

The NCLB Choice Provisions and Effects of Mobility:

A Review of the Literature and Research Designs

By

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CHAPTER I

INTRODUCTION

Education reformers have struggled with several primary challenges in their quest to improve the educational outcomes of students in the United States. These challenges include encouraging innovation in public schools; closing the achievement gap between different groups of students; and improving student outcomes. One solution promoted to address all of these challenges was the institution of school choice in the public school systems throughout the nation. If schools were structured so that a market-based approach of performance incentives existed, choice theorists asserted that schools would innovate and student outcomes would improve (Friedman, 1955; Chubb & Moe, 1990; Finn, Manno, Bierlein & Vanourek, 1997). Much of the motivation for choice was born out of a perception of schools and their districts being resistant to change and driven by self-preservation (Finn & Vanourek, 2005). In other words, traditional public schools were too entrenched as bureaucratic organizations to be effective innovators in instruction and learning.

School choice, through charter schools, voucher programs, magnet schools and open enrollment, allows a student to leave a school that was not meeting his or her needs for a school that may be a better match. When the student leaves, the associated public dollars follow the student to the new school. The ensuing competition among schools for students is the primary instrument by which the school and student improvement occur. The schools' responses to both attract and retain students will lead to better instruction and other school-based improvements. This, in turn, contributes to student achievement gains.

Although advocates place great hope on school choice, detractors have concerns about the effectiveness of a market-based approach to education reform. School choice provisions are critiqued frequently around concerns of divestment of the public school system. When more public education dollars are moved into external or non-traditional educational systems, they argue that the core school system is weakened. With the increase in choice policies and structures, this weakening is accelerated. While school choice may produce strong results for an individual student, these individual gains must be weighed against the impact on the structure of the public education system as a whole (Witte, 1996). Corollaries to this concern center on issues of equity and stratification. There is concern that parents who are most likely to choose or most likely to find out the best information about schools are going to be those from more enfranchised, higher socioeconomic status (SES) families. This would provide unfair disadvantage to the most at-risk families. Additionally, there is concern that schools that can select which students attend their school, as some magnets and charters can, will select only the best students which will first skew the results of any evaluation of their effectiveness and second eliminate a strong peer set from the traditional public school system.

Choice programs, in practice, can take a very different shape than either of the opponents and proponents may assert, as there is heterogeneity in design and outcomes. While the best and the worse outcomes are both possible in a choice framework, the reality is much more muddled than the policy debate may suggest. It is not clear from the research on various choice options that choice alone is a driver for improved student outcomes. However, allowing parental choice to shape the education system has the potential to produce positive change at the individual and systemic levels.

NCLB School Choice

There are patchworks of choice policy options available throughout most of the United States. Whether or not the various iterations of publicly funded school choice exist in a public school district is based on the laws and regulations of the state and local governments. In the past, the federal government's involvement was limited to pilot projects and research grants to examine school choice. With the advent of the No Child Left Behind Act of 2001 (NCLB), the federal government's role in school choice was codified. NCLB provides an additional avenue for increasing choice within the nation's public school systems.

NCLB school choice is part of a graduated system of educational interventions into low performing schools (P.L. 107-110). NCLB requires that certain percentages of a school's students make Adequate Yearly Progress on academic achievement tests in reading and math. The percentage threshold required of schools increases over time, with a statutory expectation of 100 percent proficiency by 2014 (P.L. 107-110)¹. The requirements for percent proficient, the grades tested (by school year 2005-06, all grades 3-8 and one high school grade had to be tested), and the subjects tested increase and expand over time, making more schools and more students subject to these provisions (Johnson, 2006). There are safe harbor criteria to give some schools a reprieve if they improve but are still not on par with the state's proficiency targets.

For Title I schools, a series of interventions into a school's services and governance occurs if these yearly benchmarks are not met (see figure 1). If a Title I school² fails to meet the

¹ Many states sought and received waivers from beginning in 2011 to this requirement, often in return for agreeing to use student test scores as a part of teacher evaluations.

² There are three states that expand the policy beyond the federal requirements. Idaho and New Mexico require non-Title I schools that are identified for improvement to offer choice. Tennessee requires schools that are in corrective action to offer choice (Gill et al., 2008).

Adequate Yearly Progress (AYP) standard in the same content area for two consecutive years in reading or math (or in an additional area, such as graduation rates for a high school), the school is placed in its first year of School Improvement Status (P.L. 107-110; U.S. Department of Education, 2009; Gill et al., 2008). A school can be deemed not making AYP if a demographic sub-group does not make AYP, even if the school as a whole makes AYP. If a school is in improvement status, the first parental option in NCLB is the school choice provision, which allows students to move to another school in the district that is not in improvement status. The next year, if the school continues to not meet AYP standards, in addition to the school choice requirements, NCLB requires the school to offer students supplemental educational services such as tutoring and after school programs to boost achievement. An additional year of not making AYP places the school in corrective action where, in addition to the previously listed requirements, schools are required to invest in professional development, replace ineffective staff, extend the school day or school year or restructure school management. A sixth year of not making AYP requires a school takeover where more dramatic changes like replacing principal and faculty, reopening as a charter school or contracting with an outside management entity are required (Hassel, Hassel, Arkin, Kowal & Steiner, 2006). The requirements placed on a school are maintained until a school makes AYP for two consecutive years. School level accountability that measured a school's proficiency levels prior to the enactment of NCLB were used within NCLB for many states, which resulted in some schools being in School Improvement Status (SIS) in the first year of NCLB.

