

# **The Role of Welfare and Space in the Migration of the Poor**

By

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**Abstract:** This study investigates whether interstate differences in welfare benefits affected destination choices of low-income households in the United States during the 1985-90 period. It considers place-to-place migration decisions within a conditional logit framework. The research develops an array of variables that add a substantial spatial component to the analysis, with particular emphasis on measures of distance and the spatial distribution of significant population agglomerations. The empirical results do not support the existence of a general welfare magnet effect, but strongly support the hypothesis of a more limited effect related to a combination of welfare differences and nearby large population agglomerations.

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## I. Introduction

The welfare reform bill of 1996, i.e., the Personal Responsibility and Work Opportunity Reconciliation Act, placed the issue of welfare-induced migration, i.e., the “welfare magnet” effect, back in the forefront. Under the Temporary Aid to Needy Families (TANF) program, states have wide discretion in setting eligibility criteria and benefit levels. If welfare benefit differences induce migration, then states could encourage outmigration and discourage immigration of the poor by reducing benefit levels (or tightening eligibility criteria). Some fear that states may ultimately participate in a “race to the bottom,” competing to export their poverty burden to other states.<sup>1</sup>

The substantial interstate variation with respect to maximum AFDC/TANF benefits reveals the potential for welfare-induced migration. In 1996, when Congress passed the welfare reform bill, the maximum state-level monthly benefit for a three-person family ranged from \$120 in Mississippi to \$639 in Vermont.<sup>2</sup> Benefits varied much more than interstate cost-of-living differences can explain. Some states are closely scrutinizing welfare-induced migration, especially high-benefit states such as Wisconsin. Wisconsin’s maximum monthly benefit level of \$517 in 1996 greatly exceeded neighboring Illinois’ maximum of \$377 for a three-person family. Wisconsin considered the welfare magnet hypothesis important enough that the state government established a special committee to study the issue.

In sharp contrast to anecdotal evidence from state policymakers, such as those in Wisconsin, the academic literature has taken a much weaker and more varied stance. Scholars have researched and debated the welfare magnet issue for more than three decades, without a consensus. The combination of different data sets, time periods, models, and methodologies

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<sup>1</sup> Brueckner (2000) concludes that empirical evidence supports the “race-to-the-bottom” hypothesis.

have led to a variety of often-contradictory conclusions. The most recent work, with better data and more advanced methodologies, has found evidence of, at most, a weak welfare magnet effect.

This research investigates interstate migration decisions of low-income individuals in the United States during the 1985-90 period (the most recent decennial census migration data available). Though structured as a destination choice model, this study considers both movers and nonmovers, i.e., remaining in the origin is part of the choice set. Crucially, the research develops an array of variables that add a substantial spatial component to the analysis, with particular emphasis on measures of distance and the spatial distribution of significant population concentrations. It also incorporates the notions of return and repeat migration. All of these may be particularly relevant for low-income households. The empirical results reconcile conclusions of recent academic literature with the views of state policy officials, finding substantial welfare magnet effects between some pairs of states but little such effect between most states.

## **II. The Literature**

During the past 30 years, scholarly journals have published more than three dozen empirical studies that purportedly consider the effect of social welfare programs on destination choices of the poor. Most studies focused on migration that occurred during the 1950s and 1960s.<sup>3</sup> The early literature suffered from several critical shortcomings, largely resulting from using highly aggregated data. Most importantly, aggregate data did not allow researchers to clearly identify the poverty population. Almost all studies used race as a proxy for poverty status, with blacks representing the poor and whites representing the nonpoor. In addition, most studies used relatively few variables to explain an inherently complex migration process, often

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<sup>2</sup> Does not include Alaska or Hawaii.

omitting key measures of economic conditions or amenities that could characterize specific locations. A few studies used a single variable such as distance to account for spatial relationships among origins and/or destinations. Most had no accounting for space. For low-income households, which have limited resources and often-limited information about other locations, space may critically influence migration decisions. Most early studies concluded that higher welfare benefits attracted the poor (blacks), but a variety of often-contradictory conclusions emerged.

Later studies avoided many pitfalls of the early research, primarily because of improved access to more disaggregated data, particularly microdata. Most importantly, they focused on the low-income population, rather than studying a crude proxy. Research during the 1980s [Blank (1988), Cebula and Koch (1989), Friedli (1986), Gramlich and Laren (1984), Peterson and Rom (1989), and Southwick (1981)] strongly supported existence of a welfare magnet effect. Overall however, these studies still omitted potentially important explanatory factors, had little or no accounting for space, and sometimes employed crude dependent variables.

More recently, Frey et al (1996), Enchautegui (1997), and Levine and Zimmerman (1999) modeled low-income migration. Levine and Zimmerman (1999), using data from the National Longitudinal Survey of Youth (NLSY), conducted a probit analysis of the decision to outmigrate from a state and the likelihood of being an inmigrant into a state.<sup>4</sup> They focused on low-income single women with children, who are most likely to be benefit-eligible and thus most likely to make a welfare-induced move. They compared outcomes for this group (the treatment group) with those of various other low-income control groups. Welfare benefit variables were uniformly insignificant in explaining differences between the treatment group and control group.

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<sup>3</sup> Cebula (1979), Moffitt (1992), and Charney (1993) review this literature.

<sup>4</sup> Fox, Herzog, and Schlottmann (1989) and Cushing (1993) have also combined an outmigration model with a dual

Levine and Zimmerman omitted some potentially important explanatory factors, such as measures of employment opportunities and climate. While they explicitly accounted for space with a distance variable, their model lacks the spatial richness necessary to adequately address the welfare magnet issue, as discussed in the next section. Finally, their destination model can only loosely be interpreted as a destination choice model. It tells us the likelihood of being classified as an immigrant to a particular state as opposed to being a nonmigrant (already resided in the state at the beginning of the period). Frey et al (1996) conducted a nested logit analysis of aggregate state-to-state migration flows using data from the *1990 Census of Population and Housing*. They incorporated a more comprehensive set of explanatory variables, including more spatial attributes. While they found some statistically significant “welfare magnet” effects, they concluded, “State welfare benefits exert similarly small effects on both the departure and destination selection of inter-State poverty migrants.”<sup>5</sup> Enchautegui (1997) used a sample of women from the *1980 Census Public Use Microdata Sample (PUMS)*. For movers, her binary probit model compared characteristics at the origin with those of the chosen destination, ignoring all other alternatives. Nonmovers compared origin characteristics with an average of characteristics of all potential destinations. Enchautegui more strongly supported a welfare magnet effect than either Frey et al (1996) or Zimmerman and Levine (1999), but in most cases found a relatively modest impact.<sup>6</sup> Her model lacks any spatial component. None of these models could adequately capture a Chicago-Milwaukee type of migration connection that has spurred scrutiny by the state government in Wisconsin.

