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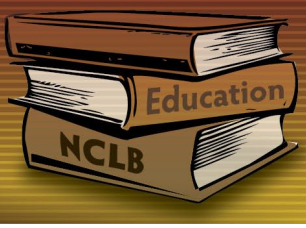

Can NCLB Choice Work?

Modeling the Effects of Interdistrict Choice on Student Access to Higher-Performing Schools

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BY

Meredith P. Richards

Kori J. Stroub

and

Jennifer Jellison Holme

Headquarters: 41 East 70th Street – New York, NY 10021 – 212.535.4441 – 212.535.7534 (Fax) – info@tcf.org – www.tcf.org
D.C. Office: 1333 H Street, NW – 10th floor – Washington, D.C. 20005 – 202.387.0400 – 202.483.9430 (Fax) – info@tcf.org – www.tcf.org

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The Policy Context

Under current No Child Left Behind (NCLB) legislation, a Title I school is deemed "in need of improvement" if it fails to make Adequate Yearly Progress (AYP) for at least two consecutive years. Moreover, students attending schools in need of improvement are eligible to transfer, at the cost of the district, to another public school within their home district that is not in need of improvement. Despite skyrocketing numbers of schools identified as in need of improvement, the number of students taking advantage of choice under NCLB has been extremely low.[1] As Figure 1 reveals, between 2003 and 2005, fewer than 2 percent of the students eligible to transfer to other schools in their district actually took advantage of this option. Moreover, while the number of students enrolled in schools labeled in need of improvement increased by approximately 300 percent between 2003 and 2005 (from 1.5 million to 6.1 million), actual rates of participation in NCLB choice declined over this period.

Figure 1. Number of Students Eligible to Participate in NCLB Choice and Percent Participating, 2003-2005

Source: State and Local Implementation of the No Child Left Behind Act, Volume IV—Title I School Choice and Supplemental Educational Services: Interim Report (Santa Monica, Calif.: RAND Corporation, 2008), http://www.rand.org/pubs/reprints/RP1332/.

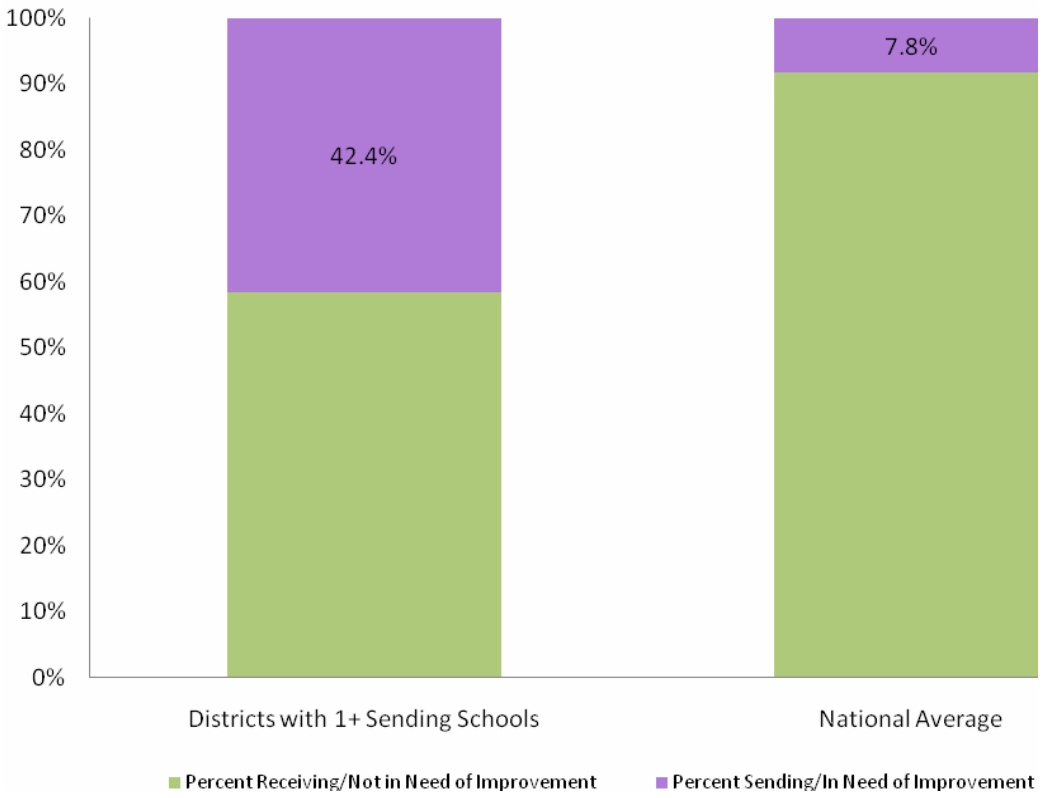
What makes these participation rates even more troublesome is the fact that, despite NCLB's emphasis on reducing the achievement gap and targeting students in high-poverty and high-minority schools, participation rates for racial and ethnic minorities lag behind those of white students. In 2004–05, 1.1 percent of eligible white students took advantage of the NCLB choice option, while only 0.9 percent of African Americans and 0.4 percent of Hispanics chose to transfer to a higher-performing school.[2]

While some have argued that low participation rates are a result of parental preferences for neighborhood schools,[3] others suggest that the NCLB school choice program has failed because it does

not provide high-quality options to most students in failing schools. By limiting the options of students in failing schools by allowing to choose among only the other schools in their districts, NCLB choice suffers from a fundamental problem of inadequate supply of schools eligible to receive transfer students (that is, schools not in need of improvement, known as "receiving schools").[4]

Supporting this argument of inadequate supply, schools eligible to send transfer students under NCLB choice (that is, schools in need of improvement, known as "sending schools") are often situated in districts that have few, if any, eligible receiving schools, resulting in few to no intradistrict choice options available to eligible students. Figure 2 demonstrates that districts with at least one eligible sending school have higher proportions of schools in need of improvement than the national average. In 2004–05, the most recent year for which national data are available, 42.4 percent of campuses in districts with at least one eligible sending school are also in need of improvement. This stands in stark contrast to the national average for districts; on average, only 7.8 percent of campuses are deemed in need of improvement.

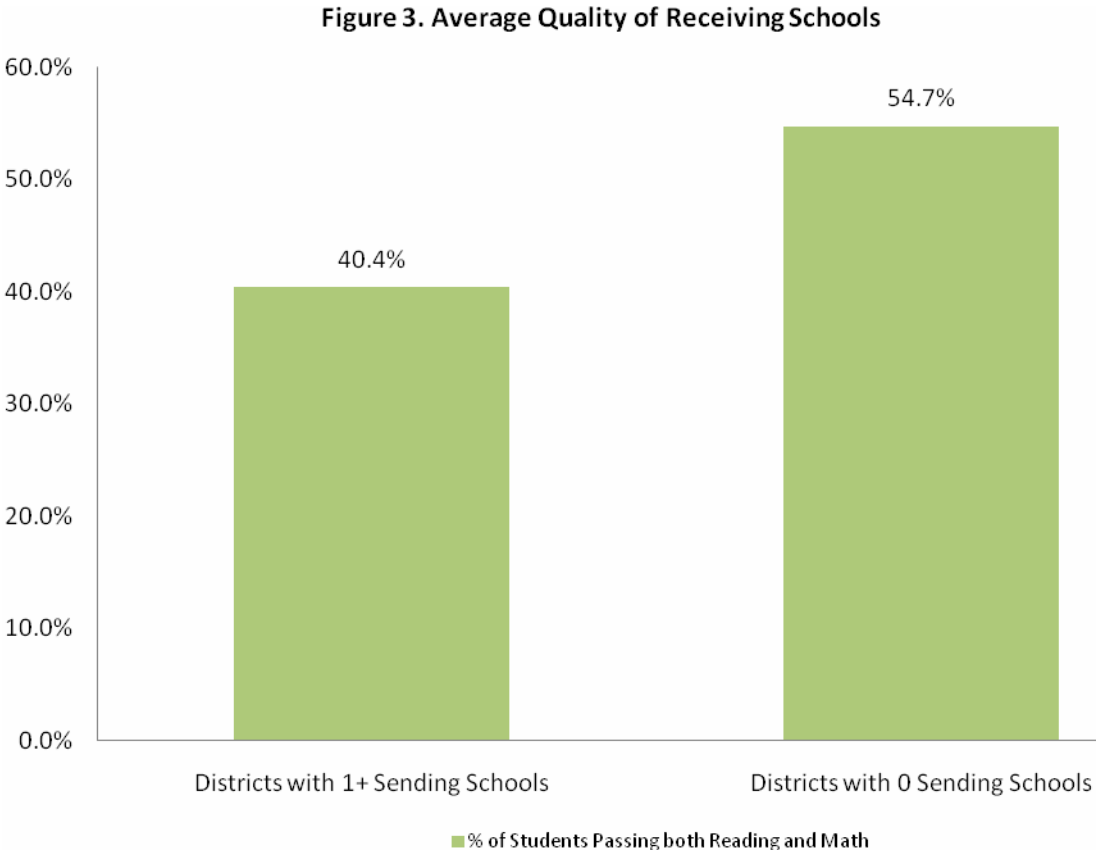
Figure 2. Percent of Schools in Need of Improvement



Source: National AYP and Identification (NAYPI) database, 2004-05, http://www.air.org/focus-area/education/index.cfm?fa=viewContent&content_id=860.

Exacerbating the scarcity of supply of eligible receiving schools in districts that have schools in need of improvement is the fact that those receiving schools that are available tend to perform only marginally better, at least in terms of test scores, than the schools from which students might transfer.[5]When compared to districts without schools in need of improvement, the receiving schools in districts with schools in need of improvement are substantially lower quality in terms of the proportions of students

passing NCLB assessments in both math and English (see Figure 3). Specifically, receiving schools in districts with one or more eligible sending schools have a combined math/English pass rate nearly 15percentage points lower than receiving schools in districts with no eligible sending schools.



