REACH

Choice in a Time of COVID: Immediate Enrollment Decisions in New York City and Detroit

Sarah A. Cordes, Temple University

Sarah Winchell Lenhoff, Wayne State University

Amy Ellen Schwartz, University of Delaware

Jeremy Singer, Wayne State University

Samantha Trajkovski, Saint Michael's College

Choice in a Time of COVID: Immediate Enrollment Decisions in New York City and Detroit

Sarah A. Cordes, Sarah Winchell Lenhoff, Amy Ellen Schwartz, Jeremy Singer, and Samantha Trajkovski

Introduction

The COVID-19 pandemic wrought sudden and massive educational disruptions as families found themselves navigating questions not only about where to send their children to school, but how to get them to school every day. These immediate enrollment decisions were complicated by uncertainty around important issues such as what district-provided online or hybrid schooling would look like, whether school buses would be offered, the health risks of students taking various forms of transportation or attending in-person classes, and the timeline to a vaccine. Families therefore found themselves considering not only the quality of their children's education but also the health risks and logistical implications of various schooling options in ways that may impact educational equity and access for years to come.

Uncertainty, particularly around the availability and safety of pupil transportation may have induced families to gravitate toward their zoned schools, thereby limiting access to high quality education to advantaged students and potentially exacerbating educational inequities. Conversely, the expansion of transit-free choice in the form of fully online education may have offered some families the ability to access high-quality schools that they would have otherwise been unwilling or unable to travel to, thereby broadening access and possibly reducing disparities. To some extent, each of these possibilities assumes that students and families responded to COVID through increased mobility, specifically non-structural moves. Yet it is also possible that in the face of uncertainty, families were *less* likely to move schools, opting instead for familiarity. Thus, COVID may have served to retrench existing inequalities or even

exacerbate them if mobility responses differed among historically marginalized populations, who were also the hardest hit by the pandemic (Camp & Zamarro, 2021).

Ultimately, these decisions about whether and where to enroll have important implications for districts, schools, and students. COVID hit at a time when enrollment in many large urban school districts were already stagnating or declining (Spurrier, 2019; Pearman, 2020). Thus, further enrollment losses, changes in enrollment patterns across district schools, or shifts in enrollment between sectors (district, charter, and non-district), particularly those that were unanticipated, could have future consequences in terms of funding and school closures. Similarly, changes in enrollment, student mobility, and student characteristics could have serious budgetary and staffing implications for schools. For individual students, these enrollment decisions have the potential to impact performance, depending on the extent to which students made moves to better or worse matched schools.

While several studies to date have examined the extent to which COVID impacted school entry/exit, these focus on enrollment at a state level, which does not speak to the realities that may be faced by individual districts. Further, these studies do not explore the effects of COVID on student mobility patterns, which we explore here. Specifically, we focus on three primary questions:

1. How did enrollment change post-COVID, overall and by sector (i.e., traditional public versus charter)?
2. How did school mobility and characteristics of moves (i.e., to better or worse schools, distance to school) change post-COVID?

3. What was the impact of COVID on mobility?

To answer these questions, we explore the effects of COVID on enrollment and mobility among K-8 students in two choice rich districts: New York City (NYC) and Detroit. These districts have several features in common—both serve large populations of students who are eligible for free or reduced price lunch and students of color, and both districts were particularly hard-hit at the beginning of the COVID-19 pandemic. Yet, despite these similarities, the two districts also provide useful contrasts. For example, while NYC has faced years of enrollment declines, enrollment in Detroit has been relatively stable. In addition, while both are choice-rich environments, the structure and extent of choice differs—while about 45% of Detroit public school students attend charter schools and another 10% use interdistrict school choice to exit city schools, in NYC the predominant form of choice is among district-managed schools with 34% of students participating in some form of district choice and approximately 15 percent of students enrolled in charter schools. The two cities also provide useful contrasts in their infrastructure for choice. NYC has robust public transportation and school buses available for elementary children. About 50% of schools that serve Detroit students offer no transportation, and most others only offer transportation if the student is zoned to the school (Singer et al., 2020). In addition, Detroit has no centralized enrollment process across choice options, while NYC has centralized middle school choice process and the majority of charter schools participate in a Common Charter School Application, which is a project of the New York City Charter School Center. Together, these two districts are representative of other large, urban choice-rich districts, such as Chicago,

Philadelphia, Denver, and Los Angeles, but differ from many other districts with more limited school choice.

Briefly, we find that COVID-19 had little to no effect on enrollment of K-8 students—while there were some enrollment declines in traditional public schools, especially in NYC, these appear to be continuations of previous enrollment trends. Further, we do not observe heterogeneous enrollment responses by race/ethnicity or poverty. While there do not appear to be significant impacts of COVID on whether students enrolled, we do find that COVID-19 lead to statistically significant and meaningful reductions in non-structural school moves across both districts. After COVID, students in NYC were 3.1 percentage points less likely and students in Detroit 17.3 percentage points less likely to make non-structural moves. These effects are sizeable--compared to mobility in the year immediate prior to the pandemic, this represents a 60 percent reduction in non-structural mobility NYC and 86.5 percent reduction in Detroit. Further we found that in both cities, reductions in non-structural mobility were largest among Black and economically disadvantaged students. Finally, we found divergent patterns among English language learners (ELLs), while ELLs in NYC experienced larger reductions in non-structural mobility than their peers, we find the opposite pattern in Detroit. This may have to do with differences the composition and geography of the ELL populations in the two districts.

Previous Evidence

While there is limited research exploring how COVID-19 influenced school mobility, , a handful of studies have examined changes in overall school enrollment for the 2020-21 school

year. These studies reveal three key findings around general enrollment patterns and differences across student subgroups.

First, public school enrollment declined in 2020-21, particularly in kindergarten. Using national school enrollment data, Dee et al. (2021) found that public school enrollment fell by 2%—or over one million students—with the steepest declines in kindergarten and to a lesser extent other elementary school grades. Data from the Common Core of Data similarly points to large rates of disenrollment in early grades, although there is variation in this pattern across states (National Center for Education Statistics, 2021). Chatterji and Li (2021) also document a national decline of 1.8 percentage points in high school-aged students' self-reported enrollment. State-specific evidence corroborates these national findings. Musaddiq et al. (2021) found a 3% enrollment decline in public school enrollment in Michigan, with a 10% decline among kindergarteners. Dee and Murphy (2021) found a 3.9% overall decline in public school enrollment in Massachusetts, and Bassok and Shaprio (2021) found pre-kindergarten enrollment in Virginia declined by nearly 20% and kindergarten enrollment by 13%, with 4-6% declines in other elementary school grades. Second, as with preferences for different learning modalities (e.g., Camp & Zamarro, 2022), disenrollment patterns varied by student race/ethnicity and by school sector. While disenrollment increased among all students, the largest increases were among white students and students in non-urban districts. In Michigan, Musaddiq et al. (2021) found that while Black and Hispanic student disenrollment rates increased slightly, white student disenrollment nearly doubled. In Massachusetts, Dee and Murphy (2021) similarly found that enrollment fell more in districts with smaller shares of Black and Hispanic students. Finally, while traditional public schools lost students, charter school enrollment remained steady or increased. Veney and Jacobs (2021) report that charter schools in most states saw an increase in enrollment. Dee et al.

(2021) likewise found that charter school enrollments in Massachusetts rose by 2.7% even as traditional public school enrollment fell by 4.5%.

Third, variation in disenrollment patterns suggest differences in families' health concerns and modality preferences. Nationally, Dee et al. (2021) found that remote-only instruction was associated with greater school disenrollment, though this relationship was substantially weaker in districts with fewer Black students and stronger in districts with more Hispanic students. In Michigan, Musaddiq et al. (2021) also found a negative impact of remote-only instruction on public school enrollment with substantial heterogeneity. First, they found that homeschooling increased more when only in-person instruction was offered, whereas private school enrollment increased more when only remote instruction was offered, suggesting that families facing different modality options and levels of health concerns made different enrollment decisions. They also found that white and higher-income students disenrolled in upper grades at greater rates, whereas Black and lower-income students disenrolled at greater rates in kindergarten. Bassok and Shapiro (2020) found similar patterns in Virginia, where Black, Hispanic, and economically disadvantaged student enrollment fell more in pre-kindergarten and kindergarten, while white and not-disadvantaged student enrollment fell more in higher grades.

These findings raise several issues and unanswered questions relevant to student enrollment, particularly around mobility. Declining enrollment may signal discontent or discomfort with the available options, but it is not yet clear whether or how such sentiments translated into switching among available public school options. In addition, while there is evidence that enrollment declined in traditional public schools and increased in charter schools, it is not clear whether this reflects the continuation of existing enrollment trends or an uptick in

students switching between the sectors. Finally, significant heterogeneity in disenrollment patterns suggests there may have been heterogeneous mobility responses.

Study Contexts

Our study examines these questions around enrollment and mobility in two large, choice-rich districts: NYC and Detroit., which are described in Table 1. It should be noted that in this report, we focus on K-8 students for two reasons. First, because enrollment decisions for some high school students also involve dropout. Therefore, "exit" in the high school context is a different concept than exit in earlier grades when attendance is still compulsory. Second, because school choice and mobility among high school students in NYC is a fundamentally different process. There are no zoned high schools in NYC, so all students in a sense must "choose." In addition, for a variety of logistical and practical reasons, there is relatively little mobility among high school students. For these reasons, we leave the study of enrollment and mobility among high school students to a different report.

New York City

With over 1.1 million students in roughly 1,800 schools, the New York City Department of Education (NYCDOE) oversees the nation's largest school district. NYC public school students are racially and ethnically diverse. In 2019, White and Asian students were the minority of the public school student population at 17% and 19% respectively, while the majority students were either Black (20%) or Hispanic (42%). NYC students are also predominantly poor, with 73% eligible for free or reduced-price lunch. Further, NYC neighborhoods span a wide range, including very dense areas such as Manhattan and much lower density areas dominated by single family homes on Staten Island and portions of Brooklyn, Queens, and the Bronx, which more closely

resemble inner ring suburbs. Thus, there was likely wide variation in students' exposure to COVID based on where they lived.

The NYCDOE allows a considerable amount of school choice, even at the elementary and middle school levels. In some areas, open enrollment is a formal policy, allowing students to attend any school within a sub-city Community School District (CSD).[1] In other areas, each student is assigned a zoned school based upon their residential location, but an array of policies and practices allow students to attend a school outside their catchment area. For example, families may be granted a waiver from the principal of another zoned school to allow their child to attend due to the proximity to parents' employment, after-school family care, or schools attended by siblings. NYCDOE also offers an extensive array of special admission schools, magnet schools, gifted and talented programs, and dual-language programs (among others) that do not rely on catchment areas. (For more detail, see Cordes & Laurito, 2022). Lastly, the number of charter schools in the city has grown in the past two decades, and charter schools currently serve about 15 percent of public-school students (New York City Charter School Center, 2022). As shown in Table 1, in 2019, the last pre-pandemic year, 58 percent of K-8 students attended their zoned school, while 42 percent of students attended a choice school.

