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CHARTER SCHOOLS' EFFECTIVENESS, MECHANISMS, AND COMPETITIVE
INFLUENCE

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ABSTRACT

This paper reviews the research on the impacts of charter school attendance on students' academic and other outcomes, the mechanisms behind those effects, and the influence of charter schools on nearby traditional public schools, almost three decades after the first charter school was established. Across the United States, charter schools appear to perform, on average, at about the same level as their district counterparts. Underlying the similarity in performance across sectors is a consistent finding: charters located in urban areas boost student test scores, particularly for Black, Latinx, and low-income students. Attending some urban charter schools also increases college enrollment and voting and reduces risky behavior, but evidence on such longer-term outcomes has been found in only a few sites and has a limited time horizon. No Excuses charter schools generate test score gains, but their controversial disciplinary practices are not a necessary condition for academic success. Charter school teachers tend to be less qualified and more likely to leave the profession than traditional public school teachers, though the labor market implications are understudied. The influence of charter authorizers and related accountability structures is also limited and would benefit from more rigorous examination. The competitive impact of charter schools on traditional public schools suggests a small, beneficial influence on neighboring schools' student achievement, though there is variation across contexts. Charters also appear to induce a negative financial impact for districts, at least in the short term, though a larger scale study finds charter entry generates more revenue per pupil for district schools. Finally, there is competing evidence on charters' contribution to school racial segregation, and little evidence on the impact of newer, intentionally diverse school models. While we know much about charter schools, more research, in more contexts, is needed to further understand where, for whom, and why charters are most effective.

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1 Introduction

Charter schools were established in the United States when Minnesota became the first state to pass charter school legislation in June 1991, and as of 2020, the number of states that permit charter schools stands at 44. Charter schools—publicly funded and regulated, but privately run schools—operate as autonomous schools (sometimes associated with a larger network) governed by contracts with authorizers that set the accountability requirements for the schools they oversee. Each state in the U.S. has its own laws governing the entities allowed to authorize charter schools, which may include local school boards, state boards of education, universities, or other educational entities. Authorizers typically approve non-profit boards seeking to operate schools of choice, though there are some for-profit charter schools. Charter schools must abide by internal performance expectations, agreed upon with their authorizer, and a timeline by which they must be met—usually a 5-year inaugural period—at the end of which the initial charter is up for either renewal or termination by the authorizer (Education Commission of the States, 2018). Charters are still public schools, with public funding, but they are distinct from traditional public schools in their accountability mechanisms, admissions processes, and contracting arrangements with teachers.

As of 2020, the charter sector comprises more than 7,000 charter schools in the 44 states that have enacted charter laws, serving roughly 3 million students annually—6% of the total U.S. public school student population (David & Hesla, 2018; Hussar et al., 2020). While the majority of charter schools are independently managed, roughly one-quarter belong to charter management organization (CMOs)—nonprofit organizations operating multiple charter schools, responsible for school leader hiring and setting school curricula and policies, and often providing back-office functions to schools in their network in a manner similar to a district office for traditional public schools (LiBetti et al., 2019). CMOs also have a for-profit equivalent, known as education management organizations (EMOs), which operate roughly 12 percent of the nation’s charter schools.

In some cases, U.S. charter schools have served as models for, or developed in parallel to, similar schooling alternatives around the world. The growth of charter schools in the United States has been compared to the expansion of “academies” in England—a system of schools overseen by a board of directors and organized as non-profits (Eyles et al. , 2017). The school-based governance structures of academies and charters are similar, however unlike American charter schools, nearly

all of England's academies are takeovers rather than start-ups (a subset of academies known as "free schools"), and are solely authorized by the country's national Department for Education (Eyles, Hupkau & Machin, 2016). As of 2018, 35 percent of England's public-school system was made up of academies, including free schools—a large proportion compared to the smaller share of the U.S. public school system that charters hold (National Audit Office, 2018). In the past decade, New Zealand has begun allowing for the creation of privately managed publicly supported schools, joining the United States, England, Sweden and Chile—the latter having one of the oldest systems of school choice in the world. New Zealand's Partnership Schools, established in 2014, are most akin to England's free schools, while Chile's privately-run voucher schools—educating more than a quarter of the country's total student population—are similar to American charters in their use of both independent and "network" organizational structures, though the funding mechanisms differ (Elacqua et al., 2008; Jha & Buckingham, 2015).

Motivating concepts behind charter schools, and similar school models internationally, include the ideas that market competition and the opportunity for new schools to act as "laboratories of innovation" can drive school improvement. There is already some competition in the geographic zoning mechanism used by most U.S. school districts to determine public school attendance. Families can "vote with their feet," moving to communities that theoretically compete to offer higher quality public services (Tiebout, 1956). However, moving costs, experienced differentially due to racial wealth gaps and racist redlining practices, undermine the Tiebout model of relocation to access school resources, alongside a long history of segregated schools and ongoing school funding disparities. To increase access to high-quality schools and address inefficiencies in the provision of education, Milton Friedman, among others, argued that market-based school choice via vouchers to attend private schools would engender Tiebout-like competition without the need to move communities, bring choice to families for whom it was not previously available, and theoretically improve the quality of all schools (Friedman, 1955). His argument posits that consumers—in this case, families—will, if unconstrained, make choices concerning their children's schooling that force schools to improve in order to compete with private schools for students.

Of course, there are alternative models to competition when it comes to improving schools, many of which have a track record of success, including increasing school funding (Jackson, Johnson, & Persico, 2015; Jackson, Wigger, & Xiong, in press). However, market-based ideas have

much allure for U.S. policymakers (Chubb & Moe, 1990). Friedman specifically argued in favor of vouchers as a choice mechanism. The same competitive logic applies to charter schools. The idea of charter schools, specifically, was developed by education professor Ray Budde in the 1970s (Jason, 2017) and popularized by Al Shanker during his time as president of the American Federation for Teachers in the following decade (Reichgott Junge, 2012).

Charter schools in the United States have been a contentious political issue since their inception, and policymakers have long sought evidence on charter school effectiveness to inform the debate. Almost 30 years into the charter school movement, there is a broad research base on charters that can answer many questions: such as: the average effectiveness of charter schools, where and why they are most effective, and their influence on traditional public schools. However, answers to these questions sometimes depend on context and research methodology.

The next section reviews the methods researchers use to estimate the impact of charter schools. We then turn to the evidence on charter schools' impacts on student achievement in Section 3. Our goal is to include all rigorous studies of charter school effectiveness (lottery-based, and those that control for prior student achievement), except when a source has been superseded by an updated examination of the same sample of schools. First, we present results on nationwide or statewide samples of charter schools, which provide estimates of charter effectiveness that include a variety of charter schools in multiple environments, though they are primarily limited to observational findings. Next, we present local findings, which offer evidence on effectiveness in specific contexts, are typically based in one urban location, and often use lottery-based evidence. In Section 4, we consider the conditions that support effective charter schools, and finally address the broader, systemic question of charter schools' competitive effects in Section 5; that is, how the existence of charter schools may indirectly affect the quality of education received by students attending traditional public schools. Section 6 concludes by highlighting further questions that have emerged and areas where additional work is needed.

2 Estimating Charter School Impacts

2.2 Using Charter School Lotteries to Address Selection

Simple comparisons of the outcomes of charter school students to other students are flawed. Students and families that opt for charters are likely different than those that opt for

traditional public schools, and any difference in outcomes between those two groups might be due to selection rather than attendance at a particular school. One tool for addressing such selection is a randomized controlled trial (RCT), in which researchers would assign students to attend either charter or district schools and measure the causal effect of charter school attendance as the difference in outcomes between the two groups. In the case of charter schools, a natural experiment comes close to this RCT. When charter schools are oversubscribed, they are required by law to admit students by lottery.