Source: National AYP and Identification (NAYPI) database, 2004-05, http://www.air.org/focus-area/education/index.cfm?fa=viewContent&content_id=860; National Longitudinal School-Level State Assessment Score Database (NLSLSASD), 2004-05, http://www.schooldata.org/.

Expanding Options through Interdistrict Choice

Citing the *de facto* limitation on intradistrict NCLB choice imposed by the limited supply of high-quality receiving schools in the districts of schools labeled as in need of improvement, a number of reformers have proposed redesigning rather than abolishing the policy, so that students could transfer to schools *outside* their home district.[6]Such an interdistrict NCLB choice policy could theoretically provide students trapped in failing schools and districts with greater access to higher-performing schools by allowing them to cross district boundaries. Available data shows that, compared to the average non-failing school, schools in need of improvement are far more likely to be located in districts with large clusters of relatively low-performing schools. Consequently, allowing students to attend schools in other districts in their metropolitan area would, on average, allow them to access schools of substantially higher quality. Indeed, as Figure 3 reveals, the combined math/English pass rate of receiving schools under conditions of interdistrict choice would be 20 percentage points higher than under conditions of intradistrict choice.

Consistent with this emphasis on interdistrict choice, the Obama administration's blueprint for reform would seek to expand meaningful NCLB choice through the dissemination of competitive grants that give priority to districts or consortia of districts that enact interdistrict choice policies. Under existing NCLB choice regulations, districts with numerous failing schools and few viable choice options are encouraged to enter into cooperative agreements with surrounding districts "to the extent practicable."[7] However, these arrangements are voluntary and are rare in practice.[8] The blueprint would increase the federal commitment to interdistrict choice by offering monetary incentives for districts to enter into cooperative interdistrict arrangements.[9] At the same time, the Obama proposal dilutes the current law's intradistrict choice provisions by eliminating the requirement that districts offer any choice to students in schools identified as in need of improvement.

The Obama administration's proposal constitutes one of the many possible formulations a federal interdistrict choice policy might take. An interdistrict choice policy may be mandatory, like the current NCLB intradistrict choice policy, or it may be voluntary, with participation encouraged via the provision of financial incentives for participating districts. It may be universal, whereby all eligible students are equally eligible to transfer, or it may be targeted at certain disadvantaged subgroups, such as low-performing students, or non-white or low-income student populations. Likewise, choice may be equally available to students in all eligible sending schools or it may be targeted at students in the lowest-performing schools. In addition, interdistrict arrangements may vary in scale, ranging from cooperative agreements between two or more districts to a more regional solution incorporating all districts in a metropolitan area.

Can NCLB Interdistrict Choice Succeed?

Despite the burgeoning federal emphasis on interdistrict choice, there has been surprisingly little research evaluating whether an NCLB interdistrict choice program holds the potential to meaningfully expand choice beyond existing NCLB intradistrict choice provisions. Two recent reports by Education Sector policy analyst Erin Dillon have attempted to model the effects of NCLB interdistrict choice.[10]Using an innovative geographic information system-based (GIS) approach that counted the number of higher-performing schools within a fixed drive distance, Dillon evaluated the extent to which students could potentially benefit from interdistrict choice. On the basis of this analysis, Dillon concluded that "permitting students to move further, beyond school system boundaries, is unlikely to increase most students' educational opportunities significantly," owing largely to prohibitive increases in travel time to higher-performing schools and capacity limitation of eligible receiving schools.[11] In a subsequent study examining the potential effects of targeting choice to lowest-performing schools and students, however, Dillon concluded that tailored interdistrict choice programs may yield "more robust results" than would more generic programs.[12]

The validity of both reports' conclusions, however, is undermined by the problematic method of modeling interdistrict choice.[13] Specifically, the method of quantifying choice is premised on a number of arbitrary assumptions regarding student eligibility for choice, school capacity, and the time students are willing to travel to attend a higher-performing school.[14] First, the reports define students eligible to transfer as "students in the bottom 40 percent of schools," as measured by Reading and Math Proficiency (RAMP) scores. This lacks validity as a measure of student eligibility for NCLB choice, as it is inconsistent with the NCLB eligibility criterion of failing to make AYP for two or more consecutive years.

Additionally, the reports impose a 10 percent cap on capacity beyond current enrollment for all receiving schools, despite a lack of empirical evidence regarding actual school capacity. Likewise, the reports limit travel time to twenty minutes, based on the average commute time reported in a 2001 travel survey. Anecdotal evidence from existing choice programs (for example, Boston's Metco program), however, suggests that this figure may dramatically underestimate the time students are willing to travel to a higher-performing school.[15]

Moreover, instead of focusing on schools in metropolitan areas—which have higher levels of school density, where proponents believe interdistrict choice would be most effective, and where more than 90 percent of all students reside[16]—Dillon's analysis examined schools in remote and rural areas. Evidence on eligibility rates for NCLB choice has demonstrated that students in schools in more sparsely populated areas are generally less likely to be eligible to participate in NCLB choice than students in suburban and, in particular, urban areas. Indeed, in 2004–05, Title I schools in rural areas were half as likely to be required to offer NCLB choice as suburban schools, and a third as likely as schools in urban areas.[17] Dillon's inclusion of rural schools may have downwardly biased her findings about the potential for interdistrict choice to increase options for students in low-performing schools, because of the prohibitive driving time within rural areas.[18] While Dillon's follow-up analysis[19] does focus on a single urban metropolitan area (Chicago), it relies on similar problematic assumptions regarding eligibility for NCLB choice.[20]

Taken together, both reports fail to examine the effects of NCLB systematically across different types of metropolitan areas with different geo-political configurations.[21]As a result, they provide policymakers with little useful information about the impact of expanding choice in those areas where policymakers believe it most necessary: densely populated metropolitan areas.

Modeling the Effects of NCLB Interdistrict Choice

This report presents a study that examines the potential for an NCLB interdistrict choice policy to expand student access to higher-performing schools beyond the existing intradistrict choice policy using a modeling technique adapted from the human geography literature. This study corrects for a number of the limitations of the reports outlined above, by examining NCLB interdistrict choice in a national context and attending to the metropolitan contexts in which it is most likely to be effective. Towards this end, the study addresses the following primary research question:

> *Would an NCLB interdistrict choice policy increase student access to higher-performing schools beyond NCLB intradistrict choice?*

It should be noted that the proposed policy being tested in this study assumes an NCLB interdistrict choice policy that is parallel in structure to the current NCLB intradistrict choice policy, with transfer eligibility based on whether a school failed to make AYP for two or more years. Specifically, the policy being tested is mandatory inasmuch as it assumes that students would have the automatic right to transfer from low-performing schools to higher-performing schools in nearby districts. It is universal, in that all students at all schools in need of improvement are equally eligible to transfer. And it is large-

scale, in that it assumes that students in schools in need of improvement would be permitted to transfer to any eligible receiving school in their metropolitan area.

It is also important to note that the purpose of the study is to assess the potential availability of higher-performing options available to students under interdistrict choice, not to determine whether students will actually take advantage of these options. It is acknowledged that systematic differences in parental and student school preferences and capital to realize these preferences will ultimately influence actual choice behaviors. However, access to higher-performing schools is a necessary precondition to allow parents to exercise their choice preferences.

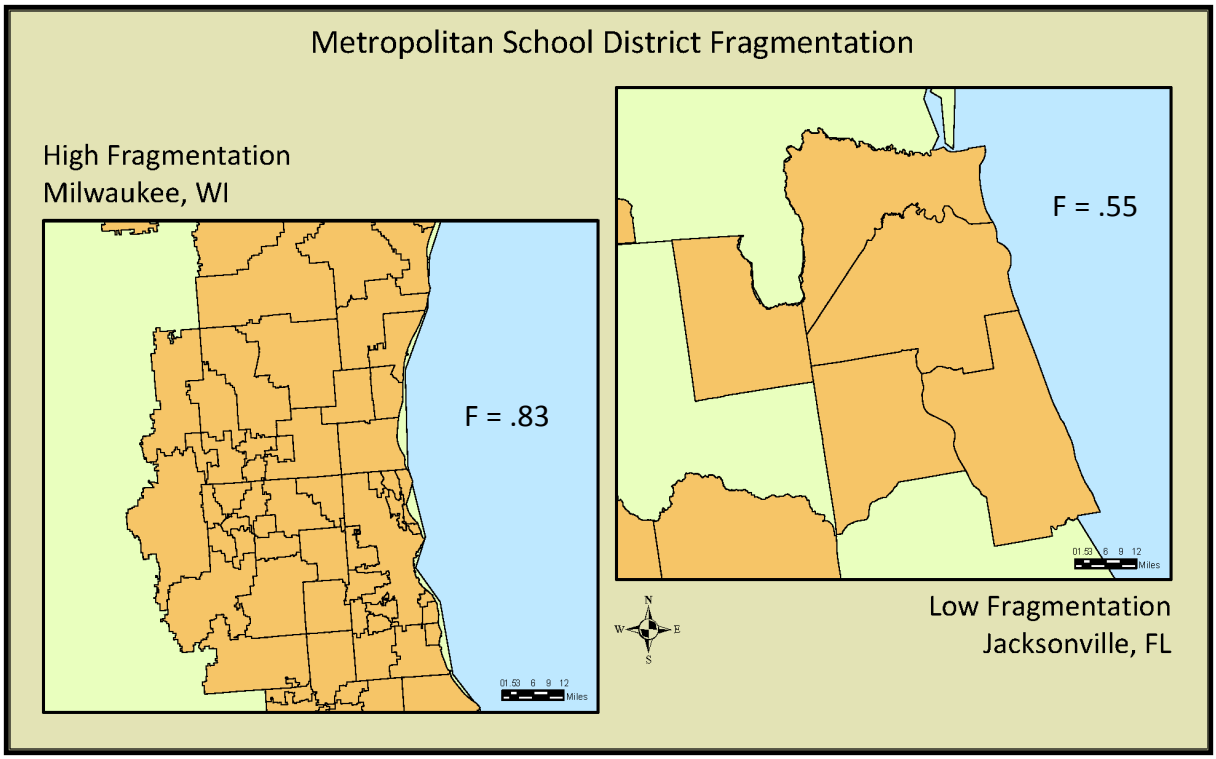
Contextual Effects

In addition to determining the overall change in accessibility to higher-performing schools that students would experience under interdistrict choice, the study also seeks to identify those school and metropolitan contexts under which such a policy would be more or less effective. At the school level, this study evaluates the extent to which an interdistrict choice policy would specifically benefit students in high-poverty and high-minority schools. Given the federal emphasis on improving the performance of students in high-poverty, high-minority schools and on prioritizing choice programs that promote diversity, these populations are of particular concern. As such, the current study addresses the following research question:

> *Would the effect of an NCLB interdistrict choice policy depend on a school's proportion of low-income and non-white students?*

At the metropolitan level, this study examines the role of the proliferation of school districts in a metropolitan area,[22] known as metropolitan fragmentation, in expanding and limiting the choices available to students under NCLB choice. Metropolitan statistical areas (MSA) vary significantly in terms of the number and size of their school districts, with metropolitan areas with larger numbers of districts having higher levels of fragmentation than metropolitan areas with smaller numbers of districts, holding the total number of students constant. Map 1 illustrates the difference between the highly fragmented Milwaukee metropolitan area, where 239,912 students are distributed across 68 school districts, and the less fragmented Jacksonville metropolitan area, which accommodates a similar-sized student population of 206,414 in only 7 districts.[23]

Map 1



Fragmentation may be calculated as the probability that two students in the same MSA will attend schools in different districts, controlling for the metropolitan population.[24] Fragmentation values range from 0 to 1, where 0 indicates that all students in an MSA attend the same district (that is, zero fragmentation) and 1 indicates that all students in an MSA attend different districts (that is, perfect fragmentation). For example, using this formula, the fragmentation value for Milwaukee is 0.83, while the value for Jacksonville is 0.55. This means that two students in Milwaukee have an 83 percent chance of attending different districts, while students in Jacksonville have a 53 percent chance of attending different districts. The formula for fragmentation is presented in Appendix A.[25]

Because metropolitan fragmentation is related to the probability that students will reside in the same district, on average, highly fragmented MSAs tend to have fewer students per district than less fragmented MSAs (for example, Milwaukee has 3,528 students per district, while Jacksonville has 29,488 students per district). Thus, holding school size constant, highly fragmented MSAs will have fewer schools per district than less fragmented MSAs. For example, Milwaukee has an average of 77 schools per district, while Jacksonville has 104 schools per district. District boundaries thus impose a limit on the supply of available receiving schools, whereby highly fragmented MSAs may have fewer viable transfer options under intradistrict choice. As such, highly fragmented metropolitan areas may be expected to experience the greatest gains in choice under an NCLB interdistrict school choice policy.

The phenomenon of metropolitan fragmentation is especially salient given that, after nearly a century of school district consolidation resulting in dramatic declines in the number of school districts in the United States, the past three decades have witnessed substantial increases in the total number of school districts and associated measures of metropolitan fragmentation.[26] This growth in metropolitan

fragmentation highlights the potential for educational policies that transcend district boundaries and underscores the importance of understanding how fragmentation would influence the effectiveness of an NCLB interdistrict choice policy. Toward these ends, this study addresses the following research question:

Would the effect of an NCLB interdistrict choice policy depend on a metropolitan area's level of school district fragmentation?

Accessibility Model

Student access to higher-performing schools was calculated using a gravity model of accessibility, of the type used in the study of human geography. Gravity models have been consistently shown to accurately predict travel behavior[27] and have been used extensively in the urban planning, transportation, and public health literatures to model accessibility of resources such as grocery stores, bus stops, and health clinics.[28]

In a traditional gravity model, accessibility of a set of destinations to a given origin is computed as a function of the travel time between the origin and each destination as well as the attractiveness of each destination. Specifically, the attractiveness of each destination is discounted by the time required to reach that destination, such that as the travel time between an origin and destination increases, accessibility decreases, holding constant the level of attractiveness between the origin-destination pair. Similarly, as the attractiveness of a destination increases, accessibility increases, holding constant the travel time between the origin and destination. The formula for a simple gravity model of accessibility is presented in Appendix B.

Accessibility models have not yet been applied to the realm of education; however, school choice presents an ideal opportunity to leverage such an approach. Dillon identified[29] three factors that influence the choices available to students: (1) the quality of schools to which students might transfer, (2) the drive time to higher-performing schools, and (3) the capacity of receiving schools to accommodate transfer students. The first two of these factors generally correspond with the components of the traditional accessibility model: school quality is a measure of the attractiveness of receiving schools, while student travel time to school serves as a constraint to student's ability to access higher-performing receiving schools.

Although traditional gravity models do not contain a capacity constraint on accessibility comparable to that identified by Dillon, this constraint is critical in the school choice context, as schools do not have an infinite capacity to accept new students. As such, the traditional model was modified for the school context, constraining accessibility by the capacity of receiving schools to accommodate transfer students. Thus, as the capacity of a receiving school increases, accessibility increases, holding constant the quality of the receiving school and the travel time between the sending-receiving pair. The formula for the modified gravity model of accessibility used in this analysis is presented in Appendix B.

It should be noted that, because it is a composite of attractiveness and drive time, the gravity-based accessibility index is not as readily interpretable in an absolute sense as more simplistic accessibility measures, such as those produced by "cumulative opportunities" models. Such models, like those used by Dillon,[30] essentially count the number of destinations available to each point of origin, resulting in

metrics that are easily interpretable. However, such measures weigh all opportunities equally, providing a rather crude conceptualization of accessibility. For example, under a cumulative opportunities model, a school located in a district with five eligible receiving schools, each with a combined math/English pass rate of below 50 percent, would have the same accessibility score as a school located in a district with five eligible receiving schools, each with a combined math/English pass rate of above 80 percent. Likewise, a school in a district with five eligible receiving schools, all of which are more than ten miles away, would have the same accessibility score as a school in a district with five eligible receiving schools within a three-mile radius. A gravity-based accessibility model, however, would take into account both the quality and distance to each receiving school, and weigh their accessibility accordingly.

The theoretical shortcomings of the cumulative opportunities approach are evident in its lack of predictive power. A cumulative opportunities model, for example, would fail to provide insight into the disparity between rates of eligibility and rates of participation in NCLB intradistrict choice presented in Figure 1. A gravity-based accessibility model, however, which takes into account factors related to individual preferences, would predict that participation would be low on the basis of the low quality of eligible receiving schools in the districts with schools in need of improvement (see Figure 3).

Model Components

Relative School Quality. Because the attractiveness of a receiving school to students at a sending school is a function of the quality of both schools, the quality component of the accessibility model was computed in terms of the quality of each receiving school relative to the quality of each sending school. Specifically, the quality, *q,* of each sending and receiving school was operationalized as the probability of a student at that school passing both the math and English assessments used by the state for calculating AYP.[31] These measures of quality were then compared for each sending-receiving pair to determine how much more likely a student at each receiving school was to pass both math and English than at the sending school. This approach allows for a direct comparison of the relative attractiveness of a set of eligible receiving schools to a given sending school.

For example, if a sending school has a math pass rate of 50 percent and an English pass rate of 50 percent, the probability of a student at that school passing both math and English assessments is 0.25. If an eligible receiving school has a math pass rate of 75 percent and an English pass rate of 95 percent%, the probability of a student at that school passing both math and English is 0.71. Thus, the relative quality of the sending-receiving pair is 0.71-0.25, or 0.46, meaning that 46 percent more students at the receiving school passed both math and English than students at the sending school. If a second eligible receiving school has an overall quality of 0.50, the relative quality of that receiving school to the sending school above is 0.50-0.25, or 0.25. While students at both eligible receiving schools outperform students at the sending school, the first receiving school has a higher relative quality than the second receiving school (0.46 versus 0.25) and can be considered, all else being equal, nearly twice as attractive to eligible transfer students.

Receiving School Capacity. Because schools do not have an infinite capacity to accept new students, accessibility must be constrained by the receiving school's capacity, *c.* Unfortunately, there is no existing standard for measuring or reporting school capacity. Limited data on physical capacity are available; however, physical capacity may not reflect the actual capacity of a school to take on additional students. While not a traditional measure of capacity, student-teacher ratios (STRs) provide insight into a school's

capacity to accommodate more students. Based on the assumption that the 75th percentile of the distribution of student-teacher ratios in the state in which the school is located reflects a reasonable STR (where schools in the 1st percentile have the lowest STRs and schools in the 99th percentile have the highest STRs), the STR of each receiving school was compared to this figure to determine the total residual capacity of all eligible receiving schools.[32] For example, if an eligible receiving school has an STR of 15.6, and the state's 75th percentile of STRs for schools of that level is 18.1, the receiving school has 16.0 percent residual capacity to accommodate transfers. Conversely, if an eligible receiving school has an STR of 18.2 or higher, it is assumed to have zero residual capacity to accommodate transfers.

