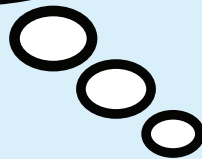
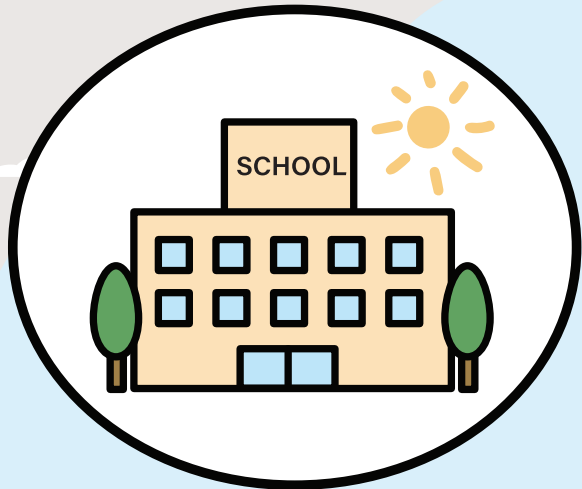


January 2024

New Home, Same School:

Charter schools and residentially mobile students

by Douglas Lee Lauen



Foreword by
David Griffith and Amber M. Northern

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Suggested Citation

Douglas Lee Lauen. New Home, Same School: Charter schools and residentially mobile students. Washington D.C.: Thomas B. Fordham Institute (January 2024). <https://fordhaminstitute.org/national/research/new-home-same-school>

Acknowledgments

This report reflects the contributions of many individuals, starting with Professor Lauen (without whom it would not exist). In addition to Dr. Lauen, we are grateful to professors Sean Corcoran and Ron Zimmer for their technical review of early drafts, and to Pamela Tatz for copyediting. On the Fordham side, we extend our thanks to Chester E. Finn, Jr., Michael Petrilli, and Amber Northern for reviewing drafts, to David Griffith for managing the project, to Stephanie Distler for overseeing report production and design, and to Victoria McDougald for handling media dissemination.

Access to the confidential administrative data was permitted through a data access agreement with the North Carolina Department of Public Instruction (NCDPI) and facilitated by the Education Policy Initiative at Carolina. Dr. Lauen would like to thank Ashley Baquero of the NCDPI Office of Charter Schools and Assistant State Superintendent Andrew Smith for their support of this work and their advice throughout this project, Kyle Abbott and Elizabeth Brown for excellent research assistance, and Philip McDaniel for GIS advice.

Funding for this report comes from the Walton Family Foundation, The Louis Calder Foundation, and our sister organization, the Thomas B. Fordham Foundation.

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Foreword

by David Griffith and Amber M. Northern

Every now and then, the cracks that form at the intersection of housing and education policy become visible to a casual observer. An overcrowded school building.¹ A desperate family that commits “residency fraud” so their kids can learn.² A homeless parent who struggles to enroll her children in a local school.³

Yet too often, such fissures are undetectable to all, save the case workers and educators who do their best to patch them (with mixed results). One day Johnny is scraping out a D-minus in English. The next day he’s gone, carried away by circumstances beyond his control—social, economic, familial—to unfamiliar streets and classrooms unseen.

Alas, Johnny’s experience is far from unique. Roughly one in five poor families in the United States changes residences each year, often involuntarily.⁴ Worse, because the housing and education markets are linked, involuntary changes in residence often force already-vulnerable students to change schools, at least when their new address is sufficiently far afield that they wind up in another attendance zone.

It follows that, insofar as school choice weakens the link between housing and education, it may hold particular benefits for students who experience “residential instability.” Families would surely benefit from being able to change homes while keeping their children at the same school. Yet, to our knowledge, this potential benefit has never been studied, perhaps because doing so requires a dataset with detailed information on students’ home addresses.

That’s why we were excited to learn of the dataset that the University of North Carolina’s Douglas Lee Lauen and his research assistants have painstakingly assembled. Professor Lauen is well-known for his prior work on charter schools and educational accountability and, like us, was eager to shine a bright light on this neglected dimension of school choice. In addition to information on student demographics, achievement, attendance, and discipline, his database includes the home addresses of every student who enrolled in a North Carolina public school between 2016–17 and 2018–19. This unusually rich dataset, which includes information on more than four million students, enables analysis of the relationships between residential mobility, school mobility, and charter school enrollment.

Lauen’s resulting report is worth reading in full. But here are its four key findings.

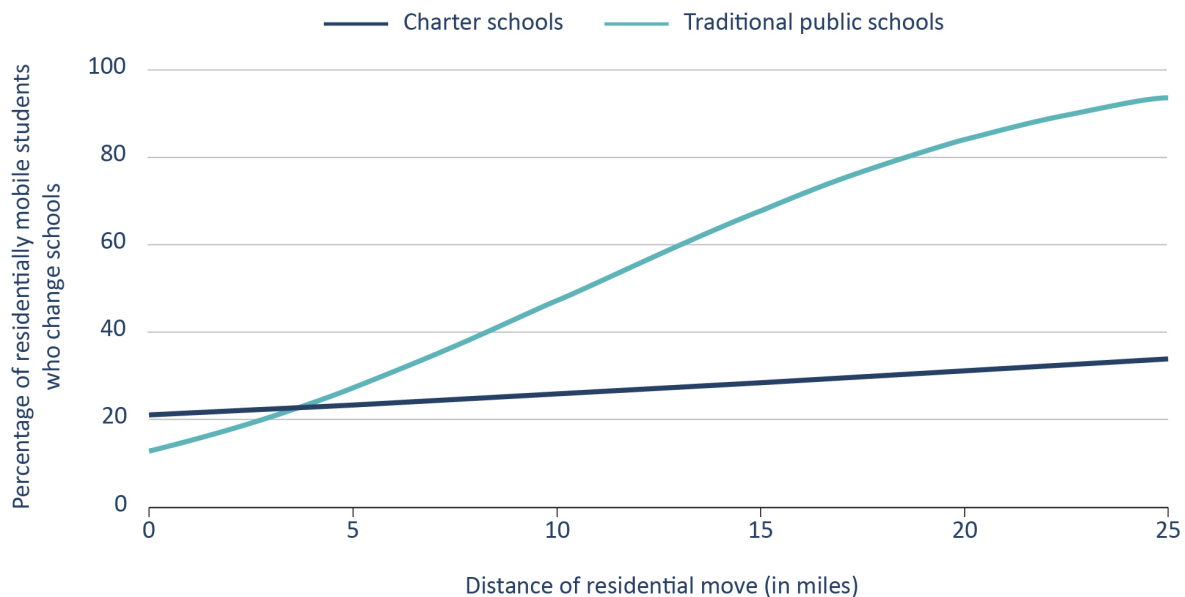
First, about one in seven students experiences a change in residence or school in a given school year. Moreover, there is a strong link between residential and school mobility, although it’s hard to say how many of these moves are “involuntary.”

Second, Black and Hispanic students are more mobile than White students. For example, Black students are about twice as likely to change schools as White students (and about two-thirds of those moves are accompanied by changes in residence). In other words, racial disparities in school mobility are effectively baked into a system in which housing and schooling stay linked.

Third, residentially mobile students in charter schools are less likely to change schools than their counterparts in traditional public schools. More specifically, the former become less likely to change schools relative to students in traditional public schools as the distance of the residential move increases (Figure FW1).