Detroit

While smaller than NYC, Detroit is the largest school system in Michigan, with more than 100,000 public school students living in the city. Detroit is a high-poverty, racially isolated, and choice-rich context (Singer, 2020). About 80% of Detroit students are Black, 10% are Hispanic,

---

[1]NYC is divided into 32 geographic community school districts (CSD), each with its own superintendent and some autonomy in setting educational policies. Eight of these CSDs are designated as choice districts at the middle school level, while three are designated as choice districts at the elementary level. Moreover, two of the five boroughs in NYC – the Bronx and Staten Island – offer borough-wide choice programs, where students are eligible to attend any school in the borough.

and about 90% are identified by the state of Michigan as "economically disadvantaged," which includes those who: are eligible for free or reduced-price meals, living in households receiving SNAP, TANF, or Medicaid, or are homeless, migrant, or in foster care.[2] Like NYC, Detroit's neighborhoods vary in population density and school availability. Although schools are disproportionately concentrated in the greater downtown area, the student population is more concentrated on the east and west regions of the city, including Southwest Detroit, which is home to a large Hispanic community (Lenhoff et al., 2019). Detroit neighborhoods range in size and in number of students who attend public school, from around 3,500 students in Warrendale to fewer than 10 students in areas with more commercial activity, such as Eastern Market and Tech Town. Detroit also offers considerable school choice to its students. In addition to their residentially assigned traditional public school (i.e., zoned school), students can enroll in a different traditional public school through intra-district choice; a magnet/application public school; a charter school within or outside the city; or a traditional public school in one of the suburban districts that allow inter-district choice. About 75% of Detroit students attend one of the city's 170 traditional public and charter schools, with the remaining 25% of students attending one of over 450 schools in the suburbs (both TPS and charter), and there is a roughly even enrollment split between traditional public and charter schools.

Responses to COVID

Both NYC and Detroit experienced an early spike in COVID-19 cases in spring 2020 (see Figure 1), when many families were making decisions about fall enrollment, and moved to fully remote instruction for the remainder of the school year by March 2020. Leading into the 2020-21

---

[2] SNAP refers to the Supplemental Nutrition Assistance Program, which is the largest federal nutrition assistance program. SNAP provides benefits to eligible low-income individuals and families. Temporary Assistance for Needy Families, or TANF, provides cash assistance to low-income families with children.

school year, Michigan required all schools to submit plans for reopening that were aligned to the state's public health guidance and included instructional delivery options in remote, hybrid, and in-person formats (Education Policy Innovation Collaborative, 2021). The Detroit Public Schools Community District mostly offered remote learning, with some schools offering in-person instruction, and some schools acting as learning centers where students could conduct their online instruction while in the building (Catolico, 2020). Detroit charter schools varied in their instructional offerings, with some schools providing in-person options but more providing remote-only instruction (Higgins, 2020). Both sectors reduced in-person options as COVID-19 cases spiked in winter 2020, but increasingly provided in-person instruction into the spring, even as COVID-19 rates rose again (Education Policy Innovation Collaborative, 2021).

NYC began a delayed 2020-21 school year with both in-person and virtual options, but moved fully online eight weeks after school opening. The mayor announced the reopening of elementary schools at the end of November and by the end of February, in-person instruction was offered in middles schools for at least part of the week. Like in many other districts, modality decisions were left up to individual charter schools/networks, although all charter schools were fully remote in spring 2020.

Methodology

Data

Data for NYC comes from three sources: the NYCDOE, New York State School Report Cards (SRC), and NYC Open Data. The NYCDOE provides rich student-level administrative data on traditional public school students, including sociodemographic and program characteristics, such as gender, race/ethnicity, eligibility for free or reduced-price meals, English language learner status, and participation in special education. Importantly for our mobility analyses, these data also

contain information about where students are enrolled at two points in time during the school year, as well as a student's building of residence as of October. We use information on residential and school locations to calculate the distance from home to school using *Open Source Routing Machine (OSRM)*[3] and data on residential location combined with school zone shapefiles from NYC Open Data to determine whether a student attends a zoned or choice school. The SRC contains school-level information on gender and racial/ethnic composition of students, enrollment, and location as well as measures of academic performance (including proficiency rates for New York State standardized tests in English Language Arts (ELA) and mathematics); we measure school performance as the average of these and, ultimately, to distinguish moves between better or worse schools. In addition, because we do not have student-level data on charter school students beginning in 2019, we use SRC to track enrollment trends across the traditional public and charter school sectors.

Data for Detroit come from the state of Michigan's longitudinal data system. These student-level administrative data provide information on all public school students (traditional public and charter), including sociodemographic and program characteristics. Data also include a record of the school a student attended, and a residential Census block geocode, which we use to calculate an as-the-crow-flies distance between home and school. For the 2017-18 through 2020-21 school years, we linked students to their zoned schools to identify whether a student attended their zoned school or any choice school (a non-assigned traditional public school, magnet/application school, or charter school). As in NYC, we use publicly available school-level

---

[3] OSRM uses geographic data on latitude and longitude to determine travel time and distance between two coordinate pairs using a user-imported map of NYC from *OpenStreetMaps*. We calculate the fastest walking route from the student's home to school, which is also the shortest walking route (OSRM assumes a constant walking speed of 3 MPH)

proficiency data from state tests in math and reading to construct measures of school quality and distinguish moves between better and worse schools *(MI School Data*, n.d.).

Sample

Our NYC analysis draws on two samples. We begin with a school-level sample from the SRC to examine overall enrollment trends, as well as enrollment by sector. This sample consists of schools serving K-8 students from AY 2015-2021, excluding alternative or full-time special education schools. Next, to explore both enrollment trends and school mobility, we turn to a student-level sample. This sample includes K-8 traditional public school students from AY 2015-2021, excluding students ever enrolled in a full-time special education school because their choice and enrollment decisions are likely to differ. For our student-level analysis we also exclude students ever enrolled in charter schools during the sample period because student-level charter school data were not provided after AY 2019. Lastly, we exclude students with only one year of data or those missing residential location because we are unable to examine mobility among this group of students.[4]

For Detroit, our sample includes all students in kindergarten through eighth grade for the 2014-15 through 2020-21 school years, excluding students in alternative schools or special education centers. Again, for our regression analyses, we exclude students with only one year of data or those missing residential location because we are unable to examine mobility among this group of students.[5]

---

[4] In our NYC data, we drop 429,193 observations for students who have ever attended a charter school, and 129,955 observations for students who ever attended a full-time special education school. We drop an additional 219,533 students who have no prior year observation, and 346,850 observations for students missing residential location
[5].In our Detroit data, we drop 149,193 observations who have no prior year observations (including all kindergarten students). In our regression analyses with Census tract fixed effects, we drop and an additional 11,339 observations due to students who have no residential data, and in models controlling for residential mobility, we exclude an additional 8,343 observations due to missing prior-year residential data.

In general, we expect that students who are excluded from the sample in both locations due to missing data are somewhat more likely to be mobile.

Methods

Since we are interested in *changes* in student enrollment and mobility after COVID, we begin by examining trends in these outcomes spanning both the pre- and post-COVID period. In particular, we plot enrollments, entry and exit rates, and mobility rates for each year from 2015 to 2021 and examine whether there is a change in the general trends for these outcomes post-COVID.

Next, we estimate the causal impact of COVID on student mobility using the following model:

$$Y_{iglt} = \beta_0 + \delta POSTCOVID + \beta_1 STUDCHAR_{it} + \gamma_l + \theta_g + \lambda_t + \varepsilon_{iglt}$$

where Y is a measure of mobility for student i, in grade g, in location l, in year t, which includes any school move, structural moves, or non-structural moves, POSTCOVID is an indicator equal to 1 in 2021, STUDCHAR is a vector of student characteristics including gender, race/ethnicity, disability status, English language classification and poverty indicators, γ are census tract fixed effects, θ are grade effects, λ are year effects, and ε is the error term.

In these models, the main coefficient of interest is δ, which captures differences in mobility in the post-COVID period. For example, in models where our outcome is any school move, δ represents the change in the probability that students switched to a different school in the post-COVID period. A positive coefficient would indicate that COVID increased the probability of school mobility, while a negative coefficient would indicate that COVID decreased the probability of school mobility. A similar interpretation can be applied for our other mobility outcomes. Our estimates can reasonably be interpreted as causal because the timing of COVID during the 2019-2020 academic year is random. While ascribing the same post-COVID period in both cities may

introduce some measurement error, as COVID hit different locations at different times, ascribing it to a specific month based on prevalence or official diagnoses might raise concerns about endogeneity due to state or local policies that may have altered the rate of spread. Specifically, defining the post-COVID period based on a specific month could raise concerns that differences in mobility or enrollment patterns could be in response to differences in policies, rather than responses to COVID. By defining the POSTCOVID period as the entire 2020-21 academic year, rather than as number of months "exposed" or COVID rates, in both locations, we avoid this problem.

This model can be interpreted as an intent-to-treat type model, where the actual "dosage" of COVID as determined by state and local policies is the treatment-on-treated for which we do not have a good estimate.

Next, to examine whether and to what extent changes in school mobility may be explained by changes in residential mobility, we re-estimate our models both controlling for residential mobility and including an interaction between residential mobility and the post-COVID.

Finally, we explore whether the impacts of COVID on mobility differed across racial/ethnic subgroups. To do so, we, we re-estimate our models including interactions between POSTCOVID and student characteristics to see if, for example, Black and Hispanic students are more or less likely to move schools or move to better/worse schools in response to COVID.

Results

Descriptive Statistics

Enrollment patterns across NYC and Detroit were largely consistent with pre-pandemic trends with two notable exceptions. First, both cities saw a slight decline in new entrants to the district, which appear to be driven by a drop in kindergarten enrollment. This pattern was

somewhat more pronounced in Detroit, which does not have a robust public pre-K. Second, both cities saw a substantial drop in the percentage of students making non-structural school moves, that is moves that are not mandated based on the school's grade configuration.

