation
Clark Tuttle et al. (2013)	6 states	2009	22				—*
Dobbie & Fryer (2015)	New York	2005-06	1				↑
Angrist et al. (2016)	Massachusetts	2002-09	6	↑	↑	↑	↓
Setren (2021)	Massachusetts	2003-14	30	↑	↑	↑	
Angrist et al. (2023)	Illinois	2009-12	30				↓
Cohodes & Feigenbaum (2023)	Massachusetts	2002-13	12	↑	↑	↑	
Reber et al. (2023)	California	2013-14	5			—	

How to read: This table shows the direction and significance of charter school impacts on several college preparation outcomes. Blank areas indicate that a study did not report on the given outcome. Shading indicates level of statistical significance. Studies with null findings have a dash.



“Sample Enrollment Year” refers to the initial years of enrollment for all cohorts of students who are included in a particular evaluation. For example, if a study analyzes all students who applied for a spot in a charter school for the 2008-09, 2009-10, and 2010-11 school years, this column reads “2008-10.”

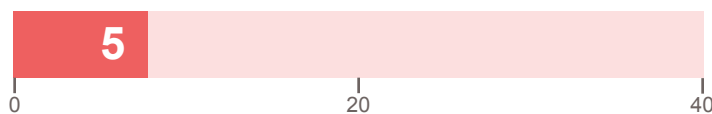
\* Clark Tuttle et al. (2013) report whether a student expects to graduate high school on time.

## High school graduation

It is unclear whether attending a charter school boosts high school on-time graduation, with studies in Boston and New York City giving conflicting results. The Boston study showed that charter attendance reduced the likelihood of on-time graduation by 14.5 percentage points, but that charter students caught up after five years.<sup>16</sup> Meanwhile, the New York City study found that on-time graduation increased by 13.3 percentage points, with students from traditional public schools catching up after six years.<sup>17</sup> Meanwhile, a Los Angeles study found no significant impact on graduation.<sup>18</sup>

On-time graduation may not be the most informative outcome to examine student achievement. Students may spend an extra year in high school to meet more rigorous graduation requirements.

### Supporting literature



### College Preparation Impacts

Charter schools improve students' college preparation, as measured by SAT and AP test scores. However, more work is needed to unpack the conflicting findings for high school graduation rates and how these rates vary for different groups of students.

## Charter school attendance boosts four-year college enrollment but has an unclear impact on college persistence.

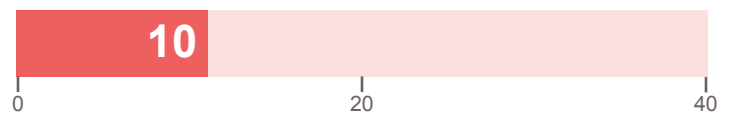
Gains in college preparation and inconclusive evidence on high school graduation naturally lead to the question of whether charter school attendance boosts college enrollment and persistence. This is also one of the salient questions facing policymakers and charter school leaders today. Since many high-stakes accountability decisions, including charter renewals, depend on standardized test scores, it is plausible that schools teach to the test but do not generate longer-term gains. Furthermore, because charter schools enroll higher shares of historically disadvantaged students, their impact on longer-term outcomes illuminates the role they can play in enhancing equity in higher education and other life outcomes down the road.

## College enrollment

Most lottery studies have found that a charter school education increases the likelihood that a student attends a four-year college (eight of ten studies). For example, a 2022 study of 13 KIPP charter middle schools quantified that edge at 12.9 percentage points.<sup>19</sup> It is unclear what drives this outcome. Some studies suggest charter schools induce students who would not have attended any college to enroll in a four-year college.<sup>20</sup> Other evidence suggests charter schools influence students to attend four-year rather than two-year colleges.<sup>21</sup> More work is needed to uncover the mechanisms behind these trends.

Few studies evaluate charter schools' impact on college decisions in the long term. One study in Chicago showed that charter students were more likely to be enrolled in or graduate from a four-year college than traditional public school students seven to nine years after high school graduation.<sup>22</sup> However, another study of a New York City charter school found no difference in college-going rates between charter school students and their traditional public school counterparts six years after high school graduation.<sup>23</sup>

### Supporting literature

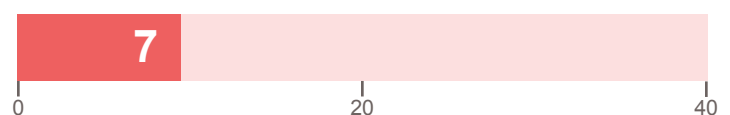


### College persistence and quality

The evidence is mixed on how charter school attendance impacts college education. Seven studies examine college persistence: Four found that charter school attendance increased college persistence, while three showed no effect.<sup>24</sup> To some extent, the studies that found no effect were limited by a lack of reliable data that covered an extended period of time. For example, one study reported a small, positive, but statistically imprecise—and therefore inconclusive—impact on college persistence after three semesters.<sup>25</sup> The impact declined after five semesters, with follow-up data unavailable beyond that.<sup>26</sup>

The evidence is also mixed on whether charter school attendance increases the quality of the four-year college that the student attends. Three studies tied charter attendance to higher-quality college enrollment (as defined by peer SAT scores, college graduation rates, and admissions rates), and one study found no impact.<sup>27</sup> Table 3 summarizes the impacts of charter schools on postsecondary outcomes.