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model focusing on likelihood of being an immigrant.

<sup>5</sup> Frey et al (1996), p. 527.

<sup>6</sup> The only strong welfare benefit effect was for the subsample that received welfare benefits at the end of the period. This result is not surprising and may have been preordained by the sample selection.

### III. The Welfare Magnet Effect and Space

Since welfare benefits serve as a potential source of income for low-income individuals (or those at risk of having low income), it makes sense that generous welfare benefits would attract at least some rational low-income people. What we need to know, however, is the magnitude of the welfare magnet effect. Distance (space) may play an important role.

If distance correlates with the monetary and psychic costs of migration, as well as with information about alternative locations, it may disproportionately inhibit migration of low-income people. It may discourage long distance moves and make such moves more risky, i.e., more likely to result in failure. This may prove critical when looking for a welfare magnet effect.

Typically, AFDC benefit levels have exhibited regional similarity, as shown in Figure 1. For the most part, low-benefit states cluster around other low-benefit states and high-benefit states cluster around other high-benefit states. If Figure 1 were a three-dimensional (3-D) graph, it would have fairly smooth contours, with no extraordinarily high cliffs and only a few moderately high cliffs. As a result, the inhibiting effects of distance could well cover up any welfare magnet effect. The costs and risks would be high for the long-distance moves typically necessary to reap a large welfare-benefit gain. The small welfare-benefit gains from most short-distance moves may rend even these low-cost moves of little value. In short, we are unlikely to find much of a welfare-magnet effect for the low-income population – precisely the outcome of recent studies.

Figure 1 suggests one important condition for finding an important welfare-magnet effect. We should look for combinations of proximity and large differences in welfare benefits – high cliffs if this was a 3-D map. For a state-level analysis, we need a second important

condition: significant concentration of population near the border of contiguous states. There is little migration of poor people from Idaho to Washington State, despite contiguity and a 58 percent welfare benefit premium in Washington relative to Idaho. Few people reside in Idaho close to the Washington border, making it unlikely that a migration path would be established. With only a moderate-size city (Spokane) in Washington close to the border with Idaho, Washington has relatively little to attract poor migrants from Idaho.

On the other hand, consider the potential for low-income migration from Illinois to Wisconsin. The Milwaukee-Racine and Madison metropolitan areas, with combined population of about two million in 1990, lie just north of the border, the Chicago metropolis lies just south of the border, and Wisconsin paid a 41 percent welfare benefit premium. The combination of substantial population concentrations near the border and a large welfare benefit difference should lead to the statistically and practically significant welfare-induced migration that Wisconsin policymakers claim exists.

#### **IV. Methodology**

The analysis considers state-to-state migration. Some key characteristics of the underlying migration model ultimately lead to the choice of the econometric methodology. First, this study employs microdata to focus on individuals' decisions. Use of microdata calls for a discrete-choice framework such as logit or probit analysis. Second, unlike most microdata analyses of migration, I do not just consider individual migration decisions in a binary choice framework, e.g., "move" versus "don't move." Instead, the model incorporates each individual's choice from among 49 potential locations – remain in the initial home state or move to any of the other 48 contiguous states (with Washington, DC considered as if it were a separate state). The

model relates migration choice to the location-specific characteristics of each of these 49 locations.

Choice of econometric methodology depends critically on assumptions regarding how individuals make migration decisions. Migration may be a sequential decision-making process. For example, an individual may first make the decision whether to move, followed by the choice of destination (for those who do move). This assumption underlies models considering the decision to move, separately from destination choice (for example Herzog and Schlottmann, 1986; Cushing, 1993; Clark, Knapp, and White, 1996; and Levine and Zimmerman, 1999), as well as models focusing only on destination choice of movers (Blank, 1988; Bartel, 1989). In the context of jointly modeling the decision to move and destination choice, an assumption of sequential decision-making leads to a nested logit framework, employed by Frey et al (1996).

Alternatively, Davies, Greenwood, and Li (2001) argued that the decision to move and choice of destination cannot be separated. Their logic leads to a conditional logit model. In practice, some individuals likely jointly make the decision to move and destination choice, while others follow a more sequential process. For now, however, I accept the perspective of Davies, Greenwood, and Li (2001) and apply a conditional logit model.

A random utility model motivates the conditional logit model.<sup>7</sup> For an individual initially in area  $i$  faced with  $j$  location choices, including remaining at the current location, suppose that the utility of choosing location  $j$  is

$$U_{ij} = \beta'x_{ij} + \varepsilon_{ij},$$

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<sup>7</sup> See Greene (2000), Chapter 19 for a more complete description of the conditional logit model.

where  $x_{ij}$  is a vector of choice-specific attributes. If the individual chooses destination  $j$ , then we assume that  $U_{ij}$  is the maximum among the  $J$  locational choices. Thus, the statistical model is driven by the probability that an individual from  $i$  chooses location  $j$ , which is

$$\text{Prob}(U_{ij} > U_{ik}) \text{ for all other } k \neq j$$

The model is made operational by a particular choice of distribution for the disturbances. Let  $Y_i$  be a random variable that indicates the choice made. Based on McFadden (1973), if and only if the  $J$  disturbances are independent and identically distributed with the Weibull distribution, then the probability of an individual from  $i$  choosing area  $j$  (where  $j = i$  for nonmovers) is

$$\text{Prob}(Y_i = j) = \frac{e^{\beta'x_{ij}}}{\sum_k e^{\beta'x_{ik}}}$$

With 49 possible locational choices, the log-likelihood function generated by the above model is

$$\log L = \sum_{i=1}^{49} \sum_{j=1}^{49} d_{ij} \log \text{Prob}(Y_i = j),$$

where  $d_{ij} = 1$  if  $Y_i = j$  and 0 otherwise.

