The Impact of Residential and School Mobility on Neighborhood Characteristics, School Quality, and Educational Outcomes

Expanded abstract/proposal prepared for PAA 2005

Introduction

There has been a long history of research examining residential mobility patterns and their relationship to children and family outcomes (Long, 1972; Rossi, 1955). Much of this observational research suggests that the disruptions that often accompany moving neighborhoods negatively impact behavioral outcomes and school performance (Astone and McLanahan, 1994; Straits, 1987; Pribesh and Downey, 1999). Another literature that examines the impact of residential mobility experiments, where poor families are placed into better neighborhoods via legislative mandate, suggests that moving from disadvantaged neighborhoods to more affluent and safer areas can significantly *improve* children's educational outcomes and family life in general (cf. Rubinowitz and Rosenbaum, 1999). This suggests that neighborhood and school change can sometimes help, despite initial disruptions in social ties, family routine or schooling adjustments[1]. However, these studies examine data derived from intense interventions and can't tell us what happens "naturally"—that is, when families make the choice to move on their own or switch the schools their children attend. Additionally, the research that connects residential/school mobility to youth outcomes generally doesn't provide information about the areas and schools to which people move. One might imagine that "destination" neighborhoods and schools may mitigate the negative results that might occur when a family has to move due to extreme neighborhood violence, or when a child switches from a poor performing school to a more resource rich environment. On the other hand, it is also possible that some moves are involuntary, such as those involving eviction by a landlord or expulsion by school administrator, and may result in lower levels of neighborhood or school quality. Therefore, this paper will examine what kinds of neighborhoods and schools families move to when they do make such a change, what kinds of students make such changes, and whether residential moves and school changes still result in negative effects when the quality of neighborhood and school is accounted for in the processes determining student outcomes. In this paper, using the very recent NLSY97 data set, we ask specifically:

1) *How often do students experience residential mobility? How often do students change schools?*

2) *Which kinds of students are more likely to experience these events?*

3) *What determines how many moves students experience?*

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[1] When we refer to school change, we mean non-routine, non-promotional changes, not the transition from elementary to middle school, for example.

4) *How does neighborhood quality change after moves?*

5) *How does school quality change after moves?*

6) *How does the occurrence of these events impact high school outcomes?*

Background Research

There are many ways in which we might think about the motivations behind mobility. Parents may choose to move into public housing because of a loss of income or they may move from the city to the suburbs when they acquire a new job. Sometimes parents will remove their children from schools because the schools are too dangerous, the child has special needs the school can't meet, or the student has been discharged from the school due to disciplinary problems (Riehl, 1999). Despite the various reasons for moving, most research has found that mobility has negative effects on a variety of educational and developmental outcomes, from adolescent behavioral development to high school test scores and completion (Pribesh and Downey, 1999; Astone and McLanahan, 1994; Adam and Chase-Lansdale, 2002; Straits, 1987; Tucker et al, 1998; Heinlein and Shinn, 2000). Although family structure and family social capital can help to reduce the negative impacts of moving, students who experience high levels of mobility may still demonstrate lower levels of academic achievement (Hagan, MacMillan and Wheaton, 1996; Ream, 2003; Tucker et al, 1998). It is hypothesized that the mechanisms through which these disruptions impact school involve the loss of social and community capital, and the severing of important relationships with school personnel (Coleman, 1988; Pribesh and Downey, 1999; Hagan et al, 1996).

However, it is important to note that most of this research has been carried out with nationally representative panel data, such as the High School and Beyond data or the National Education Longitudinal Study of 1988. While this data is representative and long-term, it is also observational. That means we can't be sure that the effects of moving neighborhoods and schools isn't just a selectivity effect—that the effects of mobility aren't really proxies for family characteristics that also affect educational outcomes. Therefore, if minority families, low income families or families with low performing students are more likely to move, we are more likely to observe negative effects of mobility (as Pribesh and Downey, 1999 note). This also means that the families likely to move might also be likely to move to lower quality neighborhoods, given the well known trends in racial segregation and rental discrimination (Massey and Denton, 1993; Yinger, 1995). What if they moved to better neighborhoods?