### Supporting literature



**Table 3: Lottery-based impacts of charter schools on postsecondary outcomes**

Paper	State	Immediate college enrollment	2-year college enrollment	4-year college enrollment	Ever enrolled in college	College persistence <sup>28</sup>	College quality <sup>29</sup>	College graduation
Dobbie & Fryer (2015)	New York	↑		—	—	—		
Angrist et al. (2016)	Massachusetts	↑	↓		—	↑		
Coen et al. (2019)	4 states	↑	—	↑	↑	—	—	
Davis & Heller (2019)	Illinois		↑	↑	↑	↑	↑	
Setren (2021)	Massachusetts		↓					—
Nichols-Barrer et al. (2022)	4 states	—	—	↑	↑	↑		
Angrist et al. (2023)	Illinois			↑				
Cohodes & Feigenbaum (2023)	Massachusetts		—	↑	↑		↑	
Demers et al. (2023)	9 states				↑	—	↑	—
Reber et al. (2023)	California	↑	—	↑	↑	↑	—	

How to read: This table shows the direction and significance of charter school impacts on several postsecondary outcomes. Blank areas indicate that a study did not report on the given outcome. Shading indicates level of statistical significance. Studies with null findings have a dash.

↑	Positive effect, statistically significant
↑	Positive effect, not statistically significant
—	No effect
↓	Negative effect, not statistically significant
↓	Negative effect, statistically significant

### College Enrollment and Persistence Impacts

More research with longer-term follow-up is needed to provide conclusive evidence of charter impacts on college persistence and completion. Further studies can help answer whether the tightly structured environments in “high expectations, high support” charter schools, which enhance K-12 academic achievement, also help prepare students to succeed in the long term. Finally, future work is needed to more thoroughly investigate whether charter graduates attend higher-quality colleges.



## Sparse evidence exists on non-academic performance, and existing findings are inconclusive.

In recent years, many researchers and policymakers have moved away from achievement as the sole measure of school quality. Testing disruptions due to COVID-19 furthered this shift. Non-academic measures, including health and behavioral outcomes, can help build a more holistic understanding of school effects not captured by test scores. To this end, researchers have begun to investigate the impacts of charter schools on behavior, health, and civic engagement.

### Behavior

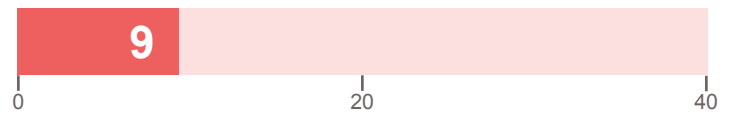
Nine papers have explored charter impacts on student behavior outcomes, including those related to absences, effort, suspensions, and risky behaviors like drinking, drugs, and pregnancy.

Four papers examine the impact of charter school attendance on disciplinary outcomes such as suspensions. Two studies found that students who attended “high expectations, high support” charter schools in Massachusetts were significantly more likely to be suspended than their peers in traditional public schools.<sup>30</sup> Two other studies, one in Michigan and the other across 15 states, found no impact of charter attendance on disciplinary incidents.<sup>31</sup> Student discipline is particularly hard to measure in the charter school context. A higher suspension rate could reflect stricter disciplinary policies, which are common at “high expectations, high support” charters, rather than more incidents of misconduct.<sup>32</sup>

Five studies analyze student behavior in school, including tardiness, absences, and measures of effort based on students’ responses to survey questions. Three papers found attending a charter school had no impact on student effort.<sup>33</sup> Two papers showed that charter school attendance reduced student absences or class-skipping behaviors,<sup>34</sup> while one found no effect.<sup>35</sup>

Two papers evaluate the effect of attending a charter school on student engagement in risky behaviors. Both showed that charter attendance decreased extremely risky behaviors, such as sex without contraception, pregnancy, and incarceration.<sup>36</sup>

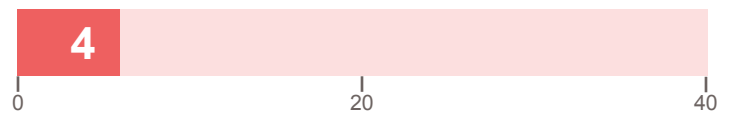
### Supporting literature



### Health

Four studies report on student health, which we broadly define as student well-being and attitudes as well as physical and mental health. Two papers estimate charter effects on student well-being and attitudes, with mixed results. One study found that charter students were more well-adjusted than their peers in traditional public schools, while the other found that charters had no impact on student attitudes toward school.<sup>37</sup> Two papers examine student health outcomes, finding null effects. One study found that attending a charter school had no effect on alcohol, tobacco, and drug use,<sup>38</sup> and the other found that charters had no effect on physical and mental health outcomes.<sup>39</sup>

