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The Effects of Unified School Enrollment Systems on New Orleans Schools: Enrollment, Demographics, and Outcomes after the Transition to OneApp

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The Effects of Unified School Enrollment Systems on School Demographics and Outcomes: Evidence from New Orleans' Transition to a Centralized School Lottery

Abstract

Unified enrollment (UE) systems were designed to improve efficiency, equity, and transparency in school choice processes, but research has focused on efficiency gains. This study examines whether moving from decentralized enrollment processes to UE mitigates or exacerbates racial segregation that often occurs in choice systems. Specifically, we examine a subset of charter schools in New Orleans that had enrolled disproportionately high numbers of white students prior to entering UE. We find that UE entry was associated with increased enrollment of nonwhite students in these schools without offsetting declines in white enrollment, facilitated by schools also increasing total enrollment after entering UE. We find no meaningful impacts of UE on school accountability measures, student or teacher mobility, or student discipline.

Keywords: Unified enrollment systems, school reform, school choice, segregation

Introduction

Advocates of market-based education reforms argue that schools operate more efficiently and serve families more effectively when schools must compete to attract families to enroll. By empowering families to choose from an assortment of autonomous schools, these reforms create incentives for schools to satisfy families' needs in ways that, in theory, could improve school performance and the fit between what families want and what schools offer (Friedman, 1955; Chubb & Moe, 2011). This prominent role for school-choosing parents results in a corresponding "decentering [of] the state" as governments cede control to the market (Fuller, 2000). This suggests that the outcomes of market-based reforms depend partly on what families want for their children relative to what they would get in a more traditional, government-run school system. If families want their children to attend schools that are more diverse than their local neighborhoods, we might expect market-based reforms to reduce the high levels of racial and economic segregation that harm many U.S. students (Reardon et al., 2021). In practice, however, school choice reforms are often associated with increases in school segregation (Monarrez & Chingos, 2022; Logan & Burdick-Will, 2016; Bifulco & Ladd, 2007; Weiher & Tedin, 2002). This brings into question whether school choice reforms are an effective pathway to integration or a diversion from more promising strategies (Roda & Wells, 2013; Scott & Holme, 2016).

In this study, we examine whether the design of choice systems can contribute to the degree of racial segregation that results from parent choice. The mechanisms through which parents apply to schools and students are assigned to seats are policy design components that might maintain or alter the distribution of students across schools (Harris, 2020; Sattin-Bajaj & Roda, 2020). Navigating school selection and submitting applications to multiple schools can be a substantial and stressful burden for busy parents (Jochim, DeArmond, Gross, & Lake, 2014),

and factors such as parent nativity (Sattin-Bajaj & Roda, 2020), parent time and financial resources (Harris, 2020), and access to transportation (Valant & Lincove, 2023; Sattin-Bajaj, 2023) can limit the number of options that are available to families. There is also evidence that, given control over their own admissions processes, schools implement both formal and informal practices that discourage application or enrollment by students who are perceived internally to be a bad fit for the school's resources or culture (Jabbar, 2015; Mickelson, Bottia, & Southworth, 2012; Perez, 2011). If the capacity to navigate complex application systems is also unequally distributed across families by race and income, school choice might do little to change enrollment patterns, or perhaps intensify segregation (Holme, 2002).

Unified enrollment (UE) systems are a policy innovation designed to improve both the efficiency of school assignments and the burden of choice on parents (Pathak, 2017; Benner & Boser, 2018). UE systems replace decentralized and repetitive school-based application processes with a single application where parents can simultaneously apply to many schools in a choice-rich district (Ekmecki & Yemnez, 2019). UE streamlines the application costs for parents and schools, while reducing school managers' capacity to manipulate outcomes (Harris, 2020). The efficiency of student placement algorithms used in UE has received a great deal of attention in economic and policy research, and evidence suggests impressive gains in the number of students successfully matched to preferred schools when UE replaces decentralized applications (Pathak, 2011; Abdulkadiroğlu & Andersson, 2022; Abdulkadiroğlu, Agarwal, & Pathak, 2017). Less is known about whether UE systems ultimately alter school demographics, relative to decentralized systems, by making seats more widely available.

In this study, we empirically test the distributional effects of the transition from a decentralized enrollment mechanism to a UE system. We focus our analysis on the New Orleans

public school system (NOLA-PS), which was a pioneer in the implementation of UE and the only US school system where participation in school choice is required for enrollment at all grade levels and in all public schools. Like many urban school districts, New Orleans is an ethnically, racially, and economically diverse city where the public schools have historically served a large majority of students from low-income families of color, while higher-resourced families often utilize a diverse market of private school options (Lincove, Valant, & Cowen, 2018). In New Orleans and similar settings, policymakers' and parents' concerns often focus on historical racial segregation and a lack of access among Black families (Harris, 2020). Given the option to enter a UE system, schools with disproportionate enrollment of white and economically privileged students are also often the most reluctant to give up autonomy over admissions processes, fearing that students who enroll through UE will change the school culture, perform poorly, or require extra resources (Cook, 2019). Although several authors identify specific choice policies that might mitigate or exacerbate segregation (Mickelson, Bottia, & Southworth, 2012; Weiler & Vogel, 2015; Harris, 2020; Giersch, 2022; Mead & Green, 2012), there is little empirical evidence on how choice mechanisms impact school demographics or performance.

Our approach is to look at changes in racial segregation at the district level over time, and at the school level, to measure changes in demographics and outcomes in a group of "focus schools" in New Orleans that had highly disproportionate white enrollment prior to entering UE. We do this using a comparative interrupted time series (CITS) design. The CITS design allows us to estimate the immediate and longer-term changes that followed the focus schools' staggered entry into UE. Our results indicate that UE entry was associated with a steady increase in Black and total nonwhite enrollment over time at disproportionately white schools in NOLA-PS, with the largest immediate effects in elementary school entry grades. We find no evidence of

corresponding declines in white enrollment in these schools from either exit or reduced demand among new families. Instead, the focus schools, on average, increased total enrollment after entering UE, allowing them to enroll more nonwhite students while also increasing persistence among already-enrolled white and nonwhite students. These enrollment changes occurred without significant changes to schools' state accountability scores, student or teacher mobility rates, or student discipline rates.

School Choice, Assignment Mechanisms, and Racial Segregation

U.S. public schools have a long history of racial segregation and policies attempt to improve integration. De jure segregation prior to the U.S. Supreme Court's 1954 decision in *Brown v. Board of Education* gave way to segregation associated with neighborhood zoning of schools. When students were required to attend the school zoned to their residence, residential segregation and racist housing policies and regulations continued to segregate many schools (Frankenberg et al., 2019; Reardon & Owens, 2014; Rothstein, 2017). Both academic theorists and advocates recommend targeted race-based policies to integrate public schools, but these efforts have been politically fraught and often contested in court (Domina et al., 2021; Johnson, 2011; Roda & Wells, 2013).

In theory, removing residence-based requirements for enrollment through choice policies could improve access and outcomes by breaking down geographic barriers, but market-based principles are "race-blind" and often exacerbate stratification (Mickelson, Bottia, & Southworth, 2012). For example, choice through academically selective magnet options tend to serve more privileged families (Scott & Holme, 2016; Saporito, 2003), and a large number of studies suggest that charter expansion has not reduced, and has sometimes increased, racial segregation (Weiher & Tedin, 2002; Bifulco & Ladd, 2007; Kotok et al., 2017; Logan & Burdick-Will, 2016;

Monarrez, Kisida, & Chingos, 2022; Weixler et al., 2017; Ladd, Clotfelter, & Holbein, 2017; Cobb & Glass, 1999; Stein, 2015; Renzulli & Evans, 2005).

There are two potential types of explanations for why school choice reforms have not markedly changed enrollment patterns. The first is the preferences of school-choosing families. Both Black and white parents seem to prefer that their children attend schools with same-race or otherwise-similar peers, and they may choose their way into relatively segregated schools (Weiher & Tedin, 2002; Bifulco, Ladd, & Ross, 2009; Glazerman & Dotter, 2017; Gross, DeArmond, & Denice, 2015; Hastings, Kane, & Staiger, 2009; Stein, 2015). Less directly, schools in choice systems can often select their location, mission statements, or curricular themes in ways that appeal to specific racial or ethnic groups (Mickelson, Bottia, & Southworth, 2012). One specific concern for diverse, or gentrifying, urban school districts is the issue of "white flight" from traditional public schools through transfer to charter schools with higher white enrollment, exit to private schools, or relocation to majority-white suburban districts (Holme, 2002). This may relate to the concept of "racial threat," whereby white residents associate increased racial diversity with a reduction in school quality even if actual performance indicators do not decline (Goyette, Fairly, & Freeley, 2012; Pearman & Swain, 2017). Several studies document this phenomenon among parents (Roda & Wells, 2013; Billingham & Hunt, 2016; Cucchiara & Horvat, 2014), school administrators (Giersch, 2022), and residents (Goyette, Fairly, & Freely, 2012). Several studies of system-level segregation highlight white flight as the primary driver of increased segregation in choice systems (Renzulli & Evans, 2005; Garcia, 2007).

The second potential explanation for the association between choice and segregation is that barriers to access remain in choice systems, and families confront obstacles that keep them

from enrolling in schools they would otherwise want (Mead & Green, 2012). These barriers come in a variety of forms and tend to disproportionately affect Black, Hispanic, low-income, and immigrant families (Dreilinger, 2016; Sattin-Bajaj & Roda, 2020). For example, many districts with school choice policies offer little or no transportation support, which can restrict parents' choice sets, especially for families without cars (Valant & Lincove, 2023; Blagg et al., 2018; McShane & Shaw, 2020). Similarly, if parents do not know that a school is available to them because of informational barriers, they will not request or enroll in that school (Jochim et al., 2014; Sattin-Bajaj, 2014; Mavrogordato & Stein, 2016; Corcoran et al., 2018; Corcoran & Jennings, 2019).

In this study, we focus on policies related to application processes and assignment mechanisms. In decentralized choice systems, schools have incentives and opportunities to target desired students through program design and parent outreach (Jabbar, 2015) or internal manipulation of the lotteries and waitlist (Weiler & Vogel, 2015). The application process might directly select students through entrance exams, but schools might also weed out less committed families by requiring attendance at open houses, submission of extra eligibility paperwork, or other time-consuming activities (Dreilinger, 2016; Sattin-Bajaj & Roda, 2020). There is also evidence that school leaders strategize marketing, outreach, and parent communication to attract certain students but not others (Bergman & McFarlin, 2020; Jabbar, 2015; Jennings, 2010).

UE systems are proposed as a potential remedy to obstacles created by decentralized choice and enrollment systems (Benner & Boser, 2018; Gross, DeArmond, & Denice, 2015; Weiler & Vogel, 2015). The basic model is that families submit a single application with rank-ordered school requests to a central agency, and then the agency runs a placement algorithm that assigns students to schools based on parents' requests, seat capacity, and student priorities.

Proponents have argued that UE systems can be fairer, more transparent, and more efficient than decentralized processes (Benner & Boser, 2018; Gross, DeArmond, & Denice, 2015) by clarifying the application process for families while reducing administrative burden for schools. With placement algorithms, they can allocate students to schools more efficiently than decentralized systems by preventing a student from holding seats in multiple schools and incorporating families' ranked preferences (e.g., Abdulkadiroğlu et al., 2020; Abdulkadiroğlu & Sönmez, 2003; Ekmekci & Yemnez, 2019; Pais & Pintér, 2008; Pathak, 2017).