Since receiving schools must share their residual capacity among multiple competing eligible sending schools, the residual capacity of each receiving school will be constrained by the number of eligible sending schools, weighted by the number of students in each sending school. Accounting for school population ensures that the model does not over-estimate the accessibility of relatively small sending schools or under-estimate the accessibility of relatively large sending schools. For example, suppose the receiving school above, with a STR of 15.6 and residual capacity of 16.0 percent, is located in a district with three sending schools in need of improvement, with 200, 100, and 150 students. The residual capacity of the receiving school (16.0 percent) is proportionally divided among these three sending schools, such that the sending school with 200 students will be allowed to fill44.4 percent of the receiving school's residual capacity (that is, 7.1 percent), while the sending schools with 100 students and 150 students will be allowed to fill22.2 percent and 33.3 percent of the receiving school's residual capacity (that is, 3.6 percent and 5.33 percent), respectively.

It should be noted that, because interdistrict choice may increase the competition for slots in receiving schools, it is theoretically possible that some schools could have *lower* accessibility to higher-performing schools under interdistrict choice than under intradistrict choice. For example, if sending school *A* is located in a district with no other eligible sending schools and one eligible receiving school with a capacity of 10 percent, all the residual capacity of that school is available to students in that sending school under intradistrict choice. If an adjacent district contains another sending school *B* of equal size, but no eligible receiving schools, the residual capacity allotted to each sending school under an interdistrict choice policy would be 5 percent. As such, sending school *A*'s accessibility to a higher-performing receiving school would be higher under intradistrict choice than interdistrict choice (although, in this case, the accessibility of school *B* would increase).

Our model also assumes that student in schools inside and outside a given receiving school's district will have an equal opportunity to transfer to that receiving school under an interdistrict choice policy. This may or may not reflect the actual implementation of an NCLB interdistrict choice policy, which might prioritize intradistrict transfers over interdistrict transfers. On the whole, however, because so few eligible receiving schools are located in districts with schools in need of improvement, it is unlikely that available receiving slots would be filled by intradistrict transfers.

While relying on STR as a proxy for school capacity is yet to be validated, it has one important advantage over Dillon's fixed measure of capacity (10 percent across all schools). The assumption that all eligible receiving schools have identical capacity to accept transfer students is problematic in that it fails to account for variation in capacity and how capacity may vary systematically across contexts. The measure of capacity used in the current study, while imperfect, provides a relative measure of capacity that is sensitive to differences across schools, as compared to a national standard.

Travel Time between Sending and Receiving Schools. Drive times were calculated between all eligible sending and receiving schools in each MSA using Freeway 2009 spatial analysis software. All travel times were estimated under "normal" traffic conditions.

School quality and capacity were discounted by the travel time in hours, *d*, from sending school *i* to receiving school *j* to compute the accessibility between each sending-receiving pair. Thus, as the travel time between a sending school and an eligible receiving school gets larger, the accessibility of the receiving school decreases, regardless of its relative quality.

The functional form of the gravity model (which discounts accessibility by the square of the drive time between each sending-receiving pair) results in accessibility values that are highly sensitive to changes in drive time, and thus highly conservative. This sensitivity ensures that, for any given sending-receiving pair, if drive time is very high, the accessibility to that receiving school will be very low (even if that receiving school is highly attractive in terms of its relative quality). Consequently, a distant receiving school will contribute very little to a sending schools cumulative accessibility score.

This sensitivity constitutes one of the advantages of an accessibility-type model as it does not require an upper bound on drive time because it already penalizes receiving schools that are temporally distant from a sending school. Moreover, it does not require any a priori assumptions about the travel time preferences of parents. Thus, all eligible sending-receiving pairs were included in accessibility calculations, regardless of the distance between the schools, as long as a potential receiving school was located within the same MSA as an eligible sending school. The only exceptions to this rule were areas where receiving schools were inaccessible to sending schools via car (for example, Hawaii).

To illustrate how drive time influences the accessibility of receiving schools, suppose an eligible sending school with a combined pass rate of 20 percent is five minutes away from an eligible receiving school with a combined pass rate of 25 percent. Holding capacity constant, the receiving school has an accessibility value of 0.002. For a receiving school that is ten minutes away from the sending school to have an equivalent level of accessibility, it must have a combined pass rate of 40 percent.

Identifying Eligible Sending and Receiving Schools

To identify all schools eligible to send or receive transfer students under NCLB choice, a number of exclusion and categorization criteria were applied to data on the full population of U.S. schools for the 2004–05 school year, the most recent year for which all required data were available. At the state level, schools in the District of Columbia and Hawaii were excluded from analysis because they have only one school district; as such, an interdistrict choice policy would be logistically unfeasible in these states. At the metropolitan level, schools located in metropolitan and micropolitan areas, as defined by the U.S. Census, were included (hereafter collectively as "metropolitan areas"). At the school level, because alternative and magnet schools operate under different standards for student admissions and are not required, under current NCLB policy, to accept transfer students (thought they may accept students voluntarily), such schools were excluded from the analysis.[33] Because they are subject to NCLB intradistrict charter provisions, charter schools were retained in the analysis.

The remaining schools were categorized as either sending or receiving, depending on their AYP status.[34]Title I schools that failed to make AYP for two or more consecutive years and were, therefore, classified as in need of improvement, were categorized as eligible sending schools. Consistent with NCLB

regulations, schools that either made AYP or had only failed to make AYP for one year were categorized as eligible receiving schools.

*Study Sample*After applying these exclusion and categorization criteria, 6,085 (9.9 percent) schools were classified as eligible sending schools and 55,477 (90.1 percent) schools were classified as eligible receiving schools. Combined, these schools represent 60.3 percent of all U.S. public schools, and serve 65.0 percent of the nation's students in 45 states. As noted previously, schools in Hawaii and Washington, D.C., were excluded from analysis because an intradistrict choice policy would not be feasible in those contexts. In addition, schools in New Jersey, Tennessee, North Dakota, and Utah were ultimately excluded from analysis owing to lack of data to compute accessibility. Schools in the sample were located in 272 metropolitan areas and 182 micropolitan areas. The average level of fragmentation for metropolitan areas was0.84, meaning that two students in the average metropolitan area have an 84 percent chance of attending different schools, while the average level of fragmentation for micropolitan areas was0.61.

Examination of the demographic characteristics of the sending and receiving samples revealed systematic differences in student populations consistent with the robust associations between student characteristics and achievement. On average, 70.8 percent of the student population at eligible sending schools was eligible for free- or reduced-price lunch (FRL), nearly twice the proportion in eligible receiving schools (38.5 percent). Likewise, while 75.4 percent of the population at eligible sending schools was classified as non-white, only 34.7 percent of students at eligible receiving schools were non-white.

Computation of Accessibility Indices

To determine how much NCLB interdistrict choice would increase access to higher-performing schools beyond the current intradistrict choice policy, two accessibility values were computed for each eligible sending school: (1) intradistrict accessibility, weighing the quality, capacity, and drive time of all eligible receiving schools in the sending school's district; and (2) interdistrict accessibility, weighing the quality, capacity, and drive time of all eligible receiving schools in the sending school's MSA, but not in the sending school's district. Appendix C provides a detailed example of how intra and interdistrict accessibility indices were calculated and compared.

Findings

Would an NCLB interdistrict choice policy increase student access to higher-performing schools beyond NCLB intradistrict choice?

To assess the overall effects of an NCLB interdistrict choice policy as well as the effects of school and metropolitan contextual factors on the change in accessibility under interdistrict choice, a hierarchical longitudinal model was used to predict the increase in accessibility under interdistrict choice as a function of school percent FRL and non-white and metropolitan fragmentation. Because our sample contained larger metropolitan areas as well as smaller micropolitan areas, we also added a categorical variable reflecting whether an area was metropolitan or micropolitan to evaluate whether the predicted change in accessibility under interdistrict choice varied by the type of urban area. However, since type of urban area was not related to changes in accessibility, this variable was dropped in the final analysis.

The results of the model are depicted in Table 1. Each of the results will be discussed and interpreted in light of the study's research questions at length below.

Table 1

Effects of School and Metropolitan Characteristics on the Change in Accessibility to Higher-Performing Schools Under Intra- and Interdistrict Choice

	Coefficient	**SE**	***t*-value**
Intercept	3.97	1.55	2.57*
Level 1			
Choice (Inter vs. Intra)	13.99	1.40	10.03*
Level 2			
% FRL	0.04	0.05	0.84
% Non-white	0.09	0.05	2.07*
Choice X % FRL	0.21	0.06	3.34*
Choice X % Non-white	0.14	0.06	2.56*
Level 3			
Fragmentation	-0.24	0.08	-3.18*
Choice X Fragmentation	0.36	0.08	4.38*

* $p < 0.05$

Contrary to the findings of previous research, the current study finds that an NCLB interdistrict choice policy, if implemented nationally, has the potential to meaningfully expand access meaningfully to higher-performing schools for students in over 80 percent of eligible sending schools. Under the current intradistrict policy, the model estimates that an average sending school (that is, average proportion of non-white and free- and reduced-price lunch eligible students in a metropolitan area of average fragmentation) has an accessibility value of 3.97. If, however, NCLB choice was expanded to include interdistrict options, the average sending school's accessibility value would increase five-fold, to 17.96.

Consistent with the argument that low participation in current NCLB intradistrict choice may be attributed to a paucity of eligible receiving schools, analysis revealed that an overwhelming 94.5 percent of eligible sending schools have no meaningful access to higher-performing schools under intradistrict choice (5,749 of 6,085). As such, the vast majority of eligible sending schools are currently located in districts which either: (1) have no eligible receiving schools under NCLB's criteria, (2) have no eligible receiving schools that performed better than the sending schools, and/or (3) have eligible receiving schools with no capacity to accommodate transfers (see Table 2).