### Supporting literature

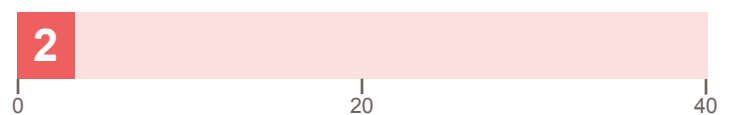


### Civic engagement

In the United States, higher education levels are correlated with higher voter turnout.<sup>40</sup> However, limited evidence exists on how school sectors influence civic engagement. Some charter school models emphasize civic participation, so it is plausible that these schools may positively impact voting and other civic outcomes.

Two lottery studies showed that charter school attendance increased a student’s likelihood to vote without increasing voter registration rates.<sup>41</sup> Interestingly, this was observed at both a civic participation-oriented charter school in New York City and a larger sample of schools in Boston with no such thematic focus. In the Boston schools, voter participation increased by six percentage points, a pattern completely driven by females.<sup>42</sup>

### Supporting literature



## Behavior, Health, and Civic Engagement Impacts

Lottery-based evidence about the impact of charter schools on behavior and health outcomes is inconclusive. Behavioral impacts may be an important channel for explaining the long-term outcomes of attending charter schools, such as higher rates of four-year college enrollment. The evidence on civic engagement is limited but suggests that charters may induce higher voter participation. More work is needed to determine which findings generalize across the charter sector and how outcomes vary across student subgroups and different charter school practices.

### Charter schools especially benefit low performing, non-white, and low-income students; more evidence is needed to clarify whether specific student subgroups experience larger gains than their counterparts.

An intended benefit of many charter schools is to provide historically disadvantaged students with access to high-quality education. Therefore, it is crucial to understand if charter schools benefit certain student groups more or less than others.

Eight of the reviewed studies indicated that students with lower incoming test scores benefited more from attending a charter school than those with higher test scores.<sup>43</sup> Six of these studies found that lower-income and non-white students enjoyed large benefits as well.<sup>44</sup> For example, one of these studies found that attending an urban charter middle school in Boston improved Black and Hispanic students' math scores by 0.421 standard deviations, compared to a 0.133 standard deviation increase among white students.<sup>45</sup> Six studies found that English language learners (ELL) benefited as much if not more than non-ELL students from charter school attendance, as measured by test scores, college enrollment and persistence, and civic engagement.<sup>46</sup>

For other groups of students, charter studies have yielded mixed results. The evidence is inconclusive on whether charter school impacts differ by gender. Five studies found similar test scores and postsecondary

impacts across boys and girls,<sup>47</sup> while two reported larger gains for girls.<sup>48</sup> Similarly, five studies in Massachusetts evaluate the differential impacts of charter schools by special education status. Three found that special education students experienced particularly large math and reading achievement gains,<sup>49</sup> while two other studies found no such differences.<sup>50</sup>

Importantly, research suggests that the student groups that benefit most from attending a charter school are the least likely to attend them.<sup>51</sup> In one study, for example, charter schools produced the greatest benefits for ELL students and those with low incoming test scores.<sup>52</sup> However, these same groups were less likely to apply to and enroll in charter schools. This suggests that charter schools would continue to produce strong student outcomes for students if the sector grows.

### Differential Impacts on Different Student Groups Impacts

More research is needed to understand which groups benefit most from charter schools and how charter schools can best address education equity. To this end, research on which practices lead to high-quality schools should also include comparisons by student subgroup.

## Areas for Future Research

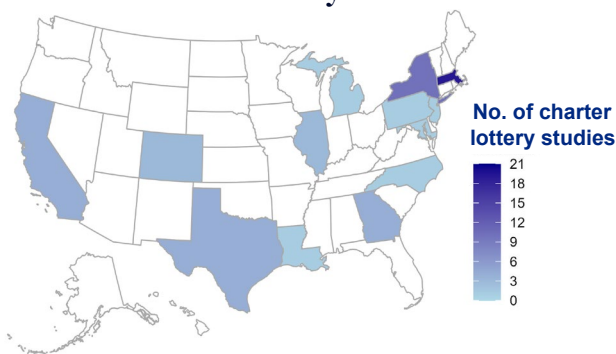
Lottery-based research reveals that attending charter schools improves students' standardized test scores and their likelihood of enrolling in a four-year college. However, many outcomes and settings have not been studied in depth and show more mixed results. Charter school growth offers new opportunities to deepen and broaden our understanding of charter schools. Future research should focus on five key areas:

- **Drivers of Quality:** Lottery-based studies to date examine the effect of attending charter schools on student outcomes; they do not shed light on which characteristics of charter schools are most effective. Charter schools that embrace different practices, policies, and curricula have varying impacts on student success. Lottery-based studies have focused much attention on the "high expectations, high

support” model. Investigating a wider range of charter school models could help further identify effective techniques and policies.