Lottery-based studies are the most credible methodology available for determining the impacts of charter schools on the students who attend them. However, lottery studies are only possible for oversubscribed charter schools with good records. The lotteries generated by charter school natural experiments consist of students randomly assigned to the treatment group (offer of charter admission) or the control group (no offer of a seat). This random assignment can then be used in an instrumental variables framework to estimate the impact of charter attendance, where the offer of treatment is used as an instrument for actual treatment. Estimates of the causal effect of treatment are typically retrieved through a two-stage least squares (2SLS) procedure, in which the first stage is the effect of being randomly offered admission on students' likelihood of enrollment (i.e., the difference in enrollment rates or time in a charter school between treatment and control groups), and the second stage estimates the effect of charter school attendance on a given student-level outcome. These 2SLS estimates are restricted to compliers, that is, students who follow the assignment rule in their school attendance (Angrist, Imbens, & Rubin, 1996).

The 2SLS model's first stage is:

$$D_i = \gamma + \pi Z_i + \sum_j \lambda_j d_{ij} + \mu_i,$$

where D_i indicates whether a student ultimately enrolls in the charter to which they were admitted and Z_i is an instrument indicating a randomized offer of admission. The effect of winning the lottery on attendance is represented by π . Since charter school lottery estimates are often generated for a group of charter schools at the same time, $\sum_j \lambda_j d_{ij}$ represents lottery fixed effects, or "risk sets." These are an exhaustive set of indicators for the set of schools applied to by each student (or the sub-lottery within a school based on timing or preferences). The risk sets are necessary to account for differential likelihood of attending a charter school based on number of applications and student-specific lottery preferences.

The second stage:

$$Y_i = \phi + \rho \widehat{D}_i + \sum_j \omega_j d_{ij} + \epsilon_i,$$

retrieves the effect of interest, ρ . This represents the impact of charter school attendance on a student-level outcome, Y_i , (e.g., test scores, college attendance), for compliers. Again, lottery fixed effects must be included.

Underlying this approach is a reduced form, or intent-to-treat, model:

$$Y_i = \alpha + \beta Z_i + \sum_j \theta_j d_{ij} + \epsilon_i,$$

where β indicates the relationship between winning a lottery and student outcomes, without adjusting for charter school attendance. Some researchers prefer the intent-to-treat estimate, as it is closest to the random assignment from the lottery and reveals a policy-relevant treatment effect of the offer of a seat at a charter school. The main benefit of the 2SLS approach is that it estimates the average causal effect of attendance. Adding covariates representing baseline demographic information or test scores to the system of equations increases the precision of these estimates.

Lottery-based estimates of charter effectiveness remove selection bias, but limitations remain.¹ First, lottery studies are limited in their generalizability. The findings are credible causal estimates, but they are specific to the context in which the oversubscribed lottery exists. As most oversubscribed charter schools are located in urban areas, there are fewer lottery-based estimates from rural and suburban settings. Second, lottery-based studies may not generalize even within their specific contexts, as the students who apply to charter schools may be very different than the students in traditional public schools in the same area. Similarly, oversubscribed charter schools may not be representative of all charter schools in an area. Finally, from a logistical perspective, studying charter schools via lottery requires historic record-keeping or a great deal of prospective planning. Simple operational decisions, like changing the technology platform used for admissions or staff turnover, can result in a loss of the records necessary to recreate admissions lotteries. This is particular concern when attempting to understand the long-term outcomes of charter school attendance, which requires records from far enough in the past to follow a student from their point of charter school admission into adulthood.

2.3 Alternative Observational Designs

When charter schools are not oversubscribed—the case for the majority of charter schools operating in the United States—there are alternative options for estimating charter school

¹ See Clark Tuttle, Gleason, & Clark (2012) for an in-depth look at these issues.

effectiveness. Using administrative data, researchers seek a plausible comparison group for students enrolled in charters. This can be done with propensity score matching or other, similar matching methods. Matching takes the observable characteristics for charter school students and uses those characteristics to match a charter-attending student to a non-charter-attending student whose observable characteristics are as similar as possible. In some cases in the charter school literature, researchers are able to use multiple years of demographic and test score information to make a match. Matching methods with such longitudinal data are more plausibly able to retrieve causal effects of charter schools than other observational research designs (Clark Tuttle et al., 2015).

There are several limitations to this method. Researchers are limited to the observable characteristics for which data are available to facilitate the matching, leaving unobservable differences unchecked. The matching process also involves a number of choices on the part of the researcher, creating challenges for replication. Some experts, cautioning that matching techniques are needlessly complicated, have argued regression with controls for covariates is a more transparent approach which can be as successful at eliminating selection bias as propensity score matching (Angrist & Pischke, 2009). Regardless of the approach, in both cases, researchers are limited to controlling for variables that exist in administrative data, and selection into charters may not be fully addressed. However, where it is possible to compare methods, matching and regression methods often replicate each other (Abdulkadiroğlu, 2011; Clark Tuttle et al., 2015, Fortsan et al., 2015, Foreman et al., 2019).

A similar nonexperimental approach uses each student as a comparison to themselves, leveraging transfers of students from traditional public schools to charter schools, or vice versa, using student fixed effects. While the comparison within an individual is perhaps more credible than comparison across individuals, fixed effects analyses are restricted to students who have switched between charter and traditional public schools, limiting external validity to that sub-population of charter attendees, rather than the population of students who have only ever attended charter schools.² However, there is some evidence that matching methods and fixed effects analyses come to similar conclusions (D. H. Davis & Raymond 2012).

² A regression discontinuity approach can sometimes be used to generate estimates of charter school effectiveness, but since charter schools do not admit students by a cutoff on an exam or other measure, there are limited contexts where this approach works. Carlson and Lavertu use the regression discontinuity approach to examine the impact of charter school closures, determined by formula, in Ohio (2016). Researchers have also used difference-in-

In short, observational methods may not fully eliminate selection bias, but they can be used to generate estimates for representative samples of charter schools with administrative data. Lottery methods are limited in their generalizability and require special data collection, but generate internally consistent estimates of charter school impacts. Considering both types of research in tandem, as in the next section, offers a fuller picture of overall charter school effectiveness.

3 What Have We Learned About Charter Schools' Impact on Student Achievement?

This section summarizes the evidence on charter schools' impacts on students' academic outcomes, drawing on studies that use student-level data and account for selection into charter schools via the use of lotteries or by including credible controls. We first present studies that draw on nationwide or statewide samples of charter schools, which are largely observational but offer evidence from multiple environments. Studies based on local analyses follow, which offer evidence from specific contexts and are more likely to use lottery-based research designs.

3.1 National and Statewide Analyses

Most studies on charter school effectiveness assess the impact of attending a charter school on students' annual standardized exams, given the immediacy and relative accessibility of test score data. On average, there are few differences in student test scores between charter and traditional public school students in the United States when broad, nationwide comparisons are made. Using matching methods, a comparison of students in charters to those in traditional public schools in 27 states found very small differences between the two groups in terms of math and reading test scores (Center for Research on Education Outcomes [CREDO], 2013).³ Another broad study, again using matching methods, but for a sample of 36 charter management organizations (CMOs) across 19 states, each operating at least four schools, found small, positive but not statistically significant impacts on test scores or college enrollment (Furgeson, et al. 2012).⁴ These

differences approaches to examine impacts when charter school operators take over extant schools (for example, Abdulkadiroğlu, et al., 2016 and Zimmer, Henry, & Kho, 2017).

³ This study found statistically significant charter test score gains in reading of less than 0.01 standard deviations and no statistically significant difference in math (CREDO, 2013). Given the very small magnitude, we characterize this as basically no different than traditional public schools.