The  $x_{ij}$  vector includes choice-specific characteristics that influence individuals' migration decisions. These include economic and amenity characteristics, as well as variables reflecting the spatial relationship between locations. The nature of a conditional logit model requires some compromises in the variables included in this vector. The conditional logit model can only identify choice-specific attributes (those that vary across choices for a given individual), which eliminates characteristics of individuals, as well as origin-specific characteristics. The model could incorporate individual characteristics through a series of dummy variables and interaction terms. The coefficients of these terms would show whether an individual's personal characteristics affect his response to each choice specific attribute. Likewise, interacting origin

characteristics with destination characteristics would indicate whether origin characteristics influence the effect of destination characteristics. Unfortunately, this would cause explosive growth in the number of parameters and computational complexity of an already large, computationally complex model.

Like Davies, Greenwood, and Li (2001), I retain the influence of origin characteristics by entering choice-specific attributes as a ratio of the destination attribute relative to the corresponding origin attribute. While a restrictive formulation, this captures the concept that individuals compare alternatives with their current situation.<sup>8</sup> Many studies have shown that personal characteristics greatly influence the decision to move, e.g., DaVanzo (1978). To capture this effect, I interact some personal characteristics with a dummy variable related to the “don’t move”/“move choice,” i.e., choosing to remain at the origin versus choosing one of the other 48 locations.

The conditional logit formulation inherently assumes independence of irrelevant alternatives (IIA). IIA follows from the underlying assumption that the stochastic terms in the utility functions are independent. Intuitively, this assumption requires that the relative probabilities between choices must be independent of other alternatives, e.g., the relative probability of a Connecticut resident moving to New Jersey vs. Pennsylvania must be independent of the alternative of choosing New York. Undoubtedly, some individuals make migration choices in a way that satisfies the IIA assumption. As a general proposition, however, IIA is untenable. A complete test of IIA in a model with 49 choices is impractical. Davies, Greenwood, and Li (2001), undertook some limited testing of the IIA assumption, using the test proposed by Hausman and McFadden (1984). In turn, omitting Florida and Colorado, they could

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<sup>8</sup> This formulation assumes symmetric responses for changes in an origin state characteristic and the corresponding destination characteristic.

not reject IIA for their sample. I tested IIA for the same two cases. As often occurs, the Hausman-McFadden test could not be applied due to a nonpositive definite matrix. Instead, I applied an alternative test proposed by Small and Hsiao (1985) that avoids this problem. When omitting either Florida or Colorado, this test rejects the IIA assumption at the one percent significance level. The difference in conclusions regarding IIA compared with those of Davies, Greenwood, and Li (2001) may result from the different tests, levels of aggregation, or, most likely, sample sizes. The sample size for this study is large enough that almost any difference between models would be statistically significant. Ultimately, comparing empirical results from different modeling methods would better reveal the true importance (or cost) of maintaining the IIA assumption. For this paper, I accept the arguments presented by Davies, Greenwood, and Li (2001) in support of the conditional logit formulation and defer thorough consideration of the statistical and practical importance of the IIA assumption for a separate paper.

## **V. The Data and Hypotheses**

The migration data come from the five percent Public Use Microdata Sample (PUMS) from the *1990 Census of Population and Housing*. The PUMS data provide information on place of residence in April 1985 (beginning of period) and April 1990 (end of period). PUMS supplies a very large sample size and good geographic detail. This study restricts the sample to low-income (below the official poverty level) householders, aged 25 to 60 years old in 1990 (aged 20 to 55 at the beginning of the migration period). It excludes those serving in the military or attending school. The restrictions help the study focus on those making migration decisions (excludes children), those who might be attracted to welfare benefits (low-income working age people), and those making “normal” migration choices (not dominated by a prior choice to serve in the military or attend school). The full sample consists of 16,603 individuals. Of these, 1,499

(9.0 percent) resided in a different state at the end of the period than at the beginning (movers) and 15,104 (91.0 percent) resided in the same state at the end of the period as at the beginning (nonmovers). In this conditional logit model, with 49 choices, the data include 49 rows for each of the 16,603 individuals in the sample (one row per state) – 813,547 rows of data. The dependent variable,  $d_{ij}$ , equals 1 for the state of residence at the end of the period (1990) and equals zero otherwise. This study will separately consider the subsample of female-headed families, which consists of 5,738 individuals.

To explain migration choices, I primarily employ an array of place characteristics that should affect the utility of residing in any particular location. Dummy variables and interaction terms capture effects of some personal characteristics. The place characteristics come from a variety of (mostly government) sources and cover four key categories of explanatory factors: (1) measures of economic opportunity, (2) demographics, (3) amenities/disamenities, and (4) spatial relationships. Migrants should prefer locations with better opportunities, all else equal.

Economic opportunity measures include (with expected sign in parentheses) 1980-1988 growth of nonagricultural employment (+), average annual unemployment rate between 1984 and 1988 (-), 1985 per capita income (+), and maximum AFDC benefit for a family of three (average of 1985 and 1990 levels) (+).<sup>9,10</sup> Unlike nonpoor individuals, low-income people have reason to value greater potential AFDC benefits. Demographic variables include 1985 population (+/-) and 1985 population density (+/-). These likely capture some advantages (more diverse opportunities, stronger support network, better information, better public transportation, larger population of similar people) and some costs (higher crime, more congestion, greater likelihood

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<sup>9</sup> All economic opportunity and demographic variables come from standard Federal Government sources. The family of three for the welfare benefit variable includes one adult and two children with no other source of income.

<sup>10</sup> In some estimations, I adjusted per capita income and AFDC benefits for interstate cost-of-living differences provided by McMahan and Chang (1991). Since the adjustment made no perceptible difference, I used unadjusted

of a slum) of larger, more densely populated locations. Previous research suggests that population size will tend to reflect advantages of large agglomerations and density will reflect more of the disadvantages. The model includes three location-specific amenities/characteristics: average January temperature (+), type of terrain, and coastal/noncoastal location.<sup>11</sup> Numerous studies have found evidence that more pleasant climates exert a significant, often large, attractive effect on location decisions. I hypothesize that individuals prefer terrain and coastal characteristics similar to those at the origin. This assumes that, at a given point in time, individuals will tend to have sorted themselves by preferences for terrain and coastal location. Presumably, these measures capture not only preference for landscape, but also other factors such as types of outdoor recreational activities. The coastal measure equals 1 if the coastal characteristics of a potential destination differ from the origin, i.e., coastal origin with noncoastal destination or noncoastal origin with coastal destination; equals zero otherwise. I expect a negative sign on the coefficient. The underlying measure of terrain is an index that varies from 1 (completely flat) to 9 (extreme variation in the gradient of the land within a state). Thus, the measure of absolute change in terrain varies from zero (no difference between origin and potential destination) to 8 (completely flat origin with extremely mountainous destination or extremely mountainous origin with completely flat destination).<sup>12</sup> Once again, I expect a negative sign on the coefficient. Intuitively, one expects low-income individuals to give greater weight to economic opportunities than to amenities such as climate. If so, then these location-specific amenities will influence destination choices less strongly than economic opportunities.