The implications of UE for racial segregation, relative to decentralized enrollment, are complex. One persistent concern has been the accessibility of selective schools, as well as high-demand open enrollment schools, to families that lack the resources to navigate a maze of application requirements, deadlines, and procedures (Sattin-Bajaj & Roda, 2020). Depending on design, UE systems can reduce those barriers by simplifying applications. Transitions to UE also tend to come with consolidated information about schools, such as parent guides, that can address transparency concerns and mitigate information inequities (Gross, DeArmond, & Denice, 2015).

If UE systems lead to more applications from previously underrepresented groups in elite schools and assignment processes are truly race-neutral, then we would expect increased enrollment from these groups. Some of this effect could be immediate due to sudden changes in schools' applicant pools. Some of the effect could take years to materialize. It might take time for communities to adjust to the new system; increased enrollment of underrepresented students in one year could lead to more applications from this group in subsequent years (Caetano & Maheshri, 2017; Card, Mas, & Rothstein, 2008); and increased demand could lead schools to invest in increased seat capacities in oversubscribed schools. Thus, assessing how schools' entry

into UE systems affects enrollment requires attention to both short-term and long-term enrollment changes. Conversely, if participation in UE signals a threat to white parents or the perception that school quality will decline, UE might further segregate by encouraging white families to exit the system.

There are also reasons to hypothesize that UE will have little or no effect on the distribution of students. First, high-demand schools may have incentives to avoid or postpone entry into a UE system (Ekmekci & Yenmez, 2019). This has been an issue in New Orleans, where several of the city's highest-rated schools resisted entry into OneApp, in some cases until they were required to enter as a condition of their charter reauthorization (Jewson, 2020). Second, UE systems' placement algorithms often maintain problematic components of other enrollment mechanism. For example, the OneApp algorithm offers some geographic seating priorities. When high-performing schools are located in high-rent or predominantly white areas, geographic priorities will benefit white, well-off families (Valant & Walker, 2023; Gerry, Balfe, & Weixler, 2020; Kessel & Olme, 2018). UE systems, including OneApp, can also allow schools to maintain selection admissions, extra paperwork, and other requirements that might exclude parents with less time and resources to dedicate to school applications.

UE has rapidly expanded across US cities (Hesla, 2018; Monarrez & Chien, 2021), but few studies have tested these competing hypotheses about UE effects on student segregation, relative to decentralized enrollment mechanisms. Monarrez & Chien (2021) collected data from the largest 100 U.S. school districts, finding that roughly half had a centralized school lottery. They used a difference-in-differences approach to compare changes in district level racial/ethnic segregation from 2003 (before the introduction of modern UE systems) to 2018 in districts with and without those lotteries. They find no evidence of differential changes but acknowledge their

estimates are “rough” given the long time period analyzed and their lack of detail about individual systems’ UE adoption. Kutscher, Nath, and Urzua (2020) use a difference-in-differences strategy that exploits the varied times that communities entered a UE system in Chile. They also find little evidence of overall reductions in segregation when moving from decentralized to centralized enrollment, though their results display heterogeneity by community characteristics. In New Orleans, Weixler et al. (2017) found that little or no redistribution by race, income, or special needs occurred when New Orleans transitioned from centralized, residential assignment to decentralized school choice. This is the first study to expand this analysis to test the effects of the transition from decentralized school choice to UE. We also contribute deeper context by examining not just system-level segregation but entry and exit patterns at the school level.

Policy Context

Like many large urban education settings, New Orleans has a long history of both demographic diversity and a highly segregated, underperforming public school system (CFED, 2016; Woodward, 2019). The U.S. Census Bureau (2022) estimates that 58% of Orleans Parish residents are Black, 33% white, 6% Hispanic or Latino, 3% Asian, and 4% two or more races, with 24% of residents living in poverty. In 2016, the median income for Black households of around $25,000 was less than half of the median for white households at $68,000 (Plyer and Gardere, 2018). New Orleans has one of the highest rates of private school enrollment in the country, with a disproportionate share of the city’s more affluent families in private schools (Cowen Institute, 2023), public schools serve a student population that is disproportionally Black and low-income. As of October 2022, 86% of the public school population was economically disadvantaged and 90% were students of color (Cowen Institute, 2023).

Historically, the small share of white students enrolled in public schools was heavily concentrated in a small number of schools with above average performance ratings. The Cowen Institute (2023) reports that even with "some progress in the racial and socioeconomic integration of the city's public schools," 75% of white students in New Orleans attended an A or B-rated school, compared to only 24% of Black and 33% of Hispanic students. For this reason, we focus on analysis of the demographic effects of UE on racial segregation.

The current New Orleans school system was shaped by sweeping education reforms that followed Hurricane Katrina in 2005. These reforms followed the broad premise, set out by influential thought leaders such as Friedman (1955) and Chubb and Moe (1990), that a market-like structure could improve public education by inducing competition and innovation at the school level. New Orleans reforms included both wide-spread privatization through contracting all schools to non-profit charter operators, and widespread choice and competition, through the elimination of geographic attendance and the eventual implementation of unified enrollment.

Figure 1 illustrates the timeline of school reforms in New Orleans. We emphasize the choice and enrollment mechanisms that are the focus on this study. The incremental process of decentralization and privatization began in fall 2005, with state takeover of most Orleans Parish School Board (OPSB) campuses by Louisiana's Recovery School District (RSD). In the initial years of reform, New Orleans public schools operated as a "portfolio system" with multiple agencies governing schools directly and an expanding number of private, charter operators (Harris, 2020; Hill, Pierce, & Guthrie, 1997). All schools deemed "underperforming" prior to Katrina were taken over by the RSD, which sought to quickly convert all campuses to independent charter schools. A smaller number of previously high-performing schools were not taken over by RSD. These included both district-run and charter schools governed by OPSB and

a small number of charter schools governed by the state Board of Elementary and Secondary Education (BESE). Because the RSD is meant to be a temporary solution to local management problems, all RSD-governed schools were eventually returned to local control in 2019 under the newly reconstituted New Orleans Public Schools (NOLA-PS). By that time, all OPSB schools had also transitioned to decentralized charter management, and, moving forward, NOLA-PS only directly operated a school as a temporary measure in instances of charter contract failure.

The transition to school choice for families was more sweeping and sudden. Given the unstable housing conditions in post-Katrina New Orleans, families returning from evacuation could apply for seats at any school in the city. Choice was not just an option but a requirement, as there were no longer guaranteed seats at any grade level based on residential location. The initial post-Katrina enrollment mechanism was highly decentralized. Schools citywide controlled their own application and enrollment processes, and parents applied directly to individual schools. School managers were responsible for upholding laws regarding non-discrimination, and when applications exceeded available seats, for holding admissions lotteries to select admitted students. While open enrollment policies plus lotteries were required at all RSD-governed schools, schools governed by OPSB and BESE were permitted to operate full or partial magnet programs with school-determined admissions requirements. Some selective programs were legacy magnet programs from before Katrina, while others were newly created during the period of school reform.

The transition to a market-based public school system produced intense public backlash in New Orleans, with many concerns focused on perceptions of unfair mechanisms of choice and enrollment (Harris, 2020; Jabbar, 2015). Of particular concern was the possibility that schools would have incentives to exclude certain students, including students with disabilities and

students with academic or behavioral challenges. Decentralized enrollment placed the burden on parents to research school options and application procedures, creating a disadvantage for children of parents with constrained resources. In interviews with school leaders, Jabbar (2015) documents many strategies to manipulate enrollment such as selective advertising, discouraging parents from applying, and leaving seats unfilled to avoid students who are more potentially more expensive to educate. Students with disabilities filed a class-action lawsuit in federal court alleging system-wide discrimination toward students with special needs, including through enrollment practices (Chang, 2010).

RSD, which oversaw a majority of schools at the time, initiated incremental efforts to simplify and unify enrollment. In 2008, RSD introduced a common application form and deadline for schools under its control (Cowen Institute, 2011), and in 2012, began conducting UE through OneApp. Families using OneApp ranked participating schools in a single application, and a newly created Office of Enrollment used a "strategy-proof" algorithm to place each applicant in a single seat based on families' rankings, seat availability, and a set of school determined student priorities (Abdulkadiroğlu et al., 2020). The first year of unified enrollment via OneApp, which assigned seats for fall 2012, included only schools governed by RSD. The following year, OPSB required remaining schools under its direct control to join, and all other New Orleans schools were invited but not required to participate. Since that time, UE incrementally expanded through the voluntary or forced addition of charter schools governed by BESE and OPSB. Any schools not participating in UE were not listed on the OneApp form, and these schools maintained control of their applications and enrollment. Students would receive only one assignment from OneApp but might be assigned to multiple non-participating schools leaving parents to decide where to enroll. A citywide school catalogue known the *New Orleans*

Parents' Guide listed all publicly funded school options and provided detailed instructions for completing OneApp. Nonparticipating schools were listed in the guide as well, but application instructions for these schools were only to contact the school for further information.

Between 2012 and 2022, several schools resisted entry into OneApp (Jewson, 2020; Juhasz, 2021).[1] Because RSD schools were required to participate, holdout schools included some OPSB and BESE charter schools. These schools were operating under charter contracts lasting up to 10 years, and they argued that they could not be forced into participation under their current charter contracts. After 2013, OPSB and, later, NOLA-PS included OneApp participation as a requirement for charter renewal. Some holdout schools that offered pre-K were forced into OneApp prior to contract renewal by a state a state policy change that required state-funded pre-K seats to be allocated through OneApp. By 2022, all charter contracts signed prior to OneApp had expired. For the first time, parents could rank all schools on a single application, and students could only be assigned to one school. Figure 1 displays the full timeline for these incremental changes.

When selective admissions schools joined OneApp, whether voluntary or not, they were not required to remove admissions requirements. Instead, the algorithm was adjusted to only place students at a school where they met all admission criteria (e.g. passed admissions test, attended requirement meetings, and submitted extra paperwork). Schools with extra requirements were required to contact all applicants to offer opportunities to meet requirements in the period between the application deadline and the final OneApp assignment date. Between 2012 and

[1] After 2012, two policy changes could force holdout schools into UE. A Louisiana law change regarding state funded pre-K required all schools in New Orleans to use OneApp to enroll state-funded pre-K students. This pushed some schools into UE for pre-K only, and they later joined voluntarily for other grades. The second change was that the NOLA public school system made participation in OneApp a requirement for charter renewal at the time of renewal. Because several holdout schools had 10-year charter contracts beginning in 2012, these school could not be forced into OneApp until 2022.

2022, partial school participation in UE meant that parents interested in applying to non-participating schools were still required to navigate multiple application systems, and parents applying to selective schools (whether in OneApp or not) were required to complete additional requirements.

Schools that did not participate in OneApp were subjected to criticism in the media (Dreilinger, 2016; Landry, 2015; Vanacore, 2012) and by advocacy groups (Orleans Public Education Network, 2019; Urban League of Louisiana, 2020) that argued that school control over applications and admissions was a de facto barrier to access for children of parents with fewer resources to dedicate to school choice. The fact that many schools resisted participation in favor of dedicating school resources to application and enrollment processes suggests that some school leaders saw centralized enrollment as potentially disruptive to the school's reputation, internal climate, or future performance, which is consistent with findings from interviews in other settings (Giersch, 2022).