School System Enrollment, Entry, and Exit

Total enrollment in NYC and Detroit declined somewhat in 2020-21 from pre-pandemic levels (Figure 2). In NYC, this represented a modest exacerbation prior enrollment losses in the district since 2017-18. More specifically, 2020-21 enrollment declined by about 26,500 students compared to a decline of 24,000 students in 2019-20. This was driven entirely by decreased enrolling in traditional public schools, as charter school enrollment continued a steady increase. In Detroit, pre-pandemic enrollments were relatively steady, hovering around 78,000, but dropped to about 75,000 in 2020-21, with roughly equal declines in traditional public and charter schools (Figure 2). Enrollment declines across both cities may have been driven by decreases in entries in the early grades. In NYC, new student entries fell by 1.6 percentage points (pp) overall, with new kindergarten entries falling by 0.3pp and 1-5 entries by 0.8pp. Declines in new entry were slightly higher for zoned schools (1.8pp) than for district choice schools (1.2pp) (Appendix B). In Detroit, new student entries fell more steeply, by 5.2pp overall, with a 4.5pp drop in new kindergarten entries and in grades 1-5(Figure 4). Similar to NYC, the decline in new entries in Detroit was larger for zoned public schools (5.9pp) than schools of choice (5.0pp) (Appendix B). Although smaller in magnitude, these patterns are consistent with what has been documented nationally (Dee et al., 2021). One potential explanation for the smaller drop off in kindergarten entries in NYC compared to Detroit and other districts is that NYC has a robust public pre-K sector. Thus, many kindergartners may have already been enrolled in public schools prior to the pandemic and declines in kindergarten entry may not be observed until the 2021-22 academic year. Exit patterns were

largely consistent with prior trends, although there was a small reduction in Detroit, and slight uptick in NYC, primarily in grades K-5, though both of these were small in magnitude (Figure 4).

Student Mobility

Unlike enrollment, which experienced modest changes at most, there was a large decrease in student mobility in both cities in 2020-21, with particularly large reductions in Detroit. Following prior literature on student mobility, we our analyses distinguished between two types of school mobility: structural and non-structural (Schwartz et al., 2017; Grigg, 2012). "Structural" mobility occurs when students move to a new school after completing the highest grade offered in their current school (e.g., going from a K-5 school to a 6-8 school). "Non-structural" mobility occurs when a student moves to a new school before they reach the highest grade offered by their current school (e.g., leaving a K-5 school after fourth grade).

In both cities, structural moves remained consistent with prior levels and trends, while non-structural moves declined markedly (Figures 5 and 6). In NYC, where structural moves comprise the majority of K-8 school moves, overall school mobility fell by 2.2pp, with the number of non-structural moves cut roughly in half. The decline in non-structural mobility was slightly greater for district choice schools (53% decline) than for zoned schools (45% decline). In Detroit, where non-structural moves comprise the majority of K-8 school moves, overall school mobility fell by 12.1pp, driven by about a 63% decrease in non-structural mobility. The decline in non-structural mobility was greater for zoned schools (73% decline) than schools of choice (61% decline).

Despite large reductions in the level of non-structural mobility in both cities, the characteristics of school moves remained similar (see Appendices E, F, & G). The share of students moving to better or worse schools—defined by the level of student proficiency— as well as the shares of students moving farther and closer to school remained similar, except among non-

structural movers in NYC, where there was a decrease in the percentage of students moving to schools that were farther and closer to home. There were also some small changes in the share of students moving between zoned and choice schools following the onset of the pandemic. In both cities, there was a small reduction in the percentage of students switching sectors (I.e., from choice to zoned or vice versa), while post-COVID patterns of within sector switching differed. In NYC, slightly more students switched among zoned schools, while in Detroit, the number of students switching among schools of choice increased. Overall, these changes were modest, especially compared to the steep decrease in non-structural mobility overall.

While these reductions in mobility are striking, they are largely descriptive and describe aggregate patterns, Therefore, they do not necessarily indicate whether individual students were more or less likely to make school moves after COVID. We next turn to this question next.

Causal Impact of COVID-19 on Mobility in 2020-21

Similar to our descriptive results, we find that COVID significantly decreased the likelihood that students changed schools—by 2.8 percentage points in NYC and 14.8 percentage points in Detroit (Table 2). When we limit comparisons to students living in the same neighborhood to explore whether changes in mobility are explained by differences in local environment, like school quality or COVID rates, results remain unchanged in NYC and the impacts are slightly larger in Detroit, where COVID reduced the probability of moving schools by 16.3 percentage points. Notably, reductions in COVID do not appear to be explained by lower levels of residential mobility from eviction moratoria. Even accounting for residential mobility, COVID decreased the probability of moving schools by 3.0 percentage points in NYC and 14.2 percentage points in Detroit. There are two possible explanations for this finding. First, although we do find that, consistent with eviction moratoriums, residential mobility decreased after

COVID, it may have also changed the composition of students making residential moves. For example, it may be that in the pre-COVID period tended to be more reactionary and longer distance, thus resulting in more school moves while post-COVID residential moves were more likely to be welfare improving (i.e., to higher quality units) and unrelated to school moves. Second, the option of virtual schooling may have fundamentally changed the relationship between residential and school mobility regardless of any eviction moratoriums. Specifically, with the option of virtual schooling made it easier for families to decouple residential and school mobility.

Following previous literature, we further disaggregate school mobility into structural and non-structural moves, which reveals that reductions in school moves are driven entirely by decreased non-structural mobility (Table 3). Perhaps not surprisingly, we find no meaningful impact of COVID on structural moves in NYC and a small increase in structural moves in Detroit (1.1 percentage point), while non-structural mobility decreased by 3.1pp in NYC and 17.3pp in Detroit. Relative to non-structural mobility rates immediately prior to COVID, this represents a roughly 60 percent reduction in non-structural mobility in NYC and 87 percent reduction in Detroit. In absolute terms, reductions in non-structural mobility were larger among students making residential moves. COVID reduced non-structural mobility in NYC (Detroit) by 2.2 (11.1) percentage points among students who did not make a residential move, and by an additional 11.2 (24.3) percentage points among students who did make a residential move. This does, in part, reflect lower pre-COVID levels of mobility between these different groups of students. Specifically, only 3 (13) percent of non-movers in NYC (Detroit) made non-structural moves prior to the pandemic, while 22 (43) percent of residential movers also made non-structural school moves. Thus, in relative terms, non-structural mobility decreased somewhat more among non-

movers—by roughly 73 percent in NYC and 85 percent in Detroit—than among residential movers, whose non-structural mobility decreased by 61 percent in NYC and 82 percent in Detroit. However, these are still sizable reductions among residential movers. There are a number of possible explanations for this pattern. First, students and families already experiencing the instability or uncertainty associated with a residential move during the pandemic may have been less willing to endure the instability and uncertainty of enrolling in a new school. Second, since NYC was fully online and Detroit was mostly online in the Fall of 2020, there may have been fewer logistical challenges for students to remain in their prior school following a residential move. In particular, students who were learning online could continue to do so even through moves, and they would not need to find new ways to commute to school.

Following prior research finding heterogeneous disenrollment patterns, we also explore heterogeneity in mobility and find notable differences by student race/ethnicity, socioeconomic status, and program characteristics (Table 4). In both locations, reductions in non-structural mobility were largest for Black students—4.2 percentage points in NYC and 16.8 percentage points in Detroit. However, patterns for other racial/ethnic groups differed across locations. While in Detroit, COVID had similar impacts on non-structural mobility among White and Hispanic students (approximately 8.8pp reduction), in NYC, the reduction in non-structural mobility among Hispanic students was more than twice as large (3.6pp) as the reduction for white students (1.6pp).

In both locations we also find that non-structural mobility decreased more among economically disadvantaged students—an additional 4.1 percentage points in Detroit and 1.4 percentage points in NYC. In NYC, while the effects of COVID on non-structural moves differ for ELLs and students with disabilities, the magnitude of these differences are quite small (an additional 0.3 percentage point reduction). However, in Detroit, the impact of COVID on mobility

19

is notably smaller among ELLs. While COVID decreased non-structural moves by 16.2 percentage points among students who did not receive ELL services, non-structural mobility decreased by only half as much (8.5 percentage points) among ELLs. Differences in ELL mobility patterns between Detroit and NYC may be due to differences in the concentrations and characteristics of their ELL population. In Detroit, ELL students are predominantly Hispanic and live and attend school in Southwest Detroit. Students who attend school there live closer to school and have more traditional public schools in their choice sets than they would have in other neighborhoods (Lenhoff et al., 2022). If Hispanic and ELL students had more schools accessible to them via walking or non-public transit, this may have led to smaller decreases in mobility due to COVID. This is also consistent with the finding that the effect of COVID on non-structural mobility of Hispanic students in Detroit was smaller than the effect on Black students and roughly on par with that for White students. In contrast, ELL students in NYC are linguistically, racially, ethnically diverse and dispersed across a wide range of neighborhoods and may therefore more closely mirror mobility patterns of their non-ELL peers.

Conclusions and Policy Implications

Contrary to the popular narrative of steep enrollment losses in the wake of COVID-19, we find that enrollment declines in NYC and Detroit were modest and, in the case of NYC, largely a continuation of prior trends. Further, we find little or no evidence that COVID induced exit from the public school system in either district and that effects on entry were small and tended to be concentrated in the earlier grades. One possibility for this finding is the rich and varied public school choice environments in these districts provided families with more options when deciding whether to enroll their children in public schools versus private or homeschooling. Instead, it seems that the biggest impact of COVID in these districts was to substantially reduce non-

structural mobility, particularly among residentially mobile students. That is, after COVID, students were more likely to "stay put" in their schools if they could, even when their families move homes.

Why did these substantial declines in non-structural mobility occur? There are several possible explanations, each connected to the social and economic impacts of the COVID-19 pandemic and related policy responses. First, the pandemic introduced a broad sense of risk and uncertainty and, for some, increased levels of stress and anxiety (Salari et al., 2020). For parents, keeping their children's school enrollment the same may been a cognitive relief in an otherwise stressful period (Jabbar & Lenhoff, 2019). Second, the pandemic led initially to significant reductions in employment and family income, especially for lower-income families (Bauer et al., 2020). These socioeconomic effects may have led families to feel more restricted in their ability to access different schools, ultimately leading them to keep their children enrolled in their current schools. Third, research on school reopening suggests that schools in urban districts were much more likely to start the year remote-only (Singer, 2022), with modality offerings more similar than different between schools and public sectors (Cohodes & Pitts, 2021; Singer, 2022; Singer et al., 2022). Thus, rather than a stark choice between in-person, hybrid, and remote options, parents may have perceived relatively few distinctions among available school choices in this period of the pandemic. Finally, most states and the federal government enacted eviction moratoria during the pandemic (Benfer et al., 2022). Especially since residential and school mobility are often linked, added housing stability may have enabled families who otherwise would have moved residences and schools to keep their children enrolled in the same school. Alternatively, the availability of remote options may have decoupled residential and school mobility decisions for families.