Some research has been able to test that question. Research involving residential mobility experiments has focused on the major changes in neighborhood quality that come from random and quasi-random assignment of low-income families to better neighborhoods. The Gautreaux program followed families moved from public housing to the affluent suburbs of Chicago (Rubinowitz and Rosenbaum, 1999). Research examining the long-term outcomes of these families has shown strong positive effects of increases in neighborhood quality on children's educational outcomes, such as high school completion and college attendance (Rosenbaum, 1995) as well as family economic

outcomes (Mendenhall, Duncan and DeLuca, 2004). The experimental Moving To Opportunity program (which placed randomly selected public housing families into low poverty census tracts in five cities and included control groups) has also shown some positive effects of moving to safer neighborhoods with better schools (HUD, 2003).

With this research, we know more about the real causal effect of neighborhoods and schools, but we know less about how this occurs naturally among families who are not involved in such intense changes of environmental quality. This is because the common analytic treatment of the relationship between school and residential mobility does not consider the quality of the schools or neighborhoods to which families move. Though research has found negative effects of moving, it doesn't consider empirically whether that move brings the child to a better school, or a safer neighborhood. Since we know that moves from very poor neighborhoods to more advantaged areas can lead to better outcomes for some children, we need to examine to what extent some nonexperimental moves result in higher levels of school quality. If the changes in school or neighborhood quality that accompany mobility were considered with observational data, we might find that not all moves are detrimental to school outcomes. Therefore, we examine these issues with the most recent data available to study such relationships, the NLSY97.

Data and Methods

The National Longitudinal Survey of Youth 1997 (NLSY97), collected by the Bureau of Labor Statistics, tracks a nationally representative sample of youths living in the United States who were 12 to 16 years old as of December 31, 1996. The NLSY97 cohort, a sample of 8,984 youths, is interviewed annually with 5 rounds of data available thus far to examine their various school and mobility trajectories. The survey collects detailed information about youth labor market and educational experiences and provides valuable contextual information through parent interviews, school surveys, and transcript data gathered as the youths leave high school (see Table 1 for basic descriptives on the sample). Essentially, we have data that covers the 7th grade through the first years of college for four cohorts of students, depending on their age at the start of Round 1.

Independent Variables

Student level (from youth questionnaire):
Race
Gender
8th grade grades
ASVAB test scores at Round 1
High school curriculum (levels of math, science, English, Social science courses)
Measures of expectations about college, work, and adult life
Measures of peer relationships and influences (whether peers use drugs, drink, go to church, volunteer, play sports, cut classes)
Engagement behaviors (absences, homework)

Family level (from the household roster, youth questionnaire, and parent interview):

Highest grade completed by parents
Family income
Family structure (two parent, single, biological parents, other caregivers)
Household size and number of youth under 18 in household

Dependent Variables
Mobility
We obtain our measures of student residential and school mobility from a number of sources[2].

     Residential Mobility: Variables were created in round 1 to describe the respondent's residence as of his or her 12th birthday; another counts the number of residences in which the respondent has lived from his or her 12th birthday until the survey date (all rounds, updated by round). Another variable is available for rounds 2 through 5 and describes all moves made by the respondent, including moves within a county, within a state to a different county, between states, and to and from a foreign country. Parental interview data describes moves made from the 7th grade forward.

     School Changes: As suggested by Swanson and Schneider (1999), we use both school and residential mobility measures. The school data is derived primarily from the school rosters, which have data for every spell of schooling at all schools students attended, starting at round 2 and updated every subsequent round. With this data, we know the unique school ID, the type of school (middle, high school, college) and the duration of attendance by month. This allows us to carefully track all school changes that are not the result of regular promotional change (i.e. from 8th grade to high school). For those students who entered the survey while already in high school, we supplement the school roster data with parental data. The parent reports information about all schools attended by the youth since 7th grade and answers questions about gaps in enrollment of one month or more.
We will also use an NLSY97 created variable to summarize the total number of schools the respondent has attended from the 7th through 12th grades as of each round's survey date.