In this study, we exploit the incremental addition of schools to OneApp to assess whether entry into UE can be empirically associated with demographic shifts the student body of New Orleans schools. Because of the history and context of racial segregation in the city and the evidence discussed above that school choice policies often increase racial segregation, we particularly focus on the distribution of white and Black students, and whether UE led to increased access for Black students, exit of white students, and finally, whether there are any indications that schools' performance changed. We first identify a subset of schools that, prior to entering OneApp, had student populations that were highly disproportionately white. Some of these "focus schools" (as we refer to them due to these schools being the focus of our analysis) are among the highest-rated schools in New Orleans (based on the state's school report card).

Several joined OneApp only when forced to do so (Jewson, 2020). Thus, our primary interest is understanding how centralized enrollment—as a replacement for decentralized enrollment—affects enrollment patterns.

Underlying this work is *not* an assumption that these "focus schools" were necessarily the best schools in New Orleans, nor that parents of Black students (nor any other parents) would necessarily desire these schools over other options. Rather, we aim to test whether racial segregation and school enrollment patterns changed in response to UE and whether any such changes are associated with changes in school-level outcomes. Specifically, we ask the following research questions (RQs): 1) Did UE entry produce an immediate or longer-term change in nonwhite/Black enrollment in schools that had been disproportionately white? 2) Did UE entry produce an immediate or longer-term change in the enrollment of new or previously enrolled white students in schools that had been disproportionately white? 3) Did UE entry affect these schools' accountability indicators, student or teacher mobility rates, or discipline rates?

Data

This analysis requires panel data on school OneApp participation, student demographics, school performance, student and teacher mobility rates, and student discipline. We used restricted, student-level administrative data provided by the Louisiana Department of Education (LDOE) to aggregate data to the school-by-grade-by-year level. Some of our measures, including student racial demographics, differ from one grade level to the next within the same school and year. Other measures, such as School Performance Score and value-added measures, apply schoolwide. We have data for all publicly funded schools in New Orleans from the 2007-08 through 2019-20 school years. Since this is the post-Katrina era in New Orleans, most schools in our data are charter schools, and all district-run schools transitioned to charter management by

fall 2019. Having data that span a long period of time is important for having enough observations both before and after schools enter UE to estimate time trends precisely (Jacob et al., 2016). Using OneApp files provided by NOLA-PS, we identify a school's first year in UE (*Time*=0) in the first year that the school's entry grade was seated through OneApp. For schools that were open for the full time period of study, this includes 5 to 10 years of pre-UE observations and 4 to 8 years of post-UE observations, depending on the year of initial UE entry.

In most analyses, we measure the racial composition of each school (or a grade within that school) as the share of nonwhite students in LDOE's fall enrollment counts. Over 95% of nonwhite students in our data are Black. The largest nonwhite group other than Black is multi-race, which, based on city and school demographics, is likely to include many students with one Black parent. We do not observe enough Asian or Hispanic students to identify the effects of UE for these groups individually, and we acknowledge that UE systems might have different effects for other groups. Our results are robust to restricting the nonwhite sample to Black students only.

Our first two RQs use enrollment data to explore the percent and counts of white, nonwhite, and Black students. RQ 3 uses measures often regarded as performance or quality indicators by administrators and parents. As test-based measures, we include both the school-level School Performance Scores (SPS) from Louisiana's accountability system and researcher-estimated value-added scores. SPS is a continuous, numeric accountability score calculated by LDOE based primarily on student performance on state tests. Our value-added measure of how a school's students perform on state tests controls for factors such as prior test scores and student demographics. We follow the approach of Harris and Liu (2021) in computing school value-added scores. The measure is a weighted average of all subject area tests offered for a school's grade levels (including grades 4 through 8). Both the SPS and value-added score are

standardized relative to statewide mean of zero and a standard deviation of one. We note that Louisiana testing begins in third grade, and thus value-added measurement can begin in fourth grade, but most open seats are in entry grades of pre-K or kindergarten. Thus, is it likely that performance shifts would be considerably until these students reached third grade, unless the effects of UE are so dramatic that other students are affected as well.

As measures of stakeholder satisfaction, we calculate the proportion of students and teachers who return to a school in the following year. For teachers, this is the proportion of teachers from year *t*-1 who teach at the same school in year *t*. For students, we use the same process but omit students who were in the final grade offered at their school in year *t*-1. We use student-level discipline data from LDOE to create a final set of measures. For each school-by-year, we calculate the number of discipline incidents per 100 students and the total number of days of suspensions per 100 students. This reflects both frequency and severity of discipline events. Schools have discretion in how they punish and report student behavior, and there is documented racial bias in suspension severity in Louisiana (Barrett et al., 2021). We cannot determine whether a change in discipline rates indicates a change in student behavior or a change in how teachers and administrators react to behavior. Our data do allow us to look specifically at more serious, violent infractions that involve less discretion in whether to issue a suspension. For example, bringing weapons prohibited by federal law is supposed to result in an automatic suspension, while the most common infraction type, "willful disobedience," likely involves considerable discretion. Following the violent/nonviolent infraction classifications of Barrett et al. (2021), we create an additional discipline measure that counts a school's violent incidents per 100 students.

Descriptive Evidence of Changing Enrollment Patterns

Prior to entering UE, schools managed their own applications, and we do not have access to any application data. However, the concentrated enrollment of white students in a small number of New Orleans schools prior to UE provides suggestive evidence that decentralized enrollment might not have offered similar access to Black and white students. Figure 2 illustrates the distribution of white students in NOLA-PS across schools that were operating in 2011-2012, the final year before UE was first implemented. Black bars indicate 10 schools where white enrollment was more than double the districtwide rate of 7%. As a group, these 10 schools enrolled over 90% of the system's white students. A review of the 2011-12 *New Orleans Parents' Guide* (a catalogue of schools that was published to help parents navigate school choice) shows that each of these 10 schools offered a special theme (e.g., Montessori, language immersion, or the arts) and some included gifted programs with academic admissions requirements.[2] In the dynamic setting of New Orleans school reform, three additional schools opened in the early years of UE and, enrolling students outside of UE, reached white enrollment at more than double the districtwide rate. These three schools also had themed curricula (Montessori, arts, and innovation). Together, these 13 schools compose the focus schools for this study, based on the criterion of enrolling more than double the district rate of white students prior to participating in UE.

Figure 3 illustrates this incremental entry of the 13 identified focus schools and comparison schools into UE. While most comparison schools entered UE either in fall 2012 or 2013, only one focus school had entered by fall 2013. Four schools, including three focus schools, were open during the time series but did not enter UE early enough for us to observe

[2] We note that these 10 focus schools were not the only selective admissions schools or specially focused schools. Parents could also choose other selective admissions programs and specially focused schools that had Black enrollment shares of up to 99%. Focus schools tend to have themes identified by Mickelson, Bottia, and Southworth (2012) as more appealing to white parents.

their post-entry outcomes in our school data.[3] While we cannot look for changes in enrollment or performance information upon UE entry at these schools, their data contribute to our estimates of pre-UE trends.

To illustrate changes in student segregation by race in the aggregate in New Orleans school reform era, we calculated the white/non-white dissimilarity index from 2008-2020.[4] We do this for the whole district, as well as for only students in the most common school entry grades, pre-K and kindergarten.[5] Figure 4 illustrates the dissimilarity index measures over time. Values of the index can be interpreted as the proportion of white students that would need to change schools to achieve an equal proportion of white and non-white students in every school. District-wide, the pre-UE dissimilarity index of approximately 0.79 declined slowly over time after UE to about 0.74 by 2020. However, there were substantially larger declines in entry grades that coincide with the addition of our focus schools to UE (see Figure 3). Post-UE, dissimilarity fell to below 0.70 in kindergarten and below 0.60 in pre-K.

Mathematically, the dissimilarity index compares the distribution of students across schools to districtwide enrollment by race. The reduction we see in Figure 4 could be explained by either a redistribution of white and nonwhite student across schools (the numerator) or changes in the overall proportion of white versus nonwhite students (the denominator). Figure 5 illustrates district-wide NOLA-PS enrollment by race from 2008 to 2020. In the final year prior

[3] NOLA-PS schools were closed for in-person learning in spring 2020 due to COVID-19. At that point the pandemic likely affected all outcomes of interest. We end our analysis period with fall enrollment from the 2019-20 academic year. The final four schools entered UE in 2021 for enrollment in fall of the 2022-23 academic year. COVID also led to interruptions is state testing, which is why we cannot follow test performance through third grade for post-UE kindergarteners.

[4] $Dissimilarity = \frac{1}{2} * \sum \left| \left(\frac{school\ \%\ white}{district\ \%\ white}\right) - \left(\frac{school\ \%\ nonwhite}{district\ \%\ nonwhite}\right) \right|$. Values reflect the proportion of white students who would need to change schools in order to achieve the districtwide racial balance at each individual school. For example, when NOLA-PS enrolled 6.5% white students overall, and the dissimilarity index was 0.79, 79% of white students would need to change schools to reach 6.5% white enrollment in all schools.

[5] In NOLA-PS, schools have autonomy to determine grade configurations. Most schools serve grades PK-8 or K-8, and many serve PK-12 or K-12.

to UE, total enrollment was 88% Black, 6.5% white, and 5.5% multi- or other races. However, total enrollment also increased over time. During this growth period, white and multi/other-race enrollment increased at a faster rate than new Black enrollment. Thus, underlying the changing dissimilarity in Figure 4 was a growing share of white enrollment in the overall distribution districtwide. Deeper analysis is needed to understand the degree to which new students experienced less segregation in entry grades than prior cohorts.

As mentioned above, a reason for segregated enrollment could be that parents prefer schools with more same-race students (whether because of a demographic preference or a preference for school characteristics correlated with demographics). Before estimating the effects of UE, it is important to determine if racial segregation and high white enrollment in focus schools was driven by Black parents preferring schools with more concentrated Black enrollment. Beginning in 2017, we have access to data from school applications that identify the race of each applicant and their ranked school choices. During these years, we can aggregate applicants and subsequent enrollees each year for each participating focus school by race (see Appendix Table 4). We observe a high demand for seats in focus schools among Black parents, as well as increasing demand over time. For example, in 2017, there were 1,151 seats available through OneApp for new students in focus schools, with 1,901 applications from Black students plus 570 from other students of color. In 2020, demand increased to 5,284 Black applicants for 1,445 available seats in focus schools. However, we also note that these students were competing for seats in the UE lottery with a substantial portion of white students who applied only to focus schools. Based on the proportions of applicants by race, a simple random assignment mechanism would assign 25% of focus school seats to white students in 2017, falling to 20% by 2020.