Year 1	School does not make AYP
Year 2	School does not make AYP
Year 3	1 st Year School Improvement Status (SIS) School Choice must be offered
Year 4	2 nd Year School Improvement Status (SIS) School Choice must be offered Supplemental Educational Services must be offered
Year 5	3 rd Year School Improvement Status (SIS) School Choice must be offered Supplemental Educational Services must be offered Corrective Action
Year 6	4 th Year School Improvement Status (SIS) School Choice must be offered Supplemental Educational Services must be offered School Takeover

Figure 1. NCLB AYP and School Choice

Schools that offered choice, or sending schools, are required to offer more than one choice option, or receiving school, to eligible students (U.S. Department of Education, 2009). In addition, districts have to offer transportation to the choice school. Eligibility for the new school lasts until the student completes the highest grade offered. The provision of transportation, on the other hand, is only required so long as the school remains in school improvement status. If a scarcity for space in the receiving choice schools exists, districts are to give choice priority to low-income and low-achieving students within the sending schools.

Though the increased availability of parental choice is a primary feature of the statute, the option's utilization figures tell a different story. The number of students eligible for the school choice option is large, 6.2 million in 2004-05 and (Gill et al., 2008). However, the utilization of the choice option is small. The latest information on national utilization rates, from the 2006-07 school year is consistent with use patterns from prior years; only one percent of eligible students moved to a different school under the NCLB choice option (Gill et al., 2008; Vernez, 2009; Vernez, et al., 2009). There are likely numerous reasons for the low utilization rates for this option. There are at least three systemic barriers to full utilization of NCLB school choice (Gill et al., 2008; Stullich, Eisner, & McCrary, 2007). First, in the early years of NCLB, many of the states were not able to release their test results for AYP prior to the beginning of the next school year, leaving many parents without knowledge of their school's impending School Improvement Status. Second, parents had incomplete information. This was not only because of tardy test score tabulations but was also due to spotty and unclear notification letters to parents who were able to utilize the NCLB school choice. In 2004-05, half of the districts that had to offer school choice had not notified eligible families until the school year had already started (Gill et al., 2008). Even as NCLB implementation progressed, in the 2006-07 school year, forty-three percent of districts that were required to offer choice to some families were not able to do so until after the school year began (Vernez, et al., 2009). Third, even if parents and students were fully informed, some districts did not have choice to offer. This occurred in rural areas based on a lack of other schools that offered the same grades. This occurred in urban and suburban areas based on the potentially available option schools also being in School Improvement Status. The lack of choice options was less likely for elementary schools,

primarily because a district often has numerous elementary schools and perhaps just one or two middle or high schools.

NCLB Choice and Student Achievement

Although the policy offers choice similar to open enrollment and would certainly work in concert with higher performing charter and magnet schools that could receive choice students, this policy is yet another iteration of choice-based education reform. NCLB choice puts lower performing students in the position of choosing non-structural mobility (mobility not tied to finishing the highest grade offered in a school) to gain improved student outcomes. This places these students at an interesting intersection of policy intentions and unintended consequences. The intent of this policy is to give students in failing schools the chance to move to a school that may offer better instruction, better peer environment, better student-school match and other school-based factors that benefit students, so that there will be a positive impact on student achievement. The unintended consequences may find that students who are most encouraged to change schools are the very same students who are at the highest risk for mobility-related negative outcomes.

It follows, then, that the NCLB choice model may not produce gains in student achievement. On the one hand, there is evidence that school quality differences such as high quality instruction and academic rigor can positively impact student achievement (Bryk, Lee & Holland, 1993). With this in mind, one may conclude that a higher scoring school would be a higher quality school. However, because AYP is an imperfect measure of a school's performance, it is not clear that the schools that the students may choose under NCLB school