These findings are important to consider in the context of Detroit and NYC's school choice landscapes. First, given that mobility declined most significantly for residential movers, they suggest that, when families can stay in their school of origin, many would prefer to do so. As families who moved were able to "stay put" because their children were attending school virtually, our findings raise questions about whether, during non-pandemic years, families would prefer not to switch schools as often as they do. This implies that infrastructure, such as transportation to schools of choice, may be useful in reducing unwanted mobility in non-pandemic years. This is also consistent with our finding that reductions in non-structural mobility were larger in Detroit than NYC. NYC offers a robust pupil and public transportation system that more easily facilitates students remaining in their school following a residential move compared with Detroit, the findings may also indicate that schools need to provide more support for housing unstable students as they navigate school enrollment during periods of residential transition. Another key difference that we note across context is the effect of COVID on non-structural mobility among Hispanic and ELL students across the two sites. As discussed previously, this may reflect the geography of choices available to Hispanic students in Detroit and the importance of nearby schooling options.

Is this decline in non-structural mobility a problem? On one hand, prior evidence that some non-structural moves are beneficial for students (Schwartz et al., 2017) suggests that the steeper decline in mobility for Black and economically disadvantaged students may have important equity implications, if, for example, they were less likely than their peers to switch to better-matched schools in the wake of COVID. Although we see little evidence of heterogeneity in moves to better/worse schools by race/ethnicity (Appendix Tables E2 and E4), this does not preclude the possibility that Black and economically disadvantaged students were less likely to make welfare improving school moves along other dimensions. n the other hand, non-structural moves,

especially those concurrent with residential moves, can have harmful effects on student achievement and behavioral outcomes, such as attendance (Lleras & McKillip, 2017; Cordes et al., 2019). Particularly during the tumultuous 2020-21 COIVD school year, it may be that being able to sustain school enrollment through residential moves because of online learning created beneficial stability for students and their families. Exploring the impacts of this increased stability on student academic performance and other outcomes is an important area for future research

References

Bassok, D. & A. Shapiro. (2021). *Understanding COVID-19-era enrollment drops among early-grade public school students.* Brown Center Chalkboard, Brookings. https://www.brookings.edu/blog/brown-center-chalkboard/2021/02/22/understanding-covid-19-era-enrollment-drops-among-early-grade-public-school-students/

Bauer, L., Broady, K., Edelberg, W., & O'Donnel, J. (2020). *Ten facts about COVID-19 and the U.S. economy.* Brookings. https://www.brookings.edu/research/ten-facts-about-covid-19-and-the-u-s-economy/

Benfer, E. A., Koehler, R., Mark, A., Nazzaro, V., Alexander, A. K., Hepburn, P., ... & Desmond, M. (2022). COVID-19 housing policy: state and federal eviction moratoria and supportive measures in the United States during the pandemic. *Housing Policy Debate*, 1-25. https://doi.org/10.1080/10511482.2022.2076713

Camp, A. M. & Zamarro, G. (2021). Determinants of Ethnic Differences in School Modality Choices During the COVID-19 Crisis. *Educational Researcher,* 51(1),6-16. https://journals.sagepub.com/doi/abs/10.3102/0013189X211057562

Catolico, E. (2020, August 24). Some Detroit schools are going all-remote if not enough teachers want to return to classrooms. *Chalkbeat Detroit.* https://detroit.chalkbeat.org/2020/8/24/21400058/detroit-gives-schools-the-option-of-going-all-remote

Chatterji, P. and Li, Y., 2021. Effects of COVID-19 on school enrollment. *Economics of Education Review*, 83, p.102-128.

Cohodes, S. & Pitts, C. (2021). *A new COVID-19 data source for answering emerging pandemic questions.* The Evidence Project at the Center for Reinventing Public Education. https://crpe.org/wp-content/uploads/final-COVID-school-data-hub-blog.pdf

Cordes, S.A. & Laurito, A. (2022). Choice and change: The Implications of Charter School

    Expansion for School and Neighborhood Diversity in NYC. EdWorkingPaper No. 22-

    556.

Cordes, S. A., Schwartz, A. E., & Stiefel, L. (2019). The effect of residential mobility on student

    performance: Evidence from New York City. *American Educational Research Journal*,

    56(4), 1380-1411.

Dee, T.S. & Murphy, M. (2021). Patterns in the pandemic decline of public school enrollment.

    Educational Researcher. https://doi.org/10.3102/0013189X211034481

Dee, T. S., Huffaker, E., Philips, C., & Sagara, E. (2021). *The revealed preferences for school*

    reopening: Evidence from public-school disenrollment. (EdWorkingPaper: 21-446).

    Annenberg Institute at Brown University: https://doi.org/10.26300/ejq1-m085

Education Policy Innovation Collaborative (2021). *Instructional delivery under Michigan*

    Districts' Extended COVID-19 Leaning Plans – May Update. Michigan State University.

    https://epicedpolicy.org/wp-content/uploads/2021/05/EPIC_ECOL_report_May2021.pdf

Higgins, L. (2020, August 27). Michigan school reopening tracker: Find out if your district is

    staring in person or online. *Chalkbeat Detroit*.

    https://detroit.chalkbeat.org/2020/8/10/21361988/michigan-school-reopening-tracker-

    find-out-if-your-district-is-starting-in-person-or-online

Jabbar, H., & Lenhoff, S. W. (2019). Parent decision-making and school choice. In M. Berends,

    A. Primus, & M. Springer (eds.), *Handbook of Research on School Choice* (pp. 351-364).

Lenhoff, S. W., Pogodzinski, B., Singer, J., & Cook, W. (2019). *Student exit, mobility, and*

    attendance in Detroit. Detroit Education Research Partnership.

    https://detroitpeer.org/research/

Lenhoff, S. W., Singer, J., Pogodzinski B., & Cook, W. (2022). Exiting Detroit for school:

    inequitable choice sets and school quality. *Journal of Education Policy*, 37(4), 590-612.

    https://doi.org/10.1080/02680939.2020.1856932

Lleras, C., & McKillip, M. (2017). When children move: Behavior and achievement outcomes

    during elementary school. *The Journal of Educational Research*, *110*(2), 177–187.

    https://doi.org/10.1080/00220671.2015.1060930

MI School Data. (n.d.). Retrieved November 3, 2022, from https://www.mischooldata.org/

Musaddiq, T., Stange, K. M., Bacher-Hicks, A., & Goodman, J. (2021). *The pandemic's effect on

    demand for public schools, homeschooling, and private schools* [NBER Working Papers

    29262]. National Bureau of Economic Research. http://www.nber.org/papers/w29262

National Center for Education Statistics (2021). *Nation's public school enrollment dropped 3

    percent in 2020-21.* Institute of Education Sciences.

    https://nces.ed.gov/whatsnew/press_releases/06_28_2021.asp

Pearman, F. A. (2020). Gentrification, geography, and the declining enrollment of neighborhood

    schools. *Urban Education*, *55*(2), 183-215.

Salari, N., Hosseinian-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., ...

    & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression among the general

    population during the COVID-19 pandemic: a systematic review and meta-analysis.

    Globalization and Health, 16(1), 1-11. https://doi.org/10.1186/s12992-020-00589-w

Sattin-Bajaj, C. (2018). It's Hard to Separate Choice from Transportation, Perspectives on

    Student Transportation Policy from Three Choice-Rich Cities. Urban Institute Research

    Report. Washington, DC: Urban Institute.

Singer, J. (2020). Student stratification among a combination of school choice policies in Detroit. *Journal of School Choice*, 14(1), 122-153. https://doi.org/10.1080/15582159.2019.1689467

Singer, J. (2022). *School reopening decisions during the COVID-19 pandemic: What can we learn from the emerging literature?* (EdWorkingPaper: 22-617). Annenberg Institute at Brown University. https://doi.org/10.26300/z9w0-9q22

Singer, J., Pogodzinski, B., Lenhoff, S. W., & Cook, W. (2020). *School transportation policies in Detroit*. Detroit Education Research Partnership. https://detroitpeer.org/research/

Singer, J., Marsh, J. A., Menefee-Libey, D., Alonso, J., Bradley, D., & Tracy, H. (2022). *The politics of school reopening during COVID-19: A multiple case study of five urban districts in the 2020-21 school year* (EdWorkingPaper: 22-605). Annenberg Institute at Brown University. https://doi.org/10.26300/0bke-pz42

Spurrier, A. (2019). Changing Enrollment, Fiscal Strain, and Facilities Challenges in California's Urban Schools. *Bellwether Education Partners*.

Welsh, R. O. (2017). School hopscotch: A comprehensive review of K–12 student mobility in the United States. *Review of Educational Research*, 87(3), 475–511. https://doi.org/10.3102/0034654316672068

Figures

Figure 1
COVID-19 Case Rates in New York City and Detroit, March 2020 through June 2021
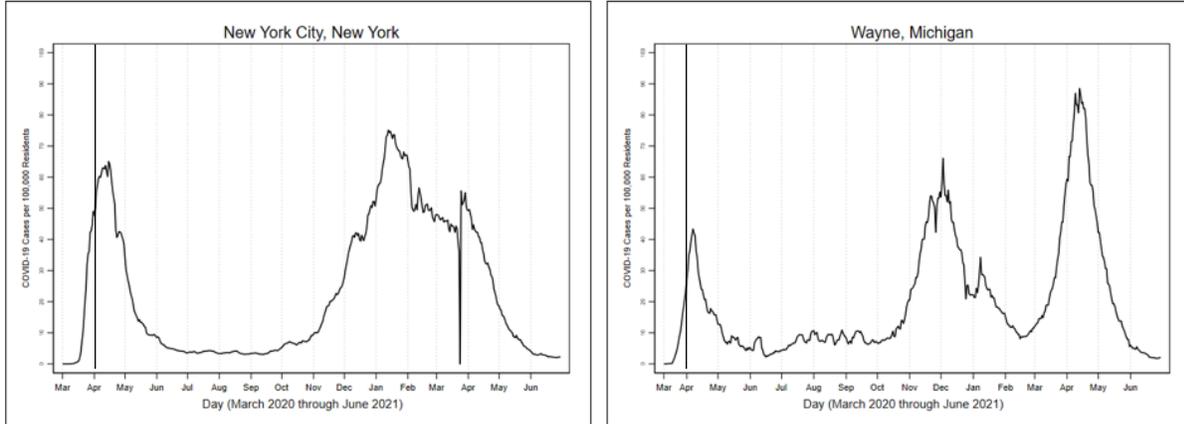
Data is at the county-level for Detroit (Wayne County) and city-level for New York City. Vertical line indicates the first day of school in the 2020-21 school year. Data come from the New York Times COVID-19 data repository: https://github.com/nytimes/covid-19-data