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values in the final analysis.

<sup>11</sup> For each state, temperature data are a weighted average of cities >100,000 (or principal city if no cities >100,000). Data are 30-year means from the National Oceanic and Atmospheric Administration.

<sup>12</sup> Cushing (1987) developed the underlying index, which is based on measures of “local topographical relief” provided in the *National Atlas of the United States of America* (U.S. Geological Survey).

Several variables model the spatial relationship or connection between origins and potential destinations. This study employs the standard measure of distance: highway mileage between principal cities of the origin and each destination state (-). Greater distance imposes monetary, informational, and psychic costs on potential migrants. The model includes a migrant stock variable (+) similar to that used by Greenwood (1969) and others. It is the number of persons born in origin state  $i$  but residing in destination state  $j$  in April 1985, as a percentage of the 1985 population of state  $i$ . Scholars have debated whether a positive migrant stock impact represents a family, friends, and information effect or whether it simply reflects temporal stability in migration patterns, thus diminishing the estimated effects of other variables. Since this may be a relatively more important source of information for low-income, poorly educated individuals, I retain migrant stock. A return migration variable captures another aspect of the relationship between origins and destinations. The importance of return migration is well documented. For this study, 38 percent of the sample resided outside of their state of birth in 1985. Of these “nonnatives,” 17 percent (6.5 percent of the full sample) resided in a different state in 1990 than in 1985 (movers). Of these movers, 40 percent returned to their state of birth. I include a binary dummy variable, Movehome (+), which equals 1 when the origin state differs from the state of birth and the potential destination state is the state of birth.

AFDC benefits tend to cluster by region, i.e., low-benefit states tend to be surrounded by similarly low-benefit states. On the other hand, low-income people are less able to afford migration costs (monetary, information, and psychic), so that distance may be too great a barrier to take advantage of higher AFDC benefits in a far-off state. Welfare-induced migration more likely occurs when a potential migrant resides close to a state that offers significantly higher welfare benefits. The combination of higher welfare benefits in a potential destination state and

proximity to that state's border should yield more information and lower monetary and psychic costs of taking advantage of the higher benefits, thus leading to greater likelihood of migration. The PUMS data only provides information on location at the level of the Public Use Microdata Area (PUMA) – areas that include at least 100,000 individuals. Since a PUMA often covers a large area, sometimes even noncontiguous areas, knowing the PUMA of origin does not always tell us whether a person resides close to a bordering state. I approximate proximity with a measure of origin population agglomeration within 50 miles of the destination state – the larger the population concentration near the border, the more likely that a given individual resides near the border.<sup>13,14</sup> Using this, I interact the AFDC Benefit Ratio and Origin Cluster variables.

The model also includes a variable that interacts AFDC Benefits with a measure of destination population agglomeration within 50 miles of the origin state. The combination of higher destination welfare benefits and the advantages of a nearby, large population, such as better employment opportunities and more support services, may be particularly attractive. If space imposes important constraints on mobility of low-income individuals, then the first interaction term would be the more critical.

Ultimately, I test the following hypotheses for low-income movers:

- (1) high relative welfare benefits increase the likelihood of choosing a state;
- (2) this welfare effect is stronger for destinations that have substantial origin population concentrations just across the border – where potential migrants likely live near the border;

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<sup>13</sup> Data are tabulated at the census tract level. If any part of a census tract is within 50 miles of a particular state's border, then the entire census tract population is counted as being within 50 miles of that nearby state.

<sup>14</sup> The wide range of the population concentration variable (from zero to several million people) hampered convergence of the conditional logit model. The analysis employed a multi-level dummy in place of the population concentration data. The dummy variable equals 3 for a concentration exceeding one million people; 2 for a population between 500,000 and 999,999; 1 for a population between 250,000 and 499,999; equals zero otherwise.

(3) this welfare effect is stronger for destinations that have own population concentrations just across the border from an origin – near to potential migrants.

Finally, the empirical model includes a binary dummy variable for the potential choice of remaining at the origin ( $STAY = 1$  for the choice of remaining at the origin), as well as three interactions with this dummy variable. As discussed in Davies, Greenwood, and Li (2001), the choice not to move (remain in the origin) differs greatly from all other choices. The decision to remain at the current location avoids the presumably substantial, unobserved costs of moving. This bias toward inertia should result in a positive coefficient for  $STAY$ . Like return migration, repeat migration, i.e., the higher propensity to migrate for those who have already migrated at least once, has been well documented. In the data used here, of those who resided in their state of birth in 1985, just 4.1 percent resided in a different state in 1990. As noted above, of those who resided outside of their state of birth in 1985, 18.1 percent resided in a different state in 1990. The model includes an interaction between  $STAY$  and a binary dummy for potential repeat migration ( $Repeat = 1$  if the origin state differed from the state of birth). A negative coefficient for the  $STAY*Repeat$  coefficient would indicate a lower likelihood of remaining at the origin (greater mobility) for those not born in the origin. Strong theoretical and empirical bases support the proposition that age and educational level influence mobility. The  $STAY*College$  variable interacts  $STAY$  with a binary dummy variable that equals 1 for a person with a bachelor's degree. A negative coefficient would indicate a lower likelihood of remaining at the origin for the highly educated.  $STAY*Age$  interacts  $STAY$  with an individual's age. A positive coefficient would indicate that likelihood of remaining at the origin increases with age.