⁴ Where possible, this study also included lottery estimates, which were very similar to the impacts estimated through matching methods.

findings are paralleled by a lottery study of 33 middle schools across 15 states (Gleason et al., 2010; Clark et al., 2015), which found, on average, no differences in test scores between charter and traditional public schools. Following the same students to college entrance and completion, there is again no difference in outcomes between charter and traditional public schools (Place & Gleason, 2019). These latter studies reflect the broadest sample of charter schools with lottery-based estimates of charter school impacts and coincide with broad observational findings showing few differences in academic outcomes across charter and district schools.

A meta-analysis combining lottery-based and well-controlled observational findings from many of the studies referenced here finds that charter attendance generates small test score gains (Betts & Tang, 2018). However, the meta-analysis weights studies by the precision of their estimates, not the coverage of the sample. This method puts local studies on close-to-equal footing with studies with much broader coverage, and since local studies are more likely to include urban charters that boost test scores, this conclusion does not generalize to an estimate for the nation as a whole.⁵

There is nuance in these broad findings, and much variation both within and across studies. Charter schools increase test scores in urban areas for both low-income students and students of color, shown in sub-analyses within the broader studies referenced above, or related follow-up research (Gleason et al., 2010, Clark et al., 2015, CREDO, 2009; CREDO, 2013; CREDO, 2015b; CREDO, 2017a).⁶ Charter schools associated with a network (CMO) perform better than independent charters, with non-profit CMO's outperforming for-profit CMOs, and larger networks more successful than smaller ones (CREDO, 2017a; Furgeson et al., 2012).

The Knowledge is Power Program (KIPP) is one CMO with a specific charter school model, located mostly in urban areas. It is also the nation's largest charter school network, with 255 schools across the United States. A series of evaluations combining lottery and matching methods show that KIPP schools increase student achievement on standardized test scores (Clark Tuttle et al., 2013; Clark Tuttle et al., 2015; Gleason et al., 2010; Knetchel et al., 2017; Woodworth

⁵ Chabrier, Cohodes, and Oreopolous (2016) also aggregate charter impact results across studies, though in a different way. They include all school-specific lottery-based results available at the time, and find that the average lottery-based charter school test score impact is positive. However, by restricting their sample to lottery studies only, the included schools are much more likely to be urban schools, and the overall estimate does not summarize a representative sample, similar to the critique of the Betts and Tang (2018) estimate.

⁶ There are similar findings for England's academies: the introduction of primary academies led to increased autonomy but no change in student performance, whereas secondary academies improved student performance, particularly among students in urban areas (Eyles, Machin, & McNally, 2017; Eyles & Machin, 2019).

et al., 2008) and college entrance (Coen, Nichols-Barrer, & Gleason, 2019). KIPP schools primarily serve low-income, Black, and Latinx students. They also employ a specific model focused on academic achievement, discipline, and comportment discussed further below. Evidence from KIPP adds to other evidence that charters located in urban areas and enrolling underserved populations improve students' test scores and academic attainment.

Modality matters, too. One of the most consistent findings in the charter school literature is that online, or virtual, charters reduce test scores for those who attend (CREDO, 2015a). This national finding is based on matching methods, and it corresponds with state-specific evidence of the negative impacts of online charters on test scores, which uses fixed effects and matching methods (Bueno 2020; Ahn, 2016; Ahn & McEachin, 2017; Fitzpatrick et al., 2020), and high school graduation (Bueno, 2020). Organizational and pedagogical practices of online charters are substantively different from brick-and-mortar charters, limiting the usefulness of comparisons between the two. However, online charters account for 7 percent of charter schools and 10 percent of charter school students (Molnar et al., 2019) and have increased enrollment during the COVID-19 pandemic (Lieberman, 2020).

While limited in geographic scope, state-specific studies do examine a broad set of charter schools in multiple contexts, and conclusions are largely similar to studies with national coverage. In Massachusetts, lottery-based evidence shows charter attendance increases students' test scores, but that is due to the large number of urban charter schools in the sample; suburban charters have no or negative impacts (Angrist et al., 2013). A large sample of lotteries of one chain of for-profit charter schools in Michigan finds small test score gains in math (Dynarski et al., 2018). This study provides a counterpoint to the general conclusions presented thus far, in that the small gains are driven by non-poor students in non-urban areas. This heterogeneity underscores how lottery-based estimates are available for only a small subset of charter schools and that gathering lottery information in more contexts should be a research priority.

Some state-level analyses have found variation between, and sometimes even within, contexts, typically using matching, regression, or fixed effects methods, but again often come to the conclusion that there is no difference, on average, between charters and traditional public schools. In Texas, as shown with matching methods, on average, enrollment in charters generally has negligible impact on students' test scores, but attendance at No Excuses charter schools improves them (Dobbie & Fryer, 2020). Prior work in Texas has found students fare poorly

following their initial year in a charter school, but that performance improves over subsequent years of attendance (Booker et al., 2007). A fixed effects analysis from Ohio found charter attendees, excluding online charters, have larger test score gains than their traditional public school peers since statewide accountability reforms were implemented, particularly among Black and low-income student populations (Lavertu, 2020). A study of charters in California has found negligible differences in academic outcomes between charters and district schools, though the geographic size of the state begets wide variation within the state's charter sector (Buddin & Zimmer, 2005). Charter attendance in North Carolina increases ACT scores and likelihood of voting and decreases students' propensity to commit crimes (McEachin et al., 2020), but also decreases overall GPAs and likelihood of on-time high school graduation (Horvath, 2018; Spees & Lee Lauen, 2019). Students attending charter middle school and high schools in Florida are more likely to graduate and attend college than those attending traditional high schools (Booker et al., 2011). Performance in Arizona and Utah charters varies widely, but overall there is little difference in performance between charter and district schools (Chingos & West, 2015; Ni & Rorrer, 2012).

Does the finding that, on average, there is little difference in test scores between charter and district schools mean that impacts are similar for outcomes like college enrollment, college graduation, earnings, and employment? The same group of national charters that showed benefits for subgroups of charter students and urban schools in lottery-based analyses did not have similar benefits for college outcomes, with no overall difference in college enrollment or completion, as well as no gains for urban charters (Place & Gleason, 2019). This is a single study, and urban charters boost college-going in several lottery-based studies of specific cities (Angrist, et al. 2016, Davis & Heller, 2019; Dobbie & Fryer, 2015, Coen, Nichols-Barrer & Gleason, 2019). Along with site-specific lottery-based evaluations of charter school impacts on college, there is some evidence from observational studies in specific states on college and earnings. Students in Florida and Illinois who switch into charters have higher high school graduation rates, college enrollment rates, and earnings (Sass et al., 2016). In Texas, there are no overall earnings gains for charter students, but small increases for those who attend No Excuses charters (Dobbie & Fryer, 2020). However, there is much less evidence on longer-term charter outcomes than on test-score outcomes and conclusions about charter school impacts on test scores may or may not presage similar patterns in other outcomes.

Evidence from matching and lottery-based studies of charter school impacts generally coincides: Overall, students who attend charter schools have few differences in test scores or college outcomes when compared with students who attend traditional public schools. However, charter schools located in urban areas and enrolling Black, Latinx, and low-income students tend to improve academic outcomes for those students. The latter finding is bolstered by evidence from smaller-scale studies focused on specific cities.