If you think about it, this makes sense: The further a family moves, the more likely the kids are to wind up in the catchment zone of a different traditional public school, or an entirely different school district. But most charter schools don’t have catchment zones, so provided any transportation barriers are surmountable, nothing prevents their students from remaining enrolled should where they live change.

Figure FW1: As the distance of the residential move increases, students in charter schools become less likely to change schools than those in traditional public schools.



Notes: This figure shows how the probability of school mobility increases for residentially mobile students as the distance of the residential move increases. The sample includes only students who made a residential move of twenty-five miles or less. Traditional public school and charter school status are defined at baseline (i.e., before the residential move occurred). Estimates were generated using a probit model with distance of a residential move as the predictor and school move as the outcome.

Finally, residential mobility, school mobility, and “compound” mobility are all associated with a small decline in academic progress in math and a slight increase in suspensions. In other words, the results suggest that needlessly high mobility rates have real costs for students (and of course there could be other costs that we do not observe).

Isolating these adverse effects is challenging, as is generalizing about the various scenarios that can result in a student changing schools. (Consider the difference between a student who is expelled and a student whose parent takes a higher-paying job in a better-resourced community.) Still, if there’s no reason to believe that a student’s new school will be better than their old one, it’s hard to endorse a regime that forces families to change schools when they change homes.

“Freeing” students in low-income neighborhoods from low-performing schools remains a key benefit of school choice. But another, albeit less obvious, benefit is reducing the educational disruption and personal stress that often come with a change in residence, especially for students in those same neighborhoods.

Every year, about 3 million children in the United States are evicted.⁵ As of 2022, about 1.2 million students were considered homeless by the U.S. Department of Education (though the true number is almost certainly higher).⁶ And in the past year, a combination of rising rents and the expiration of pandemic-era protections has created a housing crisis that has disproportionately affected students of color.⁷ Right now, in New York City alone, at least 100,000 kids are in temporary housing.⁸

Obviously, school choice can’t address all of the factors underlying such tragic statistics, or completely quell their consequences. But more robust and equitable open enrollment policies would be one step. More charter schools (which are legally prohibited from giving preference to students from “good” neighborhoods) would be another. And, regardless of how we attack the problem, the burden of proof should fall on those who insist that students who are already perilously close to falling through the cracks *must* change classes, teachers, curricula, and peer groups if and when they find a new home.

In short, the right to school choice is also about the right to stay put.

Introduction

Every year, about 10 percent of U.S. households change residences. Often, these changes are positive, such as when a family upgrades to a larger or newer home or when parents move to be close to better career opportunities. But sometimes they are a sign that something has gone wrong. And in these cases, the implications for student learning and well-being are generally considered to be negative.

Moving is a stressful activity for any parent, but for many low-income families who rent their homes, “residential instability” is a constant challenge. Residential mobility rates are much higher for renters than for homeowners (24 percent versus 6 percent),⁹ and they are significantly higher for poor families, who are far more likely than wealthy or middle-class families to experience such unwelcome shocks as eviction or “unit failure” (e.g., a collapsed roof).¹⁰

Because housing and education markets in the United States are linked, involuntary changes in residence can also force already vulnerable students to switch schools. After all, most traditional school districts assign students to schools based on the catchment zone in which they reside. Most require students to enroll in a new school when a residential move takes them across those boundary lines, and students whose moves take them to new school districts are nearly always obliged to change schools, save in the handful of states with robust interdistrict choice policies.

Consequently, to the extent that school choice severs the link between housing and education, it seems likely that it holds particular benefits for the subset of students who experience residential instability. After all, provided the new address is reasonably close to the child’s previous school and some sort of transportation can be arranged, nothing prevents families who enroll their children in charters, private institutions, or other schools of choice from keeping their children in these institutions when their home addresses change.

To our knowledge, there has been no research on the tendency of charters or other schools of choice to retain residentially mobile students. Accordingly, this study uses data from North Carolina to explore the effect of residential mobility on school mobility, the relationships between both forms of mobility and student outcomes, and the extent to which charter school enrollment can buffer students from the potentially harmful effects of residential instability.

More specifically, this study seeks answers to four research questions:

Q1: What percentage of students experience residential and/or school mobility?

Q2: How do residential and school mobility rates vary by race and socioeconomic status?

Q3: Is the relationship between residential and school mobility stronger or weaker in charter schools? And what impact does the distance of the residential move have on this relationship?

Q4: To what extent are residential and/or school mobility associated with worse outcomes for students?

Because the study is limited to North Carolina, the answers to these questions necessarily reflect the Tar Heel state’s specific student population and charter school sector, which in some ways are atypical compared to other states (see *The North Carolina context*, pg. 10). On the other hand, this is a first-of-its-kind examination of these questions in a large and diverse state with a healthy mix of rural, urban, and suburban areas. Therefore, to the extent that the “tyranny of zip code” remains a dominant feature of K–12 education in the rest of the United States, the findings may hold broader lessons.

Background

Prior research suggests that both residential and school mobility have negative effects on children's well-being and academic outcomes,¹¹ and at least one study has found that changing schools has a negative impact on residentially mobile students.¹² Furthermore, research shows that poor families move more frequently than rich families and are more likely to relocate to poor neighborhoods with inferior schools.¹³ Perhaps as a result, the effects of mobility seem to be particularly acute for poor students.¹⁴

While the most obvious potential benefit of school choice is that students can gain access to schools that better meet their needs, a less obvious possibility is its potential to reduce the disruption associated with residential shocks that cause low-income families to move from one school catchment area to another. After all, unlike students in most traditional public schools, students in charters typically don't need to change schools when such shocks occur, so long as the distances and transportation logistics are manageable.

Notably, a more recent line of research suggests that enrolling in a charter school reduces the likelihood that students will subsequently change schools, especially if the charter is high performing.¹⁵ Yet, to our knowledge, there is no research on the extent to which enrolling in a charter school mitigates the negative consequences of residential mobility.

Data and methods

Data for this study come from the North Carolina Department of Public Instruction (NCDPI). The source files contain records for every student who enrolled in a North Carolina public school from three consecutive school years (2016–17 through 2018–19) and include information on students’ home addresses, enrollment, demographics, attendance, disciplinary records, and achievement.

To enable a clean comparison of brick-and-mortar charter and traditional public schools, we exclude magnet schools, virtual charter schools, schools run by UNC Hospitals, and schools run by the state department of corrections from the sample. We also restrict the sample to students with three consecutive years of enrollment data and arrange the analytic samples into three three-wave panels of third through fifth graders, sixth through eighth graders, and ninth through eleventh graders. To produce accurate estimates of “nonstructural” school mobility (i.e., mobility that is not attributable to expected transitions from one grade band to the next), we drop students who made “structural” moves in nonmodal grades (e.g., between fourth and fifth grade rather than between fifth and sixth grade). However, we retain students who did not make normal grade progressions (i.e., those who were retained and those who skipped a grade). After cleaning the address file in Stata to make the addresses and zip codes as consistent as possible, students’ addresses were geocoded with ArcGIS using the USA local composite locator—a process which accurately located about 99 percent of addresses. Finally, a small number of students with more than two addresses for the same school year were dropped.