Estimating Effects of UE on Schools

The next steps in our study are designed to test whether entering UE affected enrollment patterns and outcomes at the school level. Specifically, we seek to identify changes both immediately upon UE entry and over subsequent years in: (1) nonwhite/Black enrollment, (2) white enrollment, and (3) school performance and climate measures. Our objective is to estimate causal effects of UE entry, isolating the impacts of entering OneApp from potentially conflating effects such as unrelated time trends (e.g., broader demographic shifts in New Orleans) and other factors (e.g., changes in state policy that affect schools statewide). Since we are interested in whether OneApp entry played out differently in focus schools and other schools in New Orleans, we employ a comparative interrupted time series (CITS) design that takes advantage of the uneven shares of white students across schools and the staggered timing of schools' entry into OneApp. In general, interrupted time series designs estimate whether the timing of an exogenous event disrupts existing time trends for an outcome of interest. The CITS design adds a comparative dimension by estimating changes in outcomes for a particular subgroup relative to changes in a broader sample. The model estimates pre-event time trends, a post-event intercept shift that reflects immediate implementation effects, and a post-event change in the time trend (i.e., a slope change) that reflects gradual effects over time. To identify the unique effects on the subgroup of interest, the model also estimates differential pre-event trends, post-event intercept shifts, and post-event slope changes for the focus group relative to the rest of the district.

In this case, the event of interest is a school's entry into UE, the focus group is schools with high rates of white enrollment prior to entering UE (focus schools), and the full sample includes comparison schools with lower rates of white enrollment. Because schools join UE over a 10-year timeframe, time in the model is measured in years relative to UE entry. We estimate:

$$Y_{it} = \alpha_0 + \gamma_1(Time_{it}) + \gamma_2(Post\ UE_{it}) + \gamma_3(Time \cdot\ Post\ UE_{it}) + \beta_1(Focus_i \cdot Time_{it}) + \beta_2(Focus_i \cdot Post\ UE_{it}) + \beta_3(Focus_i \cdot \quad (1)$$

$$Time_{it} \cdot Post\ UE_{it}) + \mu_i + \tau_t + \varepsilon_{it}$$

Here, Y_{it} is an enrollment or performance outcome for school *i* in academic year *t*. *Time* measures years to UE entry, with *t*<0 in years prior to UE, *t*=0 in the school's first UE enrollment year, and *t*>0 in subsequent years of UE participation. *Post UE* is equal to one when *t*>=0 and equal to zero otherwise. *Focus* is equal to one for schools in our sample that were disproportionately white before UE entry (and equal to zero for comparison schools). In our primary model, this is determined by having white enrollment above 15%, with alternate thresholds tested for robustness.

γ_1 gives the pre-UE time trend for comparison schools, with β_1 giving the difference in pre-UE time trend for focus schools. γ_2 represents the immediate change in Y_{it} after entering UE for comparison schools, while β_2 shows how that immediate change differed for focus schools. γ_3 shows how the time trend (slope) changed after UE entry for comparison schools, with β_3 showing how this differed for focus schools. We also include school (μ_i) and academic year (τ_t) fixed effects to isolate the effects of UE entry from other factors and estimate the within-school effects of UE.

We are interested in what happens, in general, after schools enter UE and especially interested in the changes in focus schools (as captured by β_2 and β_3). A significant value of β_2 would indicate that entering UE led to an immediate and persistent change in outcomes for focus schools beyond that seen in comparison schools when they entered UE. This would be a differential intercept shift. A significant value of β_3 would indicate that entering UE changed the trajectory for an outcome differently in focus schools than comparison schools. This would be a differential change in slope suggesting that UE has an effect that grows over time. Notably, significant changes must be interpreted in the context of UE replacing decentralized enrollment.

The null hypothesis is that UE and decentralized distributed students the same ways. The directional alternative hypothesis is that UE is either an improvement on decentralized enrollment or it makes segregation worse. The context does not allow us to compare systems without choice to systems with choice and UE.

For some analyses, we focus on a specific grade level (e.g., kindergarten) or set of grade levels (e.g., the lowest grade level offered by schools, which we call entry grades). We run the same models for these analyses but restrict our samples to only the relevant grade levels. Finally, due repeated observations of schools across years, we run all models with standard errors that are robust to clustering at the school level.

Results

Description of Focus and Comparison Schools

In Tables 1-4, we apply the threshold of 15% white enrollment (prior to school entry in UE) to distinguish between focus and comparison schools, and appendix tables show robustness to alternate thresholds. Table 1 displays descriptive statistics separately for focus and comparison schools, disaggregated by the period before NOLA-PS started OneApp (fall 2007 to spring 2012) and the period when OneApp began (fall 2012 to fall 2020). Note that schools entered OneApp incrementally, so the post-OneApp period still includes many nonparticipating schools. The system is also changed over time as new focus and comparison schools opened, and some comparison schools closed. We observe 10 of our focus schools open in the pre-OneApp period for a total of 35 school-by-year observations and 61 comparison schools with 269 school-by-year observations. In OneApp implementation period, we observe 13 focus schools (102 school-by-year observations) and 78 comparison schools (525 school-by-year observations). Focus schools generally enroll more students than comparison schools, but enrollment at both types of schools

grows over time. The whole city was growing in the decade post-Katrina as damaged housing was rebuilt and evacuated families moved back to New Orleans. On average, focus schools had 639 students before OneApp and 709 during OneApp implementation, compared to 494 students before and 578 during UE in comparison schools. Focus and comparison schools have notably different racial demographics. Focus schools have, on average, fairly balanced numbers of Black and white students both before and during implementation. Comparison schools, in contrast, have fewer than 10 white students, on average, both before and during implementation.

Descriptive statistics on outcomes vary considerably across focus and comparison schools, with generally better outcomes in focus schools. Looking across time periods, outcomes are fairly stable for student return rates and the rates of suspensions and violent incidents. Teacher return rates and school value-added scores fell for both focus and comparison schools. Two outcomes appear to have potentially differential patterns. First, the total number of suspension days per 100 students increased slightly in focus schools (from 25.4 to 31.5 per year) while decreasing in comparison schools (from 90 to 68.9 per year). Second, the mean standardized School Performance Score dropped from 1.57 to 0.97 in focus schools while climbing from -0.70 to -0.43 in comparison schools. Our CITS analysis will examine whether these changes are attributable to schools' entry in UE.

CITS Effects on Share Nonwhite and Black

To address RQ 1, we assess whether entering UE led focus schools, relative to other schools, to enroll larger shares of nonwhite students. Table 2 displays regression results from our CITS models and pre-UE mean values for the dependent variables.[6] All results reflect models

[6] The CITS model with school fixed effects does not allow us to estimate the pre-UE difference between focus and comparison schools. Instead, we provide this information by showing the pre-UE means by group.

with school and year fixed effects.[7] Columns 1-5 display results for the share of all nonwhite students, beginning with overall effects across all grade levels (Column 1). Since open seats are disproportionately available in schools' entry grade levels, we then look separately at this subset of grades. We do so for all entry grades (Column 2), pre-K (Column 3), kindergarten (Column 4), and upper entry grades such as 6th or 9th grade (Column 5). Columns 6-10 repeat this analysis for the share of Black students only.

Looking first at schoolwide effects on share nonwhite (Column 1), focus schools averaged 60% nonwhite enrollment before they entered UE. This was markedly lower than the 99% nonwhite enrollment share at comparison schools. We find no significant systemwide changes in the share of nonwhite students (*Time*) or systemwide intercept shift upon UE entry (*Post-UE*). In comparison schools, we observe a small but statistically significant change in the nonwhite enrollment trend upon entry in UE. This change amounts to a decrease of 0.3 percentage points per year in the share of students who were nonwhite.

Relative to the systemwide trend, focus schools had a pre-UE trend of -0.4 percentage points per year. This indicates that prior to UE the share of nonwhite students at these disproportionately white schools was decreasing slightly each year relative to other schools. We do not see evidence of a differential intercept shift in focus schools upon UE entry (*Focus* x *Post-UE*). This indicates that, looking across all grades, entering OneApp did not immediately change the percent balance of white and nonwhite students in focus schools relative to other schools. However, we observe a positive and significant difference in the slope change upon UE entry (*Focus* x *Time* x *Post-UE*). Relative to comparison schools, focus schools saw an annual increase of 1.4 percentage points in nonwhite enrollment share in the years after entering

[7] Collinearity with the time variable requires omission of two academic years. We omit the last two years before UE was first implemented in NOLA-PS.

OneApp. This more than reverses the negative pre-trend. Putting these estimates together, we find that entering UE led to an increase of 0.7 percentage points in nonwhite enrollment per year in focus schools from a pre-UE mean of 60.4%. UE appears to have had a small but significant effect on overall enrollment of nonwhite students the disproportionately white focus schools. The timing of these effects—more incremental than immediate—could reflect that few seats in non-entry grades were available for new students.

Column 2 looks specifically at entry grades (i.e., the school's lowest grade offered). The pre-UE share nonwhite in entry grades at focus schools was only 55%, which was lower than the schoolwide share of nonwhite students (60%) and much lower than the corresponding share of nonwhite students in comparison schools (98%). Systemwide, we see increases in nonwhite enrollment before UE (1.6 percentage points per year) coupled with a 1.8 percentage-point decline immediately after UE entry. Notably, our estimate for *Focus* x *Post-UE* indicates a large, differential intercept shift in focus schools. Relative to the comparison schools, focus schools saw an immediate increase of 11 percentage points in nonwhite enrollment in entry grades. This is consistent with our expectation of more immediate change in grades with all open seats. Combining this with the systemwide estimate for *Post-UE*, we find that entering UE led to an immediate increase in nonwhite enrollment share of approximately 9 percentage points. Moreover, we observe a significant, positive effect of 1.1 percentage points per year on our measure of differential slope changes upon UE entry (*Focus* x *Time* x *Post-UE*). In other words, focus schools experienced a large immediate increase in nonwhite enrollment share in entry grades, and the share of nonwhite students in these grades continued to increase in subsequent years, both relative to comparison schools and overall.

Columns 3, 4, and 5 further disaggregate entry grades into pre-K, kindergarten, and upper

grades, respectively. In comparison schools, nearly 99% of students in these grades were nonwhite. In focus schools, the pre-UE share of nonwhite students was particularly low in the younger grades: 45% in pre-K and 51% in kindergarten. These younger entry grades are where we observe the strongest effects from UE entry. In pre-K, systemwide, we observe a positive, pre-UE time trend in nonwhite enrollment share, followed by a negative UE intercept shift and then a positive post-UE slope change. This suggests that comparison schools saw a decrease in the share of nonwhite students in pre-K after UE, but that this effect diminished over time. Focus schools had a very large, differential post-UE intercept shift of 26 percentage points, followed by a small, incremental increase of 1.6 percentage points per year relative to the systemwide slope change. Notably, many pre-K seats in NOLA-PS are funded through Louisiana state programs that limit eligibility to students who are either from low-income families or have IEPs. Absent this funding, schools must self-fund pre-K through either fundraising, shifting resources from higher grades, or charging tuition. The large effect of UE at pre-K likely reflects, in part, that these eligibility requirements made pre-K applicants more likely to come from these high-risk groups.[8]

In kindergarten, where there are no special eligibility requirements, we do not observe significant changes in the systemwide indicators. We do, however, observe differential effects netting a 3.4 percentage-point larger intercept shift and 2.1 percentage-point larger positive slope change in nonwhite enrollment relative to comparison schools. This suggests that in kindergarten, as in pre-K, OneApp entry was associated with an increase in nonwhite enrollment share, but the immediate effects were stronger in pre-K than kindergarten. Finally, as seen in

[8] Applicants to state-funded pre-K seats must provide evidence of eligibility through income verification or providing a student's IEP. Ineligible or unverified applications for state-funded seats are excluded before the assignment process.