3.2 Local Analyses

Charters in Boston, Chicago, Denver, Los Angeles, New York City, New Orleans, and Newark all improve students' academic outcomes, as shown by lottery-based estimates of impacts on test scores and other outcomes, along with other schools sharing similar school models.⁷ Attendance at charter elementary, middle, and high schools in Boston increases student achievement in both reading and math (Abdulkadiroğlu et al., 2011; Angrist, Pathak, & Walters, 2013; Setren, 2019; Cohodes, Setren, & Walters 2021), as well as SAT scores, AP test scores, and likelihood of four-year college enrollment (Angrist et al., 2016). Boston charter students, however, take longer to graduate high school, perhaps due to the academic requirements of charters (Angrist et al. 2016). Other, urban charter schools in Massachusetts improve test scores, as well (Angrist et al., 2010; Angrist et al., 2012; Angrist, Pathak, & Walters, 2013). More recent analyses show that these test score gains persist even when charter schools open new campuses (Cohodes, Setren, & Walters, 2021) and that impacts are quite large for English learners and special education students, despite students being less likely to be assigned those designations in charter schools (Setren, 2019).

Several single-city, lottery-based analyses have been conducted outside Boston, finding similar academic gains, though such studies are limited to the large, urban centers where oversubscription is prevalent. This is consistent with broader evidence on urban charters from matching studies (CREDO, 2015b).⁸ New York City charter school attendance improved math and English scores (Hoxby, Murarka, & Kang, 2009; Dobbie & Fryer, 2011; Dobbie & Fryer, 2013; Unterman, 2017; The, McCullough & Gill, 2010), and, for specific charter schools, increased

⁷ One caveat: the evidence on New Orleans uses quasi-experimental methods rather than lotteries.

⁸ Earlier observational work in urban areas shows no or small positive impacts on test scores (Zimmer & Buddin, 2006, Imberman, 2011a; Nisar, 2012). It is difficult to know whether the more consistently positive results for urban charter schools in more recent literature reflect improvement over time, different samples, or different research methods.

college enrollment, decreased rates of pregnancy and criminality (Dobbie & Fryer, 2015) and increased civic participation (Gill, et al. 2020). Denver and Newark charter schools also boost scores, as shown in research that takes advantage of student assignment algorithms to generate estimates of charter school attendance in settings where school enrollment is centrally determined for all schools (Abdulkadiroğlu et al., 2017; Winters, 2020). In Los Angeles, the offer of charter high school admission improved students' test scores while also reducing very risky behaviors, such as binge drinking, substance abuse, and gang participation (Wong et al., 2014). Charter schools in Chicago improve test scores and college-going (Hoxby & Rockoff, 2005; Davis & Heller, 2019; Booker et al., 2011) Similar, lottery-based evidence on urban charter schools comes from studies of a small, anonymous urban school group (Hastings, Neilson, & Zimmerman, 2012) and a Washington, D.C. charter school that also boards students during the week (Curto & Fryer, 2014).

New Orleans, the only all-charter school district in the country, offers a unique setting for understanding charter effectiveness. This context makes it more complicated to study the impacts of charters since all schools are charter schools. Additionally, it is challenging to disentangle the causal effects of charter schools from Hurricane Katrina's impact and the increased funding that came after the storm (Harris, 2020). Nonetheless, difference-in-difference estimates of the New Orleans school reform model, which includes charter schools as the centerpiece of the reform, show that it improved students' test scores, high school graduation and college enrollment (Harris & Larsen, 2019). Studies of school closures and charter takeovers from New Orleans have also found large increases in student achievement (Abdulkadiroğlu et al., 2016; Bross et al., 2016).

By definition, local analyses are specific to a particular context and school model, limiting their generalizability. However, they are more likely to include lottery-based estimates of charter school effectiveness, giving special credence to their findings. The overall conclusions of local analyses are similar in cities across the United States: Urban charter schools boost students' test scores, and where evidence exists on college and risky behaviors, urban charters also improve students' outcomes. These local findings also align with the positive impacts for urban charters found among national and statewide observational and lottery-based research. However, there are over 6,000 charter schools in the United States, and fewer than several hundred are represented in lottery-based studies, while even fewer have a long enough time horizon to look beyond test scores. This highlights the need to continue to collect charter school lottery data, perhaps by systematizing

the collection of lottery records by state education agencies, and by using passive data collection due to universal enrollment systems in order to expand the most rigorous type of evidence on charter school effectiveness beyond the current sample of schools.

4 Why Charters May (Or May Not) Be Effective

One of the initial premises of charter schools is that they serve as laboratories of innovation for the education sector as a whole. Determining which charter school practices and conditions contribute to academic success can help to explain charter school effectiveness, while identifying policies that might be beneficial in traditional public schools as well. This section summarizes the role of charter school practices and curricula, with a special focus on “No Excuses” pedagogy, charter teachers, governance, and student populations. This section also draws on studies that rely on individual student- or teacher-level data and then use lottery or other carefully controlled methods to generate charter school impacts. However, researchers then associate those impact estimates with charter school practices, or aggregate them by school type. While these analyses are seeded with credibly causal estimates of charter school effectiveness, they cannot fully purge selection bias due to, for example, charter schools choosing to locate in certain communities or fully disentangle common practices from others.

4.1 Charter School Practices and Curricula

The large test score gains in urban charter schools motivate the examination of the practices that underlie their success. One common urban charter school model is a No Excuses approach. No Excuses schools are characterized by high academic expectations as well as a strict code of behavior in an extended-school day setting. Many of these schools also incorporate tutoring and small-group learning into the school day, use frequent teacher observations for feedback, and use high-frequency assessments to target instruction. While the No Excuses moniker was intended to describe a particular mindset of adults working in schools, critics characterize it as a strict disciplinary system for students, often based on merits and demerits and suspensions of students who violate school codes. In many cases, white school leaders and teachers are those responsible for implementing these disciplinary systems in schools with predominantly Black and Latinx students (Kershner, Weiner, & Torres, 2018). The No Excuses approach is a bundle of multiple

features, which can make it difficult to disentangle which factors contribute to charter school academic gains.

Massachusetts and New York City both have charter schools with varied impacts. When researchers correlate school-specific impact estimates from those sites with school characteristics, they find that charter schools that boost test scores are likely to employ a No Excuses approach (Angrist et al., 2013; Dobbie & Fryer, 2013). KIPP schools tend to incorporate many facets of this approach and also demonstrate test score gains (Angrist et al., 2013; Clark Tuttle et al., 2013). Other evidence of academic improvement comes from evaluations of specific No Excuses-style schools: Success Academy in New York City (Unterman, 2017), Noble Schools in Chicago (M. Davis & Heller, 2019), an anonymous school group (Hastings, Neilson, & Zimmerman, 2012), and the SEED school in Washington, D.C. and Baltimore (Curto & Fryer, 2014). When researchers in Denver and Newark (Abdulkadiroğlu et al., 2017; Winters, 2020) examine charter gains between operators that identify with national networks—which are more likely than smaller networks or independent charters to use No Excuses practices—they find large gains for such schools. A meta-analysis of No Excuses schools that includes the studies above shows average test score gains of about one-quarter of a standard deviation in math and slightly smaller gains in English (Cheng et al., 2017). Examining No Excuses charters outside of urban areas would help disentangle the impact of their specific practices from other circumstances that lead to urban charter gains, like poorly performing counterfactual district schools and heterogeneous effects for the student population served. However, outside of a few schools in the KIPP network, No Excuses schools typically do not locate in suburban or rural areas, and there is little evidence specific to such schools in these alternative contexts. One exception is the study of a for-profit charter school network located in non-urban areas in Michigan (Dynarski et al., 2018). This network shares some of the characteristics of No Excuses schools, including more time spent on academic subjects and a regimented school discipline system. The network also produces test score gains, though at a smaller scale than urban, No Excuses schools, and the gains are focused among non-poor students. This is suggestive evidence that No Excuses practices can be successful in nonurban contexts, though it comes from only one study.