Figure 2
Enrollment Trends in NYC and Detroit, K-8

NYC Enrollment by Sector

Detroit Enrollment by Sector
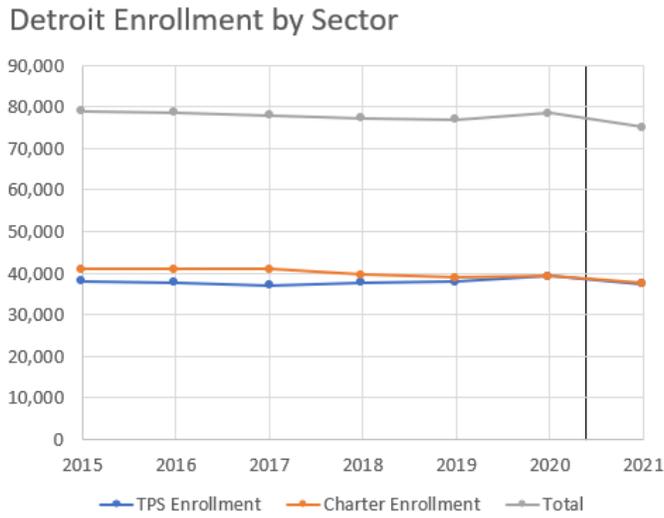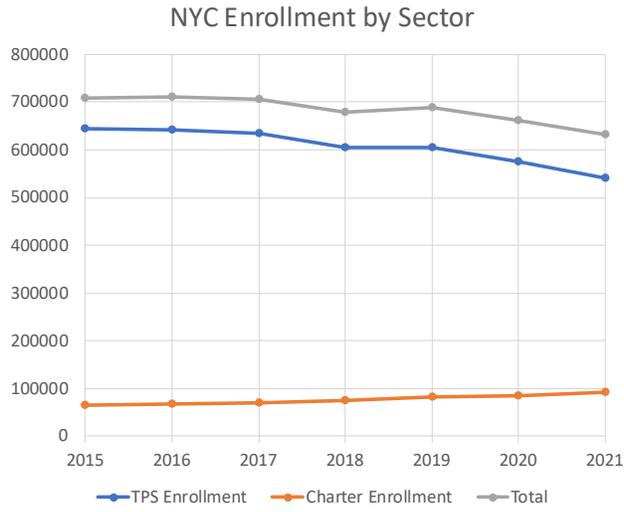
Notes: TPS refers to traditional public school.

Figure 3

New Entry of Students in NYC and Detroit, K-8

NYC, Entry as Share of Population
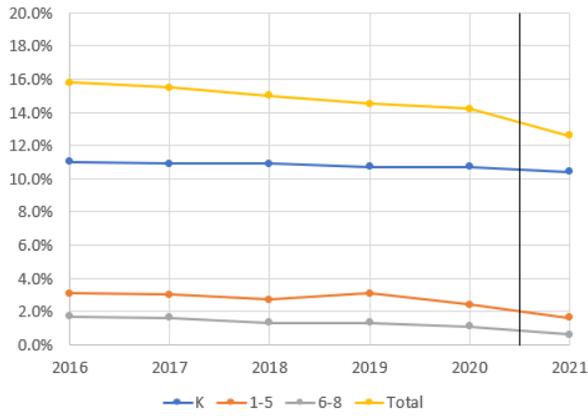
Detroit, Entry as Share of Population
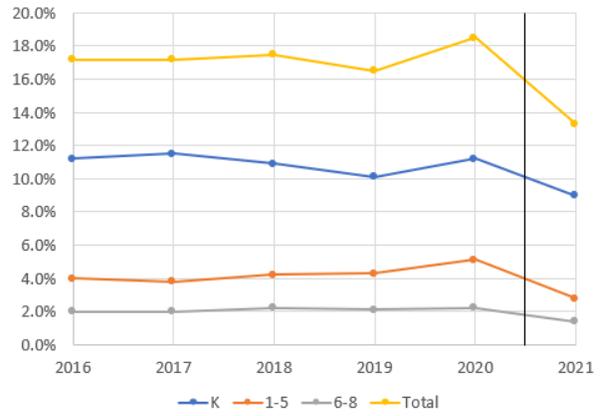
Note: Entry rate is the percent of students enrolled in year t who were not enrolled in year t-1. All kindergartners not repeating a grade are counted as entrants. NYC sample excludes students ever enrolled in charter schools.

Figure 4

Exit of Students in NYC and Detroit, K-8

NYC, Exit as Share of Population
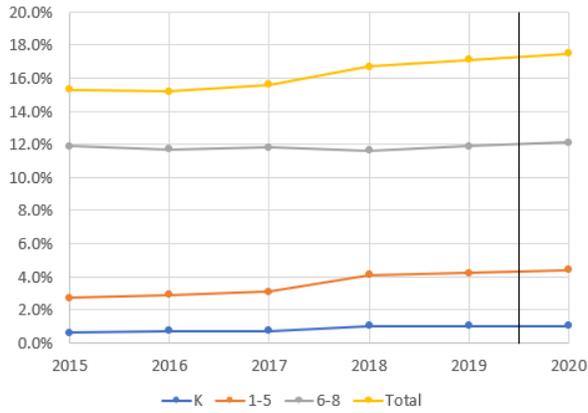
Detroit, Exit as Share of Population
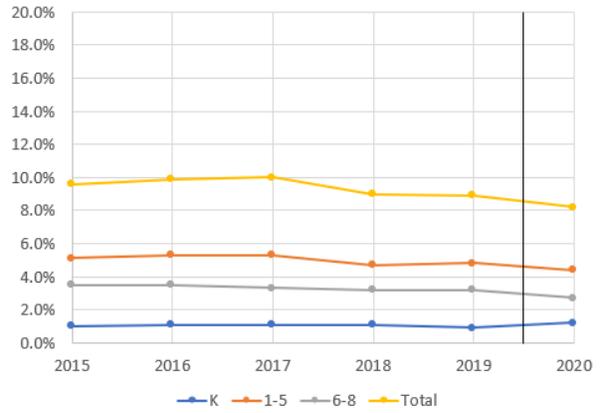
Note: Exit rate is the percent of students enrolled in year t who were not enrolled in year t+1.

Figure 5

School Mobility by Type of Move in NYC and Detroit, K-8
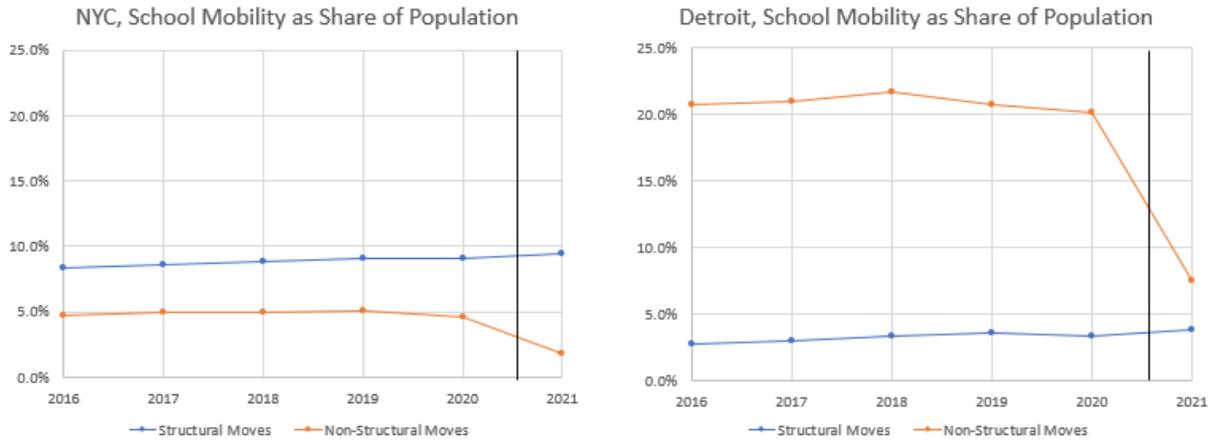
Note: A student is mobile it the school they attend in t differs from the school attended in t-1. Structural moves are defined as moves where a student's school t-1 does not offer their grade in year t.

Figure 6

Non-Structural School Mobility by School Type in NYC and Detroit, K-8
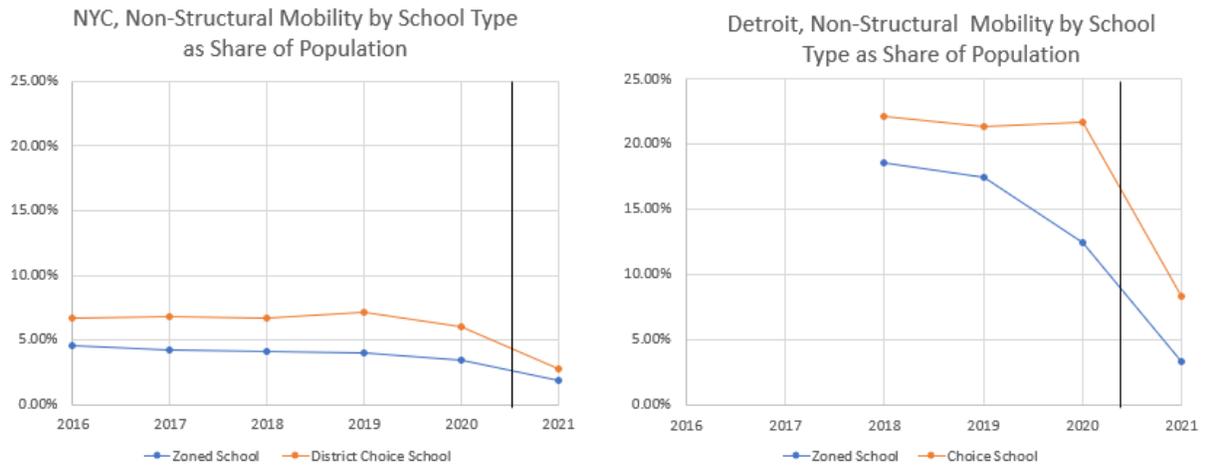
Note: A student is mobile it the school they attend in t differs from the school attended in t-1. Structural moves are defined as moves where a student's school t-1 does not offer their grade in year t.