## VI. Empirical Results

### *A. Full Sample*

Table 1 presents empirical results for three specifications of the full sample conditional logit estimation. Model 1 includes a basic specification for the welfare effect, i.e., an AFDC variable, but no AFDC interaction terms. Model 2 replaces the AFDC variable with the two AFDC-Cluster interaction variables. Model 3 includes all three AFDC variables. Since the results from Model 3 do not differ qualitatively from the combination of Models 1 and 2, the discussion below focuses solely on Model 3. Most (13 of 18) estimated coefficients have the expected sign and are statistically significant at the one-percent level. The coefficient for difference in terrain is significant at the ten percent level. Coefficients for employment growth, the unemployment rate, welfare benefits, and the welfare benefit-destination cluster interaction are statistically insignificant.<sup>15</sup>

The insignificance of the AFDC Benefit Ratio coefficient does not support the first hypothesis for low-income movers. This result conforms to the majority of recent findings, which conclude that welfare benefit differentials have little or no influence on migration decisions of the poor. The AFDC\*Destination-Cluster interaction variable, also statistically insignificant, fails to support the hypothesis that higher welfare benefits attract poor people from origin  $i$  to destination  $j$  when destination state  $j$  has a large population concentration near the border of origin state  $i$ . The result for the AFDC\*Origin-Cluster interaction variable, however, supports the second hypothesis, i.e., a substantial origin population concentration just across the border from a potential destination increases the welfare effect.

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<sup>15</sup> If one-tail tests of significance are employed when there is a clear expectation for a coefficient's sign, employment growth is significant at the ten percent level in all three models. Difference in terrain would be significant at the ten percent level in Model 1 and the five percent level in the other two models. The AFDC-Destination Cluster interaction would be significant at the ten percent level in Model 2 using a one-tail test.

To aid in interpreting results for welfare benefits and other variables, Table 2 presents the estimated direct probability elasticities (column 2), values for the explanatory variables (column 3), estimated effects on the probability of migration, i.e., the proportional change in predicted migration (column 4), and estimated effects on predicted migration (column 5) from Illinois to Wisconsin.<sup>16,17</sup> The elasticities are computed as

$$\frac{\partial \log P_j}{\partial \log x_{jm}} = \beta_m x_{jm} (-P_j),$$

where  $x_{jm}$  is attribute  $m$  of choice  $j$ . For an individual initially residing in Illinois, the model estimates a base probability of moving to Wisconsin equal to 0.0083. Using the U.S. Bureau of the Census' *Consumer Population Survey* estimate that 1,830,000 poor people resided in Illinois in 1985, the model predicts that 15,270 poor people migrated from Illinois to Wisconsin between 1985 and 1990.<sup>18</sup> Several explanatory variables have a value of zero for this specific case and must be considered in a more general context.

Since the AFDC\*Origin-Cluster interaction variable has a value of zero for 93 percent of the observations, its mean is very low, yielding a deceptively small average elasticity for the full sample – approximately 0.034. As Table 2 shows, however, this variable can be important for adjacent states, having the second largest elasticity (0.83) for the origin-destination pair of Illinois-Wisconsin. We can further illustrate the importance of this interaction variable by considering columns 4 and 5. If the AFDC\*Origin-Cluster variable is set equal to zero, the model predicts that migration would fall by 8,640, a 57 percent drop. This decline has two

<sup>16</sup> These elasticities relate to an individual not born in Wisconsin, i.e., MOVEHOME=0.

<sup>17</sup> For each state, the conditional logit estimation also can provide estimated cross probability elasticities with every other state. A change in the probability of moving from state  $i$  to state  $j$  must affect the probability of moving from  $i$  to at least one other state (since probabilities must sum to 1.0). The large number of choices leads to very small cross elasticities.

<sup>18</sup> The CPS data refer to the total poverty population, while the regression focuses on the working-age poverty population. Thus, the estimated effects on predicted migration in column 5 should be viewed as ballpark estimates provided for illustrative purposes. The values in column 4 of Table 2, however, come from the regression results,

components, an AFDC component and a cluster component. If we retain the population cluster, but set the AFDC Benefit Ratio equal to 1.0 for this variable (maximum benefits in Illinois exactly equal those in Wisconsin), the AFDC component yields a 3,628 (24 percent) decline in predicted migration.<sup>19</sup> Doing away with the cluster component yields an additional 5,012 (33 percent) decline in predicted migration. Individually, each of these changes exceeds every other change shown in Table 2. Together, the two components of the AFDC\*Destination-Cluster variable also yield a fairly large change in predicted migration, however, the estimated coefficient and elasticity are statistically insignificant.

We can take an alternative perspective on the AFDC effect by setting the AFDC Benefit Ratio equal to 1.0 and considering its simultaneous influence through all three AFDC variables.<sup>20</sup> All else equal, if AFDC benefits in Wisconsin equaled those in Illinois, predicted migration would drop by 4,058 (27 percent). The AFDC\*Origin-Cluster variable accounts for about 88 percent of this decline (-3,571) while the AFDC\*Destination-Cluster accounts for 26 percent of the decline (-1,055). The AFDC Benefit Ratio variable offsets about 14 percent of the decline (+568).

The analysis for the AFDC effects reconciles recent empirical results showing little or no evidence of welfare-induced migration with the anecdotal evidence of significant welfare-induced migration in some states, such as Wisconsin. It also corresponds well with Brueckner's (2000) conclusion that states appear to engage in a "race-to-the-bottom" with respect to welfare

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thus are valid, regardless of the base poverty population used for the illustration.

<sup>19</sup> For the discussion of Table 2, most of the effects on predicted migration can be reasonably approximated using the information in columns 2 and 3. Since the elasticities are not constant, however, this simple method is not exact and, for large percentage changes in X, may give results substantially different from the precise results presented in the last two columns.

<sup>20</sup> This latter approach might be especially useful if multicollinearity is a problem. A high simple correlation (0.90) between the two interaction variables and variance inflation factors of about 5.5 suggest possible multicollinearity, however, collinearity diagnostics based on Belsley, Kuh, and Welsch (1980) show no significant evidence of multicollinearity in the model – probably due to the very large sample size. None of these criteria indicate potential

benefits, taking into account benefit levels in nearby states. For most migration alternatives, welfare benefit differentials have little influence on migration decisions of low-income individuals. The combination, however, of noticeable welfare benefit differences between two states and proximity, as measured in this model by large population agglomerations near the border of the two states, may have a significant attractive effect, resulting in a large amount of welfare-induced migration between some proximate states.