Column 5, we find no unique effect of UE on focus schools in the entry grades for middle and high school. However, our sample of focus schools at these grade levels is small.

In Columns 6-10, we replicate this analysis estimating only the share of Black students instead of the share nonwhite. Most nonwhite students in these schools are Black. Before UE, for example, 44% of focus school students were Black (60% nonwhite) and 39% of focus school students in entry grades were Black (55% nonwhite). Roughly 95% of students in comparison schools were Black. Given this, we expect broadly parallel results in Columns 1-5 and 6-10, and this is what we find. However, our estimates of differential effects are somewhat smaller in magnitude when we focus specifically on Black students only, and some of our findings are no longer statistically significant (whether because of smaller coefficients or larger standard errors). Looking at *Focus* x *Post-UE*, we estimate significant, differential intercept shifts for all entry grades (+6.7 percentage points) and pre-K (+18.7 percentage points) but not schoolwide or for kindergarten or upper entry grades. Looking at *Focus* x *Time* x *Post-UE*, we estimate significant, differential changes in slope for all grades (+1.0 percentage points) and kindergarten (+1.4 percentage points) but not the other columns.

CITS Effects on Enrollment Counts by Race

Overall, the results in Table 2 suggest that UE induced focus schools to enroll larger shares of nonwhite and Black students, with both immediate and longer-term effects in pre-K and kindergarten entry grades. The effects on schoolwide enrollment shares were modest, perhaps due to relatively few open seats outside of entry grades. Because it is unclear from Table 2 whether these enrollment changes resulted from focus schools enrolling more nonwhite students, fewer white students, or both, we next turn to the effects of UE on student persistence by race.

Table 3 presents results from CITS estimates (Equation 1) where we examine the (logged) number of students enrolled by racial group. By logging the enrollment counts, we report coefficients as elasticities that can be interpreted as the percent change in student enrollment. If overall enrollment increases, then it could be that both nonwhite and white enrollment increase. This differs from the analyses in Table 2, where an increase in the share of enrollment for one group implies a decrease in share for the other group. Table 3 displays results first for schools' overall enrollment and then for white, nonwhite, and Black students individually. Where we examine results by subgroup, we further disaggregate by the number of students from that group who reenroll in the subsequent year ("Returning") and the number who enroll in that school ("New"). This enables us to test for patterns such as white flight in the context of increasing nonwhite enrollment.

Across all seven columns, we do not observe any statistically significant systemwide effects. This suggests that enrollment counts—overall and by group—were stable in comparison schools, with no significant pre-UE trends, immediate changes upon UE entry, or change in trends after UE. Significant changes appear as differential effects for focus schools only and, specifically, as differential changes in slope upon UE entry. Upon entry in UE, focus schools increased overall enrollment by 17.4% per year relative to comparison schools (Column 1). This enrollment growth was fueled by both expanding capacity in existing grade levels—in some cases by renovating or changing buildings—and expanding the number of grade levels offered. The overall growth is notable, because the expanded capacity allowed focus schools to enroll more nonwhite students without serving fewer white students.

Columns 2 and 3 estimate (logged) enrollment counts for white students, disaggregated by the number of returning students and new students, respectively. Both inside and outside of

UE, students are guaranteed a seat in their current school if they wish to enroll for the next grade in the subsequent year. Still, it is plausible that UE entry could change reenrollment patterns if entering UE—and the accompanying changes in student enrollment—affected families' perceptions of a school. UE could affect new student enrollment via several pathways including changing families' beliefs about a school, making it easier or harder to enroll, changing the school's visibility, or causing the school to alter its placement priorities or requirements in ways that tend to benefit or harm certain groups' placement chances.

The stark contrast in student demographics across focus and comparison schools is again clear in Columns 2 and 3 of Table 3, with pre-UE means of only 3 returning and 3 new white students in comparison schools. The only statistically significant estimate in these columns is for *Focus* x *Time* x *Post-UE* for returning white students. UE is associated with a positive, differential slope change for focus schools, indicating a differential increase of 13.6 percent per year in returning white enrollment. This is notable, since white exit from disproportionately white schools is a salient concern for schools entering UE. We do not find evidence that white families exited or avoided focus schools after they entered OneApp[9].

The remaining columns in Table 3 show our estimates for (logged) enrollment counts for nonwhite and Black students. Results are similar for these two groups. Here, we find large and significant post-UE slope changes at focus schools beyond the systemwide effects. They amount to 22% to 23% per year for returning nonwhite/Black students and 12% per year for new nonwhite/Black students. Table 3 explains the mechanisms for the Table 2 results. Put together, the growing share of nonwhite students in focus schools is explained by increased enrollment

[9] We replicated these estimates for just grades K-2 to see if white exit occurred in the grades where non-white enrollment share was increasing. The results (available on request) are similar to the schoolwide effects in Table 3 with no evidence of reduced demand among white families.

and retention of nonwhite students with no offsetting exit or avoidance from white families. This is possible only due to the growth in seat capacity in focus schools after they entered UE.

Changes in School Performance Measures

Next, we explore whether the timing of UE entry is associated with changes in various indicators of school performance. We examine two outcomes focused on academic performance (Score Performance Scores and value-added measures), two outcomes that might reflect stability and satisfaction (student and teacher return rates for the following year), and three outcomes focused on student discipline (rates of suspension, rates of suspension for violent incidents, and number of days suspended). Table 4 displays these results, which come from CITS model in Equation 1.

Some caveats apply to these analyses. We observe nearly a decade of OneApp in our data, timing is still a challenge for measuring effects. This is particularly true for measures based on state test scores. Since Louisiana's state test is first administered in 3rd grade, a cohort of pre-K students who enter via OneApp would not directly affect test data for several years. When we estimate immediate effects of UE on measures that include older students, we seek to test a more indirect effect of the changing population of incoming students on how schools allocate resources and effort. We will only see results here if the entry of different students has schoolwide effects. With this limitation in mind, we include these measures in the context of the "racial threat" hypothesis, which suggests that white parents assume performance will decline when more Black students enroll.

The first two columns of Table 4 show estimates of changes in test performance indicators. Both SPS and value-added are standardized within the state and year, so a coefficient of 1.0 would indicate improvement of one standard deviation relative the rest of the state. Results

in Column 1 suggest that entering UE is associated with an immediate, systemwide increase in NOLA-PS schools' SPS, with an intercept shift of 0.35 standard deviations. We do not observe any other significant coefficients on this measure, suggesting that the increase in SPS occurred similarly across focus and comparison schools. The second column in Table 4 shows estimates using a value-added measure of schools' performance. Here, we find no significant coefficients, which suggests that UE is not associated increases or decreases student learning in focus or comparison schools.

Next, we assess whether UE entry is associated with changes in the rates of students and teachers remaining at their school in the following year. Most estimates are statistically insignificant. However, we observe a slightly positive, differential time trend effect on the student return rate in focus schools. Focus schools saw greater incremental increases than comparison schools in the share of their students who persisted in enrolled in the years following UE entry.

Our final set of school performance indicators focuses on student discipline. Results appear in the final three columns of Table 4. We examine three types of discipline outcomes that capture different aspects of the frequency and severity of student punishments. The clearest trend—and only statistically significant findings ($p<0.05$)—are negative estimates for *Time* x *Post-UE*. These indicate that UE entry led to declines in student discipline indicators across the system. We generally do not see differential effects for focus schools. We find a marginally significant ($p<0.10$) estimate on *Focus* x *Time* x *Post-UE* on one measure. This is an increase in violent incidents per 100 students that roughly offsets the decrease captured by *Time* x *Post-UE*. Combining the comparison group, post-UE slope change (-0.767) and differential focus school slope change (0.942), this would net 0.1 to 0.2 additional violent events per 100 students per

year. Given the average school size is fewer than 1,000 students, this is fewer than one event per school. Estimates of differential intercept shifts (*Focus* x *Post-UE*) are all negative but statistically insignificant.

Overall, we see little indication of different performance changes in focus schools, relative to comparison schools, immediately after UE entry or in the years that follow. We find systemwide declines in discipline rates and an immediate increase in School Performance Scores after UE entry.

Robustness Checks

As a robustness check, we examine the sensitivity of our estimates through: (a) alternate ways of identifying focus and comparison schools and (b) the one-by-one removal of individual focus schools that could be outliers driving our results. Our primary analyses define focus schools as having at least 15% white enrollment prior to UE entry and comparison schools as having less than 15% white enrollment prior to UE entry. This is a low threshold, but a white enrollment share of 15% is disproportionately high in the context of New Orleans public schools. The first alternative sets the threshold at 25% white (focus schools greater than 25% white; comparison schools less than 25% white). As seen in Figure 1, this only changes the classification of two schools, since most schools with white enrollments of at least 15% also had white enrollments of at least 25%.

Appendix tables show the sensitivity of our estimates of the effects of UE entry on nonwhite and Black enrollment shares (Appendix 1), enrollment counts (Appendix 2), and school performance measures (Appendix 3). We observe very slight changes in coefficients, standard errors, and statistical significance, but none of these changes is notable enough to suggest different takeaways with respect to UE's effects on nonwhite and Black enrollment share

or enrollment counts. Perhaps the most notable difference across all robustness checks appears in the first column of Appendix Table 3. Here, with a threshold of 25% white for distinguishing between target and comparison schools, we obtain a statistically significant estimate of the differential effects on SPS in the years following UE entry. This appears as a differential slope change in *Focus* x *Time* x *Post-UE* of 0.162 standard deviations per year. The corresponding estimate from Table 4 was a statistically insignificant differential effect of 0.095 standard deviations per year. This suggests that the post-UE gains in SPS may not have consisted entirely in an immediate, systemwide intercept change but also an added, incremental gain in the schools with the highest shares of white students before they entered UE. In online supplemental appendices, we test a second alternate that sets the threshold for focus schools at 15% or more white and the threshold for comparison schools at less than 5% white. This creates a larger gap between the "least white" target school and "most white" comparison school by dropping a small number near that threshold. Results from these robustness checks do not alter our conclusions.

Finally, since we have a relatively small number of focus schools, we assess whether an individual outlier might be driving our findings. Given the unique character of decentralized schools in New Orleans, this ensures that results are from UE in general rather than individual school responses. In a final supplemental appendix, we estimate the effects of UE entry on nonwhite enrollment share in entry grades, omitting a different focus school in each column. If the results from any one column look markedly different from the corresponding results in Table 2, Column 2, then the omitted school for that column might have driven our main results. While results differ slightly from one column to the next, they are broadly similar and suggest that the study's main results are not attributable to a single outlier.

Discussion

How U.S. students are assigned to schools has changed in recent years, especially in the country's largest cities. Historical links between where families live and which schools their children attend has been weakened by decades of school choice policies that produced a rapid expansion of charter schools, open enrollment in public schools, and private school choice programs. However, hopes that these policies would markedly improve marginalized students' access to highly sought-after schools or reduce school segregation have gone unfulfilled (Valant & Walker, 2023; Monarrez, Kisida, and Chingos, 2022). The reasons for this are complex, but a possible issue is policy design. The rapid expansion of school choice opportunities has meant that families in many cities confront the need to navigate many schools' application processes and deadlines at once, often with little transparency about how these processes work. This has created especially daunting obstacles for families with limited time and resources.