School Quality (from youth questionnaire and restricted school administrator survey[3]):
Student report of school climate
     Discipline is fair
     Disruptions by other students get in the way of my learning
     I feel safe at this school
     Students are fairly graded
     Teachers are good
     Teachers are interested in the students

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[2] There are some data coverage limitations, due to sample attrition and non-response, as with any longitudinal panel data set. For example, we are likely to underestimate the number of moves made by students for whom we only have a few rounds of data, or for whom parent interview data are missing.
[3] The data coming from the school administrator survey is available only by permission at the Bureau of Labor Statistics in Washington. We already have access to this data.

There is a lot of cheating on tests and assignments
School size
Student-Teacher Ratio
Administrator Data (collected in 1996 and 2000 for every school in a sampled
     Metropolitan Statistical Area):
Type of School (Catholic, Public, etc)
School resources (whether school has library, career center, media center, health clinic,
remedial resource centers, drug prevention)
Number of computers per student
Teacher tenure and qualifications
Teacher salary
Graduation rate
College enrollment rate
Average daily attendance
Percent of free lunch, school breakfast, ESL, and special education students
Percent students taking SAT, ACT, college preparatory courses
Number of graduation requirements
Whether graduation exam is required
Whether entrance exam is required
Frequency of delinquent or violent behaviors per year (such as fights, gang activity,
robbery, vandalism, abuse of teachers, possession of weapons, use of substances)
Frequency of withdrawal behaviors (tardiness, truancy)

Neighborhood quality (from Geocode data, based on census tract):
Poverty rate
Percent of Female headed families
Percent of 16-25 yr olds with HS diploma
Percent of 25 or older with college degree
Percent of homeowners
Unemployment rates (male and female)
County level crime rates
Percent minority
Percent receiving public aid

School Outcomes
     High school dropout—a measure of ever experiencing a spell of high school
     dropout, regardless of whether or not the student returned; derived from youth and
     parent questionnaire
     GED attainment—derived from youth interview
     Cumulative High School Grade Point Average—updated every round, as students
     graduate
     College Enrollment—whether student ever enrolled in college; whether student
     enrolled in college within 6 months of high school graduation

Methodologically, our work advances previous research in the following ways:

1) We use the **most recent data** available. For example, the NLSY97 allows us to examine outcomes for students who have been impacted by the school choice legislation efforts of the mid to late 1990's.
2) We have matching neighborhood and school characteristics as they change over time, and we have multiple measures of residential change over a five to seven year period
3) We have complete monthly school attendance spells for each school attended, with start and stop dates by month and year, for five years of school attendance for students ages 12-16
4) We are using **event history models** that are sensitive to relevant issues of timing, as called for by previous researchers (Astone and Mclanahan, 1994). We can use hazard models to predict the effects of student characteristics on the likelihood of moving. Using such models allows us to account for the fact that some students will move, but may not during our observation window. Instead of inaccurately characterizing these students as having never experienced an event of interest, we can consider them as still in the "risk set", and open to experiencing the event in the future. In addition, the effects of mobility are likely to differ depending on *when* students move, and treating such changes as static takes away from their effects on school outcomes.

5) We also rely on **multiple sources of data**: student survey data (from interviews), high school survey data (from school administrators) and parent interviews. This combination allows us to make the residential and school trajectories as complete as possible.

6) We will use **multiple imputation** techniques to handle missing data problems.

e) Results and Analytic Plan for Next Steps (Preliminary)

To date, we have run primarily descriptive analyses. As mentioned above, the data set is complex and relatively new (the first data user's workshop was held July 21-24th of last year). Therefore, we have not completed our multivariate analyses at this time. Here we present our descriptive findings (Tables 1-5) and our proposals for more sophisticated models.

1) *How often do students experience residential mobility? How often do students change schools?*

Table 2a suggests that most students experience at least two school changes, and 33% experience more than 2. Thirty percent of students have one residential change during the five years of survey collection, while almost half have three or more.