- **Variation across geography and time:** Most of the lottery studies to date have been in a handful of large urban centers (e.g., Boston, New York, and Chicago; see Figure 4). Although charter schools operate in 45 states, lottery studies come from only 14 states.<sup>53</sup> For a more representative evidence base, additional studies should target the Midwest, South, and Southwest as well as more suburban and rural areas. Existing lottery-based research relies on data from 2015 or earlier. Studies using more recent data will reveal how the charter sector is faring as it expands and evolves. In addition, studies of charter effectiveness since COVID-19 could help uncover how charter schools can help address pandemic learning losses.

**Figure 4: Number of charter lottery studies by state**



- **Non-test score outcomes:** While test scores offer a ready gauge of success, they don’t capture the impact of charter schools on other outcomes such as course-taking, student behavior, health, and civic participation. Studying those areas would provide a broader picture of the impact of attending charter schools.
- **Looking longer-term:** Data constraints limit researchers’ ability to study long-term outcomes such as college persistence, earnings, and employment. These outcomes will help reveal whether charter schools are preparing students for future success as opposed to just helping them score well on standardized tests to meet accountability standards.
- **System-level impacts:** Lottery studies focus on evaluating the effect of attending charter schools. Researchers need more than lottery-based studies to evaluate the spillover effects of

charters on the school system at large and the effects of governmental policy changes on charter effectiveness. Several studies have examined how policy changes (e.g., statewide suspension rules and charter caps) impact both charter school and traditional public school effectiveness. More research is needed into the practices of charter school authorizers, the charter school labor market, charter school funding sources, and other ecosystem drivers that can yield improvements in student performance.

## Conclusion

Amid charter school growth and change, a tremendous opportunity exists for diverse stakeholder groups to come together to make charter school research more rigorous, actionable, and timely. New research-practice partnerships can help answer questions about what works, in what context, for which students, and under which conditions. Answers to these questions will help ensure that charter school practices and policies evolve in the most evidence-informed and equitable way possible.

## About MIT Blueprint Labs

Blueprint Labs is a non-partisan research lab based at MIT that is dedicated to studying pressing problems in education, health care, and the workforce. The MIT Blueprint Labs Education Team studies education systems and policies, coupling groundbreaking research with strong policy partnerships. Our work helps policymakers design more equitable education systems and improve outcomes for children and families.

## For Further Reading

This evidence review is an executive summary of work by Sarah Cohodes and Susha Roy: “Thirty years of charter schools: What does lottery-based research tell us?”

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# Appendix

## Featured research summary of charter lottery studies & outcomes

Paper	Outcome							Details	
	Math/ELA	Other K-12 academic	Health	Behavior	Postsecondary	Civic	Labor market	Location	Sample
Hoxby & Rockoff (2005)	✓							Illinois	<5K
Abdulkadiroğlu et al. (2009)	✓							Massachusetts	<5K
Hoxby et al. (2009)	✓							New York	<100K
Angrist et al. (2010)	✓							Massachusetts	<500
Gleason et al. (2010)	✓	✓	✓	✓				15 states	<5K
Abdulkadiroğlu et al. (2011)	✓							Massachusetts	<5K
Angrist et al. (2011)	✓							Massachusetts	<20K
Dobbie & Fryer (2011)	✓	✓		✓				New York	<5K
Angrist et al. (2012)	✓							Massachusetts	<1K
Angrist et al. (2013)	✓			✓				Massachusetts	<30K
Clark Tuttle et al. (2013)	✓	✓	✓	✓				6 states	<1K
Cohodes et al. (2013)	✓							Massachusetts	<20K
Dobbie & Fryer (2013)	✓							New York	<20K
Curto & Fryer (2014)	✓							Washington, DC	<500
Grigg & Borman (2014)	✓							Colorado	<500
Wong et al. (2014)			✓	✓				California	<1K
Clark et al. (2015)	✓							13 states	<5K
Dobbie & Fryer (2015)		✓	✓	✓	✓			New York	<500
Abdulkadiroğlu et al. (2016)	✓							Louisiana, Massachusetts	<10K
Angrist et al. (2016)		✓			✓			Massachusetts	<5K
Cohodes (2016)	✓	✓						Massachusetts	<5K
Abdulkadiroğlu et al. (2017)	✓							Colorado	<5K
Unterman (2017)	✓							New York	<5K
Dynarski et al. (2018)	✓	✓	✓					Michigan	<30K
Frandsen & Lefgren (2018)	✓							Massachusetts	<500
Ridley & Terrier (2018)	✓							Massachusetts	<3 mil*
Walters (2018)	✓							Massachusetts	<10K
Coen et al. (2019)					✓			4 states	<5K
Davis & Heller (2019)					✓			Illinois	<1K
Felix (2020)				✓				Massachusetts	<30K
Gill et al. (2020)						✓		New York	<5K
Winters (2020)	✓							New Jersey	<10K
Cohodes et al. (2021)	✓							Massachusetts	<5K
Setren (2021)	✓	✓			✓			Massachusetts	<5K
Nichols-Barrer et al. (2022)					✓			4 states	<5K
Angrist et al. (2023)	✓	✓			✓			Illinois	<30K
Cohodes & Feigenbaum (2023)	✓	✓			✓	✓		Massachusetts	<10K
Demers et al. (2023)						✓		9 states	<5K
Grissmer et al. (2023)	✓	✓						Colorado	<5K
Reber et al. (2023)	✓	✓		✓	✓			California	<5K
<b>Count</b>	<b>31</b>	<b>12</b>	<b>4</b>	<b>9</b>	<b>10</b>	<b>2</b>	<b>0</b>		