UE systems emerged as a response to these concerns. Yet, even as UE systems have proliferated across U.S. cities (Hesla, 2018), the literature contains virtually no research on how these systems affect enrollment or performance. This study seeks to fill that gap. Our findings indicate that UE, compared to decentralized enrollment, produces measurable and meaningful shifts in student demographics. In New Orleans, this has included larger shares of nonwhite and Black students enrolling in schools that have historically under-enrolled these groups. This growth and demographic change occurred without negative effects on enrollment or persistence of white students, schools' performance on Louisiana's accountability measure (SPS), value-added performance on state tests, student or teacher mobility rates, or student discipline.

Our findings are consistent with claims that UE systems, compared to decentralized processes, can improve access to high-demand schools for marginalized communities, at least to some extent. We find both immediate effects and longer-term effects on nonwhite/Black

enrollment in our focus schools' entry grades. The immediate effects suggest that many nonwhite families want seats in these schools now, not contingent on demographic change in the future. It could be, for example, that UE entry made these schools more visible or reduced the barriers to applying. However, we also see that increasing numbers and shares of nonwhite/Black students enrolled in the years after UE entry. This could reflect the changing demographics making schools more appealing or welcoming to families of color. It could reflect other factors as well, such as a multiplier effect from schools' sibling preference, where admitting more nonwhite students in one year leads schools to admit more nonwhite children from the same families in subsequent years. Still, expectations for schoolwide change should be tempered by the finding that effects are concentrated in entry grades. For a school with many grade levels, it would take several years for students in each grade to have entered via UE.

We should emphasize that schools increased the number of nonwhite and Black students enrolled without offsetting decreases in white enrollment because they were able and willing to expand enrollment. The New Orleans context provides incentives for growth through per-capita funding in charter contracts (Jabbar, 2015). With autonomy over grade configurations, some schools increased capacity by adding grade levels (e.g., starting with just pre-K/kindergarten and adding a new grade each year, or by adding middle grades and high school to K-5). With substantial post-Katrina FEMA funding for school construction, other schools were able to grow all grades through building renovations or opening satellite campuses. Finally, while decentralized enrollment allowed schools to under-enroll to exclude more challenging students (Jabbar, 2015), OneApp ensured that all seats were filled. The failure to "backfill" when seats are vacated has been documented at charter schools in other settings (Campbell and Quirk, 2019). OneApp transferred backfilling authority and waitlist management to the central enrollment

office to minimize vacant seats. The degree to which other cities could replicate the results from New Orleans likely depends on the degree to which oversubscribed schools are financially and physically able to expand capacity, a factor that also likely influences schools' willingness to participate in UE in the first place. Districts implementing UE with similar concerns about segregation and access might see better outcomes if there are also plans to expand or replicate high-demand schools.

Also notable is the finding that White families did not exit or avoid these schools in large numbers when the schools entered UE. We do not know precisely what motivated leaders of some disproportionately white schools to resist entering UE—whether, for example, it involved concerns about losing currently enrolled families or declines in school performance from changing student populations (though Jabbar, 2015, provides related evidence). Our findings indicate those concerns would not have much merit. Goyette, Farrie, and Freely (2012) offer an alternative to racial threat theory as contact theory, where exposure to peers of different races and ethnicities reduces prejudice and fear. It is possible that the white parents who live in New Orleans participate in NOLA-PS have less racially motivated fear than is typical, as they have already sorted into participation in a majority-Black district where even the whitest schools have substantial Black enrollment. Given that the majority of white families in the city send their children to public schools (Dreilinger, 2017), our public school sample is likely unlike the full population in a combination of greater openness to majority-Black schools and fewer resources to pay for private school tuition.

Limitations

This study has limitations that should be considered when assessing policy implications. Perhaps the most substantial limitations relate to generalizability. With most prior studies look at

segregation when systems move from zoned enrollment to choice with decentralized enrollment, we can only draw conclusions about the difference between decentralized and centralized enrollment. We cannot compare UE to the New Orleans' context without citywide choice. Every UE system is different on a variety of dimensions, including UE policy design (e.g., which students receive priority in which schools), community context (e.g., local demographics and beliefs about schools), school choice environments (e.g., how many and what types of schools are available), and the policies and infrastructure that support school choice (e.g., the quality and availability of transit). New Orleans has an essentially all-charter public school system. It also differs from some settings in that public schools that are minority-white can be reasonably considered disproportionately white. NOLA-PS focus schools already enrolled a large share (often a majority) of Black students, and in this setting, parent preferences for same-race peers would not have discouraged Black parents from ranking focus schools. Instead, we see large numbers of both white and nonwhite applications to focus schools in UE. Change might be slower in settings where few nonwhite students attend schools. While we cannot be sure that the findings from New Orleans will generalize to other contexts, we believe this study makes an important step toward building a literature on UE system effects, and we hope to see future studies of the effects of UE implementation and entry in other cities.

A second limitation relates to the timing required to observe long-term changes. OneApp, or, as it is now known, NCAP, is among the oldest UE systems in the United States (Hesla, 2018). Still, the system was less than a decade old at the time of this study, and schools have gradually joined UE, meaning that most schools—and especially most disproportionately white schools—have had much less than a decade to accrue post-UE outcomes. Theories of demographic change, such as Schelling's (1971), suggest that change can be a long, dynamic

process. It will be important to continue following these post-UE entry trends into the future.

A third limitation relates to our school performance measures. New Orleans students do not take state tests until 3rd grade. Consequently, our School Performance Scores and value-added measures do not incorporate scores from the youngest elementary grades, limiting our ability to see how performance changed in these grades. This relates to timing challenges, too, since most elementary schools have not been in OneApp long enough to accrue many years of test score data for students who entered in pre-K or kindergarten. However, these measures still can show, for example, whether OneApp entry was so disruptive (or beneficial) that schools reallocated resources in ways that affected the scores of students in upper elementary grades. Moreover, SPS was not exclusively based on test scores and did incorporate some information about the outcomes of early grade students (e.g., attendance rates).

Conclusion

How one interprets this study's findings may depend on how they see the purpose and role of UE systems. On one hand, we find little evidence that entering a UE system is a sure path to improved school performance or immediate racial integration—neither for schools that had been disproportionately white nor other schools. On the other hand, we find that UE systems can, in fact, create more opportunities for students of color in schools where they had been underrepresented, and these opportunities can arise without triggering white flight. Importantly, too, many of the virtues of UE systems, from increasing transparency to reducing the enrollment barriers that families must navigate, are not contingent on certain students enrolling in certain schools. It may be that the most important implication of this work is that it is possible—under certain conditions—to expand access to highly sought-after schools without limiting access to other students or sacrificing school performance.

Finally, we should note that in New Orleans, as in other cities nationwide, many schools that are exclusively or almost exclusively nonwhite produce outstanding outcomes and experiences for their students. The presence of white students is, of course, not a condition for high-quality educational settings. However, separate has always meant unequal in U.S. public schools (Reardon et al., 2021), and making access more equitable remains a priority for improving educational opportunities in the United States.

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Figure 1. Timeline of Unified Enrollment in New Orleans and Data for this Study

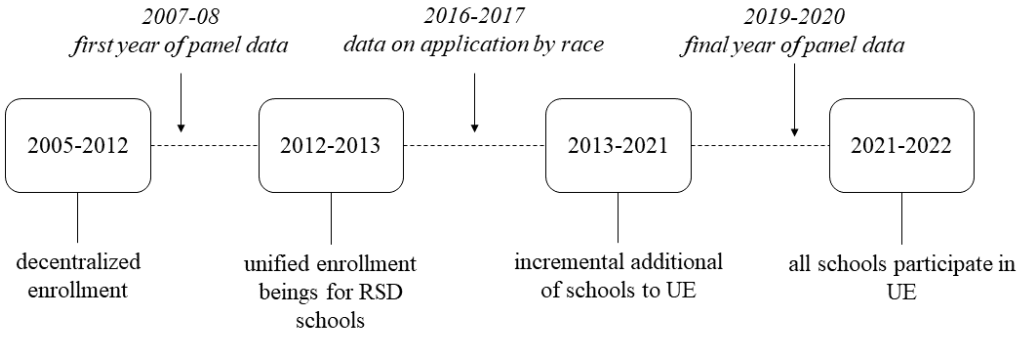
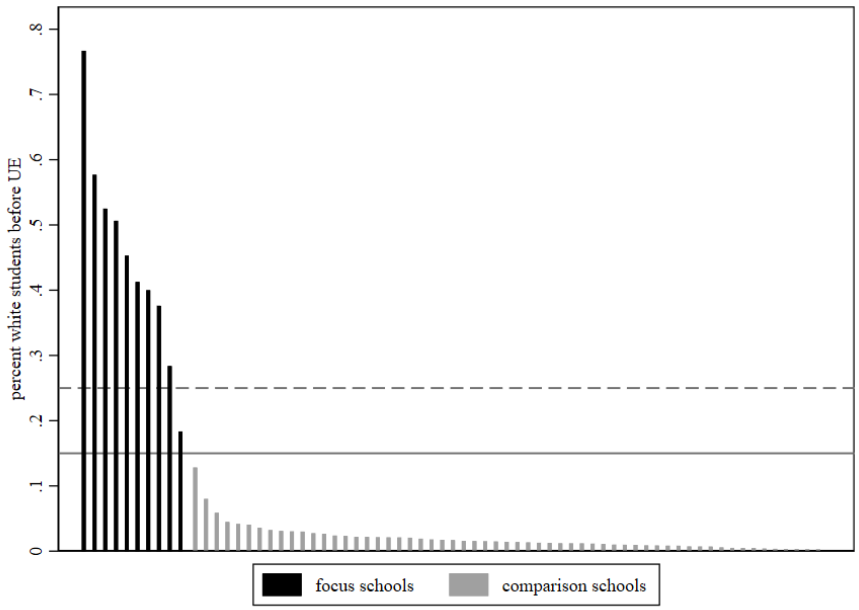
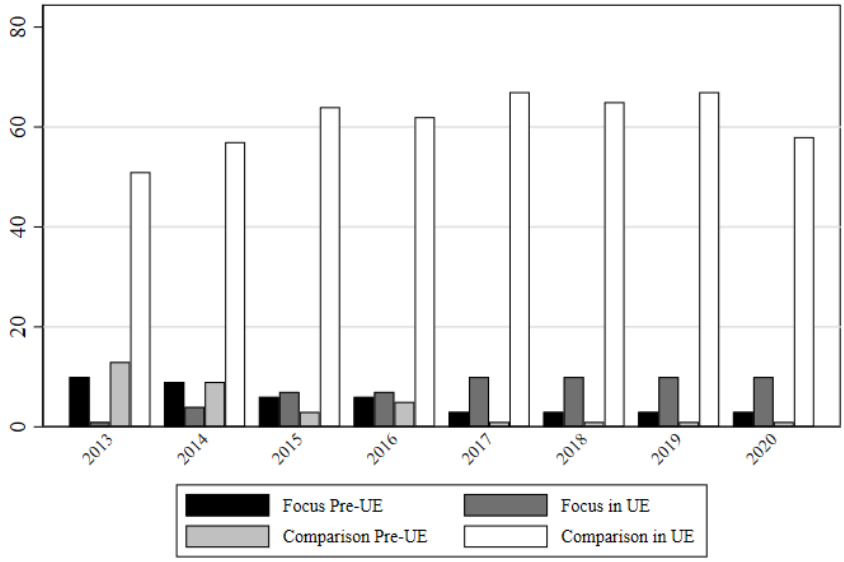