The other three variables that capture spatial relationships and connections between states also have significant explanatory power regarding migration of the poor, with the return migration variable playing a particularly important role. Distance, with an elasticity of -0.04, has a modest influence on Illinois-Wisconsin migration. Migration would be about four percent greater without the 91-mile distance separating the large cities of the two states. Distance becomes a much greater barrier for more distant states. Considering all origin-destination pairs, the mean elasticity is about -0.5. Using this mean elasticity, increasing the sample average distance of 1.170 (1,170 miles) by 50 percent (585 miles) would reduce migration by 25 percent. Distance elasticities tend to be much higher for the larger, more spatially isolated western states. Migrant Stock has a somewhat larger effect than Distance for the Illinois-Wisconsin example. Predicted migration would be six percent lower without a migrant stock effect. Migrant Stock's influence remains modest for most state pairings. A more precise family-friends measure would likely draw out this factor more effectively. Movehome only applies to those who resided outside their state of birth in 1985 and moved during the 1985-1990 period. For the Illinois-Wisconsin case, the model predicts that a low-income individual born in Wisconsin had a 19.4 percent probability of residing in Wisconsin in 1990 – 22 times more likely to move to

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for substantial multicollinearity with respect to the AFDC Benefit ratio variable.

Wisconsin than other poor people residing in Illinois in 1985, all else equal.<sup>21</sup> As other studies have concluded for the population in general, return migration is a potentially powerful factor for explaining migration of the poor.

Of the economic opportunity variables, only Per Capita Income strongly affected migration. As for almost all origin-destination pairs, its elasticity greatly exceeds all others. For the Illinois-Wisconsin case, the model predicts that migration to Wisconsin would have been 19 percent higher had Wisconsin's income level matched that of Illinois. Employment Growth had a surprisingly weak, at best marginally significant, effect on low-income migration while the Unemployment Rate had no effect. These results may simply indicate information and mobility constraints, as well as greater reliance on spatial, family, and other connections to potential destinations. Climate (Mean January Temperature) had a much stronger effect than anticipated for low-income individuals, perhaps reflecting lower costs for items such as utilities and clothing (in addition a more pleasant climate's normal amenity benefit). For the Illinois-Wisconsin case, its effect on migration nearly matched that of Per Capita Income, with the colder Wisconsin climate inhibiting immigration of the poor.

Population exerted a positive effect on migration choices, but influenced Illinois to Wisconsin migration very little. Despite its small elasticity for most state pairs, Population's wide range of values suggests potential for substantially more migration to large states. Population Density's negative effect varied widely across the states. It has moderate-to-high elasticities along the eastern coastal states that lie within the densely populated megalopolis between Washington, DC and Boston, MA, but only a moderate effect on migration from Illinois

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<sup>21</sup> If  $a$  is the coefficient of MOVEHOME, the proportional difference in probability is  $[P(\text{evaluated for person born in the destination state}) - P(\text{evaluated for person not born in the destination state})] / P(\text{evaluated for person not born in the destination state}) = e^a - 1$ . I use a similar computation to interpret the influence of the other discrete variables.

to Wisconsin. Like Population, Population Density's wide range of values indicates potentially large impacts on some migration choices.

As hypothesized, people appear to prefer topography similar to their origin state. For this sample, a change in coastal characteristics reduced predicted migration by 22 percent. For  $\Delta$ Terrain, which varies from zero (origin and destination have similar terrain) to eight (origin and destination have opposite terrains – one very mountainous, the other flat), a one-category change reduces predicted migration by about three percent. The maximum change (from 0  $\rightarrow$  8 or 8  $\rightarrow$  0) reduces predicted migration by 23 percent, roughly the same magnitude as the effect of a change in coastal characteristics. These two location-specific characteristics may capture a more general preference to remain in a familiar region or setting.<sup>22</sup>

Finally, we consider the dummy variable for the potential choice of remaining at the origin and its interaction with personal characteristics. Based on the coefficient of STAY, unobservable costs associated with moving make the probability of moving 95.6 percent lower than the probability of not moving, i.e., about 21.6 times more likely to remain at the origin than to move. As expected, those not residing in their state of birth in 1985 (potential repeat migrants) were more mobile, only about 6.5 times more likely to remain at the origin than to move. Those holding a bachelor's degree also had greater mobility, about 11 times more likely to remain at the origin than to move. Age increases the likelihood of staying at the origin. For example, an additional ten years of age yields a probability of moving 96.9 percent lower than the probability of not moving, i.e., about 31.5 times more likely to remain at the origin than to move.

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<sup>22</sup> For the Terrain variable, the analysis described in footnote 20 is extended. The proportional change in probability =  $e^{a(\Delta x)} - 1$ , where  $\Delta x$  can vary from zero to eight.

### *B. Female-Headed Families*

Table 3 presents empirical results for three specifications of the female-headed-family sample conditional logit estimation. It also provides the direct probability elasticities and the estimated probability effects of each variable (as in Table 2). There are a few minor qualitative differences, comparing the full sample with the female-headed sample results. The Population Ratio,  $\Delta$ Terrain, AFDC\*Destination-Cluster, and STAY\*College variables are statistically insignificant in all three models of the female sample. The Per Capita Income Ratio and AFDC\*Origin-Cluster variables have somewhat larger effects on migration in the female sample. Most importantly, the results from the female-headed sample lead to the same general conclusion regarding the influence of welfare benefits on migration choices.

## **VII. Conclusion**

Scholars have researched and debated the welfare magnet issue for more than three decades, without a consensus. The most recent work, however, with better data and more advanced methodologies, has found evidence of, at most, a weak welfare magnet effect. This conclusion contrasts markedly with anecdotal evidence of a significant welfare magnet effect, cited by state policymakers. This anecdotal evidence appears to have led to interstate competition to reduce welfare benefits, i.e., a “race to the bottom” with respect to setting benefit and eligibility standards.

In reconsidering the welfare magnet effect, this research develops an array of variables that add a substantial spatial component to the analysis, with particular emphasis on measures of distance and the spatial distribution of population agglomerations. The empirical results do not support the existence of a general welfare magnet effect. This concurs with recent studies by

Frey et al (1996) and Levine and Zimmerman (1999), but seems at odds with perceptions of many state government officials.