To measure the predicted gains for students in different mobility categories, we rely on ordinary least squares regression methods (for more, see *Technical Appendix*, pg. 26). Unless otherwise stated, these models control for lagged versions of the four outcome variables in the study (math and reading achievement scores, days absent, and suspensions); indicators for economic disadvantage, gifted, disability, English language learner, race/ethnicity, male, retained in grade, and structural moves (i.e., making a school move that is required by a grade-span configuration within the grade 3–5, 6–8, or 9–11 groupings); and neighborhood (i.e., census tract) fixed effects. Standard errors are cluster corrected at the school level. In the figures below, we use a measure of neighborhood socioeconomic status (SES) that is an average of census tract variables linked to the student’s address (see *Technical Appendix*, pg. 26).

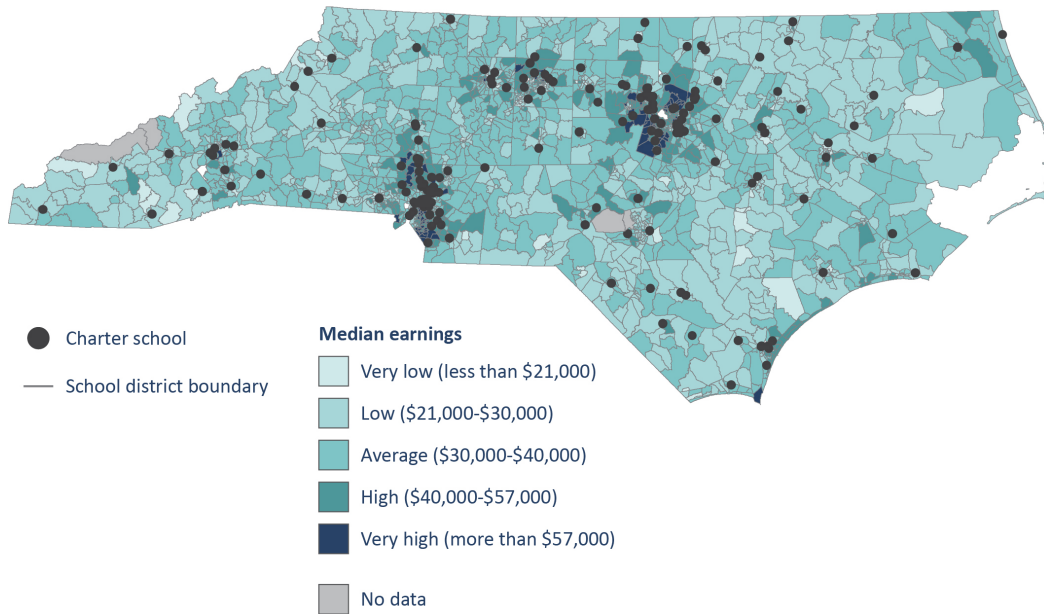
The North Carolina context

North Carolina's 200-plus charter schools account for about 9 percent of the Tar Heel state's total K–12 public school enrollment, a figure that has increased rapidly since 2011, when the legislature lifted the cap established by the state's original charter school law.

As in most states, charters in North Carolina are concentrated in places with high population density, which tend to be more affluent than rural areas; however, unlike many states, North Carolina also has many charters in affluent suburban and exurban areas, including in the Raleigh-Durham, Charlotte, and Winston-Salem metro areas (see Figure 1). Consequently, North Carolina's charter schools serve an unusually White and affluent student population relative to other states (see Figure 2).

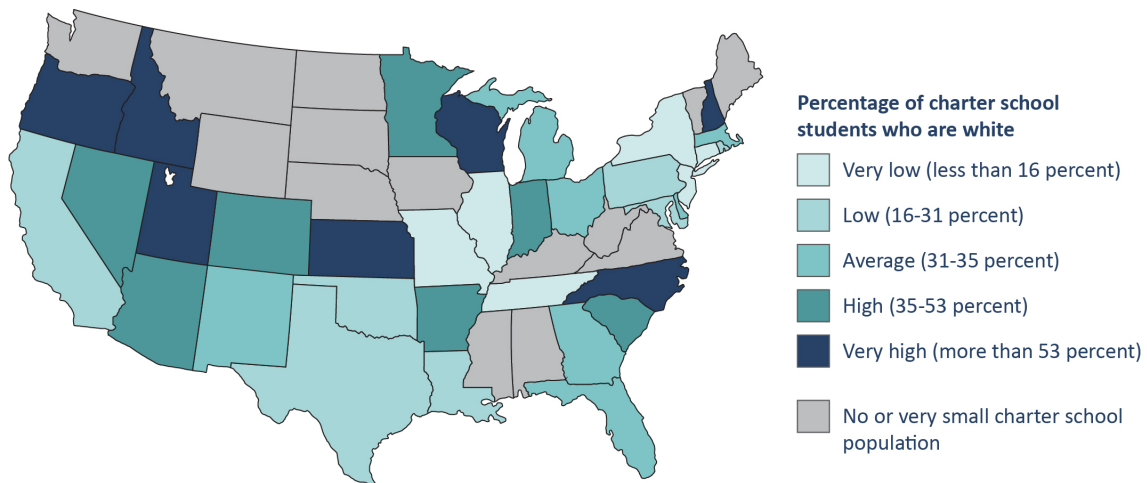
As discussed in the findings, White and affluent students are somewhat less likely to experience residential and/or school mobility than poor, Black, and/or Hispanic students. However, it is less clear that the effects of charter status on mobility or the effects of mobility on other outcomes of interest differ by student group. In other words, the results presented in this study may very well generalize to residentially mobile charter school students in other states, including those with more mobile charter school populations.

Figure 1. Many charter schools in North Carolina are located in higher-income neighborhoods.



Notes: This figure shows the location of North Carolina charter schools that were operational in 2017–18, the median household earnings of North Carolina census tracts as of 2010, and the boundaries of North Carolina school districts (which often contain multiple census tracts and are largely coterminous with counties).

Figure 2. Charter schools in North Carolina serve more White students than charter schools in most other states.

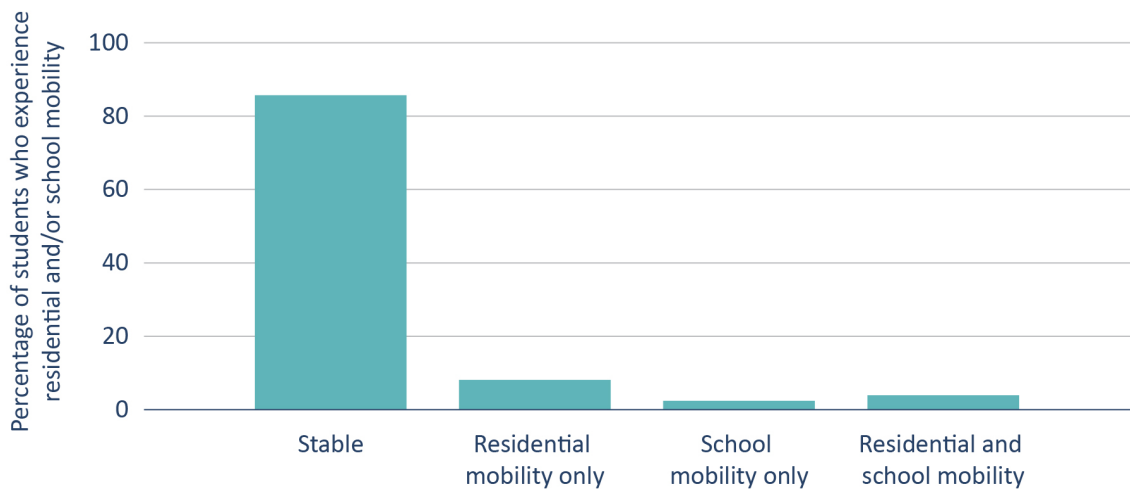


Notes: This figure shows the percentage of charter school students who are white in the states with a significant number of active charter schools as of 2018.