Specifically, of the sending schools with no intradistrict accessibility, 1,651 (28.7 percent) are located in districts with no eligible receiving schools under NCLB's definition. Thus, nearly a third of eligible sending schools are located in districts in which all other schools have failed to make AYP for at least two consecutive years. The remaining 4,098 (71.3 percent) are located in districts that have eligible receiving schools under NCLB, but which are of a lower quality than the sending school and/or lack the capacity to accept transfer students.

With regard to quality, 3,629 (63.1 percent of 5,749) schools have no eligible receiving schools that performed better than the school from which students might transfer (in terms of the likelihood of a student passing both math and reading). With regard to capacity, 100 schools (1.7 percent of 5,749)have no eligible receiving schools that have capacity to accept transfers (based on the 75th percentile of state STRs). Three hundred and sixty-nine schools lack any eligible sending schools of higher quality than the school from which they might transfer or with any capacity to accept transfers. This finding suggests that the problem of access to higher-performing schools under existing NCLB policy is primarily attributable to a lack of higher-quality receiving options.

Table 2

Intradistrict Accessibility Breakdown

	n
No Intradistrict Accessibility	**5,749**
No Eligible Receiving Schools	1,651
Some Eligible Receiving Schools	4,098
No Higher-Performing Receiving Schools	*3,629*
No Capacity at Receiving Schools	*100*
No Higher-Performing Schools or Schools with Capacity	*369*
Some Intradistrict Accessibility	**336**
Total	**6,085**

Of these schools that have no access to higher-performing schools under intradistrict choice, 84.8 percent would experience gains under an intradistrict choice policy (4,874 of 5,749), while 15.2 percent would not benefit from the ability to transfer across district boundaries (876 of 5,749).

For the remaining 5.5 percent of schools that already have some access to higher-performing schools under NCLB intradistrict choice, the effects of an interdistrict choice policy would be somewhat more equivocal. Of the 336schools with non-zero intradistrict accessibility, 50 would experience increases in access under interdistrict choice (14.9 percent), while18 would experience no change in access (5.4 percent), and268schools would actually experience decreases owing to increased competition for receiving slots for nearby higher-quality schools (79.8 percent). However, it must be emphasized that the overall proportion of schools that would experience reductions in access to higher-performing choice is extremely low—comprising only 4.4 percent of all eligible sending schools; the vast majority of schools would experience increases in access to higher-performing schools in nearby districts.

These increases in access to higher-performing schools may be attributed to the greater supply and higher quality of eligible receiving schools outside sending schools' districts, even after accounting for increases in travel time required to reach these schools and competition among students for slots in eligible receiving schools. Specifically, interdistrict choice would dramatically increase the pool of eligible receiving schools available to students in schools in need of improvement. On average, the number of eligible receiving schools available to each sending school would increase from 11 under intradistrict choice to 117 under interdistrict choice. It should be reiterated, however, that this is the number of schools technically eligible to receive under NCLB requirements – as discussed previously, these schools may have lower quality than the sending schools from which students might transfer or may not have

any capacity to accept transfer students. Moreover, even after controlling for competition effects of other sending schools, the number of receiving slots available to students from each sending school would increase under interdistrict choice. Sending schools have an average of 117 slots available to their students under intradistrict choice, but 267 slots under interdistrict choice, an increase of 128 percent.

Even more importantly, sending schools would have access to substantially higher-quality schools if they were permitted to cross district boundaries. Under intradistrict choice, sending schools would have access to receiving schools with an average quality of 33 percent (that is, 33 percent of students pass both reading and math assessments required for AYP). Under interdistrict choice, however, sending schools would have access to receiving schools with an average quality of 43 percent, reflecting a 30 percent increase in the overall quality of receiving schools.

State Effects

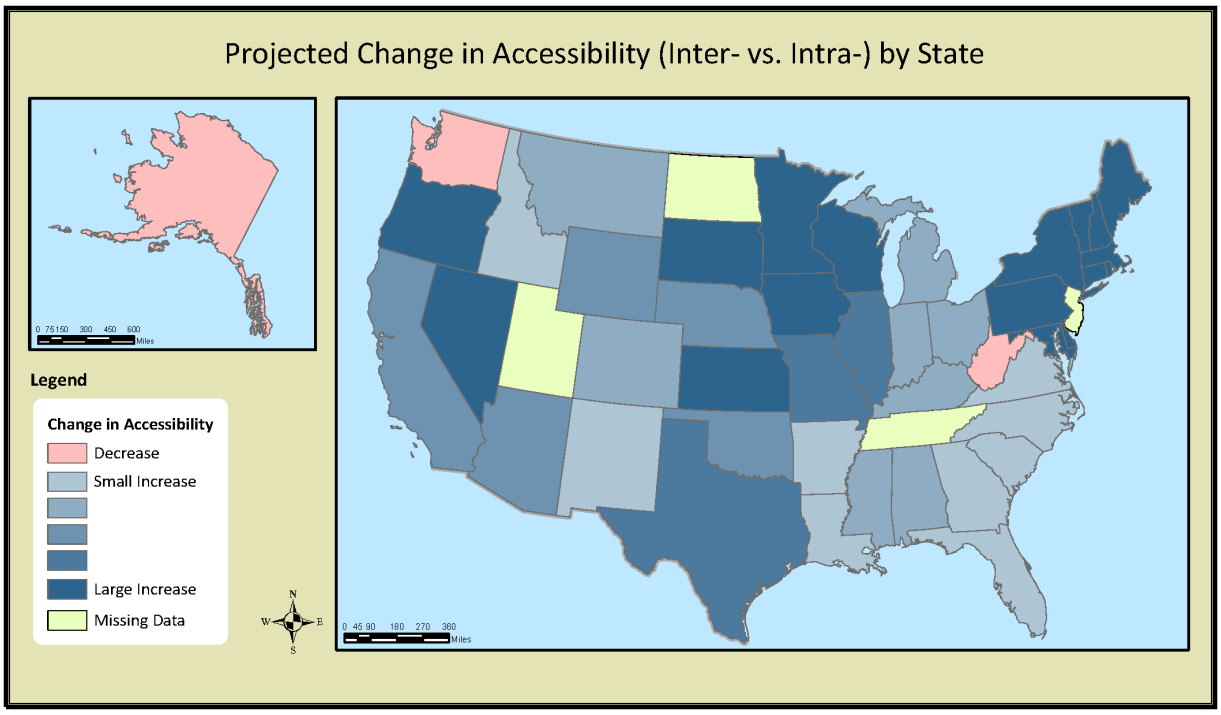
Because responsibility for most educational policy decisions rests with states, it is important to identify how an interdistrict choice policy would play out in the state context. Appendix D enumerates state-level accessibility values under conditions of intra- and interdistrict choice, as well as the characteristics of schools in the sample of sending school.

Aggregate state level measures of accessibility confirm school-level findings regarding the lack of available intradistrict transfer options. Indeed, fully fifteen states had an average of zero intradistrict accessibility , meaning that none of the state's schools in need of improvement currently have meaningful access to any higher-performing schools under current NCLB intradistrict choice policy (Connecticut, Delaware, Iowa, Kansas, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Hampshire, New York, Oregon, Rhode Island, South Dakota, and Vermont).

Moreover, in all but six of the states studied, schools would, on average, experience increases in accessibility under an interdistrict choice policy. Among the six states that would not benefit, schools in three states (Alaska, West Virginia, and Washington) would experience decreases in accessibility under interdistrict choice (owing to increased competition for available receiving slots), while three others would experience no gains (Nevada, New Hampshire, and Rhode Island). It should be noted that, in the three states that would experience decreases under interdistrict choice, students in failing schools already have high rates of intradistrict accessibility, and that accessibility would still remain relatively high even after accounting for decreases from competition effects.

To evaluate the geographic distribution of the magnitude of the change in accessibility under an NCLB interdistrict choice policy, Map 2 depicts the expected change in accessibility by state. The map reveals that although interdistrict choice would improve access to higher-performing schools in all but three states in the analysis, the effects of such a policy would likely vary by geographic region. Schools in states in the Northeast and Midwest would exhibit relatively large increments in accessibility under an interdistrict choice policy, while metropolitan areas in the South and, to a lesser extent, West would likely experience more marginal increases. As will be discussed at length below, this finding may be attributable to differences in rates of metropolitan fragmentation among these geographic regions.