choice are substantively different or of better quality than the schools that must offer choice (Braun, Chudowsky and Koenig, 2010; Riddle and Kober, 2011). On the other hand, student mobility research suggests that the negative influence of mobility may outweigh any positive elements of the NCLB school choice policy, depending on the student's overall mobility and how long the student stays in the new school. Studies of student mobility reveal that when students change schools, their achievement levels tend to decrease (Alexander, Entwisle & Dauber, 1996; Hanushek, Kain & Rivkin, 2004; Ingersoll, Scamman & Eckerling, 1989; Temple & Reynolds, 1999). This negative impact is more pronounced for certain at-risk populations of students, including low-income and urban students who make up the bulk of those affected by the NCLB policy (U.S. GAO, 1994, Hanushek et al., 2004). Student mobility is also associated with an increased risk of dropping out of school, poor attendance, grade retention, attending alternative education schools, and behavioral problems (Swanson & Schneider, 1999; U.S. GAO, 1994; Rumberger & Larson, 1998; Nelson, Simoni & Adelman, 1996). Choice based mobility produces a different, mixed results story, though with the similar achievement dip found in the mobility research (Bifulco & Ladd, 2006; Sass 2006; Solman et al. 2001; Booker et al. 2004).

CHAPTER II

LITERATURE REVIEW

Based on the negative implications that mobility has for student achievement outcomes, there is reason to be concerned that students who choose to move under NCLB school choice will experience a negative change in achievement gains and growth. However, achievement patterns over time may vary based on the school characteristics that a student selects as their receiving school. Further negative influences may be present based on the pattern of student movement associated with the NCLB policy. That is, the schools to which the students move may not provide adequate compensatory treatment to outweigh mobility's negative influence. While a "receiving" school may avoid school improvement status, it may not be a school that produces high student achievement, may not be well equipped to work with students who are in need of compensatory intervention, or may not even be substantively different from the sending schools. For these reasons, the extant research on student mobility, choice and NCLB choice in particular are examined to present potential outcomes to the federally mandated choice provisions.

Intrinsic to the NCLB school choice policy assumption is the belief that if students in an underperforming school are given an opportunity to move to a higher achieving school, their achievement will improve. Empirical research that directly informs as to the effectiveness of these NCLB choice policy assumptions is limited (Hastings and Weinstein, 2008; Phillips, Hausman & Larsen, 2012; Zimmer, Gill, Razquin, Booker & Lockwood, 2007). However, there are two primary contexts that inform NCLB policy assumptions and the policy's opportunities

for improving student achievement: choice related mobility and student mobility in general. NCLB choice research, like other school choice analyses, shares the need to consider the differences that school choice mobility introduces. Choice-based mobility is not just a transition between schools but an affirmative choice of picking one school over the existing or default school. Students and their families who make these moves differ, often in unobservable ways, from their non-mobile counterparts or from their mobile counterparts who switched schools for other reasons. These differences are often non-random, so choice-based research must keep this self-selection bias in mind when analyzing choice as an educational intervention.

Student Mobility Research

A distinguishing component of the NCLB policy, as well as school choice policies in general, is that school choice incorporates the belief that student mobility is beneficial when the student moves to seek out a better schooling situation. However, some students and patterns of movement are more associated with negative impacts on student achievement rather than the positive, even compensatory impacts intended by the law's authors. Low-income students appear to be among the most at risk for the negative impacts of school moves (Entwisle & Alexander, 1992; U.S. GAO, 1994; Mehana & Reynolds, 2004; Rumberger & Larson, 1998; Hanushek et al., 2004; Kerbow, 1996; Temple & Reynolds, 1999). Highly mobile and minority students also witness a greater loss in academic achievement after a move (Entwisle & Alexander, 1992; Mehana & Reynolds, 2004; Hanushek et al., 2004; Kerbow, 1996; Temple & Reynolds, 1999), particularly those who move within district and who move in the middle of the academic year, compared to other groups (non-movers, high socio-economic status students, white students) (Hanushek et al., 2004). Mobile students are generally more likely to start with

lower achievement levels than more stable students, placing them behind their peers at both their original and new school (U.S. GAO, 1994).

Although mobility is generally found to be negatively related to student achievement, there is a question as to how important the negative relationship may be to a student's future achievement prospects. For example, Rumberger & Larson (1998) found that a single move between eighth and twelfth grades reduced the likelihood of high school completion and made a GED more likely than with non-mobile students. However, although Hanushek et al. (2004) find a negative impact on mobility for students who move, they did not believe that student-level mobility is a large contributor to explaining why, on average, achievement gains may be less for transient students. On the other hand, they found that there was a cumulative negative impact of mobility for students in schools with a highly transient student body. For individual students they found the negative relationship of student turnover to achievement as short-term with little to no long-term consequences for most students, with minority and low-income students being the exception. Minority and low-income students experience a larger negative impact, and because of this, the authors assert that mobility could contribute "non-trivially" to the achievement gap. Kain and O'Brien (1998) agree that the negative impacts are short-term, asserting that the negative impacts of mobility found in some of the research can be misleading if just examined the year following the move, as they are not likely to persist beyond one year. Ozek (2009) found that the closer a student was to a structural move when the student changed schools, the more pronounced the negative achievement results were. Kerbow (1996) finds that one move does not have long-term negative consequences to student achievement but finds that multiple moves do not allow for achievement recovery time between moves. With multiple moves, a cumulative, larger negative impact on achievement is produced. Temple and Reynolds

(1999) found that the relationship of mobility to achievement for students who move multiple times is non-linear, with a steeper negative influence with each additional move. Other authors have discovered similar findings, that multiple moves exacerbated this negative relationship between achievement and mobility (Alexander et al., 1996; Temple & Reynolds, 1999). With the above findings in mind, an examination of the achievement effects of mobility should be concerned with both the immediate impact of the move, which is generally negative, and the long term impact of the move which may provide compensatory changes to the student's achievement growth or may never produce enough positive benefit to the student to outweigh the short term achievement loss.