Notes: This table shows all of the lottery-based studies included in this study, the associated outcomes that they analyze, the location of each study, and the sample size. Sample sizes are categorized in general buckets because in many cases the exact sample size depends on the outcome being studied. \*Ridley & Terrier (2018) uses Massachusetts-wide data, but the sample of students who actually participate in charter school lotteries is much smaller.

# References

- 1 Legislation authorizing charter schools has been passed in 45 states, though only 43 states had operating charter schools as of 2021. National Center for Education Statistics (2021). What are charter schools? How common are they and whom do they serve? Fast Facts: Charter Schools. National Center for Education Statistics. <https://nces.ed.gov/fastfacts/display.asp?id=30>.
- 2 National Association of Charter School Authorizers. (2023). What is charter school authorizing? National Association of Charter School Authorizers. <https://qualitycharters.org/authorizingmatters/#:~:text=Authorizers%20are%20the%20entities%20that, vary%20depending%20on%20state%20law>.
- 3 White, J. & Xu, Y. (2022). How are charter schools managed? National Alliance for Public Charter Schools. <https://data.publiccharters.org/digest/charter-school-data-digest/who-manages-charter-schools/>; Common Core of Data. (2022). Public Elementary/Secondary School Universe Survey (v.1a) [Data Set]. Common Core of Data. <https://nces.ed.gov/ccd/files.asp>.
- 4 Gross, B., DeArmond, M., & Denice, P. (2015). Common enrollment, parents, and school choice: Early evidence from Denver and New Orleans (Making School Choice Work Series). Center on Reinventing Public Education; Corcoran, S. P., Jennings, J. L., Cohodes, S. R., & Sattin-Bajaj, C. (2018). Leveling the playing field for high school choice: results from a field experiment of informational interventions (Working Paper No. 24471). National Bureau of Economic Research; Cohodes, S., Corcoran, S. P., Jennings, J., & Sattin-Bajaj, C. (2022). When do informational interventions work? Experimental evidence from New York City high school choice. Opportunity and Inclusive Growth Institute (Working Paper No. 57). Federal Reserve Bank of Minneapolis.
- 5 J-PAL Evidence Review. (2020). The transformative potential of tutoring for PreK-12 learning outcomes: Lessons from randomized evaluations. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.
- 6 The table suggests that, for example, an effect of 0.10 standard deviations would correspond to a student's math score increasing from the 50th percentile to the 54th percentile. In other words, the higher the standard deviation, the bigger the impact. The values in this table assume a normal distribution. J-PAL Evidence Review. (2020). The transformative potential of tutoring for PreK-12 learning outcomes: Lessons from randomized evaluations. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.
- 7 Angrist, J. D., Pathak, P. A., & Zarate, R. A. (2023). Choice and consequence: Assessing mismatch at Chicago exam schools. *Journal of Public Economics*, 223, 104892.
- 8 Abdulkadiroğlu, A., Angrist, J., Dynarski, S., Kane, T. J., & Pathak, P. A. (2011). Accountability and flexibility in public schools: Evidence from Boston's charters and pilots. *The Quarterly Journal of Economics*, 126(2), 699–748; Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Fullerton, J. B., Kane, T. J., Pathak, P. A., & Walters, C. R. (2011). Student achievement in Massachusetts' charter schools. Center for Education Policy Research; Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, 5(4), 1–27; Angrist, J. D., Pathak, P. A., & Zarate, R. A. (2023). Choice and consequence: Assessing mismatch at Chicago exam schools. *Journal of Public Economics*, 223(2), 104892; Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Dobbie, W., & Fryer, R. G. (2013). Getting beneath the veil of effective schools: Evidence from New York City. *American Economic Journal: Applied Economics*, 5(4), 28–60; Unterman, R. (2017). An early look at the effects of Success Academy charter schools (Report). MDRC. <https://files.eric.ed.gov/fulltext/ED575961.pdf>; Winters, M. A. (2020). Charter schools in Newark: The effect on student test scores (Report). Manhattan Institute. <https://files.eric.ed.gov/fulltext/ED604330.pdf>; Reber, S.J., Rünge, D., Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 9 Abdulkadiroğlu, A., Angrist, J., Dynarski, S., Kane, T. J., & Pathak, P. (2011). Accountability and flexibility in public schools: Evidence from Boston's charters and pilots. *The Quarterly Journal of Economics*, 126(2), 699–748.
- 10 Clark, M. A., Gleason, P. M., Clark Tuttle, C., & Silverberg, M. K. (2015). Do charter schools improve student achievement? *Educational Evaluation and Policy Analysis*, 37(4), 419–436.
- 11 Cohodes, S. (2016). Teaching to the student: charter school effectiveness in spite of perverse incentives. *Education Finance and Policy*, 11(1), 1–42.
- 12 Strauss, V. (2019). Some 'no-excuses' charter schools say they are changing. Are they? Can they? *The Washington Post*. <https://www.washingtonpost.com/education/2019/08/29/some-no-excuses-charter-schools-say-they-are-changing-are-they-can-they/>
- 13 KIPP Massachusetts Public Charter Schools. (2021). About. KIPP Massachusetts Public Charter Schools. <https://kipppma.org/about/>.
- 14 Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037; Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), Part 1; Setren, E. (2021). Targeted vs. general education investments: Evidence from special education and English language learners in Boston charter schools. *Journal of Human Resources*; Cohodes, S., & Feigenbaum, J. J. (2023). Why Does Education Increase Voting? Evidence from Boston's Charter Schools (Working Paper No. 29308). National Bureau of Economic Research; Angrist, J. D., Pathak, P. A., & Zarate, R. A. (2023). Choice and consequence: Assessing mismatch at Chicago exam schools. *Journal of Public Economics*, 223(2), 104892a; Reber, S.J., Rünge, D., & Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 15 Reber, S.J., Rünge, D., & Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 16 Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), Part 1.
- 17 Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037.
- 18 This study measures charter school's impact on whether students ever receive a high school diploma but does not specify the time frame in which they receive it. Reber, S.J., Rünge, D., Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 19 Nichols-Barrer, I., Bartlett, M., Coen, T., & Gleason, P. (2022). The impacts on college enrollment of a charter network serving disadvantaged students: Evidence from KIPP middle school lotteries. *Journal of Research on Educational Effectiveness*, 15(4), 780–798.