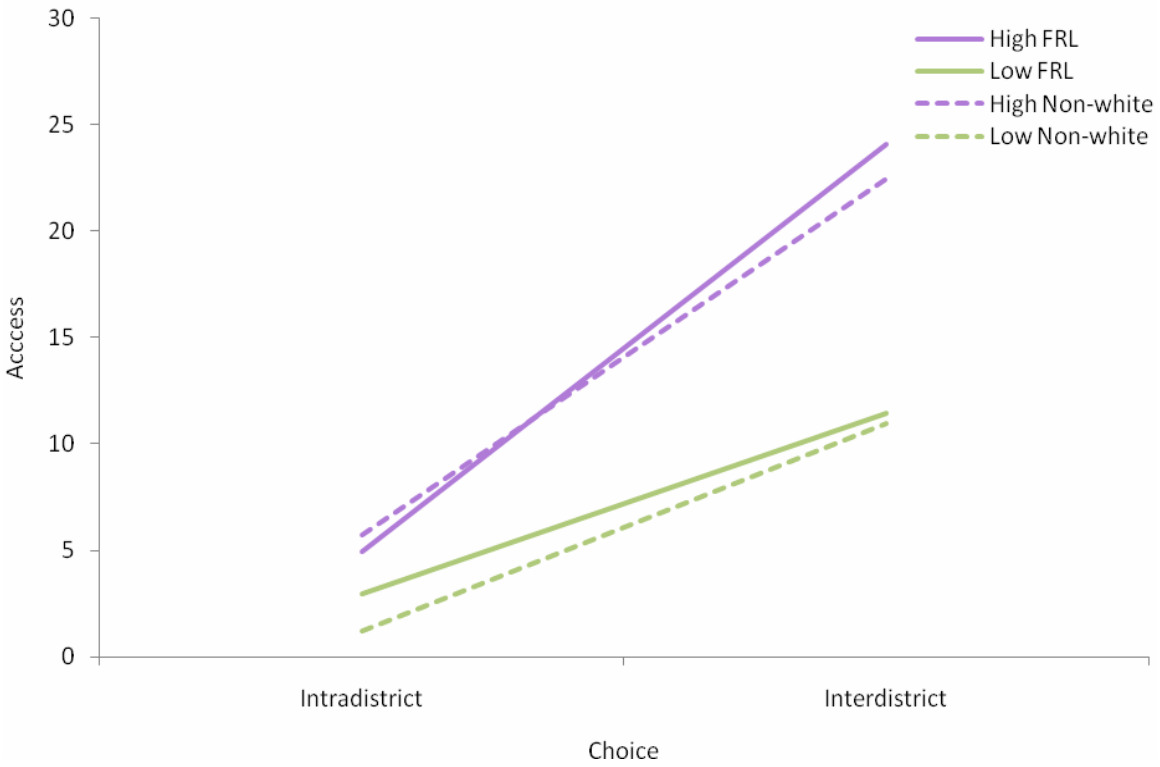
Map 2



Would the effect of an NCLB interdistrict choice policy depend on a school's proportion of low-income and non-white students?

At the school level, changes in accessibility under interdistrict choice were positively related to a sending school's percentage of FRL and non-white students. Figure 4 depicts the linear relationship between a school's student characteristics and the predicted change in access under interdistrict choice, controlling for the level of metropolitan fragmentation. The figure reveals that schools with higher proportions of low-income and non-white students would experience relatively larger gains in access than students in schools with lower proportions of these students. As such, students in schools with higher proportions of low-income and non-white students should experience the greatest gains in access to higher-performing schools under an NCLB interdistrict choice policy.

Figure 4. Estimated Change in Access by School Percent Free/Reduced Priced Lunch and Non-white Students



As the figure reveals, schools with higher proportions of FRL and non-white students have higher levels of accessibility under intradistrict choice and interdistrict choice than schools with less disadvantaged populations. Moreover, schools with higher proportions of FRL and non-white students would experience larger gains in accessibility from an interdistrict choice policy than schools with less disadvantaged populations.

For example, a school with 95 percent FRL students would experience gains in access under interdistrict choice more than twice as large as those of a school with only 45 percent FRL students. Similarly, a school with 95 percent non-white enrollment would experience gains in accessibility under interdistrict choice nearly twice as large as those of a school with only 45 percent non-white enrollment. Taken together, these findings suggest that, if implemented nationally, an NCLB interdistrict choice policy has the potential to specifically benefit students in high-poverty and high-minority schools.

Would the effect of an NCLB interdistrict choice policy depend on a metropolitan area's level of school district fragmentation?

Consistent with expectations, metropolitan school district fragmentation was positively related to the change in accessibility under conditions of interdistrict choice. As such, schools in highly fragmented MSAs would experience much larger gains in access to higher-performing schools than less fragmented MSAs. Figure 5 depicts the linear relationship between metropolitan fragmentation and accessibility under-intra and interdistrict choice, after controlling for school-level contextual effects.

Figure 5. Estimated Change in Access by Metropolitan School District Fragmentation

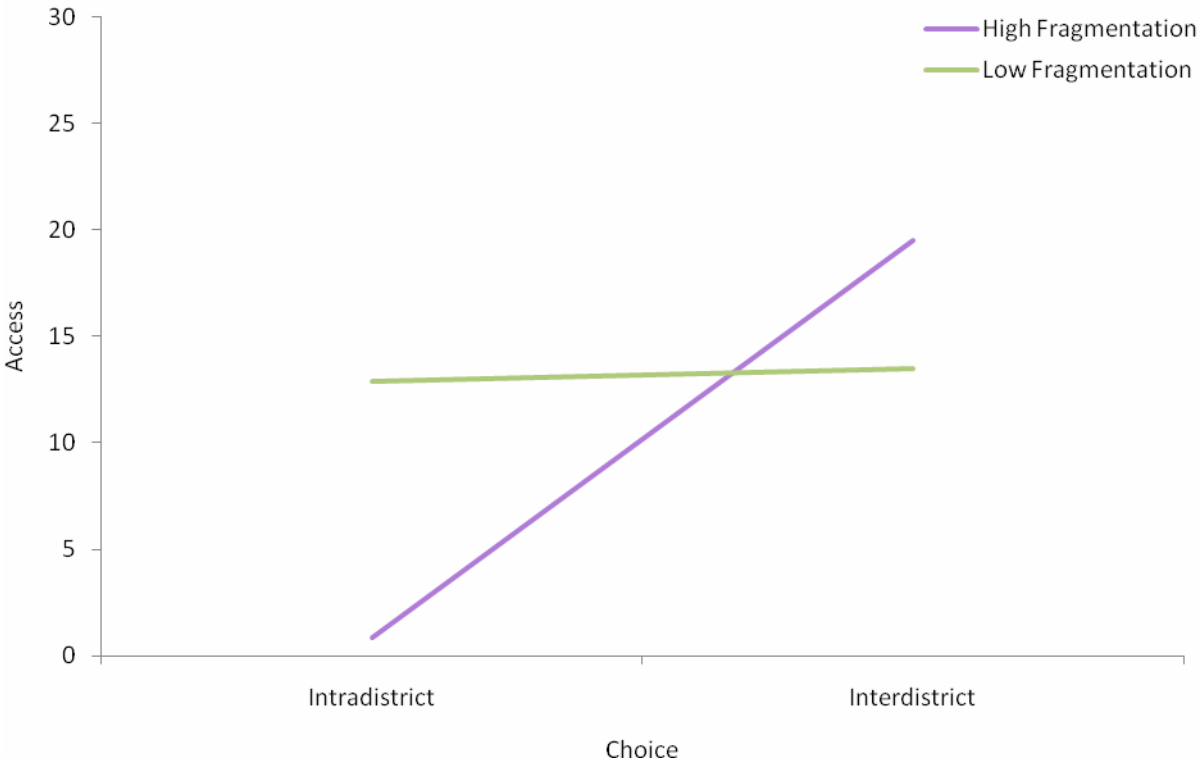


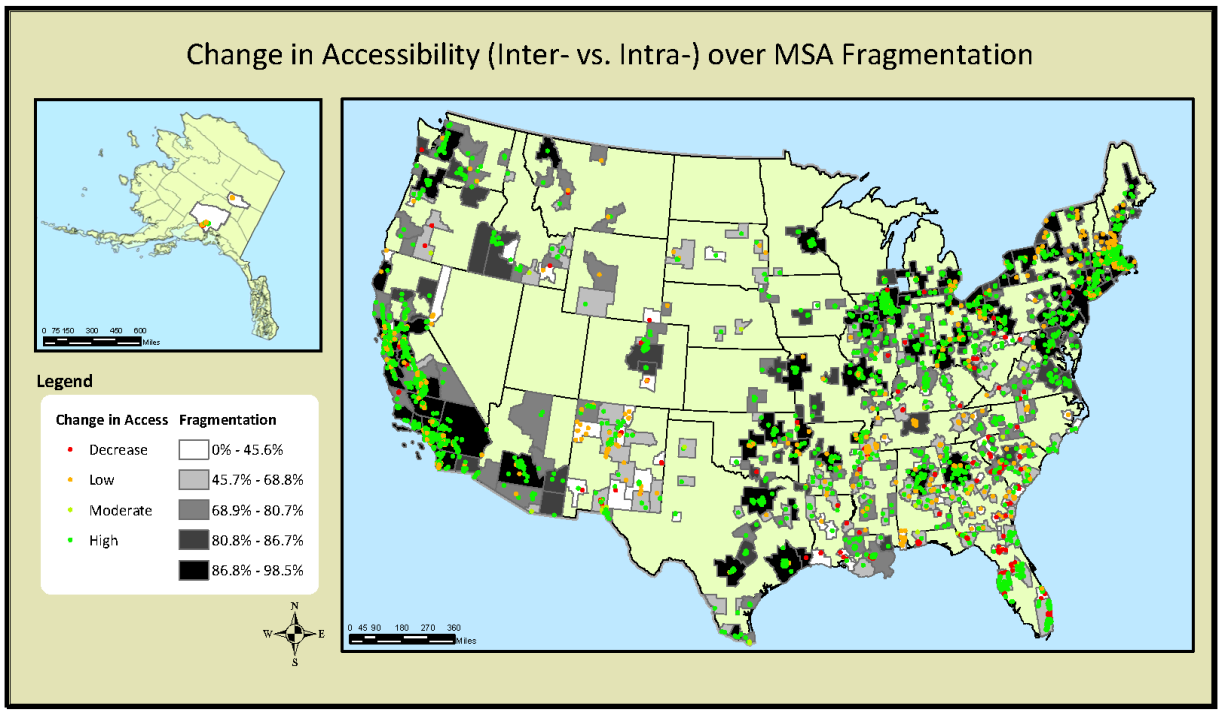
Figure 5 reveals that, although highly fragmented metropolitan areas have *lower* access to higher performing schools under conditions of intradistrict choice, they would have *higher* access to higher-performing schools under an NCLB interdistrict choice policy. Specifically, under an interdistrict choice policy, schools in metropolitan areas with low fragmentation values would experience virtually no increase in accessibility under an interdistrict choice policy, while schools in highly fragmented metropolitan areas would experience large gains in accessibility. For example, an MSA with a fragmentation value of 95 percent would experience a gain in accessibility nearly thirty times as high as that of an MSA with a fragmentation value of 45 percent.