Schools that employ No Excuses practices outside of the charter sector also boost test scores. Implementing practices associated with No Excuses charter schools in turnaround district schools in Houston, increased math and reading achievement (though the reading gains were not

statistically different from zero) (Fryer, 2014). Similarly, when No Excuses charter school operators have taken over traditional public schools in Boston and New Orleans, test scores have increased (Abdulkadiroğlu, et al., 2016, Bross et al., 2016). However, in Tennessee, when the state adopted CMO management as a turnaround strategy for low-performing schools—including some national No Excuses providers—it made no difference for student scores, whereas other, district-managed efforts were successful in boosting test scores (Zimmer, Henry, & Kho, 2017). One reason the turnaround model may not have been successful in this context is because families did not opt in to charter schools, and the schools and communities were at odds in their goals (Glazer, Massell, & Malone, 2019). In all, evidence on No Excuses practices adopted outside charter school contexts shows that the practices themselves can make a difference in non-charter schools, but not necessarily in all cases. Notably, there are separate literatures on many of the individual components of common No Excuses practices, such as time-in-school, and a particularly robust literature on the benefits of tutoring (see, e.g., Nickow, Oreopoulos, & Quan, 2020).

No Excuses schools clearly generate academic gains, but these schools may also have harmful practices. Critics see the disciplinary practices associated with many of the high-performing No Excuses charter schools, such as frequent suspensions, as racist and oppressive, contributing to the policing of Black and Latinx children. In other contexts, exposure to strict disciplinary practices may decrease students' educational attainment and increase the likelihood of adult incarceration (Bacher-Hicks, Billings, & Deming, 2020), meaning that such practices may be at odds with the academic goals of No Excuses schools. However, harsh discipline practices may not be a necessary condition for academic gains. A review of recent evidence suggests the use of No Excuses disciplinary practices is not a requirement for academic success in these environments (Golann & Torres, 2020) and some charters have begun adopting alternative models such as restorative justice or positive behavioral intervention systems in recent years (Denice, Gross, & Rausch, 2015).

Further, evidence from New York City indicates that each aspect of No Excuses schools contributes to test score gains, even holding other practices constant (Dobbie & Fryer, 2013). This suggests that strict discipline regimes may contribute to test score gains but are not required. An analysis that combines lottery estimates of school-specific effects from NYC, Massachusetts, and a nationwide study finds that tutoring is perhaps the most important practice when it comes to test score gains—not discipline (Chabrier, Cohodes, & Oreopolous, 2016). Evidence from

Massachusetts, where a charter school law limited charter schools' ability to suspend students, provides a useful context to tease apart the contribution of disciplinary practices to charter school achievement gains (Felix, 2020). Comparing the same schools before and after the law, test score gains remained while suspensions decreased, again indicating that harsh disciplinary techniques are not a necessary precondition for academic success.

Overall, No Excuses schools improve academic outcomes, though it remains to be seen if test score acceleration in these schools consistently translates to longer-term milestones such as college graduation, employment, earnings, and other adult outcomes. While these schools often employ strict discipline systems, seen by some as racist and oppressive, such disciplinary systems are not a necessary condition for student success. Evidence shows proposals for new No Excuses charters are on the decline (National Association of Charter School Authorities [NACSA], 2019), and further work understanding how existing No Excuses schools may move away from such disciplinary systems, as well as the policy environments that incentivize such a change, would shed additional light on conditions that contribute to academic achievement.

4.2 Charter School Teachers

Research has also examined the role of teacher quality in charters' success. Less qualified, less effective teachers in North Carolina—as measured by years of experience and value added on students' reading and math scores—consistently move to charter schools, particularly those in lower-performing, urban areas (Carruthers, 2012), while charter school teachers in Florida are more likely than traditional public-school teachers to exit the profession entirely (Cowen & Winters, 2013). Notably, teachers highly trained in their subject area are associated with improved student achievement in both traditional and charter contexts (Zimmer & Buddin, 2005), suggesting some measures of teacher quality do translate across labor markets. However, charters are more likely to lose both their highest- and lowest-performing teachers, as high performers transfer to traditional public schools and low performers exit the profession entirely (Bruhn, Imberman, & Winters, 2020; Barrett et al., 2020), presenting charter organizations with unique human capital challenges.

Charter schools sometimes face high teacher turnover. In Tennessee, high staff turnover has been linked to unsuccessful charter turnaround efforts (Pham et al., 2020). Descriptive work suggests charter teachers have less job satisfaction and are less committed to specific schools than traditional public school teachers, but have no less overall commitment to the teaching profession

(Ni, 2017; Roch & Sai, 2016). Quasi-experimental work in North Carolina shows the composition of the overall teaching workforce is shaped by the share of charter schools within a labor market, and that intensive local charter expansion begets a more experienced and credentialed workforce overall, as it reduces hires of brand-new teachers by traditional public schools nearby (Sorensen & Holt, 2020).

In some instances, charters have responded to these challenges by limiting the potential influence of individual teachers. In highly effective Boston charters, there is a narrower distribution of teacher effectiveness than in public schools, which suggests that part of the reason such schools are effective is because they rely on highly structured curricula and teacher co-planning, reducing variability in execution and quality across individual teachers (Cohodes, Setren, & Walters, 2021). Research from Pennsylvania similarly suggests CMOs employ a methodical approach to helping novice teachers improve more quickly than their traditional public school counterparts, and teachers in Pennsylvania CMO-run charters are indeed more effective in both English/language arts and math instruction (Steinberg & Yang, 2020).

Though there are a few exceptions, charter schools tend not to be unionized, and limited empirical work exists examining this labor market influence. Exploratory research suggests high teacher turnover in charter schools is both a motivator and a barrier for the formation of unions (Jabbar et al., 2019), and that overly prescriptive collective bargaining laws may also explain some resistance within the charter sector (Torres & Oluwole, 2015). Those charters that are unionized, however, may provide an opportunity to examine the role of unionization in student and other outcomes, potentially through difference-in-difference strategies. One study using this approach found unionization in California charter schools to be associated with increases in students' math achievement (Matsudaira & Patterson, 2017).

Overall, evidence suggests that while specialized training can improve teaching quality in both charter and traditional public schools, charters are more likely to lose their best educators. Some charter schools' use of highly structured curricula may substitute school structure in lieu of long teacher careers as a way to maintain campus stability. The impact of the particular labor constraints charter schools face and how they adapt to them needs further research, as does the role of worker power and unionization.

4.3 Governance

Charter schools operate within a systemic structure of laws, authorizers, and networks. Charter school laws vary greatly by state, some with regulations that promote strict authorizing contexts and others with more lenient regulations, making cross-state variation another potential opportunity to study the role of charter school governance.

Charter school authorizers—the entities charged with setting performance standards and determining which schools are allowed to open or must close—have the potential to influence charter student outcomes by permitting schools that have the greatest likelihood of success, as well as by closing charters that are not performing. Some research has assessed the level of autonomy offered to charters by their authorizing body as it relates to achievement, with some evidence that increased autonomy in the form of budget management and hiring decisions is related to overall charter effectiveness (Nisar, 2012). Other work compares schools across authorizer types and examines how successful authorizers are at selecting high-performing schools and closing low-performing ones.

It is possible for authorizers to determine the most effective schools when using extant schools as models (Cohodes, Setren, & Walters, 2021) or quality ratings (Bross & Harris, 2018). Research in Ohio using matching methods found schools authorized by non-profits to be associated with lower student achievement gains than for charters authorized by other entities (for example, district or state education agencies or educational service centers) (Zimmer et al., 2014), though the authors caution that authorizer type is highly correlated with the length of time charter schools have been in operation—another predictor of charter effectiveness (Bifulco & Ladd, 2006). In Minnesota, observational work showed no relationship between authorizer type and student achievement but noted the greatest variability in achievement among those authorized by non-profit entities (Carlson, Lavery, & Witte, 2012), highlighting the need for additional exploration of authorizer impact.