- 20** Davis, M., & Heller, B. (2019). No excuses charter schools and college enrollment: New evidence from a high school network in Chicago. *Education Finance and Policy*, 14(3): 414–440.; Coen, T., Nichols-Barrer, I., & Gleason, P. (2019). Long-term impacts of KIPP middle schools on college enrollment and early college persistence. *Mathematica*; Nichols-Barrer, I., Bartlett, M., Coen, T., & Gleason, P. (2022). The impacts on college enrollment of a charter network serving disadvantaged students: Evidence from KIPP middle school lotteries. *Journal of Research on Educational Effectiveness*, 15(4), 780–798; Cohodes, S., & Feigenbaum, J. J. (2023). Why Does Education Increase Voting? Evidence from Boston’s Charter Schools (Working Paper No. 29308). National Bureau of Economic Research.
- 21** Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston’s charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), 275–318; Setren, E. (2021). Targeted vs. general education investments: Evidence from special education and English language learners in Boston charter schools. *Journal of Human Resources*, 56(4), 1073–1112.
- 22** Davis, M., & Heller, B. (2019). No excuses charter schools and college enrollment: New evidence from a high school network in Chicago. *Education Finance and Policy*, 14(3), 414–440.
- 23** Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037.
- 24** Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston’s charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), Part 1; Coen, T., Nichols-Barrer, I., & Gleason, P. (2019). Long-term impacts of KIPP middle schools on college enrollment and early college persistence. *Mathematica*; Davis, M., & Heller, B. (2019). No excuses charter schools and college enrollment: New evidence from a high school network in Chicago. *Education Finance and Policy*, 14(3): 414–440; Demers, A., Nichols-Barrer, I., Steel, E., Bartlett, M., & Gleason, P. (2023). Long-term impacts of KIPP middle and high schools on college enrollment, persistence, and attainment. *Mathematica*; Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037; Nichols-Barrer, I., Bartlett, M., Coen, T., & Gleason, P. (2022). The impacts on college enrollment of a charter network serving disadvantaged students: Evidence from KIPP middle school lotteries. *Journal of Research on Educational Effectiveness*, 15(4), 780–798; Reber, S.J., Rüniger, D., Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 25** The specific outcome here is college persistence through three semesters at any postsecondary institution, measured within 18 months of expected high school graduation.
- 26** Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston’s charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), Part 1.
- 27** Davis, M., & Heller, B. (2019). No excuses charter schools and college enrollment: New evidence from a high school network in Chicago. *Education Finance and Policy*, 14(3), 414–440; Cohodes, S., & Feigenbaum, J. J. (2023). Why Does Education Increase Voting? Evidence from Boston’s Charter Schools (Working Paper No. 29308). National Bureau of Economic Research; Demers, A., Nichols-Barrer, I., Steel, E., Bartlett, M., & Gleason, P. (2023). Long-term impacts of KIPP middle and high schools on college enrollment, persistence, and attainment. *Mathematica*; Coen, T., Nichols-Barrer, I., & Gleason, P. (2019). Long-term impacts of KIPP middle schools on college enrollment and early college persistence. *Mathematica*.