Returning to the example discussed above, the predicted accessibility gains in the highly-fragmented MSA of Milwaukee, Wisconsin (fragmentation = 0.83) would be significantly higher than those in the less fragmented areas of Jacksonville, Florida (fragmentation = 0.55). The model estimates that Milwaukee

schools, under interdistrict choice, would experience accessibility gains nearly twice as large as schools in Jacksonville.

At the national level, Map 3 illustrates the relationship between metropolitan fragmentation and the increase in accessibility attributable to interdistrict choice across all MSAs in the study. The dots represent sending schools and are coded according to the magnitude of the gain in accessibility that would be expected under an interdistrict choice policy. Metropolitan areas are shaded by their level of fragmentation. Examination of the map reveals that MSAs with higher levels of fragmentation tend to have schools with higher accessibility values than do less fragmented MSAs, suggesting that highly fragmented MSAs would benefit the most from interdistrict choice policy.

Map 3



Summary of Findings

Since its inception, the NCLB school choice program has suffered from consistently low student participation rates, despite high rates of school failure to make AYP. Consistent with arguments that these low participation rates are a function of the limited supply of higher-performing schools, this study finds that students in the vast majority of eligible sending schools have little to no access to eligible higher-performing schools within their district. Moreover, owing to the supply of higher-quality eligible receiving schools in nearby districts, an NCLB interdistrict choice policy has the potential to meaningfully expand students' access to higher-performing schools beyond the existing intradistrict choice policy, even after controlling for the effect of competition among sending schools for transfer slots and increases in travel time to schools.

The potential effectiveness of an NCLB interdistrict choice policy, however, would vary depending upon the characteristics of schools and the metropolitan and regional contexts in which they are embedded.

At the school level, we find that gains in accessibility under interdistrict choice would be higher for students in schools with high proportion of FRL and non-white students. These findings are encouraging, especially in light of the current federal education policy emphasis on students in high-poverty and high-minority schools.

At the metropolitan level, an interdistrict choice policy would be more effective in highly fragmented metropolitan and micropolitan areas than in metropolitan areas with fewer school districts per capita. In addition, results suggest that the benefits of an interdistrict choice policy would be especially large for students in schools in the Northeast and Midwest; a finding that may be attributable, in part, to the higher levels of school district fragmentation in these regions.

Policy Constraints

The accessibility model employed in this study holds considerable promise for exploring geographic issues in education, especially the inherently spatial issue of school choice. It provides an empirically validated tool for assessing the opportunities available to students, which are necessary, albeit not sufficient, to ensure that students actually take advantage of choice opportunities and gain access to higher-performing schools. However, because the goal of the model is to identify the opportunities available to students and not to predict actual student behaviors, the model is relatively parsimonious, and thus neglects several important considerations that may constrain the effectiveness of the implementation of an NCLB interdistrict choice policy, namely: (1) Who will take advantage of choice? (2) Where will they choose to transfer? (3) How will they get there?

Who will take advantage of interdistrict choice?

While the present findings suggest that students in schools in need of improvement will largely benefit from increased access to high-performing schools under interdistrict choice, they do not address the critically important issue of which students will actually take advantage of these options. Prior research on participation rates by race and socioeconomic status has found that non-white and low-income students are less likely to take advantage of available interdistrict choice options.[35] Moreover, the higher-performing students in the sending schools may be more likely to take advantage of interdistrict choice than the other eligible students, leaving sending schools with even larger proportions of low-performing students.[36]

Where will they choose to transfer?

This study's model of accessibility quantified the attractiveness of schools in terms of school quality, as measured via student performance on state assessments used for AYP. While such a measure provides a valid test of NCLB policy, it may not be an accurate measure of parental preferences. Indeed, research suggests that parental preferences are relatively heterogeneous, as parents attend to a variety of factors in addition to academic quality in decisions regarding whether or where to transfer (for example, racial diversity, special programs, safety).[37] There is also some evidence that parental school choice preferences may be influenced by parents' race and socioeconomic status as well as the racial and socioeconomic composition of schools.[38]

How will they get there?

This study's model of accessibility discounted school quality by the drive time between a student's sending school and the receiving school of choice. Such a measure, however, fails to account for important differences in access to transportation by race and socioeconomic status. A growing body of research highlights the importance of transportation inequities, finding that transportation is a significant barrier to accessibility, particularly for non-white and low-income individuals, who are less likely to own personal vehicles and more likely to rely on public transportation.[39] As such, drive time estimates may systematically underestimate the actual travel time for non-white and low-income students. This problem may be mitigated, however, if transportation is provided equitably to all eligible students.

Policy Design Recommendations

NCLB interdistrict choice policy has the potential to expand student access meaningfully to higher-performing schools beyond existing intradistrict choice, especially for non-white and low-income students and students in highly fragmented metropolitan areas. However, while interdistrict choice may be a necessary condition for increasing access to higher-performing schools, it is not sufficient. Coupled with the aforementioned evidence that non-white, low-income, and lower-performing students may be less likely to take advantage of choice and may have more limited access to transportation to higher-performing schools, poorly designed interdistrict school choice policies have the potential to exacerbate, rather than ameliorate, existing inequities by race and socioeconomic status if implemented in an uncontrolled fashion. As such, a federal NCLB interdistrict choice policy should adopt a controlled, targeted approach designed to maximize access to higher-performing schools without exacerbating existing racial and socioeconomic inequalities.

Perhaps the most direct means of ensuring that NCLB interdistrict choice provides equitable access to higher-performing schools is to give priority to students in high-poverty and high-minority schools and/or low-income and non-white students when allocating available receiving slots and transportation funds. Under current NCLB policy, districts are to give priority to low-achieving, low-income students in considering transfer requests. This policy should be retained and strengthened to include students in schools with the highest concentrations of poor and minority students. Any federal interdistrict choice policy should be formulated to target low-income and minority students specifically to ensure that the policy helps those populations it is designed to benefit.

Transportation is another essential consideration in the design of any equitable and meaningful school choice program. Schools participating in NCLB intradistrict choice are required to provide transportation; to be successful, an NCLB interdistrict choice program must also compel districts to provide transportation for eligible transfer students. Without such a provision, additional transportation costs would have to be shouldered by the families of those children eligible to transfer, often those who can least afford the burden and who already face significant barriers to equitable transportation.[40]

Finally, to be successful, interdistrict choice requires the cooperation of multiple districts. The political obstacles associated with establishing and maintaining such polices can be difficult to surmount, particularly in jurisdictionally complex areas. As such, federal policy should provide meaningful incentives and support for districts interested in implementing interdistrict choice.

Conclusion

The present study finds that NCLB interdistrict choice has the potential to increase students' access to higher-performing schools meaningfully beyond intradistrict choice. Indeed, estimates suggest that, on average, students would experience a five-fold increase in access to higher-performing schools under an interdistrict choice policy, even after accounting for travel time to receiving schools and increased student competition for available transfer slots. Such a policy would be especially beneficial for the overwhelming majority of students who attend schools that currently have no meaningful access to higher-performing schools under the existing NCLB intradistrict choice policy. In addition, students in highly fragmented metropolitan areas and in Northeastern and Midwestern states would experience particularly large gains under an NCLB interdistrict choice policy. Even more encouraging, consistent with the federal policy goal of effectively targeting schools in high-poverty and high-minority schools, this study finds that gains in access to higher-performing schools under interdistrict choice would be particularly pronounced for non-white and low-income students.

Two important caveats should be acknowledged when drawing inferences from this study. First, it is important to note that the number of schools in need of improvement has increased substantially since the 2004-05 school year. While only 18 percent of schools failed to make AYP in 2004-05, 37 percent of schools failed to make AYP in 2009-10. Indeed, Secretary of Education Duncan recently estimated that 82% of schools could fail to make AYP this year.

Although it is unlikely that the current AYP criteria will be retained under the reauthorization of NCLB, these increasing rates of school failure have clearly increased the number of eligible sending schools and reduced the number of eligible receiving schools, resulting in more students eligible to transfer and fewer transfer options for students in schools in need of improvement. However, the effect of these changes on interdistrict choice vis-à-vis intradistrict choice is unclear. If schools failing to make AYP continue to be clustered in districts with other low-performing schools, it is likely that sending schools will have even fewer intra-district choice options. This reduction in intra-district choice may mean that an NCLB inter-district choice policy would have an even more dramatic positive effect on student access to higher-performing schools. However, if the increase in failure rates has resulted in a more even distribution of schools in need of improvement across districts, it is possible that increases in rates of school failure would reduce inter-district choice as much as or more than intra-district choice, thus attenuating the potential benefits of inter-district choice.

Second, for an interdistrict choice policy to be effective in practice, it must overcome the documented barriers to the equitable implementation of choice often faced by non-white and low-income students. As such, it is argued that such a policy must be sensitive to both the geographic contexts within which the choice programs operate and the differential effects such programs may have on families. Toward that end, any federal interdistrict choice policy should include provisions specifically targeting students in high-poverty, high-minority schools and subsidizing the transportation costs associated with interdistrict choice to ensure that the imperative for meaningful choice is balanced with a concern for equity. In addition, incentives should be provided to encourage district participation, particularly in highly fragmented metropolitan areas.

Appendix A
Fragmentation Formula

Fragmentation was quantified as the probability that two students in the same metropolitan area will attend schools in different districts, controlling for the metropolitan population.[41] Specifically, metropolitan fragmentation was operationalized as:

$$F_m = \sum_{d=1}^{k} p_d(1 - p_d)$$

where *p* is the proportion of students in the MSA *m* enrolled in district *d*. Fragmentation values range from 0 to 1, where 0 indicates that all students in an MSA attend the same district (that is, zero fragmentation) and 1 indicates that all students in an MSA attend different districts (that is, perfect fragmentation).