Perhaps the authorizer's most important role is the determination of which charter schools should close, and the potential of school closures as means to improve overall performance. Charter schools close at a higher rate than traditional public schools (CREDO, 2017b), but this may be a desirable feature of their accountability mechanisms if it removes low-performing schools. Indeed, most evidence shows that charter schools that close are lower-performing (Carlson & Lavertu, 2016; Bross & Harris, 2018; Baude et al., 2019; CREDO, 2017b). However, school closures are extremely disruptive to students and communities, and good, nearby

alternatives must be present for students to succeed post-closure (Engberg et al., 2012; Bross, Harris, & Liu, 2016). Some research highlights the potential for detrimental academic impacts for both transferring and receiving-school students following a closure (Steinberg & MacDonald, 2019; Brummet, 2014). The structured nature of the timeline for potential charter closure, as part of the regular authorizing process, can be a tool to alleviate some of this disruption if there is transparency and clarity around accountability benchmarks (Wechtenhiser et al., 2011).

The influence of CMOs is also important, with evidence generally indicating that schools associated with non-profit CMOs perform better, as opposed to those associated with for-profit networks or those who are independent operators, but differences are small in a nationwide sample (CREDO, 2017a). A nationwide analysis of 32 CMOs using matching found large CMOs—those operating eight or more schools—to have positive impacts on math and reading achievement, on average, for students enrolled more than two years (Furgeson et al., 2012). Greater variation in school-level effects was found across CMOs than within, suggesting a subset of networks outperformed others. This is consistent with the finding that effective charters are able to replicate their successes at new campuses (Cohodes, Setren, & Walters, 2021). Charters in Ohio associated with non-profit management organizations have the largest test score gains, relative to those managed by for-profit organizations or operating independently (Lavertu, 2020).

Extant research suggests charter governance does matter, though to what extent and how it may influence outcomes is worthy of additional exploration. Most current research focuses on authorizers and networks, while cross-state comparisons of the laws that set the stage for charter schools remain to be explored.

4.4 Student Populations

Some critics claim charter schools practice “cream skimming,” or the selective admission of the best students (e.g., previously high-achievers, students with no behavior issues, and those with highly involved families) and that this explicit selection is what drives charter gains. Analysis from across seven states found no consistent evidence of this form of student selectivity (Zimmer et al., 2012), and observational work from Tennessee and North Carolina similarly found no evidence of cream skimming (Kho, Zimmer, & McEachin, 2020).

However, student selection is still relevant, as non-representative students may apply to charters, limiting their reach. In the Boston lottery studies previously mentioned, higher-achieving students were more likely to apply to charter schools in the early years studied (Abdulkadiroğlu,

2011), but in more recent years, charter applicants have backgrounds similar to students in Boston overall (Setren, 2019). Research from Los Angeles shows some charters do attract higher-performing pupils in their baseline years, relative to peer student performance at traditional public schools (Shin, Fuller, & Dauter, 2017). However, an analysis of students transferring from traditional public schools across Indianapolis found lower-achieving students were most likely to transfer to charter or magnet schools, while higher-achieving transfer students sought Catholic or other private institutions (Berends & Waddington, 2018). The student populations served by charter schools account for some of the observed success: charter schools produce the largest academic gains for low-income and nonwhite students (Angrist, Pathak, & Walters, 2013, Walters, 2018).

None of the lottery-based charter school studies have uncovered manipulation in charter school admission lotteries. However, charter schools may counsel away certain students from applying in the first place. Evidence supports this charge: An audit study shows that charter schools are less likely to respond to initial inquiries from parents of hypothetical students with poor behavior or significant special needs (Bergman & McFarlin, 2020). Charter schools may also require additional admissions requirements, such as attendance at a welcome session or parental signatures, which can limit the students who ultimately enroll. At Success Academy charter schools, only half of the students who are offered a seat ultimately enroll, and families must participate in a long list of enrollment activities that may serve as barriers (Unterman, 2017).

A corollary critique is that charter schools quietly push or counsel out challenging students who enroll, such as students with behavioral issues, low-performing students, or students with special needs. While observational analysis from Tennessee and North Carolina showed some evidence of student push-out based on disciplinary records (Kho, Zimmer, & McEachin, 2020), others have found push-out rates at charter schools to be no higher than those at traditional public schools (Zimmer & Guarino, 2013; Nichols-Barrer et al., 2016). Notably, however, charters are also more likely to remove special education and English language learner classifications from those who enroll, and do not remove these students from the school population (Setren, 2019).

Charter decisions regarding geographic location also contribute to their student populations and success. A study of charter schools in Florida found that new charters may choose to locate in areas where it is cheapest to educate students (Singleton, 2020). This may be due to factors specific to Florida, such as its funding formula and permissiveness of for-profit charters, but the findings

highlight how charter schools may be strategic actors when it comes to the students they serve. The location of charter schools also matters in terms of the counterfactual school attended by those not offered a seat; charters tend to be most successful when the alternative schools for students not offered a seat are poorly performing (Chabrier, Cohodes, & Oreopoulos, 2016).

As a whole, there is little consistent evidence that charter schools are manipulating the lottery process to generate the appearance of higher test scores. However, concerning evidence that charter schools are less responsive to high-need applicants, and that some institute administrative barriers around enrollment, indicates that there is scope for schools of choice to influence who applies beyond the lottery itself.

5 What Are the Competitive Effects of Charter Schools?

Economic theory suggests the entry of a competitor into a monopoly environment will stimulate competition and product differentiation, raising the overall quality of products or services in the market. This rationale underlies Milton Friedman’s advocacy of government-funded vouchers in the 1950s, and is the same logic relied upon today by charter advocates who believe their growth in market share will beget improvements in the public school sector writ large, either through competitive pressure, a better match to families’ desired learning objectives, or through the stimulation of unconventional—and ideally more effective—schooling practices. Evidence on charters’ ability to differentiate suggests they may not be “laboratories of innovation” (Lubienski, 2003; Preston et al., 2012), though recent evidence from North Carolina shows some degree of both horizontal and vertical differentiation (Gilraine, et al., in press). Despite the relatively small population of students that charter schools serve, the question of charter schools’ competitive effects remains critical, given the much larger population of public-school students who would benefit from an indirect improvement in school alternatives, should theory on competitive effects of charter schools prove correct. Of course, competition may affect channels other than student achievement. In particular, since charter schools and traditional public schools both receive funding from state governments, entry of charter schools and transfers of students may affect district school funding. Additionally, the movement of students between charter and traditional public schools may impact school segregation.

Assessing the direct impact of charter schools on traditional public schools is challenging. Competitive pressures may be experienced differently in different environments, making large-

scale analyses more difficult and requiring a number of smaller, localized assessments. The constantly changing nature of schools—transfers of students, turnover of staff—further makes it difficult to assess whether observed changes in traditional public-school performance are due to competitive pressures, changes in school population, or other contextual factors.

5.1 Estimating Competitive Effects

Generating credible estimates of the impact of charter schools on traditional public school students or on school systems as a whole presents different challenges than estimating the direct impact of charter schools on students who attend them. Most studies that do so leverage some form of a difference-in-differences approach, using plausibly exogenous variation in the introduction of charter schools to an area to estimate impacts on students enrolled in nearby traditional public schools (see, e.g., Cordes, 2018; Gilraine et al., in press). The benefits of difference-in-differences studies are their simplicity and ease of explication, comparing outcome trends just before and after (arguably) exogenous interjection between treatment and comparison groups. However, it may be difficult to distinguish the introduction of charter schools from other educational and related policies happening at similar times (though some difference-in-differences approaches use geographic proximity as well as time). There also may not be similar pre-trends in treated and comparison groups, though modeling choices can sometimes address this. Additionally, researchers must make a number of modeling choices which may affect their conclusions, and the best difference-in-difference papers use a series of robustness checks to confirm it is not researcher choice driving the findings. Ultimately, these approaches, while necessarily less rigorous than lottery-based studies, are the best way to estimate the impact of charter schools on test scores and school finances beyond those directly enrolled.