Finding 1: Every year, about one in seven students changes residences, schools, or both.

Per the first bar in Figure 3, approximately 14 percent of North Carolina students experience a “nonstructural” mobility event—that is, a change in residence or school that is not attributable to the expected transition from elementary to middle school or from middle school to high school—in a given school year. More specifically, about 7 percent of all students experience residential mobility only, about 2.5 percent experience school mobility only, and about 3.5 percent experience residential and school mobility.

Figure 3. Every year, about one in seven students changes residences, schools, or both.

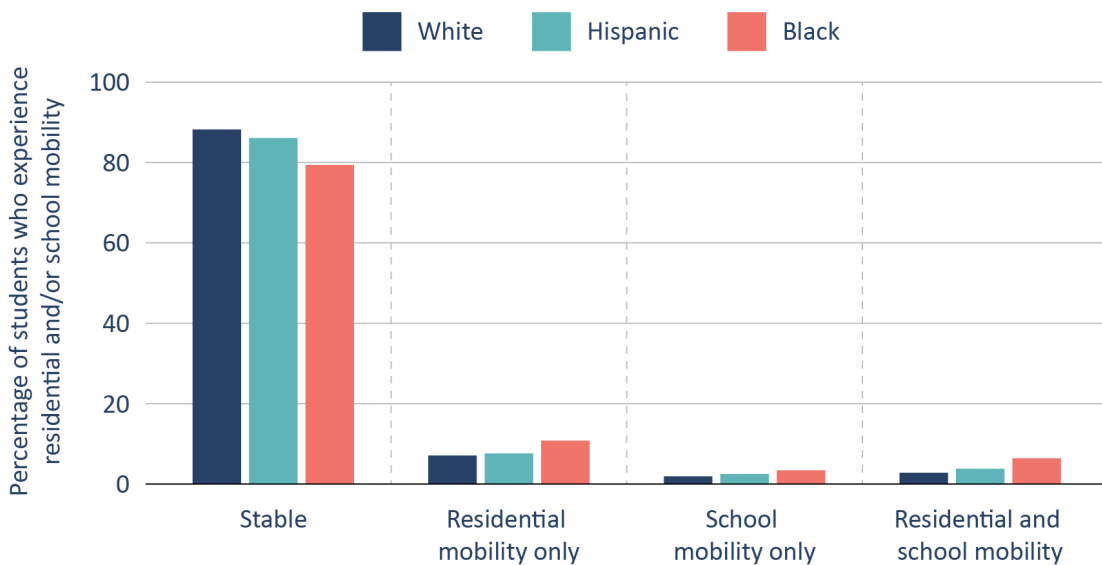


Notes: This figure shows the percentages of North Carolina students in grades K–8 who experienced residential and/or school mobility between 2016-17 and 2018-19. “Structural” school moves (i.e., moves that students are obliged to make due to grade-span configurations) are not included in these estimates.

Finding 2: In general, Black and Hispanic students are more mobile than White students.

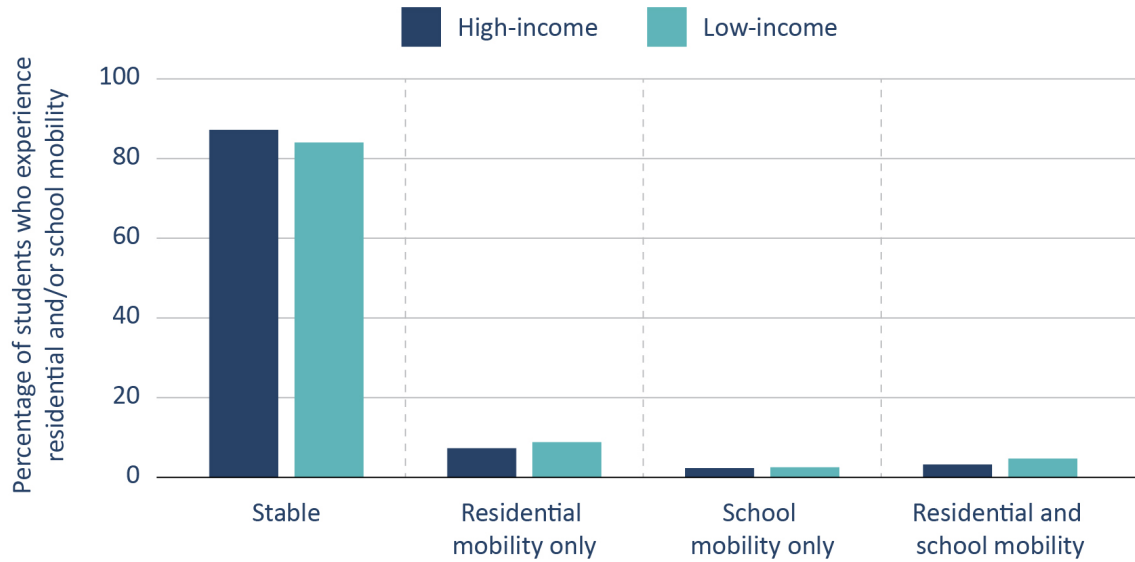
As shown in figures 4 and 5, non-White students and those from low-income families experience higher rates of residential and/or school mobility. For example, more than one in five Black students experiences some form of mobility in a given year. The rate of “compound mobility” (i.e., concurrent residential and school mobility) for Black students is more than double the rate for White students.

Figure 4. In general, Black and Hispanic students are more mobile than White students.



Notes: This figure shows the percentages of White, Hispanic, and Black students in grades K–8 in North Carolina who experienced residential and/or school mobility between 2016-17 and 2018-19. “Structural” school moves (i.e., moves that students are obliged to make due to grade-span configurations) are not included in these estimates.

Figure 5. In general, low-income students are more mobile than high-income students.