It is unclear if the age or grade level of students makes a student more or less susceptible to the negative relationship of mobility to achievement. Although subtle differences exist in this relationship for different age groups, the negative impacts of mobility are generally found throughout the grade range. Students in earlier grades are more mobile, and this mobility is more likely to produce a negative effect in these younger students' achievement (Ingersoll et al., 1989; Mehana & Reynolds, 2004). Swanson & Schneider (1999) found long term negative results to a highly mobile elementary and middle school career with an increased likelihood of dropping out of school among those who had multiple moves before the 8th grade and among students who moved in the early high school years. Additional high school achievement and graduation related relationships were explored, which produced mixed, but generally negative relationships with mobility (Swanson & Schneider, 1999; Rumbarger & Larson, 1998; Cullen, Jacob & Levitt, 2005).

Hanushek et al. (2004) examined the effects of moves within a district versus outside of a district. This is particularly relevant with NCLB choice policy as the choice is restricted to intra-

district moves, which, based on the Hanushek findings, may limit its effectiveness in improving academic outcomes. The authors found a negative relationship to achievement for students who move within a district. In contrast, Cullen, et al. (2005) found benefits of opting out of a student's zoned school and choosing another, higher achieving school within the district to be positively associated with achievement and attainment. However, their full examination shows that the benefits shown are likely to be spurious due to multiple biases in their model of primarily unobservable student characteristics that influence graduation.

Student mobility can occur for multiple reasons: family disruption, job changes, housing needs and school needs (Hanushek et al., 2004). School changes for reasons that are external to schooling decisions, for example, housing needs, may signal other negative or positive disruptions such as divorce, job loss, marriage or increased income which may have an additional impact on achievement that occurs in addition to, though concurrent with, the school change. Temple and Reynolds (1999) found that highly mobile students saw their achievement scores fall one year behind their non-mobile counterparts, but only 6 months of the achievement loss was associated with the mobility. This suggests that the disruptive events like the negative ones mentioned above contribute to the overall negative effects of mobility. Students who move based on their want of better or different schooling may have a different result, since the disruption of their family situation would be based on a desire to improve achievement outcomes. Additionally, a school move in pursuit of better quality schooling may not require a residential move, so the disruption for the student could be less. Therefore, the impact of a move may differ based on the reason a student changes schools (Hanushek et al., 2004; Hastings, Kane & Staiger, 2006, Warren-Sohlberg & Jason, 1992).

Unfortunately, the mobility research generally looks at mobile students without isolating the reasons for moving. It follows then that included in the overall average effects of mobility measured in the existing research on mobility are the effects of mobility when seeking better schooling, a form of mobility more in line with the NCLB policy assumptions. It is unclear whether the relationship of mobility and achievement, when the mobility is based on seeking improved schooling, is consistent with mobility on average. When the performance of a school is considered in the mobility research, information about school moves often comes from the perspective of reasons for leaving a school rather than reasons for affirmatively choosing another school (Kerbow, 1996). This trigger of leaving a lower performing school is consistent with NCLB policy assumptions. The trigger for the policy to be set in motion may not be the strong performance of a school attracting new students but instead the weak performance of their current school.

A few studies have taken the change in school performance levels between the new and the old school into account (Hanushek et al., 2004; Temple & Reynolds, 1999; Cullen et al., 2005). Hanushek et al. (2004) ran a student fixed effects model that attempted to separate out the effect of different types of moves (e.g., interdistrict and intradistrict mobility) during the academic year and multiple moves within a year. The authors included a mechanism to measure the effect of the accompanying change in school quality, as defined in their model. School quality was measured, in its final manifestation, through academic gains. That is, did the student who moved see increased gains in the new school? If so, then that student is considered to have experienced an increase in school quality. The operational measure within their models was a function of observable characteristics of school that may impact school performance (per pupil expenditures, teacher qualifications) and of the mobility level of the school's student body. The

measure of the change in these measures in their models was designed to separate out the net effect of the move from these other changes. These school changes were negatively related to achievement for within district school moves. Their school performance change measure incorporated elements of the school's aggregate mobility of the student body. Their findings showed that urban districts with large amounts of within district moves suffered a loss in these school measures. Students of low socio-economic status (SES) and minority students did not experience the same mitigating effect of the school change measures. Urban, low SES and minority students are particularly relevant to the Title I NCLB choice policy. The possibility that changes in school characteristics that are generally associated with improved student outcomes do not mitigate the negative influence of mobility for these students provides a troublesome picture for the NCLB choice policy.