When examining at student achievement, this section is limited to studies which use student-level data that enables tracking student movement across traditional public schools and charters. The unit of analysis changes when assessing financial and segregative impacts to include some studies that use aggregated data at the school and district levels, since these are the entities where finances and segregation are measured.

5.2 Competitive Impacts on Student Achievement

As with the direct impacts of charter schools, much of what is known on charters' competitive effects examines their impact on students' test scores. A number of studies show that

competition from charter schools increases their neighboring district schools' student achievement (Carpenter & Medina, 2011; Mehta, 2017; Cordes, 2018, Ridley & Terrier, 2018; Gilraine et al., in press). The degree of competitive response may be sensitive to the quality of nearby charter schools, as high-performing charters are associated with growth in math and reading scores at neighboring traditional public schools, while lower-achieving charters have negligible effects on achievement (Cremata & Raymond, 2014; Horvath, 2018). A study from New York City points to the role of charter schools' geographic proximity to traditional public schools in their competitive effects, with the closest charter schools (including those co-located with traditional public schools) exerting the greatest competitive effects on neighboring schools' student achievement (Cordes, 2018).

Some other work shows charter competition decreasing student achievement in neighboring schools. Analysis from a large urban school district in the southwest found the growth of charters induced drops in both math and English scores for traditional public school students (Imberman, 2011b), while analysis from Ohio found a consistent decrease in neighboring traditional public school test scores as charters market share increased (Carr & Ritter, 2007). A study using nationwide data and district fixed effects found that school districts had slightly lower test scores when exposed to a greater share of charter schools (Han & Keefe, 2020). Additional evidence from California, Massachusetts, Michigan, and North Carolina found no net competitive impact on student achievement at traditional public schools (Zimmer & Buddin, 2006; Bettinger, 2005; Mumma, 2019). Another study from North Carolina examined the effect of charter school entry on the teacher labor market—one potential mechanism underlying charters' competitive influence over public school student achievement—and found small effects on overall public school teacher turnover but a small decline in teacher quality among new hires following charter entry (Jackson, 2012).

Studies demonstrating beneficial or neutral competitive effects of charter schools on student achievement outnumber those showing detrimental effects. On average, it appears that charter school competition induces small gains in neighboring schools' test scores. With much less evidence on charters' competitive impacts than on their direct effects, more research on the academic spillover effects of charter schools on district schools would help to determine if this conclusion is merited, as well as to understand the contexts that underlie the observed variation in

studies. Additionally, charters may have competitive impacts on students beyond test scores, and future work should assess those additional academic and non-academic outcomes, as well.

5.3 Financial Impacts of Charter Schools on District Schools

Charter schools also have the potential to affect district schools through school funding mechanisms. Most U.S. states' school funding systems use a funding formula based on student enrollment. Thus, when charter schools draw students from traditional public schools, they effectively draw per-pupil funding from those schools and associated school districts (Epple, Romano & Zimmer, 2016). However, depending on state funding formulas, student enrollment in charter schools may increase per pupil funding. Some states have compensatory funding to help districts transition; other states leave school funding from local property taxes at traditional school districts, passing only state and federal funds to charters, and leaving the same local dollars to be spread over fewer students. Most studies of single localities or states show that charter school entry generally comes with negative financial consequences for nearby traditional public schools, however one, more comprehensive study shows per pupil spending increasing when charter share does (Weber, 2021). Uncertainty regarding charter schools' potential closures can also impact district school finances, as district schools are responsible for absorbing the students forced to leave schools whose charters are revoked. However, in the long run, districts may be able to adjust to these pressures.

A broad study of more than 20 states using fixed effects, which control for district-specific contexts and time trends, finds that a majority of states in the study have greater per pupil funding after charter school entry (Weber, 2021). This work includes only the states where sufficient district-level data is available to make these determinations, and suggests that the additional funding comes from both compensatory policies as well as funding formulas that do not pass locally raised tax revenue to charter schools. Importantly, this study highlights that simply following enrollment counts across traditional and charter schools is not sufficient to fully account for where funding goes, even when state funding formulas are primarily based on per pupil allotments. Other work examining all U.S. districts found very small differences in finances as charter proximity to the district increases (Jones, 2018).

Local studies tell a different story, with many showing negative impacts for districts in the absence of explicit compensatory funding policies. This likely reflects heterogeneity underlying the national study, and different approaches to charter school funding across states. Competition

from charter schools is associated with fiscal stress at traditional public schools within the same district (Arsen & Ni, 2012; Singleton & Ladd, 2020). An examination of two school districts in New York found an increase in charter schools resulted in excess costs for both districts—potentially a result of operating two distinct school systems independently (Bifulco & Reback, 2014). Evidence from California has also shown larger charter enrollment shares are associated with decreased per pupil spending among traditional public schools (Bruno, 2019).

Additional work from New York showed charter schools do, indeed, increase the cost of providing education for districts in the short-term, but increase overall district efficiency, as measured by declines in average per pupil operating expenditures, five to eight years after charter school entry (Buerger & Bifulco, 2019). An examination of charter expansion and weighted student funding formulas on resource equity across school sites within New York City found little impact of charter sector growth on systemic resource inequities, due to the relatively small share of charter schools (Baker, Libby, & Wiley, 2015).

Money may also be used differently in the wake of competition. Evidence from Ohio and Utah suggests charter school entry leads districts to allocate resources away from instructional expenditures and toward new construction or improvements to existing institutions (Cook, 2018; Kofoed & Fawson, 2020). The opposite financial shift occurred in Massachusetts: Charter school there increases per-pupil spending in public schools, triggering shifts in expenditures from support services to instruction and salaries, potentially accounting for the improvements in district students' test scores discussed above (Ridley & Terrier, 2018). However, this finding is likely due to a specific state tuition reimbursement policy in Massachusetts that softens the potential financial hit of transfers out of district schools for six years following a charter attendance increase. This is an uncommon strategy, but might be a promising model to help district schools adjust to the presence of charter schools in the short term. Work examining a similar district reimbursement policy in Pennsylvania found the financial incentives increased instructional and support services among districts experiencing charter competition (Mann & Bruno, 2020).

The differing findings from a broad study and specific locations highlights that the specific funding formula in a locality, as well as school district responses, shape the financial impacts of charter school entry. Critical to any conversation around school finance is a broader understanding of fixed versus variable costs for both types of schools (e.g., stable facilities versus changing student enrollment, particularly in the short term). For example, it is easier to adjust the size of

school staff than to open or close entire school buildings. Traditional districts already respond to enrollment fluctuations in the population as a component of annual finances, but charters add an additional, unknown element. Finally, both local and broad analyses can show different things, but share an underlying consistency: Some districts face financial consequences from charter school entry and struggle to adapt; others increase their efficiency; and, in many cases, traditional school districts may increase their funding per student but still have challenges adapting to charter school entry given their brief to educate all students in a locality.

5.4 Contribution to Segregation

Charter schools have been accused of perpetuating issues of racial and ethnic stratification through school choice mechanisms, both within their own populations and in nearby districts. While some charter advocates argue choice is the solution for the long history of school segregation in the United States, evidence on this issue is mixed. Researchers study charter school impacts on segregation by examining student movement between charters and traditional public schools. Black students in both Texas and California are more likely to move to charter schools with higher numbers of Black students than the traditional public schools they leave behind (Booker, Zimmer & Buddin, 2005), and Black and Latinx students in Pennsylvania similarly move in segregative ways between sectors (Kotok et al., 2015). A follow-up study from Pennsylvania found Black and Latinx students are averse to moving to charter schools with higher percentages of white students (Frankenberg et al., 2017). Students transferring to charter schools from traditional schools in Arkansas, however, tend to increase desegregation in the schools they leave behind (Ritter et al., 2014).