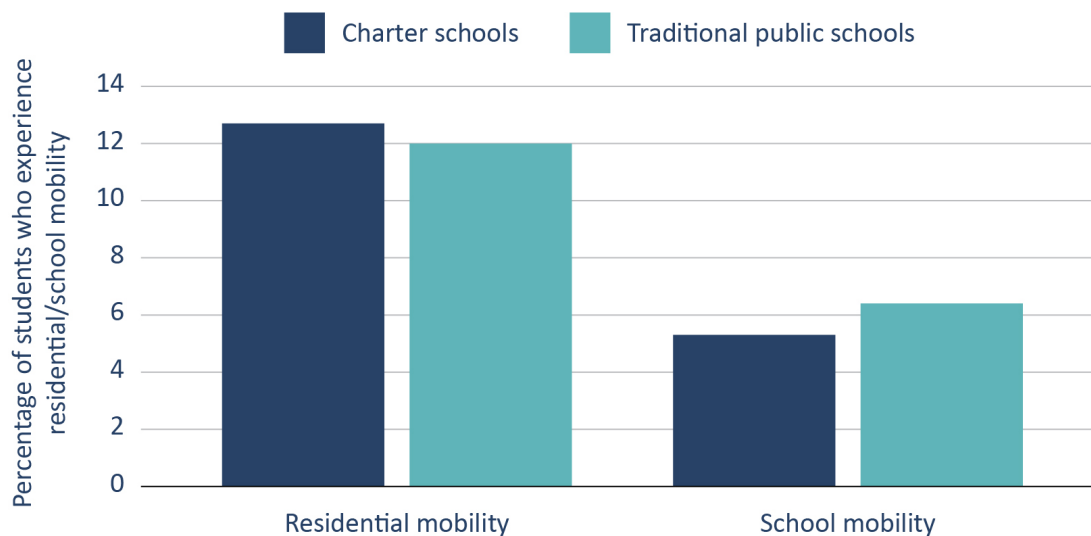


Notes: This figure shows the percentages of low-income and high-income students in North Carolina who experienced residential and/or school mobility between 2016-17 and 2018-19. "Structural" school moves (i.e., moves that students are obliged to make due to grade-span configurations) are not included in these estimates.

Finding 3: Residentially mobile students in charter schools are less likely to change schools than their counterparts in traditional public schools.

Per Figure 6, despite the fact that students in charter schools have a slightly higher residential mobility rate than students in traditional public schools (12.7 percent vs 12.0 percent), students in charters are somewhat less likely to change schools than students in traditional public schools (5.3 percent versus 6.4 percent). Moreover, residential mobility only is somewhat more common in the charter school population, whereas school mobility only and “compound” mobility are somewhat less common (not shown).

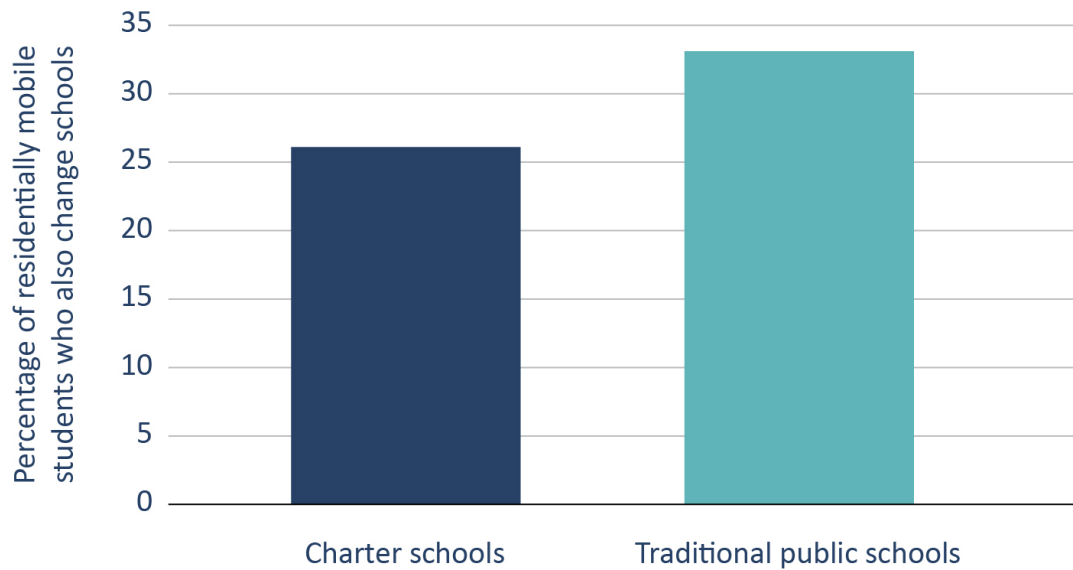
Figure 6. Despite having slightly higher rates of residential mobility, students in charter schools have slightly lower rates of school mobility.



Notes: This figure shows the percentages of charter and traditional public school students in North Carolina who experienced residential and/or school mobility between 2016-17 and 2018-19. “Structural” school moves (i.e., moves that students are obliged to make due to grade-span configurations) are not included in these estimates.

Per Figure 7, these patterns may be explained by the fact that, for charter school students, a residential move is less likely to trigger a school move. Roughly speaking, about one in three residentially mobile students in a traditional public school switches schools, versus about one in four residentially mobile students in a charter school.

Figure 7. Residentially mobile students in charter schools are less likely to change schools than residentially mobile students in traditional public schools.

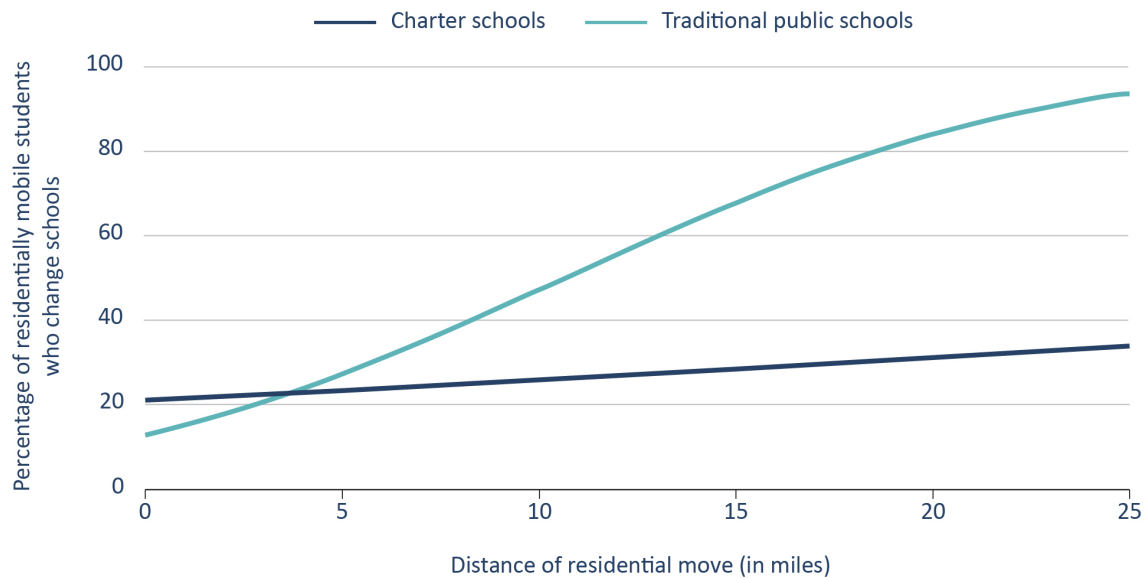


Notes: This figure shows the percentages of residentially mobile students in charter and traditional public school students in North Carolina who experienced school mobility between 2016-17 and 2018-19. "Structural" school moves (i.e., moves that students are obliged to make due to grade-span configurations) are not included in these estimates.