Figure 2. White Enrollment Share in Focus and Comparison Schools Prior to UE Implementation



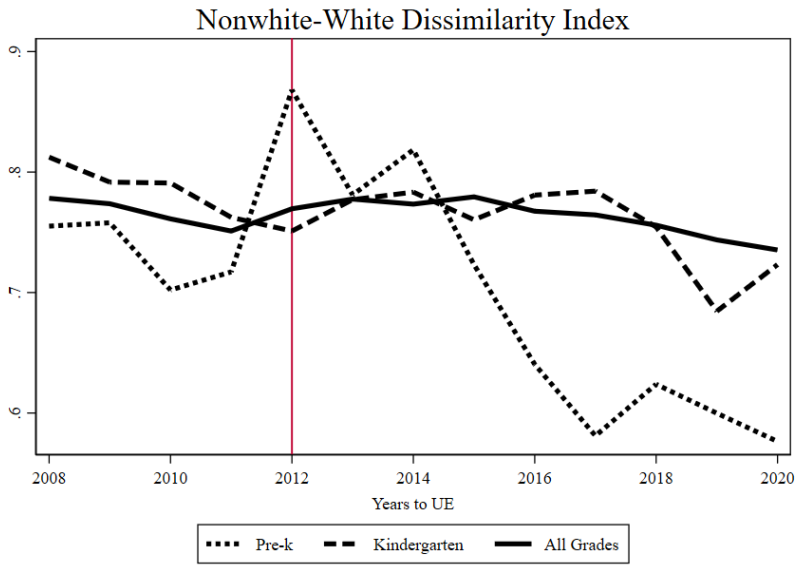
Note. Each bar represents one school and its white enrollment prior to 2012-13. The solid horizontal line at 15% shows the threshold for *focus schools* in the core analysis. The dashed horizontal line indicates an alternate threshold (25% white) used for robustness checks.

Figure 3. Number of Focus and Comparison Schools in UE by Year



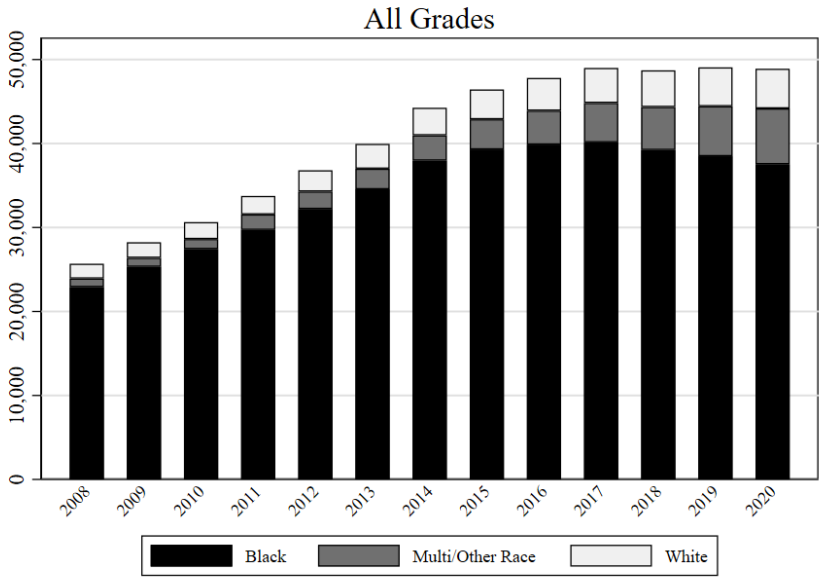
Note. Year labels indicate spring of the enrollment year. Focus schools have greater than 15% white enrollment prior to entering UE.

Figure 4. Racial Dissimilarity in New Orleans Public Schools 2008-2020



Note. Year labels indicate spring of the enrollment year. $Dissimilarity = \frac{1}{2} * \Sigma \left| \left(\frac{school\ \%\ white}{district\ \%\ white}\right) - \left(\frac{school\ \%\ nonwhite}{district\ \%\ nonwhite}\right) \right|$

Figure 5. Aggregate Enrollment by Race in New Orleans Public Schools 2008-2020



Note. Year labels indicate spring of the enrollment year.

Table 1

Descriptive Statistics for Focus and Comparison Schools by Time Period

Variable	Pre-Implementation Period (2007-2012)		Implementation Period (2013-2020)	
	Focus	Comparison	Focus	Comparison
Enrollment counts				
Total	638.9	493.6	708.7	577.9
	(428.6)	(216.6)	(421.8)	(254.5)
White	253.2	5.6	273.1	7.1
	(247.6)	(7.7)	(240.2)	(9.1)
Black	293.6	473.3	290.1	531.4
	(153.4)	(211.4)	(143.3)	(249.0)
All nonwhite	385.7	488.0	435.6	570.9
	(195.7)	(215.2)	(234.7)	(253.6)
School outcomes				
School Performance Score (standardized)	1.57	-0.70	0.97	-0.43
	(1.51)	(1.13)	(1.11)	(0.86)
School value-added score	1.30	0.28	0.84	-0.01
	(0.58)	(1.49)	(0.76)	(1.22)
Student return rate	0.92	0.77	0.92	0.79
	(0.03)	(0.14)	(0.08)	(0.13)
Teacher return rate	0.77	0.63	0.62	0.49
	(0.16)	(0.18)	(0.31)	(0.29)
Number of suspensions per 100 students	7.55	16.96	7.52	13.47
	(8.41)	(13.73)	(10.70)	(11.86)
Number of violent incidents per 100 students	3.78	9.02	3.92	7.96
	(3.72)	(7.76)	(5.71)	(6.75)
Total days suspended per 100 students	25.4	90.0	31.5	68.9
	(39.9)	(95.5)	(50.8)	(87.6)
Number of schools	10	61	13	78
Number of school-by-year observations	35	269	102	525

Note. Table shows author calculations using school panel data provided by LDOE. Standard deviations appear in parentheses. The OneApp UE system begin with fall 2012 enrollment, and schools entering incrementally. Focus schools are schools where >15% of students were white before the school entered UE. School Performance Score is a school accountability measure calculated by LDOE based primarily on student test scores (for schools with students in grades 3 through 12); it is standardized by year with a statewide mean=0 and SD=1. School value-added scores were calculated following Harris and Liu (2021). Discipline incidents and suspensions are aggregated at the school level from LDOE student records. Discipline events are reported and coded by schools and subject to local interpretation of reporting guidance and discretion in the use of suspensions. School performance, teacher retention, and discipline data were not available for 2019-20.

Table 2

CITS Estimates of the Effects of UE Entry on Proportion of Nonwhite and Black Students

Variable	Nonwhite students					Black students				
	All grades	Any entry grade	Pre-K	K	Upper entry grade	All grades	Any entry grade	Pre-K	K	Upper entry grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Pre-UE means										
Focus schools	0.604	0.552	0.452	0.510	0.668	0.443	0.389	0.338	0.357	0.486
Comparison schools	0.987	0.984	0.987	0.986	0.986	0.950	0.944	0.955	0.945	0.949
Comparison school effects (γ's)										
Time	-0.001	0.016**	0.032**	-0.003	0.013*	0.000	0.026**	0.041**	0.001	0.020
	(0.004)	(0.007)	(0.013)	(0.008)	(0.007)	(0.007)	(0.012)	(0.018)	(0.012)	(0.022)
Post-UE	0.000	-0.018**	-0.042***	-0.005	-0.003	0.014*	0.006	0.024	0.011	-0.003
	(0.004)	(0.009)	(0.016)	(0.009)	(0.008)	(0.008)	(0.015)	(0.022)	(0.015)	(0.025)
Time x Post-UE	-0.003**	0.004	0.026***	0.001	-0.010***	-0.010***	-0.011**	0.015*	-0.010**	-0.025***
	(0.001)	(0.003)	(0.006)	(0.003)	(0.003)	(0.002)	(0.005)	(0.008)	(0.005)	(0.009)
Differential effects for focus schools (β's)										
Focus x Time	-0.004***	-0.001	-0.007	-0.012***	0.003	-0.008***	-0.006	-0.008	-0.015***	-0.004
	(0.001)	(0.003)	(0.005)	(0.003)	(0.002)	(0.002)	(0.004)	(0.007)	(0.004)	(0.007)
Focus x Post-UE	0.001	0.108***	0.261***	0.034**	-0.007	-0.016	0.067***	0.187***	0.023	-0.024
	(0.008)	(0.016)	(0.028)	(0.016)	(0.018)	(0.014)	(0.026)	(0.039)	(0.026)	(0.054)
Focus x Time x Post-UE	0.014***	0.011***	0.016**	0.021***	0.003	0.010***	0.009	0.012	0.014**	-0.010
	(0.002)	(0.004)	(0.007)	(0.004)	(0.008)	(0.004)	(0.007)	(0.009)	(0.006)	(0.023)
R-squared	0.070	0.166	0.365	0.091	0.277	0.289	0.143	0.265	0.200	0.175
Number of obs	928	928	416	647	280	928	928	416	647	280
Number of schools	91	91	48	63	58	91	91	48	63	58

Note. Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. The dependent variable is the proportion of students who are nonwhite (first five columns) or the proportion of students who are Black (last five columns). "Pre-K" refers to prekindergarten and "K" refers to kindergarten. Time to UE is equal to zero in the school's first year in UE. Focus schools are those in which >15% of students were white before the schools entered UE. Models include school fixed effects (columns 1 & 6) or school-by-grade fixed effects (columns 2-5 and 7-10), as well as academic year fixed effects (all columns).