Other school level characteristics can exacerbate or ameliorate the effects of mobility on students. Mobile students in a classroom can slow curricular pace and influence the direction and rigor of classroom instruction (Kerbow, 1996; Lash & Kirkpatrick, 1990). The Hanushek et al. (2004) measure of aggregate school mobility within their school quality measure showed school-level mobility as a mechanism of disruption that explains some of the overall negative influence of mobility. This negative relationship was less about peer quality and more about the school instability that is produced by the mobility of its students. Lash and Kirkpatrick (1990) found a need for better teacher training in handling mobile students. Their study showed teachers with an average class size per year of 30 students. However, due to students moving in and out of the school, 49 students were actually served by the classroom over the course of the year. These studies suggest that mobility is a key component of some students' education, and that a school-level response that incorporates mobility through understanding mobility patterns

and what new and departing students need to succeed in a new school may be critical to the success of a policy that fosters more mobility.

In summary, the general student mobility literature paints a picture that may argue against increasing mobility for the very students for whom the NCLB choice policy is designed. One student move is not seen to be overly damaging to the long term student achievement trajectory. However, students in Title I schools are more mobile, which places them at a greater risk for the long-term negative influence of mobility. School level interventions and measures that were used to indicate increased rigor or improved student outcomes do not mitigate the negative relationship of mobility and achievement for the most at risk students (low SES and minority students) (Hanushek et al., 2004). This is particularly problematic, as the policy is limited to students in Title I schools, schools that serve predominantly low-income students and often a disproportionate number of minority students. In addition, within these schools, the policy gives low-income students priority if receiving school spaces are limited. In effect, the policy is designed to encourage mobility in students that, on average, respond negatively to the disruption that occurs with a school change.

Research on School Choice and Mobility

The extant research on choice within the context of charter and magnet schools and within voucher programs presents some similar patterns to the relationship of mobility to student achievement and is relevant to NCLB choice related mobility in that the mobility is selected. The choice mobility literature does not indicate that choice related mobility produces starkly different achievement growth patterns than mobility in general. Unfortunately, neither the

student mobility nor the choice mobility research produces a picture that gives clarity to what the expected effects may be for the NCLB choice policy. In the choice literature, the move is framed less as choosing to *move from* an underperforming school, as the NCLB policy in question is often discussed as, and more as choosing to *move to* a higher quality school or a better student-school match. School choice via charter schools, magnet schools or voucher programs can all inform an NCLB choice analysis. Open enrollment programs where intra-district transfers are allowed outside of NCLB criteria can also be an appropriate comparison but, because NCLB is in fact a sub-group of intra-district choice, that discussion is reserved for the next section.

The relationship between choice mobility and achievement among the different choice sectors can be difficult to isolate due to the heterogeneity of the choice school intervention, even within sectors. On the one hand, these differences in receiving school types may suggest that student-school match could be improved because of the distinct nature of the choice school versus the traditional public school. On a small scale, a research effort may find that. But when looking across educational sectors, the heterogeneity often masks the individual interventions that can vary widely as to their relationship to achievement gains and losses. Mobility, then, stands to be further clouded by this heterogeneity. Even so, researchers have been examining these choice interventions in their macro and more individualized forms (Bifulco & Bulkley, 2014; Zimmer and Bettinger, 2014; Ballou, 2009). Not only are there some mobility lessons to be learned from this choice literature, but the methods used to address choice element in this intervention, most specifically, the self-selection bias inherent in a choice-based intervention can inform research methods used in evaluating NCLB choice.

Charter school mobility's relationship to achievement generally mirrors student mobility overall. Most studies found at least an initial year dip in student achievement gains that corresponded to a move from a traditional public school to a public charter school (Solmon, Paark & Garcia, 2001; Bifulco & Ladd, 2006; Booker, Gilpatric, Gronberg & Jansen, 2004; Sass 2006). This is consistent with the student mobility literature outside of choice schools. However, there were varying findings on whether the length of time that charter school students stay in the charter school compensates for the achievement loss resulting from the move. In the Booker et al. (2004) study, mobility to charter schools produced the familiar dip in achievement in the first year, but continued charter school attendance allowed for a recovery in the loss of achievement. In addition, there was some evidence that, over a three year period, there is an overall gain for students. Similarly, Solmon et al.'s (2001) work showed that over time, the loss experienced in the move to a charter is neutralized by time spent in the new school. Other research did not find as positive of findings. Two studies found that the dip in achievement that occurred after the move does not grow over time, but is large enough that the benefits of staying in the charter school do not offset the initial negative effects of the move to the charter school (Bifulco & Ladd, 2006; Solmon et al., 2001). In Solmon et al., stability after a move differed in its relationship to achievement depending on the schooling sector in which the student stayed. Students staying in a charter school had higher achievement than students staying in a traditional public school.