In contrast, the analysis strongly supports the hypothesis of a more limited welfare magnet effect related to a combination of welfare differences and nearby large population agglomerations. Specifically, if a state has a substantial population agglomeration (presumably including a large poverty population) close to the border of a nearby state **and** the nearby state offers noticeably more generous welfare benefits, we can expect significant migration of the poor from the low-benefit state to the higher-benefit state. This second finding can reconcile the largely weak empirical support for a welfare magnet effect with the strong perceptions of policy makers. For example, Wisconsin provides welfare benefits substantially exceeding those in neighboring Illinois, while Illinois has a very large population agglomeration (Chicago) – including a large poverty population – near the Wisconsin border. This study suggests that Wisconsin’s generous welfare benefits will not attract low-income migrants from low-benefit, but distant, states such as Alabama. It may, however, draw a large number of “welfare migrants,” from nearby Chicago, IL. In general, these findings suggest the presence of a substantial welfare magnet effect between some pairs of states, but little such effect between most states.

This research also illustrates the general importance of spatial relationships and other connections between places. Intuitively, income, information, and other constraints affecting mobility should make these particularly important for low-income individuals. I find consistently strong evidence for the importance of these spatial relationship variables, including distance, migrant stock, and, especially, the propensity for return migration. Replacing the broad

migrant stock variable with a more precise measure of a “family/friends” effect would likely reveal a much greater influence of this factor.

Existence of a welfare magnet effect calls for a change in public policy. A welfare magnet effect leads to socially inefficient migration choices by low-income people. It also leads to inefficient public policy decisions. States have incentive to reduce the attractiveness of their welfare systems, with the aim of encouraging outmigration and discouraging immigration of the poor – a move that shifts more of the poverty burden to other states. This could take on characteristics of a prisoner’s dilemma: all states might be better off if everyone provided fair and reasonable welfare benefits, but all states move toward suboptimal benefits based on fear of attracting too many poor people. This study provides some new insight regarding the workings of the welfare magnet effect and perhaps brings us a step closer to designing policies that appropriately deal with the consequent inefficiencies.

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Table 1 - Empirical Results for Conditional Logit Estimation of a Poor Person's Migration Decision – Full Sample

| Variable                             | Model 1<br>Coefficient<br>(t-ratio) | Model 2<br>Coefficient<br>(t-ratio) | Model 3<br>Coefficient<br>(t-ratio) |
|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Employment<br>Growth Ratio           | 0.009<br>(1.61)                     | 0.008<br>(1.36)                     | 0.008<br>(1.44)                     |
| Unemployment<br>Rate Ratio           | -0.005<br>(-0.05)                   | 0.015<br>(0.17)                     | 0.011<br>(0.12)                     |
| Per Capita<br>Income Ratio           | 1.665***<br>(7.53)                  | 1.478***<br>(7.85)                  | 1.673***<br>(7.31)                  |
| Mean January<br>Temperature Ratio    | 0.555***<br>(11.68)                 | 0.602***<br>(13.84)                 | 0.576***<br>(12.24)                 |
| Population Ratio                     | 0.035***<br>(3.73)                  | 0.029***<br>(3.08)                  | 0.030***<br>(3.16)                  |
| Population Density<br>Ratio          | -0.087***<br>(-7.76)                | -0.086***<br>(-7.61)                | -0.087***<br>(-7.69)                |
| ΔTerrain                             | -0.023<br>(-1.41)                   | -0.030*<br>(-1.83)                  | -0.032*<br>(-1.90)                  |
| ΔCoast                               | -0.296***<br>(-5.31)                | -0.251***<br>(-4.46)                | -0.248***<br>(-4.41)                |
| Distance<br>(ooo <sup>s</sup> miles) | -0.637***<br>(-10.93)               | -0.443***<br>(-7.38)                | -0.430***<br>(-7.13)                |
| Migrant Stock                        | 0.032***<br>(13.73)                 | 0.033***<br>(13.98)                 | 0.033***<br>(13.86)                 |
| AFDC Benefit Ratio                   | -0.076<br>(-1.26)                   |                                     | -0.092<br>(-1.49)                   |
| AFDC*Origin-<br>Cluster              |                                     | 0.178***<br>(3.86)                  | 0.189***<br>(4.03)                  |
| AFDC*Destination-<br>Cluster         |                                     | 0.067<br>(1.35)                     | 0.057<br>(1.13)                     |
| STAY                                 | 2.858***<br>(14.63)                 | 3.120***<br>(15.81)                 | 3.120***<br>(15.80)                 |
| STAY*Age                             | 0.036***<br>(11.86)                 | 0.036***<br>(11.89)                 | 0.036***<br>(11.88)                 |
| STAY*Repeat                          | -1.102***<br>(-16.14)               | -1.103***<br>(-16.17)               | -1.099***<br>(-16.09)               |
| STAY*College                         | -0.645***<br>(-6.52)                | -0.653***<br>(-6.60)                | -0.651***<br>(-6.58)                |
| Movehome                             | 3.445***<br>(52.24)                 | 3.353***<br>(49.93)                 | 3.352***<br>(49.90)                 |

Table 2 – Direct Probability Elasticities and Predicted Migration Effects for Origin=Illinois and Destination=Wisconsin – Full Sample<sup>a</sup>