Table 1

Demographics and Enrollment in New York City and Detroit, AY19 through AY21, Grades K-8

	Detroit			NYC		
	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21
N Students	77,562	78,947	75,162	621,997	607,040	573,932
Race or Ethnicity						
Asian	0.01	0.01	0.01	0.18	0.19	0.19
Black	0.82	0.82	0.81	0.21	0.20	0.19
Hispanic	0.11	0.11	0.11	0.42	0.41	0.42
White	0.05	0.05	0.05	0.17	0.17	0.17
Other Race	0.01	0.01	0.01	0.03	0.03	0.03
FRPL	0.92	0.91	0.91	0.74	0.74	0.74
Special Education	0.13	0.12	0.12	0.23	0.23	0.23
ELL	0.13	0.12	0.12	0.16	0.16	0.17
School Type						
Zoned TPS	0.18	0.17	0.17	0.58	0.58	0.57
Non-Zoned TPS	0.19	0.20	0.19	0.42	0.42	0.43
Special Admissions TPS	0.07	0.08	0.08			
Charter	0.34	0.34	0.34	-	-	-
Suburban TPS or Charter	0.21	0.21	0.22	-	-	-
Mobility						
All Between-Year	0.28	0.28	0.13	0.15	0.13	0.11
Non-Structural Between-Year	0.25	0.25	0.09	0.06	0.04	0.02
Within-Year	0.08	0.08	0.03	0.02	0.02	0.01
New Entrants						
Pct New Entrants, K-8	0.16	0.18	0.13	0.13	0.13	0.11
Pct New Entrants, 1-8	0.07	0.08	0.05	0.03	0.03	0.02
Distance to School (mi)	2.51	2.64	2.67	1.20	1.19	1.04

Notes: Sample for NYC excludes students in charter schools because we do not have student-level charter school data after AY 2019.

Table 2: Regression Results, COVID & School Mobility, Grades 1-8, AY 2016-2021, Any School Move

	NYC			Detroit		
	(1)	(2)	(3)	(4)	(5)	(6)
Post COVID	-0.028***	-0.028***	-0.030***	-0.148***	-0.163***	-0.142***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)
Residential Move			0.217***			0.325***
			(0.001)			(0.002)
Grade FE	X	X	X	X	X	X
Census Tract FE		X	X		X	X
Observations	3,091,485	3,091,485	2,988,823	397,766	386,427	378,084

Notes: All models include controls for race, gender, English language learner, disability status, free or reduced lunch, and year effects. Post COVID =1 in AY 2020-21. Sample includes TPS students in grades 1-8, including those in ungraded special education. Models including residential move exclude observations missing residential location in year t or t-1. Students ever enrolled in D75, ever enrolled in a charter school, or those missing residential location in year t are excluded in columns 1-3. Students enrolled in alternative schools, special education centers, and strict discipline academies are excluded in columns 4-6. Robust standard errors in parentheses

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

Table 3: Regression Results, COVID & School Mobility, Grades 1-8, AY 2016-2021, Structural & Non-structural Moves

Panel A: Structural Moves

	NYC				Detroit			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post COVID	0.002***	0.003***	0.000*	0.000*	0.011***	0.010***	0.011***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Residential Move			0.007***	0.007***			0.001	0.002*
			(0.000)	(0.000)			(0.001)	(0.001)
Post COVID*Res Move				0.000				-0.002
				(0.001)				(0.002)

Panel B: Non-structural Moves

	NYC				Detroit			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post COVID	-0.030***	-0.031***	-0.030***	-0.022***	-0.159***	-0.173***	-0.152***	-0.111***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)	(0.002)
Residential Move			0.211***	0.225***			0.323***	0.355***
			(0.001)	(0.001)			(0.002)	(0.002)
Post COVID*Res Move				-0.112***				-0.243***
				(0.002)				(0.004)
Grade FE	X	X	X	X	X	X	X	X
Census Tract FE		X	X	X		X	X	X
Observations	3,091,485	3,091,485	2,988,823	2,988,823	397,766	386,427	378,084	378,084

Notes: All models include controls for race, gender, English language learner, disability status, free or reduced lunch, and year effects. Post COVID =1 in AY 2020-21. Sample includes TPS students in grades 1-8, including those in ungraded special education. Models including residential move exclude observations missing residential location in year t or t-1. Students ever enrolled in D75, ever enrolled in a charter school, or those missing residential location in year t are excluded in columns 1-4. Students enrolled in alternative schools, special education centers, and strict discipline academies are excluded in columns 5-8. Robust standard errors in parentheses

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

Table 4: Regression Results, COVID & Non-Structural School Mobility, Grades 1-8, AY 2016-2021, by Race/Ethnicity, Economic Disadvantage, and Program Status

	NYC				Detroit			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post COVID	-0.036***	-0.020***	-0.030***	-0.030***	-0.168***	-0.115***	-0.162***	-0.152***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.004)	(0.002)	(0.002)
Post COVID*Black	-0.005***							
	(0.001)							
Post COVID*Asian	0.012***				0.116***			
	(0.001)				(0.008)			
Post COVID*Hispanic					0.080***			
					(0.003)			
Post COVID*White	0.020***				0.081***			
	(0.001)				(0.005)			
Post COVID*Other Race					0.067***			
					(0.016)			
Post COVID*Econ. Disad.		-0.014***				-0.041***		
		(0.001)				(0.004)		
Post COVID*EL			-0.003***				0.077***	
			(0.001)				(0.003)	
Post COVID*SWD				-0.003***				-0.001
				(0.001)				(0.004)
Observations	2,988,823	2,988,823	2,988,823	2,988,823	378,084	378,084	378,084	378,084

Notes: All models include controls for race, gender, English language learner, disability status, free or reduced lunch, residential move, grade, year, and census tract fixed effects. Post COVID =1 in AY 2020-21. Reference group for column 1 is Hispanic students and for column 5 is Black students. Sample includes TPS students in grades 1-8, including those in ungraded special education. Models including residential move exclude observations missing residential location in year t or t-1. Students ever enrolled in D75, ever enrolled in a charter school, or those missing residential location in year t are excluded in columns 1-4. Students enrolled in alternative schools, special education centers, and strict discipline academies are excluded in columns 5-8. Robust standard errors in parentheses

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

Appendix

Appendix A: Enrollment Trends in NYC and Detroit, K-8

Table A1: New York

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY 2020	(7) AY 2021
TPS	645,441	642,962	634,754	603,983	604,954	576,318	540,946
	92.5%	91.8%	91.0%	90.4%	89.1%	88.0%	86.1%
Charter	64,279	68,471	71,266	74,216	83,172	85,577	92,244
	9.2%	9.8%	10.2%	11.1%	12.3%	13.1%	14.7%
Students	697,430	700,350	697,163	668,220	678,681	654,777	628,212
Schools	1,225	1,222	1,212	1,212	1,249	1,240	1,246

Notes: Sample excludes schools that offer grades 9-12 and schools in district 75 and 79. Traditional public school (TPS) refers to any non-charter public school.

Table A2: Detroit

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY 2020	(7) AY 2021
TPS	39,337	39,000	38,417	39,232	39,510	40,307	37,681
	49.4%	49.2%	48.9%	50.4%	50.9%	51.1%	50.1%
Charter	40,259	40,230	40,121	38,692	38,052	38,640	37,481
	50.6%	50.8%	51.1%	49.3%	49.1%	48.9%	49.9%
Students	79,596	79,230	78,538	77,924	77,561	78,948	75,162
Schools	578	603	577	588	575	570	541

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Traditional public school (TPS) refers to any non-charter public school.

Appendix B: Student Entry and Exit in NYC and Detroit, K-8

Table B1: New York Overall

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY2020	(7) AY2021
Panel A: Students entering							
K	-	22,574	18,372	17,209	15,270	15,036	12,466
	-	3.6%	2.9%	2.7%	2.5%	2.5%	2.2%
1-5	-	19,937	18,225	16,012	14,620	12,121	7,005
	-	3.1%	2.9%	2.6%	2.4%	2.0%	1.2%
6-8	-	10,553	10,331	8,479	7,720	6,547	3,446
	-	1.7%	1.6%	1.3%	1.3%	1.1%	0.6%
K-8	-	53,061	46,928	41,669	37,610	33,704	22,917
	-	8.4%	7.5%	6.6%	6.1%	5.7%	4.1%
Total	635,277	634,537	633,811	629,103	613,007	595,398	565,448
Panel B: Students exiting							
K	4,034	4,208	4,553	5,969	5,994	6,138	-
	0.6%	0.7%	0.7%	1.0%	1.0%	1.0%	-
1-5	17,250	18,294	19,841	26,042	25,908	25,934	-
	2.7%	2.9%	3.1%	4.1%	4.2%	4.4%	-
6-8	75,710	74,467	74,483	73,173	72,943	72,029	-
	11.9%	11.7%	11.8%	11.6%	11.9%	12.1%	-
K-8	96,994	96,696	98,877	105,184	104,845	104,101	-
	15.3%	15.2%	15.6%	16.7%	17.1%	17.5%	-
Total	635,277	634,537	633,811	629,103	613,007	595,398	565,448

Notes: Sample includes TPS students in grades K-8, including those in ungraded special education. Students ever enrolled in D75 and ever enrolled in a charter are excluded. A student is defined as entering when they are not observed in year t-1 and exiting when they are not observed in year t+1. Kindergarten students are considered entering if they are not repeating the grade.

Table B2: New York by School Type

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY2020	(7) AY2021
Panel A: Zoned School							
Entering	-	60,995	59,122	56,603	53,156	51,829	43,188
	-	16.4%	16.0%	15.6%	15.0%	15.1%	13.3%
Exiting	44,447	46,312	47,295	51,053	51,380	53,240	-
	11.9%	12.4%	12.8%	14.0%	14.5%	15.5%	-
Total	374,581	372,636	369,467	363,619	354,394	344,213	324,749
Panel B: District Choice School							
Entering	-	23,981	22,973	23,807	22,671	23,297	19,514
	-	10.1%	9.9%	9.9%	9.7%	10.1%	8.9%
Exiting	47,139	45,831	45,249	48,526	48,461	48,484	-
	18.9%	19.3%	19.5%	20.2%	20.7%	21.1%	-
Total	249,998	238,001	232,289	239,744	233,873	229,668	219,371

Notes: Sample includes TPS students in grades K-8, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, and those missing residential locations are excluded. A student is defined as entering when they are not observed in year t-1 and exiting when they are not observed in year t+1. Kindergarten students are considered as entering if they are not repeating the grade.