A few studies see a plurality of mobility issues that relate to choice schools. To support a school choice policy is to have implicit support for increased student mobility. For this reason, several studies examined the multitude of mobility patterns between charter and traditional public schools. Mobility from a charter school to a traditional public school finds different

results than a move from a traditional public school to a charter school. Returning to a traditional public school from a charter school has, in some circumstances, produced a positive relationship with mobility (Bifulco & Ladd, 2006; Solmon et al., 2001). Booker et al. (2004) found a roughly neutral effect for a student who first moves to a charter school and then subsequently returns to the traditional public school. With this model, two moves did not appear to produce the cumulative mobility effect that is found in the non-choice mobility literature. It is unclear what is at work to create these differing mobility relationships, as school measures that may help differentiate the school experiences such as academic rigor and teacher quality are not measured directly in these models. It may be that school match is improved since the students measured tried the charter school and returned to the perhaps better known and better matched choice. Solmon et al. (2001) suggest that the charter school could have provided a strong foundation that allowed the children to excel once they move to the traditional public school.

Voucher programs, where public school students are given a student-based subsidy to take with them to a private school, are another form of school choice. Voucher programs have stemmed from government action in some states and have been privately funded by foundations in multi-state programs. Either way, the research is mixed on voucher-based choice and its impact on mobility. Studies have found positive, negative and neutral relationships of vouchers and achievement (Zimmer, Guarino & Buddin, 2010; Zimmer & Bettinger, 2014). Rouse's (1998) study, one of the few with positive effects, tracked achievement effects over time and found that the positive effects in math grew over time, consistent with some of the general mobility literature.

There are choice models that still fit within the public school system that have shown additional evidence around choice-based mobility's relationship with student achievement.

Magnet schools and open enrollment policies are two such models. While some discussions of magnet schools place them more in line with intra-district choice programs such as open enrollment or NCLB Choice, because the educational intervention is specifically designed to be distinct from the traditional public school and at times has restricted admissions based on academic merit or specialized talent, magnets can be viewed as apart from the other intra-district choice options. Consistent with trends explored above, no one pattern emerges from magnet school literature (Zimmer, Guarino, et al., 2010).

Open enrollment is similar in many ways to the NCLB choice policy, and in areas where there is a robust open enrollment program, and long term, it is perhaps the policy that the analysis presented here may inform. The Education Commission of the States tracks state policies on open enrollment and shows a steady expansion of the availability of such choice across the country (Mikulecky, 2013). In an examination of one of the country's largest school district's open enrollment policy, Ozek (2009) finds negative effects on reading among students opting out of a student's zoned school. In a slightly different take on the duration of the negative effects of a move, he examined how close a student was to making a structural move when the choice move was made. Students who moved two years before a structural move would have occurred anyway had improved test score impacts than those who moved the year before a structural move. Additionally, he examined both elementary and middle school students and found that the negative testing results were more significant for those in elementary than in middle.

With this look at choice-informed research, there is an indication that NCLB school choice could function contrary to its policy goals, producing mixed or negative results in student achievement gains. Even so, the policy assumptions of providing a student with improved

school quality would suggest the possibility for student improvement in academic achievement.

The analysis to follow will examine the policy assumptions found in the NCLB school choice policy to determine what influence this type of mobility has on academic achievement.

Additional analysis will attempt to parse out different student populations to determine which students, if any, benefit from the opportunity to move from a lower performing school to a higher performing school. Both the mobility and choice literature will inform the models used in this examination.

NLCB School Choice and Achievement

There have been a few studies specific to the NCLB school choice provision that examine the choice utilization's relationship to student achievement (Hastings and Weinstein, 2008; Phillips, Hausman & Larsen 2011; Vernez et al., 2009; Zimmer et al., 2007). Other studies, the aforementioned included, also look at utilization rates, school and district impacts, and other NCLB interventions like the supplemental educational services (Phillips et al., 2012; Zimmer, Hamilton, et al., 2010).