Appendix B
Accessibility Formulae

Traditional Gravity Model of Accessibility

In their traditional formulation, gravity models compute the accessibility of a set of destinations as a function of the travel time between the origin and each destination and the attractiveness of each destination. Gravity models have the following general functional form:

$$A_i = \sum_{j=1}^{n} \frac{a_j}{d_{ij}^2}$$

where A_i is the accessibility of the origin, a is the attractiveness of destination j, and d is the drive time from origin i to destination j. In a gravity model, the attractiveness of each destination is discounted by the time required to reach that destination.

Modified Gravity Model of Accessibility

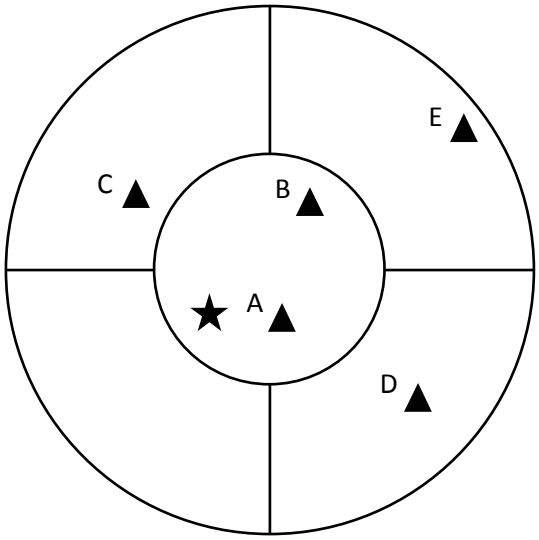
To adapt the functional form of gravity models to the educational context, the formulation presented above was modified slightly. Since schools do not have an infinite capacity to accept new students, an additional term was included in the model constraining accessibility by the capacity of receiving schools to accommodate transfer students as follows:

$$A_i = \sum_{j=1}^{n} \frac{q_{ij} c_j}{d_{ij}^2}$$

where A_i is the accessibility of a given sending school, q is the quality of a receiving school j (which is used as a proxy for the attractiveness of the school), and d is the drive time from school i to school j, and c is the capacity of school j.

Appendix C
Example Accessibility Calculation

Map of Districts within MSA



Characteristics of Eligible Receiving Schools

School	Δ Quality	Capacity	Drive Time
A[1]	1 %	2 %	2 mins
B[1]	3 %	1.5 %	3 mins
C[2]	5 %	1.75 %	4 mins
D[2]	10 %	1 %	5 mins
E[2]	6 %	2.5 %	6 mins

Intradistrict Accessibility	Interdistrict Accessibility
$A_{Intra} = \sum_{j=1}^{2} \frac{q_{ij} c_j}{d_{ij}^2}$	$A_{Inter} = \sum_{j=1}^{3} \frac{q_{ij} c_j}{d_{ij}^2}$
$A_{Intra} = \frac{1(2)}{2^2} + \frac{3(1.5)}{3^2}$	$A_{Inter} = \frac{1(2)}{2^2} + \frac{3(1.5)}{3^2} + \frac{5(1.75)}{4^2} + \frac{10(1)}{5^2} + \frac{6(2.5)}{6^2}$
$A_{Intra} = 1$	$A_{Inter} = 2.4$

Interpretation

As shown above, under conditions of intradistrict choice (2 eligible receiving schools), the sending school has an accessibility value of 1. However, under conditions of interdistrict choice (5 eligible receiving schools, with the addition of 3 eligible receiving schools outside its district), the sending school has an increment in accessibility of 1.4, resulting in a total accessibility value of 2.4. As such, this school's accessibility to higher-performing schools would be 2.4 times higher under an NCLB interdistrict choice policy than under the existing intradistrict policy.

N.B.: Because the metropolitan area above contains only one sending district, the capacity index is not adjusted for competition effects.

Appendix D
State-level Accessibility Results

State	Accessibility		N			% Min	% FRL	Frag
	Intra	Inter	Schools	Districts	MSAs			
Alabama	.09	1.51	119	39	16	79.6	77.9	0.53
Alaska	30.95	23.13	20	3	2	54.8	63.0	0.28
Arizona	0.34	10.88	87	43	8	87.4	88.5	0.78
Arkansas	2.16	4.67	100	49	13	54.9	69.8	0.73
California	0.23	7.83	1,367	301	33	86.4	77.7	0.84
Colorado	0.67	11.12	92	16	5	87.1	77.8	0.66
Connecticut	0.0	14.69	104	21	5	81.9	70.9	0.92
Delaware	0.0	1.75	10	7	2	64.5	48.0	0.81
Florida	5.90	12.16	506	27	9	75.4	78.6	0.52
Georgia	1.27	1.55	162	57	24	76.4	73.4	0.49
Idaho	0.53	1.18	27	22	10	26.9	53.6	0.62
Illinois	0.01	3.46	513	162	25	76.4	70.0	0.76
Indiana	1.32	20.17	77	35	18	50.8	63.6	0.68
Iowa	0.0	14.16	10	6	5	53.0	72.0	0.72
Kansas	0.0	2.61	14	4	2	70.8	82.9	0.77
Kentucky	3.16	19.09	74	24	11	31.0	--	0.53
Louisiana	9.65	17.48	130	21	11	96.7	88.6	0.40
Maine	0.0	1.42	23	18	5	8.8	40.9	0.89
Maryland	0.0	6.32	85	6	1	95.2	80.0	0.81
Massachusetts	0.0	91.03	295	104	4	54.2	59.2	0.90
Michigan	3.73	26.75	183	35	11	88.4	80.1	0.88
Minnesota	0.0	13.23	61	15	3	82.2	80.9	0.77
Mississippi	1.03	6.69	46	26	15	86.2	82.1	0.65
Missouri	0.12	29.49	94	22	9	82.0	79.2	0.84
Montana	0.07	0.38	12	12	6	42.4	54.4	0.72
Nebraska	0.12	8.1	3	3	3	65.2	67.5	0.63
Nevada	0.0	0.0	8	2	2	--	24.4	0.01
New Hampshire	0.0	0.0	20	14	4	11.5	30.7	0.88
New Mexico	6.37	9.30	195	44	15	83.6	78.4	0.42
New York	0.0	4.87	332	74	19	77.3	24.3	0.86
North Carolina	0.08	0.23	40	15	9	34.8	59.9	0.40
Ohio	1.38	18.58	381	110	22	64.1	68.7	0.84
Oklahoma	0.14	5.34	76	26	12	72.2	86.8	0.76
Oregon	0.0	13.25	36	15	8	45.1	67.9	0.63
Pennsylvania	0.01	68.99	218	61	17	77.3	63.7	0.82
Rhode Island	0.0	0.0	17	4	1	81.1	76.8	0.97
South Carolina	2.47	7.40	85	28	12	65.2	75.0	0.60

State	Accessibility		N			% Min	% FRL	Frag
	Intra	Inter	Schools	Districts	MSAs			
South Dakota	0.0	6.57	19	11	7	23.9	43.0	0.46
Texas	0.02	6.48	135	70	24	89.1	66.2	0.70
Vermont	0.0	0.06	8	7	3	7.2	40.3	0.89
Virginia	2.09	4.24	75	33	11	69.7	66.7	0.67
Washington	7.64	7.17	81	32	11	65.6	69.3	0.82
West Virginia	19.13	14.19	17	13	9	9.2	68.4	0.60
Wisconsin	0.01	14.89	29	3	2	90.6	76.4	0.88
Wyoming	0.31	11.69	3	3	3	51.4	58.4	0.45

Note: Green shading indicates that state would, on average, experience increases in accessibility under NCLB interdistrict choice versus intradistrict choice; yellow indicates no change under interdistrict choice; red indicates decreases under interdistrict choice. Excluded from analysis: District of Columbia, Hawaii (feasibility of policy); New Jersey, Tennessee, North Dakota, Utah (lack of data).

Notes

[1] *State and Local Implementation of the No Child Left Behind Act, Volume IV—Title I School Choice and Supplemental Educational Services: Interim Report* (Santa Monica, Calif.: RAND Corporation, 2008), http://www.rand.org/pubs/reprints/RP1332/; Jennifer Jellison and Meredith P. Richards, "Review of *Plotting School Choice* and *In Need of Improvement*," Education and the Public Interest Center and Education Policy Research Unit, 2009, http://nepc.colorado.edu/thinktank/review-plotting-school-choice.

[2] *State and Local Implementation of the No Child Left Behind Act, Volume IV.*

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About the Authors

Jennifer Jellison Holme is an assistant professor of educational policy and planning in the Department of Educational Administration at the University of Texas at Austin. Her research agenda is centered on the politics and implementation of educational policy, with a particular focus on accountability, school choice, and school desegregation policies. Her work has been published in the *Review of Educational Research*, the *Peabody Journal of Education, Equity and Excellence in Education*, and the *Harvard Educational Review*.

Meredith P. Richards is a doctoral student in educational policy and planning at the University of Texas at Austin. Her research explores the social and geographic context of education and the role of schools and educational boundaries in social stratification and segregation. Her educational work has been published in the *Review of Educational Research*, the *Peabody Journal of Education*, and the *International Encyclopedia of Education*.

Kori J. Stroub is a doctoral student in educational policy and planning at the University of Texas at Austin. His research investigates the causes and consequences of the persistent patterns of racial/ethnic and socioeconomic inequality in schools. In particular, his research links educational inequality to broader geographic patterns of segregation by race/ethnicity and social class. He currently is conducting research on the effectiveness of integration plans employing geographic proxies for student race/ethnicity.