Table B1: Detroit Overall

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY2020	(7) AY2021
Panel A: Students entering							
K	8,638	8,860	8,835	8,642	7,835	8,806	6,797
	10.9%	11.2%	11.5%	10.9%	10.1%	11.2%	9.0%
1-5	3,146	3,130	3,046	3,292	3,302	4,070	2,095
	4.0%	4.0%	3.8%	4.2%	4.3%	5.1%	2.8%
6-8	1,636	1,598	1,592	1,735	1,636	1,720	1,085
	2.1%	2.0%	2.0%	2.2%	2.1%	2.2%	1.4%
K-8	13,420	13,588	13,473	13,669	12,773	14,596	9,977
	16.9%	17.2%	17.2%	17.5%	16.5%	18.5%	13.3%
Total	79,596	79,230	78,538	77,924	77,561	78,948	75,162
Panel B: Students exiting							
K	791	887	892	819	719	915	-
	1.0%	1.1%	1.1%	1.1%	0.9%	1.2%	-
1-5	4,023	4,184	4,142	3,697	3,703	3,456	-
	5.1%	5.3%	5.3%	4.7%	4.8%	4.4%	-
6-8	2,804	2,763	2,575	2,513	2,501	2,127	-
	3.5%	3.5%	3.3%	3.2%	3.2%	2.7%	-
K-8	7,618	7,834	7,879	7,029	6,923	6,498	-
	9.6%	9.9%	10.0%	9.0%	8.9%	8.2%	-
Total	79,596	79,230	78,538	77,924	77,561	78,948	75,162

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. A student is defined as entering when they are not observed in year t-1 and exiting when they are not observed in year t+1. Kindergarten students are considered as entering if they are not repeating the grade.

Table B4: Detroit by School Type

	(1) AY 2015	(2) AY 2016	(3) AY 2017	(4) AY 2018	(5) AY 2019	(6) AY2020	(7) AY2021
Panel A: Zoned School							
Entering	-	-	-	2,343	2,038	2,256	1,365
	-	-	-	16.3%	14.5%	16.4%	10.5%
Exiting	-	-	-	965	903	944	-
	-	-	-	6.7%	6.4%	6.9%	-
Total	-	-	-	14,385	14,043	13,781	13,036
Panel B: Choice School							
Entering	-	-	-	11,326	10,735	12,340	8,612
	-	-	-	17.8%	16.9%	18.9%	13.9%
Exiting	-	-	-	6,064	6,020	5,554	-
	-	-	-	9.5%	9.5%	8.5%	-
Total	-	-	-	63,539	63,519	65,166	62,126

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Zoned school refers to a Detroit Public Schools Community District (DPSCD) neighborhood school to which students were assigned by their residential address. Choice schools include non-residentially assigned neighborhood DPSCD school, a selective admissions (exam or application-based) DPSCD school, a charter school in Detroit, or a traditional public school or charter school outside of Detroit. A student is defined as entering when they are not observed in year t-1 and exiting when they are not observed in year t+1. Kindergarten students are considered as entering if they are not repeating the grade.

Appendix C: School Mobility by Type of Move in NYC and Detroit, K-8

Table C1: New York

	(1) AY16	(2) AY17	(3) AY18	(4) AY19	(5) AY20	(6) AY21
No School Move	457,244	450,131	450,204	438,937	432,521	419,580
	85.1%	85.3%	85.3%	84.8%	85.7%	87.6%
School Move	79,779	77,560	77,613	78,795	72,322	59,358
	14.9%	14.7%	14.7%	15.2%	14.3%	12.4%
Nonstructural Move	29,271	27,600	27,198	27,482	22,861	10,870
	5.5%	5.2%	5.2%	5.3%	4.5%	2.3%
Structural Move	50,508	49,960	50,415	51,313	49,461	48,488
	9.4%	9.5%	9.6%	9.9%	9.8%	10.1%
Total	537,023	527,691	527,817	517,732	504,843	478,938

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Structural moves are defined as those moves where a student's school in t-1 does not offer their grade in year t.

Table C2: Detroit

	(1) AY16	(2) AY17	(3) AY18	(4) AY19	(5) AY20	(6) AY21
No School Move	48,895	48,012	46,756	48,028	47,730	57,810
	62.2%	61.1%	60.0%	61.9%	60.5%	76.9%
School Move	18,484	18,687	19,383	18,753	18,472	8,508
	23.3%	23.8%	24.9%	24.2%	23.4%	11.3%
Nonstructural Move	16,366	16,410	16,797	16,062	15,843	5,659
	20.7%	20.9%	21.6%	20.7%	20.1%	7.5%
Structural Move	2,118	2,277	2,586	2,691	2,629	2,849
	2.7%	2.9%	3.3%	3.5%	3.3%	3.8%
No Data	11,851	11,839	11,785	10,781	12,745	8,844
	15.0%	15.1%	15.1%	13.9%	16.1%	11.8%
Total	79,230	78,538	77,924	77,562	78,947	75,162

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Missing data (no "school move" data) denotes the number of students for whom only one year of data are observed in that year. Structural moves are defined as those moves where a student's school in t-1 does not offer their grade in year t.

Appendix D: School Mobility by School Type in NYC and Detroit, K-8

Table D1: New York

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Panel A: Zoned School						
No School Move	279,998	278,655	273,127	267,892	261,742	250,871
	87.4%	87.9%	87.7%	87.6%	88.1%	89.6%
School Move	40,266	38,336	38,274	37,864	35,380	29,129
	12.6%	12.1%	12.3%	12.4%	11.9%	10.4%
Nonstructural Move	14,826	13,195	12,780	12,279	10,454	5,310
	4.6%	4.2%	4.1%	4.0%	3.5%	1.9%
Structural Move	25,440	25,141	25,494	25,585	24,926	23,819
	7.9%	7.9%	8.2%	8.4%	8.4%	8.5%
Total	320,264	316,991	311,401	305,756	297,122	280,000
Panel B: District Choice School						
No School Move	177,246	171,476	177,077	171,045	170,779	168,709
	81.8%	81.4%	81.8%	80.7%	82.2%	84.8%
School Move	39,513	39,224	39,339	40,931	36,942	30,229
	18.2%	18.6%	18.2%	19.3%	17.8%	15.2%
Nonstructural Move	14,445	14,405	14,418	15,203	12,407	5,560
	6.7%	6.8%	6.7%	7.2%	6.0%	2.8%
Structural Move	25,068	24,819	24,921	25,728	24,535	24,669
	11.6%	11.8%	11.5%	12.1%	11.8%	12.4%
Total	216,759	210,700	216,416	211,976	207,721	198,938

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. District choice school observations consist of students who reside in an open enrollment district or attend a school other than the one they are zoned.

Table D2: Detroit

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Panel A: Zoned School						
No School Move	-	-	9,382	9,594	9,801	11,076
	-	-	65.2%	68.3%	71.1%	85.0%
School Move	-	-	2,913	2,685	1,896	694
	-	-	20.3%	19.1%	13.8%	5.3%
Nonstructural Move	-	-	2,679	2,450	1,716	449
	-	-	18.6%	17.5%	12.5%	3.4%
Structural Move	-	-	234	235	180	245
	-	-	1.6%	1.7%	1.3%	1.9%
Missing Data	-	-	2,090	1,764	2,084	1,266
	-	-	14.5%	12.6%	15.1%	9.7%
Total	-	-	14,385	14,043	13,781	13,036
Panel B: Choice School						
No School Move	-	-	37,374	38,434	37,929	46,734
	-	-	58.8%	60.5%	58.2%	75.2%
School Move	-	-	16,470	16,068	16,576	7,814
	-	-	25.9%	25.3%	25.4%	12.6%
Nonstructural Move	-	-	14,118	13,612	14,127	5,210
	-	-	22.2%	21.4%	21.7%	8.4%
Structural Move	-	-	2,352	2,456	2,449	2,604
	-	-	3.7%	3.9%	3.8%	4.2%
Missing Data	-	-	9,695	9,017	10,661	7,578
	-	-	15.3%	14.2%	16.4%	12.2%
Total	-	-	63,539	63,519	65,166	62,126

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. Zoned school refers to a Detroit Public Schools Community District (DPSCD) neighborhood school to which students were assigned by their residential address. Choice schools include non-residentially assigned neighborhood DPSCD school, a selective admissions (exam or application-based) DPSCD school, a charter school in Detroit, or a traditional public school or charter school outside of Detroit.

Appendix E: School Quality and School Moves in NYC and Detroit, K-8

Table E1: NYC

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Structural Move						
Better School	15,884 31.4%	15,584 31.2%	15,869 31.5%	15,948 31.1%	15,326 31.0%	14,846 30.6%
Worse School	28,640 56.7%	28,558 57.2%	28,348 56.2%	28,400 55.3%	27,028 54.6%	26,390 54.4%
No Change	4,910 9.7%	4,797 9.6%	4,833 9.6%	4,982 9.7%	4,670 9.4%	4,404 9.1%
Newly opened school	1,074 2.1%	1,021 2.0%	1,365 2.7%	1,983 3.9%	2,437 4.9%	2,848 5.9%
Average Change	-2.8%	-3.0%	-3.0%	-3.0%	-2.9%	-3.1%
Total	50,508	49,960	50,415	51,313	49,461	48,488
Nonstructural Move						
Better School	14,127 48.3%	13,634 49.4%	13,069 48.1%	13,007 47.3%	10,944 47.9%	5,226 48.1%
Worse School	10,137 34.6%	9,506 34.4%	9,690 35.6%	9,440 34.3%	7,746 33.9%	3,718 34.2%
No Change	3,273 11.2%	3,140 11.4%	2,803 10.3%	3,063 11.1%	2,269 9.9%	878 8.1%
Newly opened school	1,734 5.9%	1,320 4.8%	1,636 6.0%	1,972 7.2%	1,902 8.3%	1,048 9.6%
Average Change	3.5%	3.6%	3.0%	3.2%	3.3%	4.2%
Total	29,271	27,600	27,198	27,482	22,861	10,870

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. School quality is defined as combined average math and reading proficiency in the baseline year (AY 2015). A student is classified as moving to a better (worse) school if their school in year t has a 0.1 SD higher (lower) combined proficiency than their school in year t-1. A newly opened school move is a move to or from a school that has opened since AY 2015. Average changes in quality are percentage point changes in combined proficiency.