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3

CITS Estimates of the Effects of UE Entry on Enrollment Counts (Logged) of New and Returning Students by Race

	All students	White students		Nonwhite students		Black students	
Variable	Returning + New	Returning	New	Returning	New	Returning	New
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-UE means							
Focus schools	718.9	251.9	73.8	322.7	107.3	224.2	73.9
Comparison schools	499.1	3.1	3.1	324.7	203.9	313.4	196.1
Comparison school effects (γ's)							
Time	0.059	0.097	-0.165	0.038	0.045	0.035	0.055
	(0.058)	(0.098)	(0.106)	(0.066)	(0.083)	(0.066)	(0.085)
Post-UE	0.073	-0.073	-0.118	0.045	0.011	0.050	0.030
	(0.068)	(0.121)	(0.125)	(0.082)	(0.098)	(0.082)	(0.100)
Time x Post-UE	-0.018	0.020	0.035	-0.007	-0.028	-0.011	-0.039
	(0.022)	(0.036)	(0.040)	(0.024)	(0.032)	(0.024)	(0.032)
Differential effects for focus schools (β's)							
Focus x Time	-0.009	0.003	0.025	-0.025	-0.004	-0.042*	-0.022
	(0.020)	(0.032)	(0.036)	(0.022)	(0.028)	(0.022)	(0.029)
Focus x Post-UE	0.031	0.144	0.063	-0.005	0.060	0.036	0.075
	(0.125)	(0.218)	(0.228)	(0.147)	(0.179)	(0.147)	(0.183)
Focus x Time x Post-UE	0.174***	0.136**	0.008	0.230***	0.122***	0.224***	0.121***
	(0.032)	(0.053)	(0.058)	(0.036)	(0.045)	(0.036)	(0.046)
R-squared	0.252	0.109	0.015	0.295	0.037	0.251	0.038
Number of obs	928	876	927	876	927	876	927
Number of schools	91	91	91	91	91	91	91

Note. Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. The dependent variable is the number of students enrolled for the specified group. Time to UE is equal to zero in the school's first year in UE. Focus schools are those in which >15% of students were white before the schools entered UE. Models include school and academic year fixed effects.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4

CITS Estimates of the Effects of UE on School Performance Indicators

Variable	School Performance Score (1)	School value-added (2)	Student return rate (3)	Teacher return rate (4)	Number of suspensions per 100 students (5)	Number of violent incidents per 100 students (6)	Total days suspended per 100 students (7)
Pre-UE means							
Focus schools	1.654	1.332	0.929	0.752	6.994	3.312	25.78
Comparison schools	-0.541	0.354	0.778	0.636	15.71	8.388	83.24
Comparison school effects (γ's)							
Time	-0.105	-0.081	-0.011	0.003	-2.466	-1.566*	-14.665
	(0.096)	(0.170)	(0.015)	(0.025)	(1.516)	(0.940)	(11.184)
Post-UE	0.353***	0.065	0.011	-0.031	2.054	0.732	13.489
	(0.115)	(0.208)	(0.018)	(0.031)	(1.777)	(1.102)	(13.115)
Time x Post-UE	-0.012	0.001	-0.008	0.019	-1.227**	-0.767**	-8.594**
	(0.039)	(0.070)	(0.006)	(0.012)	(0.575)	(0.357)	(4.242)
Differential effects for focus schools (β's)							
Focus x Time	-0.009	0.045	-0.006	0.008	-0.131	-0.337	0.379
	(0.033)	(0.060)	(0.005)	(0.010)	(0.512)	(0.318)	(3.781)
Focus x Post-UE	-0.095	-0.153	0.004	0.058	-4.618	-1.808	-24.178
	(0.219)	(0.414)	(0.033)	(0.061)	(3.249)	(2.015)	(23.976)
Focus x Time x Post-UE	0.095	0.022	0.018**	-0.017	1.115	0.942*	5.656
	(0.063)	(0.120)	(0.008)	(0.020)	(0.821)	(0.509)	(6.056)
R-squared	0.180	0.087	0.060	0.654	0.056	0.031	0.045
Number of obs	752	814	880	766	928	928	928
Number of schools	85	88	91	88	91	91	91

Note. Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. School Performance Score is a state accountability measure calculated by LDOE based primarily on student proficiency on state exams; the score is standardized by year with a statewide mean=0 and SD=1. Discipline-related outcomes are aggregated at the school level from LDOE student records. Time to UE is equal to zero in the school's first year in UE. Focus schools are those in which >15% of students were white before the schools entered UE. Models include school and academic year fixed effects.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix Table 1

Robustness of Estimated Effects on Enrollment Proportions to Focus School Threshold of >25% White

Variable	Nonwhite students					Black students				
	All grades	Any entry grade	Pre-K	K	Upper entry grade	All grades	Any entry grade	Pre-K	K	Upper entry grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Pre-UE means										
Focus schools	0.562	0.500	0.435	0.502	0.580	0.388	0.325	0.320	0.349	0.359
Comparison schools	0.984	0.982	0.986	0.986	0.980	0.946	0.940	0.954	0.944	0.939
Comparison school effects (γ's)										
Time	-0.001	0.016**	0.032**	-0.003	0.015**	-0.000	0.026**	0.041**	0.000	0.018
	(0.004)	(0.007)	(0.013)	(0.007)	(0.007)	(0.007)	(0.012)	(0.018)	(0.012)	(0.022)
Post-UE	0.003	-0.014*	-0.032**	-0.003	-0.004	0.016**	0.007	0.027	0.011	-0.003
	(0.004)	(0.008)	(0.015)	(0.009)	(0.007)	(0.007)	(0.014)	(0.021)	(0.015)	(0.023)
Time x Post-UE	-0.003**	0.001	0.026***	0.001	-0.009***	-0.009***	-0.011**	0.016*	-0.009**	-0.021***
	(0.001)	(0.003)	(0.006)	(0.003)	(0.002)	(0.002)	(0.005)	(0.008)	(0.005)	(0.008)
Differential effects for focus schools (β's)										
Focus x Time	-0.004***	-0.002	-0.008*	-0.012***	0.005**	-0.008***	-0.007	-0.009	-0.015***	-0.003
	(0.001)	(0.003)	(0.005)	(0.003)	(0.002)	(0.002)	(0.004)	(0.007)	(0.004)	(0.007)
Focus x Post-UE	-0.011	0.121***	0.269***	0.029*	0.032	-0.024	0.085***	0.212***	0.025	-0.025
	(0.008)	(0.016)	(0.028)	(0.017)	(0.024)	(0.015)	(0.027)	(0.040)	(0.027)	(0.073)
Focus x Time x Post-UE	0.015***	0.014***	0.021***	0.024***	0.006	0.010***	0.008	0.013	0.012*	-0.037
	(0.002)	(0.004)	(0.007)	(0.004)	(0.010)	(0.004)	(0.007)	(0.010)	(0.007)	(0.031)
R-squared	0.076	0.185	0.383	0.096	0.321	0.291	0.146	0.274	0.200	0.180
Number of obs	928	928	416	647	280	928	928	416	647	280
Number of schools	91	91	48	63	58	91	91	48	63	58

Note. Table is parallel to Table 2 but with a focus school threshold of 25% white (and comparison schools less than 25% white). Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. The dependent variable is the proportion of students who are nonwhite (first five columns) or the proportion of students who are Black (last five columns). "Pre-K" refers to prekindergarten and "K" refers to kindergarten. Time to UE is equal to zero in the school's first year in UE. Models include school fixed effects (columns 1 & 6) or school-by-grade fixed effects (columns 2-5 and 7-10), as well as academic year fixed effects (all columns).

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix Table 2

Robustness of Estimated Effects on Enrollment Counts (Logged) to Focus School Threshold of >25% White

	All students	White students		Nonwhite students		Black students	
Variable	Returning + New	Returning	New	Returning	New	Returning	New
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-UE means							
Focus schools	770.4	284.1	81.8	340.1	101.1	230.1	64.7
Comparison schools	495.0	3.7	3.7	320.6	202.2	309.2	194.2
Comparison school effects (γ's)							
Time	0.058	0.097	-0.163	0.037	0.046	0.034	0.055
	(0.058)	(0.098)	(0.106)	(0.066)	(0.083)	(0.067)	(0.085)
Post-UE	0.101	-0.073	-0.128	0.065	0.016	0.074	0.031
	(0.066)	(0.116)	(0.120)	(0.079)	(0.093)	(0.079)	(0.096)
Time x Post-UE	-0.013	0.028	0.025	0.001	-0.035	-0.002	-0.045
	(0.021)	(0.034)	(0.038)	(0.023)	(0.030)	(0.023)	(0.031)
Differential effects for focus schools (β's)							
Focus x Time	0.002	0.012	0.016	-0.013	-0.010	-0.030	-0.030
	(0.020)	(0.032)	(0.036)	(0.022)	(0.028)	(0.022)	(0.029)
Focus x Post-UE	0.005	0.249	0.094	-0.028	0.051	0.001	0.088
	(0.133)	(0.229)	(0.242)	(0.155)	(0.189)	(0.155)	(0.193)
Focus x Time x Post-UE	0.178***	0.125**	0.029	0.229***	0.150***	0.223***	0.144***
	(0.033)	(0.057)	(0.061)	(0.038)	(0.048)	(0.038)	(0.049)
R-squared	0.253	0.112	0.015	0.292	0.040	0.248	0.040
Number of obs	928	876	927	876	927	876	927
Number of schools	91	91	91	91	91	91	91

Note. Table is parallel to Table 3 but with a focus school threshold of 25% white (and comparison schools less than 25% white). Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. The dependent variable is the number of students enrolled for the specified group. Time to UE is equal to zero in the school's first year in UE. Models include school and academic year fixed effects.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix Table 3

Robustness of Estimated Effects on School Performance Indicators to Focus School Threshold of >25% White

Variable	School Performance Score (1)	School value-added (2)	Student return rate (3)	Teacher return rate (4)	Number of suspensions per 100 students (5)	Number of violent incidents per 100 students (6)	Total days suspended per 100 students (7)
Pre-UE means							
Focus schools	1.908	1.345	0.937	0.772	5.036	2.614	19.08
Comparison schools	-0.516	0.384	0.781	0.636	15.86	8.378	82.86
Comparison school effects (γ's)							
Time	-0.101	-0.080	-0.011	0.004	-2.448	-1.580*	-14.704
	(0.096)	(0.169)	(0.015)	(0.025)	(1.516)	(0.939)	(11.182)
Post-UE	0.320***	0.074	0.015	-0.041	1.485	0.635	12.737
	(0.109)	(0.198)	(0.018)	(0.030)	(1.705)	(1.056)	(12.574)
Time x Post-UE	-0.039	0.019	-0.006	0.011	-1.239**	-0.838**	-9.075**
	(0.037)	(0.066)	(0.005)	(0.011)	(0.546)	(0.338)	(4.025)
Differential effects for focus schools (β's)							
Focus x Time	-0.048	0.070	-0.004	-0.002	-0.340	-0.482	-0.338
	(0.033)	(0.060)	(0.005)	(0.010)	(0.513)	(0.318)	(3.784)
Focus x Post-UE	-0.124	-0.144	-0.004	0.077	-3.083	-1.994	-27.808
	(0.234)	(0.448)	(0.035)	(0.064)	(3.448)	(2.135)	(25.425)
Focus x Time x Post-UE	0.162**	0.051	0.018**	-0.004	1.057	0.889*	5.969
	(0.069)	(0.132)	(0.009)	(0.022)	(0.868)	(0.538)	(6.402)
R-squared	0.184	0.090	0.059	0.654	0.055	0.033	0.045
Number of obs	752	814	880	766	928	928	928
Number of schools	85	88	91	88	91	91	91

Note. Table is parallel to Table 4 but with a focus school threshold of 25% white (and comparison schools less than 25% white). Table shows OLS regression coefficients and standard errors (in parentheses) from school panel data for years 2008 through 2020. School Performance Score is a state accountability measure calculated by LDOE based primarily on student proficiency on state exams; the score is standardized by year with a statewide mean=0 and SD=1. Discipline-related outcomes are aggregated at the school level from LDOE student records. Time to UE is equal to zero in the school's first year in UE. Models include school and academic year fixed effects.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix Table 4. Applicants to Focus Schools by Race 2017-2020

	2017	2018	2019	2020
Applicants to focus schools				
Black	1901	2145	5267	5284
White	976	1001	2159	2192
Multi/other race	570	708	1306	1385
Unknown	333	402	1469	2062
Seats available	1151	1077	1488	1445

Note. Author calculations from OneApp application data. Focus schools had more than 15% white enrollment before UE. Years indicate spring of academic year. Race linked from LDOE enrollment records and is unknown for applicants who never enrolled at a New Orleans public school.