NCLB based mobility has been examined for its possible influence on academic achievement. Consistent with the aforementioned studies on choice and mobility, the existing research found mixed results for the policy's influence on student achievement, as measured by standardized tests. There is some evidence that the policy's success is dependent on parent information and the achievement levels of the school that families choose. None indicates that choice in general is the determinant of positive outcomes. Each of the three primary studies uses information from the school district(s) about the schools that are in improvement status, which

schools a student can choose, and the student's choices. One examination used data from six districts to determine the relationship of the school choice to achievement (Zimmer et al., 2007). The authors broke out various subgroups across each district for analysis to determine the choice treatment influence on students who exercised choice. There were no significant reading achievement differences detected among these students. For math, they found that African-American students making the NCLB choice move in one district had significantly higher gains than those who stayed at their original school, but Hispanic students and students with disabilities saw negative relationships between math test scores and the choice move. Phillips et al. (2011) found that exercising NCLB choice did not raise math or language arts scores for the transferring students in one urban district. When the analysis included controls for whether the new school was one that was academically lower, the same or higher than the original school, they found that students choosing a higher scoring school did see achievement gains. However, few parents made the choice to a higher scoring school. Hastings and Weinstein (2008) found similar results in another urban school district. Families who chose similarly achieving schools to their original school saw no positive impact and families who chose higher performing schools found an increase in student test scores compared to the two control groups used. These studies suggest that there is opportunity for some students in exercising the NCLB school choice option, but that parent information and higher achieving receiving school options are key to its success as a compensatory policy.

Based on the mobility literature, the length of time spent in the new school may produce compensatory results that would either net out the negative influence over time, or may outpace the negative influence. However, these studies did not show this pattern. Students exercising the policy who were tracked for two to three years did not see increases in gains and in some cases,

fared poorly. Zimmer et al. (2007) used longitudinal data to examine students for one year and two or more years after the move. They found a negative influence on African American math scores over time for students who moved to a higher performing school.

Other Considerations Affecting the NCLB Choice Landscape

While this discussion explores the NCLB school choice provision, NCLB has several other interventions that work alongside the choice provision. As mentioned above, a third year of not meeting AYP requires a school to offer Supplemental Educational Services (SES) to the students remaining in the school. The take-up rate of SES services was much higher than the choice provisions with seventeen percent of eligible students utilizing them versus only one percent who utilized school choice (Vernez et al, 2009). One examination of SES services in seven cities found significant positive impact on both math and reading achievement gains for participating students in five of those districts. The remaining two districts' results were statistically insignificant. Multi-year participation produced greater and even greater positive impact in a few of these districts (Zimmer et al, 2007).

SES services impact the students in this study in that they are providing another opportunity to choose an intervention aimed at the students in the same underperforming school. For schools in their third or greater year of not making AYP or schools not yet out of School Improvement Status, SES is a competing choice for families considering ways to compensate for the school's underperformance. Once SES is offered, there is a potential for contamination of a comparison group used to analyze the impact of NCLB choice, in that both the moving and staying students could receive a choice intervention.

Another NCLB development that impacts this policy arena was the Obama Administration's decision to grant waivers beginning in 2011 from many of the AYP related measures in the NCLB law, including the expectation of 100 percent of students making AYP, school choice and other school improvement related interventions. As of November 2014, only nine states were operating NCLB without a waiver though some of the waiver states may not have sought waivers on all of the provisions mentioned (edweek.org, 2014).

Methodological Considerations

As has been mentioned above, mobility associated with *choosing* a new school functions somewhat differently than other types of mobility. The attempts to address methodological challenges of appropriately handling choice schooling can characterize much of the existing research. Some of the mixed results may stem from improving or shifting methods, while other mixed results may be functions of the limitations of rigorous methods given the policy and data considerations that must be made in choice based analysis.

Families who select a school for a child rather than sending their child to the default zoned school, may be more involved with their child's education, more educated, or may possess other observable or unobservable factors that contribute to achievement results, both positive and negative. These family background and unobservable characteristics, rather than school characteristics, may be more powerful in helping or hindering a student's achievement progress in the new, higher performing school. Therefore, statistical models that seek to illuminate the relationship between school choice and student achievement must control for this self-selection

bias (Bifulco & Bulkley, 2014; Zimmer & Bettinger, 2014; Zimmer, Guarino, et al., (2010). The literature offers a few different options of models to assist in reducing this bias in the estimates.

One such option is a student fixed effects model to address these unobservable student characteristics (Bifulco & Ladd, 2006; Sass, 2006; Ballou, Teasley & Zeidner, 2006; Hanushek et al., 2002; Booker et al., 2004; Solmon et al., 2001). A fixed effects model controls for unobservable characteristics of the individual student by tracking the same student longitudinally, thus controlling for same-student unobservable characteristics. However, caution must be taken as the model depends upon the student having test scores in both the traditional and choice school, omitting any students who begin their tenure at the choice school or for students who stay at the zoned school for the duration of the study period (Ballou et al., 2006). For the analysis presented here, a fixed effects model would be appropriate for a portion of the research question, the relationship of the choice treatment on mover educational achievement, but it would not provide any information about achievement growth of those who did not make the move. Because this is an intra-district choice intervention, the district has an equal stake in the success of both movers and stayers, and as such, both achievement trajectories are of interest.