Table E2: NYC, Non-structural moves by Race/Ethnicity

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Black						
Better School	3,891 45.5%	3,669 46.1%	3,307 44.2%	3,214 44.3%	2,479 43.1%	958 44.5%
Worse School	3,049 35.6%	2,818 35.4%	2,878 38.4%	2,570 35.4%	2,151 37.4%	801 37.2%
No Change	1,100 12.9%	1,138 14.3%	893 11.9%	953 13.1%	666 11.6%	210 9.8%
Newly opened school	518 6.1%	336 4.2%	412 5.5%	521 7.2%	456 7.9%	184 8.6%
Total	8,558	7,961	7,490	7,258	5,752	2,153
White						
Better School	1,743 55.2%	1,604 54.5%	1,726 55.0%	1,609 51.7%	1,499 51.8%	1,079 50.6%
Worse School	974 30.8%	998 33.9%	1,003 32.0%	1,027 33.0%	878 30.3%	691 32.4%
No Change	250 7.9%	172 5.9%	222 7.1%	254 8.2%	214 7.4%	111 5.2%
Newly opened school	192 6.1%	168 5.7%	185 5.9%	225 7.2%	303 10.5%	253 11.9%
Total	3,159	2,942	3,136	3,115	2,894	2,134
Hispanic						
Better School	5,756 46.1%	5,609 47.2%	5,300 45.8%	5,533 46.6%	4,626 46.8%	1,885 45.3%
Worse School	4,456 35.7%	4,182 35.2%	4,145 35.8%	4,017 33.9%	3,393 34.3%	1,479 35.5%
No Change	1,463 11.7%	1,432 12.1%	1,284 11.1%	1,352 11.4%	1,015 10.3%	370 8.9%
Newly opened school	803	658	852	965	857	432

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
	6.4%	5.5%	7.4%	8.1%	8.7%	10.4%
Total	12,478	11,881	11,581	11,867	9,891	4,166
Asian						
Better School	2,736 53.9%	2,750 57.2%	2,735 54.8%	2,651 50.6%	2,340 54.1%	1,304 54.0%
Worse School	1,658 32.7%	1,506 31.3%	1,663 33.3%	1,826 34.8%	1,325 30.6%	747 30.9%
No Change	460 9.1%	398 8.3%	404 8.1%	504 9.6%	373 8.6%	187 7.7%
Newly opened school	220 4.3%	158 3.3%	187 3.8%	261 5.0%	286 6.6%	179 7.4%
Total	5,074	4,812	4,989	5,242	4,324	2,417

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. School quality is defined as combined average math and reading proficiency in the baseline year (AY 2015). A student is classified as moving to a better (worse) school if their school in year t has a 0.1 SD higher (lower) combined proficiency than their school in year t-1. A newly opened school move is a move to or from a school that has opened since AY 2015.

Table E3: Detroit

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Structural Move						
Better School	766 36.2%	735 32.3%	812 31.4%	837 31.1%	823 31.3%	705 24.7%
Worse School	782 36.9%	861 37.8%	961 37.2%	913 33.9%	962 36.6%	1,027 36.0%
No Change	305 14.4%	264 11.6%	325 12.6%	350 13.0%	291 11.1%	340 11.9%
Newly opened school	265 12.5%	417 18.3%	488 18.9%	591 22.0%	553 21.0%	777 27.3%
Total	2,118	2,277	2,586	2,691	2,629	2,849
Nonstructural Move						
Better School	7,854 48.0%	7,409 45.1%	7,129 42.4%	6,471 40.3%	6,068 38.3%	2,235 39.5%
Worse School	5,721 35.0%	5,722 34.9%	6,328 37.7%	5,759 35.9%	4,868 30.7%	1,736 30.7%
No Change	2,220 13.6%	2,199 13.4%	2,135 12.7%	1,902 11.8%	1,756 11.1%	539 9.5%
Newly opened school	571 3.5%	1,080 6.6%	1,205 7.2%	1,930 12.0%	3,151 19.9%	1,149 20.3%
Total	16,366	16,410	16,797	16,062	15,843	5,659

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. School quality is defined as combined average math and reading proficiency in the baseline year (AY 2015). A student is classified as moving to a better (worse) school if their school in year t has a 0.1 SD higher (lower) combined proficiency than their school in year t-1. A newly opened school move is a move to or from a school that has opened since AY 2015.

Table E4: Detroit, Non-structural mobility by race/ethnicity

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Black students						
Better School	7,105 47.5%	6,687 45.2%	6,454 41.9%	5,814 39.7%	5,634 39.5%	1,974 39.7%
Worse School	5,304 35.4%	5,268 35.6%	5,901 38.4%	5,383 36.7%	4,489 33.0%	1,578 31.8%
No Change	2,102 14.0%	2,070 14.0%	2,033 13.2%	1,780 12.2%	1,664 12.3%	492 9.9%
No school quality data	462 3.1%	774 5.2%	1,001 6.5%	1,675 11.4%	2,068 15.2%	925 18.6%
Total	14,973	14,759	15,389	14,652	13,585	4,969
Other race/ethnicity						
Better School	749 53.8%	722 44.8%	675 47.9%	657 46.6%	704 31.2%	261 37.8%
Worse School	417 29.9%	454 28.2%	427 30.3%	376 26.7%	379 16.8%	158 22.9%
No Change	118 8.5%	129 8.0%	102 7.2%	122 8.7%	92 4.1%	47 6.8%
No school quality data	109 7.8%	306 19.0%	204 14.5%	255 18.1%	1,003 48.0%	224 32.5%
Total	1,393	1,611	1,408	1,410	2,258	690

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. School quality is defined as combined average math and reading proficiency in the baseline year (AY 2015). A student is classified as moving to a better (worse) school if their school in year t has a 0.1 SD higher (lower) combined proficiency than their school in year t-1. A newly opened school move is a move to or from a school that has opened since AY 2015. Average changes in quality are percentage point changes in combined proficiency.

Appendix F: Distance-to-School and School Moves in NYC and Detroit, K-8
Table F1. NYC

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Structural Move						
Closer School	9,942 19.7%	9,168 18.4%	8,698 17.3%	9,178 17.9%	9,018 18.2%	9,334 19.3%
Farther School	32,444 64.2%	32,981 66.0%	34,416 68.3%	34,403 67.0%	32,857 66.4%	31,464 64.9%
No Change	7,429 14.7%	7,269 14.5%	7,272 14.4%	7,701 15.0%	7,538 15.2%	7,294 15.0%
No Distance Data	693 1.4%	542 1.1%	29 0.1%	31 0.1%	48 0.1%	396 0.8%
Total	50,508	49,960	50,415	51,313	49,461	48,488
Nonstructural Move						
Closer School	11,067 37.8%	9,182 33.3%	8,771 32.2%	8,859 32.2%	7,979 34.9%	3,162 29.1%
Farther School	13,413 45.8%	13,624 49.4%	13,921 51.2%	13,735 50.0%	11,165 48.8%	4,536 41.7%
No Change	3,649 12.5%	4,255 15.4%	4,238 15.6%	4,605 16.8%	3,336 14.6%	2,886 26.6%
No Distance Data	1,142 3.9%	539 2.0%	268 1.0%	283 1.0%	381 1.7%	286 2.6%
Total	29,271	27,600	27,198	27,482	22,861	10,870

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Some student observations are missing school location and thus do not have a distance to school in year t, t-1, or both and are also excluded. School moves with the same distance are moves to schools in year t that ae within 0.1 mile of their school in year t-1.

Table F2: Detroit

	(1) AY 2016	(2) AY 2017	(3) AY 2018	(4) AY 2019	(5) AY2020	(6) AY2021
Structural Move						
Closer School	648 30.6%	657 28.9%	810 31.3%	795 29.5%	698 26.6%	648 22.7%
Farther School	1,083 51.1%	1,083 47.6%	1,205 46.6%	1,125 41.8%	1,125 42.8%	1,175 41.2%
No Change	346 16.3%	499 21.9%	517 20.0%	554 20.6%	461 17.5%	506 17.8%
No Distance Data	41 1.9%	38 1.7%	54 2.1%	217 8.1%	345 13.1%	520 18.3%
Total	2,118	2,277	2,586	2,691	2,629	2,849
Nonstructural Move						
Closer School	5,491 33.6%	5,521 33.6%	5,915 35.2%	5,074 31.6%	3,687 23.3%	1,105 19.5%
Farther School	6,861 41.9%	7,186 43.8%	7,072 42.1%	5,952 37.1%	5,866 37.0%	1,940 34.3%
No Change	2,832 17.3%	2,656 16.2%	2,742 16.3%	2,553 15.9%	1,260 8.0%	420 7.4%
No Distance Data	1,182 7.2%	1,047 6.4%	1,068 6.4%	2,483 15.5%	5,030 31.8%	2,194 38.8%
Total	16,366	16,410	16,797	16,062	15,843	5,659

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. School quality is defined as combined average math and reading proficiency in the baseline year (AY 2015). Some student observations are missing school location and thus do not have a distance to school in year t, t-1, or both and are also excluded. School moves with the same distance are moves to schools in year t that ae within 0.1 mile of their school in year t-1.

Appendix G: Type of School and School Moves in NYC and Detroit, K-8

Table G1: NYC

	(1) AY16	(2) AY17	(3) AY18	(4) AY19	(5) AY20	(6) AY 21
District Choice to Zoned	14,595	11,651	10,907	11,357	10,123	7,366
	18.3%	15.0%	14.1%	14.4%	14.0%	12.4%
Zoned to District Choice	22,040	22,387	22,699	22,963	20,960	16,896
	27.6%	28.9%	29.2%	29.1%	29.0%	28.5%
Zoned to Zoned	25,671	26,685	27,367	26,507	25,257	21,763
	32.2%	34.4%	35.3%	33.6%	34.9%	36.7%
District Choice to District Choice	17,473	16,837	16,640	17,968	15,982	13,333
	21.9%	21.7%	21.4%	22.8%	22.1%	22.5%
Total	79,779	77,560	77,613	78,795	72,322	59,358

Notes: Sample includes TPS students in grades 1-8 enrolled in year t and t-1, including those in ungraded special education. Students ever enrolled in D75, ever enrolled in a charter school, repeating kindergarten, or those missing residential address in year t are excluded. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. District choice school observations consist of students who reside in an open enrollment district or attend a school other than the one they are zoned. A district choice to zone school move is defined as a student who attends their zone school in year t but did not attend their zone school in year t-1.

Table G2: Detroit

	(1) AY16	(2) AY17	(3) AY18	(4) AY19	(5) AY20	(6) AY 21
District Choice to Zoned	-	-	6,188	3,241	2,890	1,019
	-	-	31.9%	17.3%	15.7%	12.0%
Zoned to District Choice	-	-	1,368	2,059	1,449	482
	-	-	7.1%	11.0%	7.8%	5.7%
Zoned to Zoned	-	-	1,544	626	447	212
	-	-	8.0%	3.3%	2.4%	2.5%
Choice to Choice			10,277	12,822	13,679	6,786
			53.0%	68.4%	74.1%	79.8%
Missing Prior School Type	-	-	<10	<10	<10	<10
	-	-	-	-	-	-
Total	-	-	19,383	18,753	18,472	8,508

Notes: Sample excludes schools that offer grades 9-12, alternative schools, special education centers, and virtual schools. Structural moves are defined as those moves where a student's school in year t-1 does not offer their grade in year t. Zoned school refers to a Detroit Public Schools Community District (DPSCD) neighborhood school to which students were assigned by their residential address. Choice schools include non-residentially assigned neighborhood DPSCD school, a selective admissions (exam or application-based) DPSCD school, a charter school in Detroit, or a traditional public school or charter school outside of Detroit.