Figure 8 unpacks the relationship between residential and school mobility across the two sectors by plotting the distance of the residential move against the probability of a school move for students initially observed in a charter versus a traditional public school. Per the figure, the slope of the graph for students in traditional public schools is much steeper than the slope of the graph for students in charter schools. In other words, relative to students in traditional public schools, students in charter schools become increasingly less likely to change schools as the distance of the move increases. For example, even at distances of greater than twenty miles, students in charter schools have a less than 40 percent chance of switching schools. Yet for students in traditional public schools, the equivalent figure is at least 80 percent.

Because students who make longer residential moves are more likely to leave their traditional public school's catchment zone, this growing divergence between charter and traditional public schools makes sense. After all, most charters don't have catchment zones, so nothing prevents families who change residences from reenrolling, provided some form of transportation can be arranged.

Figure 8. As the distance of the residential move increases, students in charter schools become less likely to change schools than those in traditional public schools.



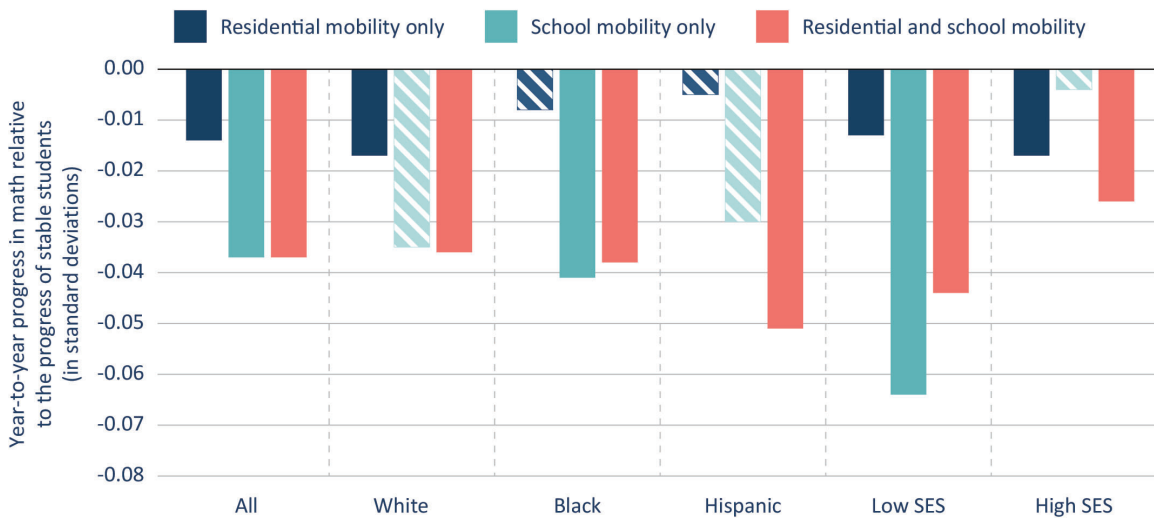
Notes: This figure shows how the probability of school mobility increases for residentially mobile students as the distance of the residential move increases. The sample includes only students who made a residential move of twenty-five miles or less. TPS and charter status are defined at baseline (i.e., before the residential move occurred). Estimates were generated using a probit model with distance of a residential move with the predictor and school move as the outcome.

Per the figure, many charter school students seem willing and able to drive long distances to remain enrolled – an intuition that is also supported by other data. For example, on average students in North Carolina charters have longer commutes than students in the state’s traditional public schools (6.6 versus 3.9 miles), with about 22 percent of charter school students in the state crossing traditional school district lines.¹⁶ Yet the figure also shows that for short-distance moves (which are far more common), charter school students are more likely to switch schools than their counterparts in traditional public schools. Although we cannot definitively assess the reasons for this, it is possible that families that enroll their children in charters have a higher tolerance for school mobility and/or a stronger desire to optimize school quality than families that enroll their children in traditional public schools.

Finding 4: Residential mobility, school mobility, and “compound mobility” are all associated with a small decline in math achievement and a slight increase in suspensions.

On average and controlling for many of the determinants of mobility, students who experience any form of mobility—residential, school, or compound—make slightly less progress in math the following year (see Figure 9). However, the negative effects of residential mobility are smaller than the effects of school mobility only and of compound mobility.

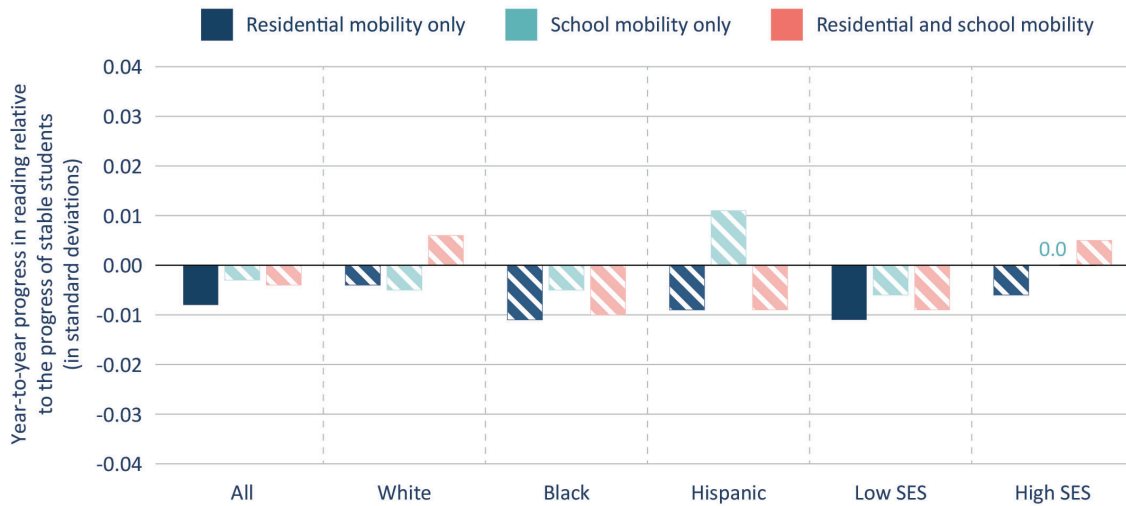
Figure 9. Compared to stable students, students who move tend to make less progress in math, especially when they change schools.



Notes: This figure shows estimated changes in average math test scores for North Carolina students who experience residential mobility, school mobility, or both. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors. Bold coloring denotes statistical significance at the 95 percent confidence level and shaded stripes denote nonsignificance.

In contrast, there is no significant association between any type of mobility and reading growth for most student groups (see Figure 10), although a small subset of students who switch from charter schools to traditional public schools appears to benefit in reading (see *Do the outcomes associated with residential and/or school mobility differ by sector?*, pg. 20).

Figure 10. In reading, students who change residences and/or schools perform similarly to stable students.