The movement of white students may be driving the increase in segregation between the two school types (Renzulli & Evans, 2005; Ladd & Turaeva, 2020). A nationally comprehensive examination of this question found an increase in the percentage of students transferring to charter schools increased the overall segregation within school districts in which the charters were located, though the within-district increase in segregation was offset by cross-district reduction in segregation (Monarrez, Kisida & Chingos, 2020).

Some researchers have also examined charters' impact on school and district segregation by students' socioeconomic status. Existing evidence suggests charters are more socioeconomically segregated than traditional public schools (Marcotte & Dalane, 2019), and national analyses have found charter growth to be a driver of both racial and socioeconomic

segregation within the public school sector (Alcaino & Jennings, 2020). On net, these national findings are consistent with many of the local analyses, which suggest that charter schools are broadly linked to increases in school segregation, but that there are some differences across locations.

Some charters have been founded for the express purpose of reducing segregation, establishing schools that are “diverse by design”—a relatively new and understudied charter school model. The share of charters with intentionally racially- and socioeconomically-integrated populations is on the rise, though they represent just 2% of all U.S. charters (Potter & Quick, 2018). Given the positive impacts of integrated education on all students (Wells, Fox, & Cordova-Cobo, 2016) and the large number of schools across the United States that remain segregated today (Garcia, 2020), the potential model of diverse-by-design charters merits further study.

6 Conclusion

In the almost 30 years since their founding, charter schools in the United States have continually increased their market share of the public school system, though they still educate a small minority of students. Lottery-based studies of urban charter schools consistently show that charters improve students’ academic achievement and some longer-term outcomes, particularly among Black and Latinx students, students with disabilities, and low-performing students. These findings are limited to oversubscribed schools, but results from observational studies in similar contexts are consistent with this conclusion. However, both lottery and observational studies from a broader array of contexts, including nation- and state-wide studies, offer a more mixed picture of effectiveness. The broader the sample of charter schools studied, the more likely for it to appear that the average charter school produces academic outcomes no different than those from traditional public schools.

Most evidence on charter school effectiveness comes from impacts on math and reading test scores. These are important guideposts, but ultimately outcomes like college attendance, college graduation, employment, and earnings are better suited to determining whether charter schools change the life trajectories of the students they serve. There is promising lottery-based evidence from some urban charters that test score gains persist through college, but the number of studies is small and the time horizon relatively short. Longer-term impacts necessitate a longer time horizon and additional data collection, and researchers should endeavor to collect college and

employment evidence on a broader sample of schools outside well-studied urban areas. Additionally, alternative measures of charter school effectiveness can broaden the picture beyond academics. Research examining charter school safety (see Hamlin, 2017) and parent satisfaction (see Oberfield, 2019), for example, are highly relevant to broader discussions of charter success, but are beyond the scope of this review. Research on public schools shows that the impact of successful traditional schools goes beyond test scores, and that schools that promote socio-emotional development increase educational attainment and decrease risky behaviors (Jackson, Porter, Easton, Blanchard, & Kiguel, 2020); charter schools would benefit from a similar examination.

In addition to understanding impacts on longer-term outcomes for a broader set of schools, future research should more generally seek to understand *where* charters are effective, for *whom*, and *why*—not only to better understand the impact of charters themselves, but because educational strategies used in charter schools may be applicable in traditional public schools, following through on the “laboratories of innovation” motivation for charters. For example, charter school practices of consistent curricula and grade-level collaboration enabled some charter management organizations (CMOs) to transition quickly from in-person to remote learning in the wake of the COVID-19 pandemic (Vanourek, 2020). Strategies adopted from more nimble charter organizations may provide useful lessons for traditional public schools during and after the COVID-19 pandemic. Charter schools use high-intensity tutoring to improve outcomes, yet this strategy is not widely implemented outside of charters, although it has received national attention as a potential recovery strategy for post-pandemic education (Kraft & Falken, 2021). Similarly, charters have intensive feedback and structure for novice teachers; again, this strategy may be successful in traditional public schools, but outside of some teacher residency programs has not been widely implemented in that context.

Further, as more charter schools move away from their No Excuses roots, a combination of quantitative and qualitative work can help assess whether schools maintain their student achievement gains and coherent school cultures while moving away from what some consider to be oppressive disciplinary systems. A necessary first step is to document the actual changes in disciplinary regimes. Charters’ instructional and disciplinary practices, their teacher labor market, the roles of CMOs and authorizers, and charter school laws and regulations are additional sources

of variation that, if studied, can shed light on the conditions for effective charter schools as well as their market-level impacts.

A growing number of cities in the United States have adopted portfolio models, whereby families can choose from both district and charter schools. These cities provide an opportunity to study the direct effect of charters and other school models, as well as their competitive effects, using data from families' school choices and the algorithm that assigns students. Such cities are another promising place to continue research on charter schools as well as broader questions about school choice.

Given their small market share, charters' greatest potential impact may come just as economic theory would predict—through their competitive impact on neighboring public schools. A number of studies assessing the competitive impacts of charters have found that charters improve student achievement in nearby traditional public schools, though like most charter evidence, the findings vary depending on the context, with other research finding no or mixed competitive impacts. The research base on competitive effects is less broad than the base of work examining the impacts of charters on the students they serve directly, likely due to the difficulty of separating the competitive effects of charter schools from other concurrent policies. Such studies are less cleanly identified than lottery-based studies of charter school impacts, but they are perhaps the most policy-relevant; researchers should target this area for additional attention. Once the competitive effects literature widens, it would also benefit from work that attempts to understand why competition appears to be successful in many contexts but less so in some.

The mixed evidence on the impacts of charter schools on district finances highlights how understanding specific funding formulas and how they are employed across different locations is crucial to understanding financial impacts. In the locations where charter schools' indirect impact on district school finances decreases per pupil funding, funding declines may ultimately be detrimental to students in traditional public schools if traditional school districts cannot adjust fast enough to charter growth and resulting declines in per pupil spending, which has been shown in other contexts to influence student outcomes (Jackson, Johnson, & Persico, 2015; Jackson, Wigger, & Xiong, in press). However, in cases where funding increases on a per pupil basis, understanding how funds are redeployed may help explain how or if charter school competition influences academic growth. Understanding the fiscal tradeoffs over time, how districts adapt to charter

school pressure, and the influence of the growing proportion of students served by charter schools is another important area for future study.

To our knowledge, there is little cost-benefit analysis on the existence of charter schools, or general equilibrium investigations of the overall effect of the existence of the charter sector. Such exercises would account for direct impacts of charter schools on students who attend, indirect competitive effects on nearby students, and the potential downstream impacts of changes in funding. These types of analyses would necessarily require strong assumptions, but may ultimately be necessary in order to answer general equilibrium questions such as whether the existence of charter schools has been helpful or harmful to students in the United States overall.

As the body of knowledge on charter school effectiveness continues to grow and evolve, researchers hoping to engage in work on this subject should pay particular attention to potential sources of exogeneity in environments where charter schools are not oversubscribed and have not yet been thoroughly examined. Matching methods reduce selection, but may not fully account for the differences between charter school students and their counterparts in traditional public schools. However, alternative methods where lottery studies are not possible may help shed light on understudied areas. For example, the clever use of a score threshold in determining school closure allowed Carlson and Lavertu (2016) to examine the impacts of charter schools in Ohio. Rules around charter school entry and exit may provide similar variation to help understand charter school impacts, and answer some of the remaining questions highlighted above on the sector's overall effectiveness.

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