Another oft used methodological approach is the natural experiment created by the lottery system for charter, voucher and magnet schools' admissions (Hoxby & Rockoff, 2005; Hoxby & Marurka, 2007; Cullen & Jacob, 2007). Randomized lotteries are conducted when the program is oversubscribed. However, this model depends on oversubscribed schools in order to have the natural experiment. Schools with waiting lists are likely to differ in significant, non-random ways from schools that are not in high demand, thus the results from such an analysis are likely to overestimate achievement results from the choice schools and the generalizability of a study is quite narrow, being only applicable to similarly oversubscribed schools.

A third method is to employ an instrumental variable, where a two-step regression model includes the instrument, a variable related to the choice decision but not to the outcome (Cullen et al., 2005). While useful, finding such an instrument can prove difficult and may narrow the applicability of the study sample.

Another quasi-experimental approach is propensity score matching (Rosenbaum & Rubin, 1983; Rubin, 1977; Guo & Fraser, 2010). This method uses treated and untreated observations (or, in the case of this examination, movers and stayers) in a probit regression model to estimate a student's likelihood to receive the treatment (attend the choice school). A propensity score is calculated to show which students possess a similar propensity to utilize the treatment. Similarly scoring students across the "control" and the "treatment" groups are matched based on having a similar distribution of covariates. This reduces bias due to self-selection inherent in choice-based research in the sample used in the analysis. This method has been employed in choice literature by Zimmer, Gill and Obenauf (2014) with their examination of charter school authorizing bodies influence on charter student achievement and by Phillips et al (2012) with their examination of the NCLB choice influence on student achievement.

Research Methodologies Employed

The limited research on NCLB choice still leaves questions as to the effectiveness of this policy. On average, the policy's effectiveness appears to be neutral or minimally impactful in either direction (Phillips, et al. 2012; Zimmer et al. 2007). However, one emerging and promising result is that NCLB moves can make a significant positive difference in student achievement if receiving schools are, in fact, high achieving schools (Phillips, et al, 2012;

Hastings and Weinstein, 2008). Other intra-district choice studies have found similar results (Ozek, 2009; Hastings et al., 2006; Temple and Reynolds, 1999). An interesting angle to exploring NCLB choice would be to have an alternate test instrument that tests the same schools so to use an alternate picture of a school's achievement than the NCLB AYP policy related picture. This alternate test could prove useful because of the myriad of state-level policy decisions that can influence how state standards tests are translated into AYP and NCLB accountability status. For example, states can reset cut points for proficiency status in their state testing, and can changing testing administration criteria such as when a 'retest' is considered valid (Riddle & Kober, 2011). Thus, schools not in school improvement status may not differ as dramatically as a choice policy may have envisioned. Schools that benefitted in reputation from some of these policy decisions that would result in a school avoiding school improvement could then be on track to receive choice students. There are concerns that AYP, in measuring levels, does not adequately capture quality schools that produce large achievement gains for initially low performing students³. If there were data that could be used to calculate school and grade level gains, the measures of higher performing schools could provide some additional dimensionality. Fall to Spring gains in addition to level scores could be utilized to allow for a measure of learning achieved in the year and a control of summer learning loss (Entwisle and Alexander, 1992). Gain score consideration also directly addresses part of the NCLB policy that has been critiqued and sometimes waived, where, in most states, only school achievement levels are used in assessing schools, which have a strong relationship to socio-economic status.

NCLB choice is under-utilized as an educational intervention with only one percent of eligible students taking advantage of the move (Vernez, et al. 2009; Zimmer et al, 2007). The

³ Three states use student growth in their assessment of AYP (Riddle & Kober, 2011).

sample utilized here shows a similar utilization rate. This is a policy that, even though it is not frequently used and some state NCLB waivers have diminished its applicability, remains relevant as intra-district choice models of similar constructs are being infused in public school districts across the country (Mikulecky, 2013). Because the policy has grown in availability to students, examinations of its impact to student achievement will be important for future policy discussions on school choice within NCLB and in open enrollment and other choice models in general.

Intra-district choice is supported through a few policies, with NCLB choice and district open enrollment available in more and more districts across the country. The NCLB choice movement pattern captured in this analysis is similar to if not the actual move that NCLB authors designed, where improved school information would help parents in low performing schools move their children to better schools. Similarly, for districts with open enrollment, the expectation is that this type of student information would be used to pursue choice schools, if parents are inclined.

With this limited research, there is an indication that NCLB school choice may produce mixed or negative results in student achievement. Even so, the policy assumptions of providing a student with improved school quality would suggest the possibility for student improvement in academic achievement. Empirical exploration of the conditions by which choice-based mobility can be compensatory for a student would prove useful as choice models of multiple designs are increasingly encouraged in the public school landscape. As more and more policy provisions expand school choice, the ability to guide parents in making an informed choice and schools in structuring their curriculum, culture and organization will be invaluable. Ways to inform decision-making that can appropriately consider choice mobility's potential for negative and for

compensatory effects that can inform school-level and parent-level actions will be critical to the success of choice-based policies.

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