- 28** College persistence is a measure of whether students remained at college beyond their initial enrollment. Different studies measure this in slightly different ways; for example, Angrist et al. (2016) defines persistence as whether a student has enrolled in college for three or five semesters, while Reber et al. (2023) defines persistence as whether a student has remained enrolled in college for the first and second years following their high school graduation.
- 29** Studies measure the “quality” of a college using several different factors, including selectivity, graduation rates, instructional spending per student, and the average test scores, such as SAT scores, of incoming students.
- 30** Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, 5(4): 1-27; Felix, M. (2020). Charter schools and suspensions: Evidence from Massachusetts Chapter 222. (Discussion Paper No. 2020.10). Blueprint Labs.
- 31** Gleason, P., Clark, M., Clark Tuttle, C., & Dwoyer, E. (2010). The evaluation of charter school impacts: Final report (NCEE 2010-4029). National Center for Education Evaluation and Regional Assistance; Dynarski, S., Hubbard, D., Jacob, B., & Robles, S. (2018). Estimating the effects of a large for-profit charter school operator. (Working Paper No. 24428). National Bureau of Economic Research.
- 32** Golann, J. W., & Torres, A. C. (2020). Do no-excuses disciplinary practices promote success? *Journal of Urban Affairs*, 42(4), 617–633.
- 33** Reber, S.J., Rüniger, D., & Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39; Clark Tuttle, C., Gill, B., Gleason, P., Knetchel, V., Nichols-Barrer, I., & Resch, A. (2013). KIPP middle schools: Impacts on achievement and other outcomes. *Mathematica*; Gleason, P., Clark, M., Clark Tuttle, C., & Dwoyer, E. (2010). The evaluation of charter school impacts: Final report (NCEE 2010-4029). National Center for Education Evaluation and Regional Assistance.
- 34** Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037; Reber, S.J., Rüniger, D., & Wong, M.D. (2023). The effects of charter high schools on academic achievement and college enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39.
- 35** Dynarski, S., Hubbard, D., Jacob, B., & Robles, S. (2018). Estimating the effects of a large for-profit charter school operator. (Working Paper No. 24428). National Bureau of Economic Research.
- 36** Wong, M. D., Collier, K. M., Dudovitz, R. N., Kennedy, D. P., Buddin, R., Shapiro, M. F., Kataoka, S. H., Brown, A. F., Tseng, C., Bergman, P., & Chung, P. J. (2014). Successful schools and risky behaviors among low-income adolescents. *Journal of the American Academy of Pediatrics*, 134(2), e289-e396; Dobbie, W., & Fryer, R. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037.
- 37** Gleason, P., Clark, M., Clark Tuttle, C., & Dwoyer, E. (2010). The evaluation of charter school impacts: Final report (NCEE 2010-4029). National Center for Education Evaluation and Regional Assistance; Clark Tuttle, C., Gleason, P. M., & Clark, M. (2012). Using lotteries to evaluate schools of choice: Evidence from a national study of charter schools. *Economics of Education Review*, 31(2), 237–253.
- 38** Wong, M. D., Collier, K. M., Dudovitz, R. N., Kennedy, D. P., Buddin, R., Shapiro, M. F., Kataoka, S. H., Brown, A. F., Tseng, C., Bergman, P., & Chung, P. J. (2014). Successful schools and risky behaviors among low-income adolescents. *Journal of the American Academy of Pediatrics*, 134(2), e289-e396.
- 39** Dobbie, W., & Fryer, R. (2015). The medium-term impacts of