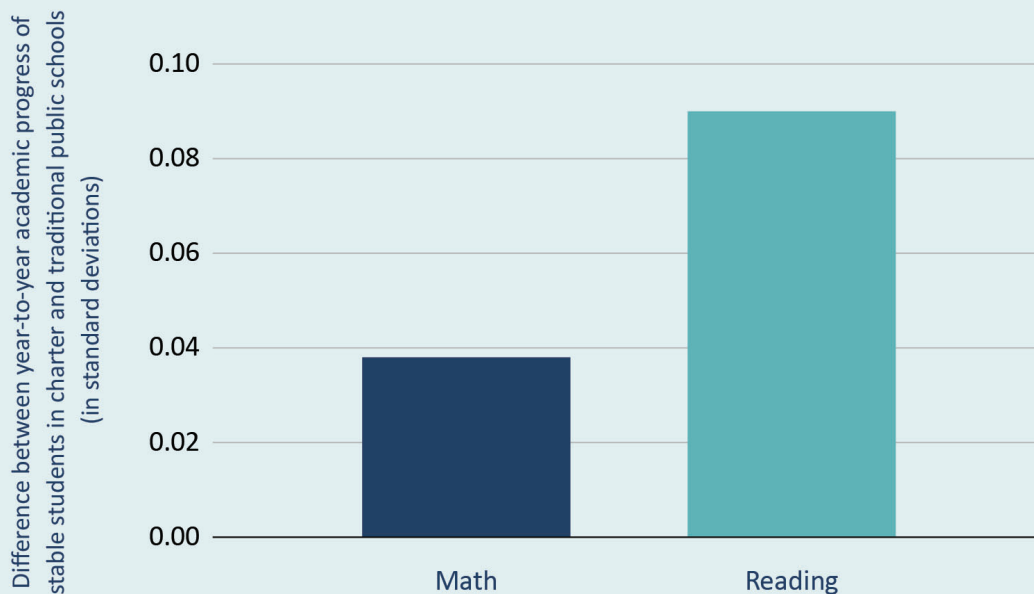


Note: This figure shows estimated changes in average reading test scores for North Carolina students who experience residential mobility, school mobility, or both. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors. Bold coloring denotes statistical significance at the 95 percent confidence level and shaded stripes denote nonsignificance.

Do the outcomes associated with residential and/or school mobility differ by sector?

Overall, the data suggest that students in charter schools make strong year-to-year progress, particularly in reading. Per Figure 11, this is largely because the five-sixths of stable students who do not experience residential or school mobility in a given school year make faster academic progress in charters than in traditional public schools.

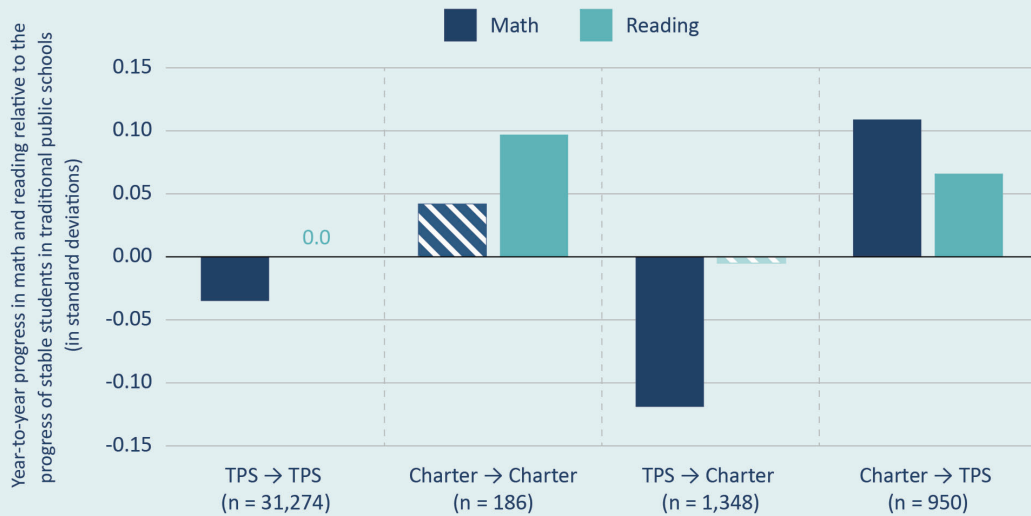
Figure 11. Stable charter school students who do not change residences or schools make faster academic progress than their counterparts in traditional public schools.



Notes: This figure shows the difference between the average academic progress of students in North Carolina's charter and traditional public school by mobility group. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors.

Yet, a small subset of students—about 4 percent of charter school students and roughly 0.3 percent of all publicly enrolled students in a given school year—experience an initial decline in math achievement when switching from a traditional public school to a charter school (see Figure 12).

Figure 12. Students who switch from a traditional public school to a charter experience an initial decline in math achievement, while those who switch from a charter to a traditional public school make faster progress in both math and reading.



Notes: This figure shows initial academic progress for North Carolina students who change schools. T → T means a school move from a TPS to a TPS; C → C means a move from a charter to charter; T → C means a move from a TPS to charter; and C → T means a move from charter to TPS. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors. Bold coloring denotes statistical significance at the 95 percent confidence level and shaded stripes denote nonsignificance.

Importantly, these estimates only capture students’ initial experiences (i.e., their experiences in the year immediately following a change in school), which may be misleading insofar as the relative performance of students who transfer into charters improves over time, as the most recent national estimates of charter school performance suggest¹⁷ (and of course, the more students who enroll in charter schools, the fewer who will find it necessary to make such a move in the first place—and the more stable a typical student’s education experience is likely to become).

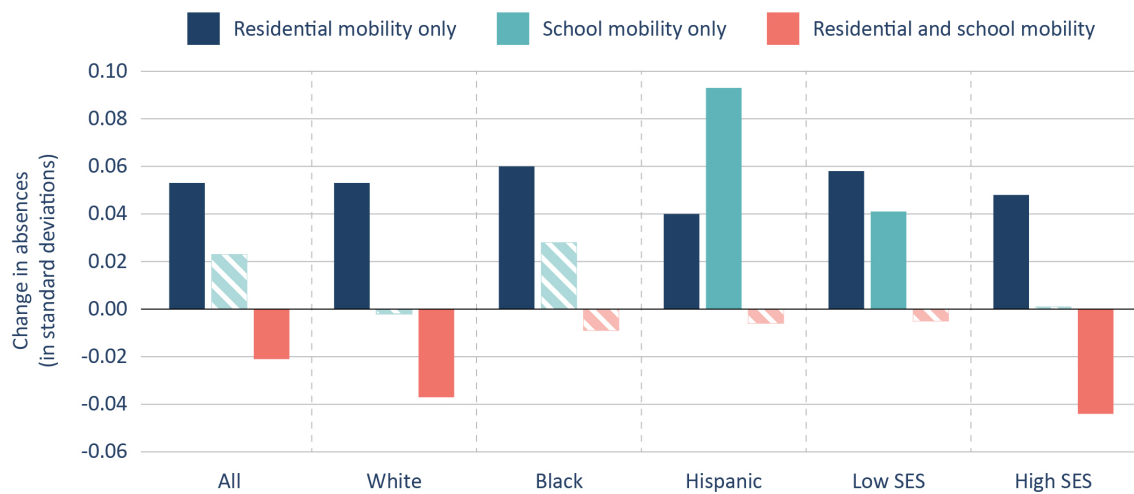
Without more insight into why these students are leaving their traditional public schools or what is happening to them once they arrive, it is hard to make any specific recommendations. But given the consistency of this pattern, it would behoove both researchers and those closer to the classroom to investigate further.

Mobility is also associated with small increases in suspensions and/or absences for some groups in some mobility categories (Figures 13 and 14). More specifically, per Figure 13, residential mobility only is consistently associated with an increase in absences for all students. This may be explained by an increased distance between home and school or moving outside a bus or walk zone. In contrast, school mobility only is associated with increases in absences for Hispanic and low-SES students, and compound mobility (both types concurrently) is associated with a decline in absences for higher-SES students.