Tables 3a and 3b show similar results when we consider students for whom we have both residential and school mobility data (sample decreases a bit). Table 4 shows that students can experience many changes in school environment with each residential move—even as many as three school changes per address change.

2) Which kinds of students are more likely to experience these events[4]?

Though these are preliminary descriptives, we can see that female experience slightly more residential mobility than males (no significance tests done at this point). However, there are much larger differences when we look by race and income level. Black students are the most likely to experience residential change, and black and Hispanic students demonstrate the most school changes. We see more mobility of both kinds among students at the lowest income levels and levels of academic performance in school. Unfortunately, we cannot say whether these are positive or negative trends, since our multivariate analyses have not been performed yet. We will use hazard models to adjust for censoring (non-observation of mobility).

3) What determines how many moves students experience?

To examine this question, we will employ ordered logistic regression to predict the number of moves, adjusting for family and student characteristics.

4) How does neighborhood quality change after moves?
5) How does school quality change after moves?

To answer these questions, we will examine the changes in both neighborhood and school quality with each move a student makes. It is possible that residential and school mobility yields no change, positive change or negative change relative to the characteristics of one's origin neighborhood. We will use our census measures and the school quality measures (linked from the restricted access school administrator surveys by a unique school ID to the youth questionnaire school roster) to create composite factors of quality and present descriptive changes of these quality measures.

6) How does the occurrence of these events impact HS outcomes?

To answer this complex question, we will first assess whether residential and school mobility (adjusting for family and student background characteristics) negatively impact HS dropout, cumulative HS grades, and college entry. This is a test to see whether previous research findings are replicated. Next we will use the variables for quality change created above, and use them in models predicting the effects of mobility on Essentially, we will test whether the impact of mobility differs depending on the quality of the destination neighborhood and school.

Other Analytic Issues

There is likely to be an endogeneity (selection) bias in our analyses of mobility and its effects on outcomes. We assume that those families that move might be different

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[4] We also have the opportunity to examine whether major household changes (such as divorce, death of parent, unemployment) impact mobility, an important consideration of past research (South, Crowder and Trent, 1998).

from those that don't in ways that affect not only student level educational outcomes, but also the quality of neighborhood and schools one experiences. It is also likely that families who move frequently will also be harder to follow up in subsequent rounds of the survey, leading to a sample selection bias. Therefore, we will employ selection correction techniques beyond controlling for background characteristics to reduce the bias these "omitted variables" will cause for our analyses.

Implications of Research

Survey research has suggested that moves are developmentally and educationally detrimental, while some unique residential mobility studies have suggested that substantial increases in school and neighborhood quality can improve educational outcomes for disadvantaged youth. The policy recommendations have been mixed— many researchers advocate the reduction of mobility, especially during developmentally risky periods (such as divorce, see Astone and McLanahan, 1994), while other researchers advocate the importance of high quality neighborhoods on child outcomes (cf. Shonkoff and Phillips, 2000). Therefore, it is important to assess whether the quality of the neighborhood and school one moves to can impact outcomes, net of the disruptions mobility can cause on social ties. The current study proposes to examine this issue with recent data and comprehensive measures for mobility and its antecedents.

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Table 1. Unweighted Descriptive Statistics: NLSY97 Youths, Ages 12-16 in 1996 (N=8984)

Variable

demographics

Female	48.8%
Black	26.1%
Hispanic	21.2%
Non-black/Non-Hispanic	49.2%
Asian	1.8%
Household Income	mean=47, 801 std. dev.=48,046
Parental Education	mean=13.14, std. dev.=3.05
Household Size	mean=4.55 std. dev.=1.54
Number of Youths in Household under Age 18	mean=2.45 std. dev.=1.28
Age at Round 1 (in continuous months)	mean=178.2 std. dev.=17.37
Lives with Biological Mother Only	24.5%
Lives with Biological Father Only	2.7%
Lives with One Bio Parent and One Step Parent	10.1%11.8
Lives with Two Biological Parents	51.3%
Lives in Other Arrangement	9.7%
Urban	74.9%
Rural	24.1%
Other Location	.97%