| Variable                          | Model 3 – Full Sample         |                   |   |                               |
|-----------------------------------|-------------------------------|-------------------|---|-------------------------------|
|                                   | Direct Probability Elasticity | Sample Value of X | Proportional $\Delta$ in Probability of Migration | Effect on Predicted Migration |
| Employment Growth Ratio           | 0.02                          | 2.331             | -0.01   | -166                          |
| Unemployment Rate Ratio           | 0.01                          | 0.790             | 0.00  | 35                            |
| Per Capita Income Ratio           | <b>1.48</b>                   | <b>0.894</b>      | <b>0.19</b>                                       | <b>2926</b>                   |
| Mean January Temperature Ratio    | <b>0.42</b>                   | <b>0.728</b>      | <b>0.17</b>                                       | <b>2560</b>                   |
| Population Ratio                  | <b>0.01</b>                   | <b>0.414</b>      | <b>0.02</b>                                       | <b>267</b>                    |
| Population Density Ratio          | <b>-0.04</b>                  | <b>0.424</b>      | <b>-0.05</b>                                      | <b>-739</b>                   |
| $\Delta$ Terrain                  |                               | 0.000             |   |                               |
| $\Delta$ Coast                    |                               | 0.000             |   |                               |
| Distance (ooo <sup>s</sup> miles) | <b>-0.04</b>                  | <b>0.091</b>      | <b>0.04</b>                                       | <b>604</b>                    |
| Migrant Stock                     | <b>0.06</b>                   | <b>1.943</b>      | <b>-0.06</b>                                      | <b>-930</b>                   |
| AFDC Benefit Ratio                | -0.14                         | 1.483             | 0.05  | 688                           |
| AFDC*Origin-Cluster               | <b>0.83</b>                   | <b>4.449</b>      | <b>-0.24 (AFDC)</b><br><b>-0.33 (Cluster)</b>     | <b>-3628</b><br><b>-5012</b>  |
| AFDC*Destination-Cluster          | 0.25                          | 4.449             | -0.08 (AFDC)<br>-0.14 (Cluster)                   | -1197<br>-2191                |
| STAY                              |                               | 0.000             |   |                               |
| STAY*Age                          |                               | 0.000             |   |                               |
| STAY*Repeat                       |                               | 0.000             |   |                               |
| STAY*College                      |                               | 0.000             |   |                               |
| Movehome                          |                               | 0.000             |   |                               |

<sup>a</sup>For ratio variables, setting Wisconsin equal to Illinois means setting X=1.0. For Distance and Migrant Stock, X is set equal to zero. Effects for statistically significant coefficients are in **bold**.

Table 3 - Empirical Results for Conditional Logit Estimation of a Poor Person's Migration Decision, with Elasticities and Effects for Illinois=Wisconsin – Female-Headed Sample<sup>a</sup>

| Variable                             | Model 1<br>Coefficient<br>(t-ratio) | Model 2<br>Coefficient<br>(t-ratio) | Model 3<br>Coefficient<br>(t-ratio) | Direct<br>Probability<br>Elasticity | Proportional $\Delta$<br>in Probability<br>of Migration |
|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---|
| Employment<br>Growth Ratio           | 0.002<br>(0.22)                     | 0.001<br>(0.06)                     | 0.001<br>(0.10)                     | 0.00                                | -0.00   |
| Unemployment<br>Rate Ratio           | 0.079<br>(0.52)                     | 0.107<br>(0.69)                     | 0.104<br>(0.68)                     | 0.08                                | 0.02  |
| Per Capita<br>Income Ratio           | 1.905 <sup>***</sup><br>(5.00)      | 1.791 <sup>***</sup><br>(5.61)      | 1.932 <sup>***</sup><br>(4.88)      | <b>1.71</b>                         | <b>0.22</b>   |
| Mean January<br>Temperature Ratio    | 0.529 <sup>***</sup><br>(5.63)      | 0.581 <sup>***</sup><br>(6.75)      | 0.560 <sup>***</sup><br>(6.04)      | <b>0.40</b>                         | <b>0.16</b>   |
| Population Ratio                     | 0.022<br>(1.23)                     | 0.012<br>(0.65)                     | 0.013<br>(0.69)                     | 0.01                                | 0.01  |
| Population Density<br>Ratio          | -0.070 <sup>***</sup><br>(-4.06)    | -0.069 <sup>***</sup><br>(-3.97)    | -0.070 <sup>***</sup><br>(-4.01)    | <b>-0.03</b>                        | <b>-0.04</b>  |
| $\Delta$ Terrain                     | -0.018<br>(-0.64)                   | -0.028<br>(-0.96)                   | -0.029<br>(-0.98)                   |                                     |   |
| $\Delta$ Coast                       | -0.391 <sup>***</sup><br>(-3.99)    | -0.344 <sup>***</sup><br>(-3.47)    | -0.342 <sup>***</sup><br>(-3.45)    |                                     |   |
| Distance<br>(000 <sup>s</sup> miles) | -0.681 <sup>***</sup><br>(-6.72)    | -0.466 <sup>***</sup><br>(-4.44)    | -0.457 <sup>***</sup><br>(-4.32)    | <b>-0.04</b>                        | <b>0.04</b>   |
| Migrant Stock                        | 0.034 <sup>***</sup><br>(8.77)      | 0.035 <sup>***</sup><br>(8.85)      | 0.035 <sup>***</sup><br>(8.79)      | <b>0.07</b>                         | <b>-0.06</b>  |
| AFDC Benefit Ratio                   | -0.056<br>(-0.53)                   |                                     | -0.064<br>(-0.60)                   | -0.09                               | 0.03  |
| AFDC*Origin-<br>Cluster              |                                     | 0.207 <sup>***</sup><br>(2.65)      | 0.213 <sup>***</sup><br>(2.71)      | <b>0.94</b>                         | <b>-0.26 (AFDC)</b><br><b>-0.35 (Cluster)</b>           |
| AFDC*Destination-<br>Cluster         |                                     | 0.036<br>(0.43)                     | 0.029<br>(0.34)                     | 0.13                                | -0.04<br>-0.08  |
| STAY                                 | 2.799 <sup>***</sup><br>(8.16)      | 3.118 <sup>***</sup><br>(8.95)      | 3.118 <sup>***</sup><br>(8.94)      |                                     |   |
| STAY*Age                             | 0.037 <sup>***</sup><br>(5.55)      | 0.036 <sup>***</sup><br>(5.40)      | 0.036 <sup>***</sup><br>(5.39)      |                                     |   |
| STAY*Repeat                          | -1.219 <sup>***</sup><br>(-10.48)   | -1.216 <sup>***</sup><br>(-10.47)   | -1.212 <sup>***</sup><br>(-10.41)   |                                     |   |
| STAY*College                         | 0.066<br>(0.22)                     | 0.040<br>(0.13)                     | 0.042<br>(0.14)                     |                                     |   |
| Movehome                             | 3.464 <sup>***</sup><br>(30.60)     | 3.369 <sup>***</sup><br>(29.19)     | 3.368 <sup>***</sup><br>(29.18)     |                                     |   |

<sup>a</sup>For ratio variables, setting Wisconsin equal to Illinois means setting X=1.0. For Distance and Migrant Stock, X is set equal to zero. Effects for statistically significant coefficients are in **bold**