As shown in Figure 14, mobility is associated with some small increases in suspensions, although effects differ by subgroup. Those who only change residences tend to see an increase in suspensions. These effects are strongest for Black and low-SES students. In contrast, moving schools only is not consistently associated with strong effects on suspensions, with the exception of high-SES students. Finally, among students who experience both forms of mobility, White and low-income students tend to see an increase in suspensions, although that is less true for Black and Hispanic students.

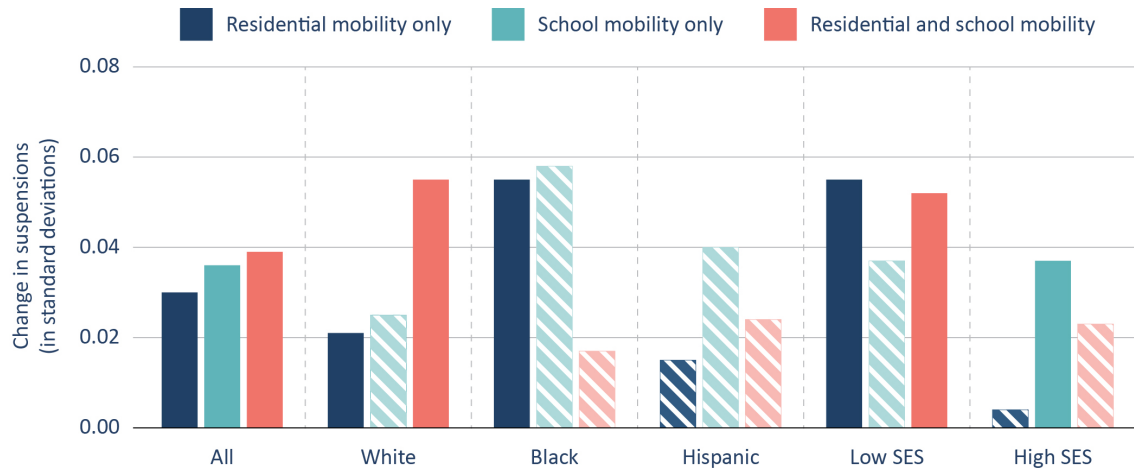
Note, however, that the estimates presented in this section only capture the initial experiences of mobile students—that is, their experiences in the year immediately following their move.

Figure 13. On average, students who change residences are slightly more likely to be absent, while those who change schools (or residences and schools) are less likely.



Notes: This figure shows the estimated change in absences for North Carolina students who experience residential mobility, school mobility, or both. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors. Bold coloring denotes statistical significance at the 95 percent confidence level and shaded stripes denote nonsignificance.

Figure 14. On average, students who change residences and/or schools are slightly more likely to be suspended.



Notes: This figure shows the change in suspensions for North Carolina students who experience residential mobility, school mobility, or both. Regression models adjust for prior test scores, prior level of absences, prior level of suspensions, and neighborhood SES, among other factors. Bold coloring denotes statistical significance at the 95 percent confidence level and shaded stripes denote non-significance.

Conclusion

Broadly speaking, the results are consistent with the hypothesis outlined in the introduction: Students who change residences are often forced to change schools in an education system that is based on local attendance zones, and students who change schools make slightly less academic progress and are slightly more likely to be absent or suspended. Thus, insofar as it reduces the incidence of involuntary school switching, expanding school choice may hold particular benefits for residentially unstable and/or mobile students.

In short, the right to school choice isn't just about parents' and students' right to leave when conditions are unacceptable. It is also about their right to stay put.

Limitations

Obviously, students are not randomly assigned to new residences or schools. Therefore, despite the fact that we control for observable student characteristics, the results are fundamentally associational.

In addition, the data that are the basis for this report have some limitations. First, students' home addresses have no dates or time ordering other than the year in which they appear. Consequently, we cannot measure departure and destination addresses within a school year and cannot definitively match student addresses with other within-year data (e.g., absences and suspensions). Furthermore, we only have three years of address data, so a four-year outcome such as high school graduation is out of bounds (as are long-run effects on test scores). Finally, we do not have access to school catchment area shape files to determine which traditional public school a student is assigned or the distance from the student's address to their assigned school.

Technical Appendix

We use the following abbreviations for the study's key student-level variables:

- RM – residential mobility indicator
 - 1 if moved residences at least once between school years, 0 otherwise
- SM – school mobility indicator
 - 1 if moved schools at least once between school years, 0 otherwise
- CH – charter indicator
 - 1 if attended a charter in the current year, 0 otherwise
- Y – a student end-of-year outcome (test score, absences, GPA, suspensions, etc.)
 - these will be either continuous or binary
- X' – student level control vector
 - includes lagged test scores, absences, and suspensions
 - therefore, in equations with outcomes and lags of the same outcomes, we will be measuring adjusted growth models
- θ_n
 - neighborhood fixed effects

For the findings reported in Section 2, the effects of mobility on gains in outcomes, we regressed study outcomes (e.g., test scores, absences, grades, etc.) on a multinomial mobility variable that is coded as stable (baseline category), RM only, SM only, or RM and SM. Our linear model predicting a continuous outcome for student i in tract n at time t , we estimated

$$Y_{int} = \beta_0 + \beta_1 \text{Mobility}_{int} + \gamma X' + \theta_n + \epsilon \quad (1)$$

This model decomposes the unique effects of SM and RM and of compound mobility (experiencing both SM and RM). It includes control variables, including lags, and census tract fixed effects, so the results can be interpreted as adjusted gains of the outcome with comparisons restricted to students within the same census tracts.

To further understand the relationship between mobility and student outcomes for charter students relative to TPS students, we estimate the following model with the three types of mobility variables and their associated interaction terms:

$$Y_{int} = \beta_0 + \beta_1 \text{Mobility}_{int} + \beta_2 \text{CH}_{it-1n} + \beta_3 \text{Mobility}_{int} \text{XCH}_{it-1n} + \gamma X' + \theta_n + \epsilon \quad (2)$$

This model permits examination of charter versus TPS differences in the effects of stability and mobility. We cluster correct all standard errors to adjust for the nonindependence of observations within schools.

Measurement of neighborhood SES

There are many concerns about using free and reduced-price lunch as a proxy for socio-economic status (SES). Among them is that it only measures whether a family has low income; it does not capture the full range of income, and it does not capture other relevant factors related to educational success such as parental education. Another is that charter schools are not required by the state of North Carolina to participate in the federal school lunch program, which makes consistent measurement across traditional public schools and charters impossible on the basis of program participation.

Our neighborhood SES measure is a proxy for family SES in the sense that it is linked to the child's home address's census tract via his/her home address. It consists of median earnings, unemployment rate, poverty rate, college-educated percentage, and percent single-headed household, all measured as part of the 2010 census. These components were standardized and averaged to create a tract SES scale ($\alpha = .87$). If free/reduced-price lunch (FRL) was a valid measure of SES, we would expect the correlation of track level percentage of FRL and average SES to be similar for the TPS and charter populations. This is not the case. Among charter students, the correlation is $-.46$, and for TPS students it is much stronger at $-.76$. This disparity indicates possible weakness in the measurement of family income by charter schools.

Endnotes

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