general schooling experiences

Public School	91.0%
Catholic School	3.5%
Private School	2.9%
Other Type of School	2.7%
Grades: Mostly below D's or D's	4.1%
Half C/D;s and mostly C's	21.0%
Half B/C's	25.0%
Mostly B's or half B's and A's	35.8%
Mostly A's	10.8%
Other	3.4%
Absent 0 Days	19.4%
Absent 1 to 5 Days	55.1%
Absent 6 to 13	18.2%
Absent 2 Weeks	7.4%
Ever Suspended	29.3%
% Chance work 20+ hrs/week & not in school	mean=82.16, std. dev.=27.68
% Chance receive a college degree by age 30	mean=71.08, std. dev.=32.32
ASVAB - Arithmetic Reason	mean=-132.22, std. dev.=842.30

Table 2a. Total Schools Attended between 7th and 12t[

Total Schools	Percent	N
0	1.13	92
1	12.61	1031
2	52.83	4320
3	21.46	1755
4	7.83	640
5	2.89	236
6	0.87	71
7	0.26	21
8	0.06	5
9	0.05	4
10	0.01	1
11	0.01	1

Notes: For youths with no parent interview (N=1,042), the number of schools attended is likely an undercounted estimate.

Table 2b. Total Residential Addresses Since Age 12

Total Moves	Percent	N
1	29.3	2306
2	21.91	1724
3	16.04	1262
4	11.6	913
5	7.83	616
6	4.94	389
7	2.88	227
8	1.91	150
9	1.33	105
10	0.85	67
11	0.5	39
12	0.33	26
13	0.18	14
14	0.1	8
15	0.09	7
16	0.05	4
17	0.03	2
18	0.04	3
19	0.03	2
20	0.01	1
21	0.01	1
22	0.01	1

Table 3a. Total Schools attended between 7th and 12th grades (N=7,682)

Total Schools	N	Percent
1	1002	12.74
2	4174	53.09
3	1693	21.53
4	611	7.77
5	224	2.85
6	69	0.88
7	19	0.24
8	5	0.06
9	4	0.05
10	1	0.01
11	1	0.01

Table 3b. Total Residential Addresses since age 12 (N=7,682)

Total Moves	N	Percent
1	2305	29.32
2	1722	21.9
3	1261	16.04
4	913	11.61
5	616	7.84
6	386	4.91
7	227	2.89
8	150	1.91
9	105	1.34
10	67	0.85
11	39	0.5
12	26	0.33
13	14	0.18
14	8	0.1
15	7	0.09
16	4	0.05
17	2	0.03
18	3	0.04
19	2	0.03
20	1	0.01
21	1	0.01
22	1	0.01
23	1	0.01
26	1	0.01

Table 4. Average School Changes per Residential Move

Number of Moves (top coded at 10)	Mean	N	SD
1	2.09	2305	0.74
2	2.20	1722	0.89
3	2.37	1261	0.97
4	2.48	913	1.04
5	2.66	616	1.13
6	2.81	386	1.30
7	3.04	227	1.38
8	2.90	150	1.31
9	3.30	105	1.54
10	3.33	177	1.67
Total	2.37	7862	1.03

Table 5. Average Number of Residential and School Moves by Socio-Economic and Demographic Characteristics

	Residential Moves	School Changes
Female	3.24	2.36
Male	2.8	2.38
Black	3.22	2.43
White	3.07	2.31
Hispanic	3.07	2.44
Asian	2.69	2.22
Lowest Income Quartile	3.8	2.53
2nd Income Quartile	3.32	2.47
3rd Income Quartile	2.95	2.3
Highest Income Quartile	2.65	2.21
Mostly below D's or D's	4.47	2.78
Half C/D;s and mostly C's	3.69	2.62
Half B/C's	3.56	2.41
Mostly B's or half B's and ⁄	3.35	2.29
Mostly A's	3.2	2.1
Other	3.7	2.49