high-achieving charter schools. *Journal of Political Economy*, 123(5), 985–1037.

**40** US Elections Project (2022). Voter Turnout Demographics. US Elections Project.

**41** Gill, B., Whitesell, E. R., Corcoran, S. P., Tilley, C., Finucane, M., & Potamites, L. (2020). Can charter schools boost civic participation? The impact of Democracy Prep Public Schools on voting behavior. *American Political Science Review*, 114(4), 1386–1392; Cohodes, S., & Feigenbaum, J. J. (2023). Why Does Education Increase Voting? Evidence from Boston's Charter Schools (Working Paper No. 29308). National Bureau of Economic Research.

**42** Cohodes, S., & Feigenbaum, J. J. (2023). Why Does Education Increase Voting? Evidence from Boston's Charter Schools (Working Paper No. 29308). National Bureau of Economic Research.

**43** Angrist, J. D., Dynarski, S. M., Kane, T. J., Pathak, P. A., & Walters, C. R. (2012). Who benefits from KIPP? *Journal of Policy Analysis and Management*, 31(4), 837–860; Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, 5(4), 1–27; Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), 275–318; Cohodes, S. (2016). Teaching to the student: Charter school effectiveness in spite of perverse incentives. *Education Finance and Policy*, 11(1), 1–42; Walters, C. R. (2018). The demand for effective charter schools. *Journal of Political Economy*, 126(6): 2179–2223; Setren, E. (2021). Targeted vs. general education investments: Evidence from special education and English language learners in Boston charter schools. *Journal of Human Resources*, 56(4), 1073–1112; Curto, V. E., & Fryer, R. G. (2014). The potential of urban boarding schools for the poor: Evidence from SEED. *Journal of Labor Economics*, 32(1), 65–93.

**44** Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, 5(4), 1–27; Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Walters, C. R. (2018). The demand for effective charter schools. *Journal of Political Economy*, 126(6): 2179–2223; Curto, V. E. & Fryer, R. G. (2014). The potential of urban boarding schools for the poor: Evidence from SEED. *Journal of Labor Economics*, 32(1), 65–93; Hoxby, C. M., Murarka, S., & Kang, J. (2009). How New York City's charter schools affect achievement. The New York City Charter Schools Evaluation Project; Winters, M. A. (2020). Charter schools in Newark: The effect on student test scores (Report). Manhattan Institute. <https://files.eric.ed.gov/fulltext/ED604330.pdf>.

**45** Angrist, J. D., Pathak, P. A., & Walters, C. R. (2013). Explaining charter school effectiveness. *American Economic Journal: Applied Economics*, 5(4): 1–27.

**46** Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Walters, C. R. (2018). The demand for effective charter schools. *Journal of Political Economy*, 126(6), 2179–2223; Cohodes, S. R., & Parham, K. S. (2021). Charter schools' effectiveness, mechanisms, and competitive influence (Working Paper No. 28477). National Bureau of Economic Research; Setren, E. (2021). Targeted vs. general education investments: Evidence from special education and English language learners in Boston charter schools. *Journal of Human Resources*, 56(4), 1073–1112; Demers, A., Nichols-Barrer, I., Steel, E., Bartlett, M., & Gleason, P. (2023). Long-term impacts of KIPP middle and high schools on college enrollment, persistence, and attainment. *Mathematica*; Cohodes, S., & Feigenbaum, J. J. (2023). Why does education increase voting? Evidence from Boston's charter schools (Working Paper No. 29308). National

Bureau of Economic Research.

**47** Hoxby, C. M., Murarka, S., & Kang, J. (2009). How New York City's charter schools affect achievement. The New York City Charter Schools Evaluation Project; Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), 275–318; Reber, S. J., Rüniger, D., Wong, M. D. (2023). The Effects of Charter High Schools on Academic Achievement and College Enrollment: Evidence from Los Angeles. *Education Finance and Policy*, 1–39; Davis, M., & Heller, B. (2019). No Excuses Charter Schools and College Enrollment: New Evidence from a High School Network in Chicago. *Education Finance and Policy*, 14(3), 414–440; Demers, A., Nichols-Barrer, I., Steel, E., Bartlett, M., & Gleason, P. (2023). Long-term impacts of KIPP middle and high schools on college enrollment, persistence, and attainment. *Mathematica*.

**48** Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter School Demand and Effectiveness: A Boston Update. The Boston Foundation; Curto, V. E., & Fryer, R. G. (2014). The potential of urban boarding schools for the poor: Evidence from SEED. *Journal of Labor Economics*, 32(1), 65–93.

**49** Angrist, J. D., Dynarski, S. M., Kane, T. J., Pathak, P. A., & Walters, C. R. (2012). Who benefits from KIPP? *Journal of Policy Analysis and Management*, 31(4), 837–860; Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), 275–318; Walters, C. R. (2018). The demand for effective charter schools. *Journal of Political Economy*, 126(6), 2179–2223.

**50** Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Setren, E. (2021). Targeted vs. general education investments: Evidence from special education and English Language Learners in Boston charter schools. *Journal of Human Resources*, 56(4), 1073–1112.

**51** Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation; Walters, C. R. (2018). The demand for effective charter schools. *Journal of Political Economy*, 126(6), 2179–2223.

**52** Cohodes, S., Setren, E., Walters, C., Angrist, J., & Pathak, P. (2013). Charter school demand and effectiveness: A Boston update. The Boston Foundation.

**53** The sample of one national study covered 15 states, but the authors did not disclose which states were included.