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SEDAP Research Paper No. 17

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April 2000

The Program for Research on Social and Economic Dimensions of an Aging Population (SEDAP) is an interdisciplinary research program centred at McMaster University with participants at the University of British Columbia, Queen's University, Univérsité de Montréal, and the University of Toronto. It has support from the Social Sciences and Humanities Research Council of Canada under the Major Collaborative Research Initiatives Program, and further support from Statistics Canada, the Canadian Institute for Health Information, and participating universities. The SEDAP Research Paper series provides a vehicle for distributing the results of studies undertaken by those associated with the program. Authors take full responsibility for all expressions of opinion.

Note: This paper is cross listed as No. 349 in the McMaster University QSEP Report Series.

Location of Adult Children as an Attraction for Black and White Elderly Migrants in the United States

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February 2000

This research is supported by the grants from the NIA (grant number RO1-AG12291), the NICHD (grant number RO1-HD297525), and the Social Sciences and Humanities Research Council of Canada (grant number 412-98-0008). The migration data for this paper were prepared at the Population Studies Center, University of Michigan from the 1990 US Census files. The authors acknowledge Cathy Sun for computer programming assistance.

Location of Adult Children as an Attraction for Black and White Elderly Migrants in the United States

This research evaluates the location of adult children as a determinant of interstate primary migration for elderly (aged 60+) blacks and whites, over the 1985-90 period. We find that the location of adult children, as well as environmental amenities, affect the migration of both elderly blacks and whites but exert different redistribution influences on each race. Our results support the migration implications of Eugene Litwak's theory of the "modified extended family", which is considered to be more viable than the isolated nuclear family in a modern society.

The idea that the location of adult children can be influential in attracting elderly migrants in an industrialized country like the United States can be traced back to the seminal paper of Eugene Litwak (1960b), which developed the theory of the "modified extended family" (MEF). According to this theory, the MEF is better than the classical extended family and the isolated nuclear family, because it not only legitimizes the out-migration of adult children for career advancement but also encourages the relocation of elderly parents to be near their adult children for the services that require continual proximity. Among the various important implications of this theory is the one on the provision of assistance and services to the elderly (Litwak 1985). Thus, an empirical study on the attraction of elderly migrants by adult children is important for both theoretical and practical reasons. Unfortunately, such a study has rarely been attempted, because it is very difficult to find a data set that contains the information on the locations of non-coresident children (Clark and Wolf 1992).

The pattern of the net transfers of elderly primary black migrants from sunbelt states to snowbelt states with a large working-age black population (Frey, Liaw and Lin 2000) suggests that the location of adult children is essential for explaining the migration pattern of elderly blacks. If Litwak's theory is largely correct, the attraction of adult children should also be strong for elderly white migrants. Since white adult children have a higher proportion with an intact family than do their black counterparts, it may turn out that the attraction of adult children is stronger for elderly whites than for elderly blacks.

The purpose of this paper is to assess the importance of the locations of adult children in influencing the 1985-90 interstate primary migration of elderly blacks and whites in a multivariate context, based on the data of the 1990 census. Since the census questionnaire did not elicit information about the locations of non-coresident children, our empirical work will first show that it is possible to use the information on the state of birth to create a reasonable proxy for the location of the adult children of elderly "natives" (i.e. the elderly whose 1985 state of residence was identical to their state of birth). This proxy, together with the indicators of environmental amenities and other explanatory variables, will then be used in a nested logit model to account for the primary migration of both races. It is the comparison of the effects of the adult children on the one hand and environmental amenities on the other that will help us account for the major differences between black and white elderly migration patterns.

In addition to yielding more insights into the differences between black and white elderly migrations, our findings will shed further light on the viability of Litwak's model of modified extended family, which he claimed to be the only one that is consistent with modern industrialized

society (Litwak 1985:102). Moreover, they will also help us explain an “unexpected” contrast between return and non-return in-migrants of the Midwest that was revealed by Longino and Serow (1992) but remained unexplained: relative to return in-migrants, nonreturn in-migrants are older, more prone to be widowed, and less prone to live independently.

Our focus on primary elderly migrants is based on the well-known classification of primary, secondary and return migration (Eldridge 1965; Miller 1977; Long 1988) that has been used in previous census-based migration studies.[1] This classification is especially useful in the study of elderly migration (Serow 1978; Longino 1979; Rogers 1990; Newbold 1996; Frey et al. 2000), because it serves as a proxy for distinguishing largely younger, amenity-oriented migrants (i.e. primary migrants) from generally older, assistance-seeking migrants (i.e. return migrants). Since we wish to examine the contention that the location of adult children will vie with amenities and other socioeconomic factors in attracting younger and more "mainstream" elderly migrants (rather than only older assistance-seeking elderly migrants), our analysis will be restricted to primary migrants.

LITERATURE REVIEW AND RESEARCH CONTEXT

[1] These previous studies employ the US census variables: state of birth, state of residence five years before the census and state of residence at the census, to classify primary, secondary and return migrants. Primary migrants are those who resided in their birth state five years prior to the census but changed residences prior to the census date. Return migrants are those who resided in a different state than their birth state five years before the census but moved back to their birth state prior to the census. Secondary migrants are those who reported different state locations at birth, five years prior to the census, and at the census. The present study focuses on the out-migration behavior of the elderly (aged 60+) who resided in their birth state five years before the census (same-state "natives"), and on the destination choice behavior of these natives who relocated to another state prior to the census ("primary migrants").

Our search through the literature revealed that none of the previous multivariate analyses of elderly migration (e.g. Clark et al. 1996; Newbold 1996; Frey et al. 2000) used the location or distribution of adult children to explain elderly migration. The reason seems to be that there has not been any national data set that identifies the specific location of non-coresident adult children. Two of the nationally representative longitudinal data sets that have been used in recent years for studying the relocation of the elderly in the United States (the Longitudinal Study of Aging, and the National Survey of Families and Households) contain the information on the proximity between elderly parents and their children (measured in terms of travel time in LSOA and travel distance in NSFH) as the only geographical information for non-coresident adult children. Based on these data, some knowledge about the attraction of elderly migrants by their adult children may be only indirectly inferred from changes in proximity or from transitions into and out of coresidence. Because changes in the location of non-coresidence adult children are not recorded, it is not possible to directly attribute changes in parent-child proximity to the migration of one or the other.

From the LSOA, Silverstein found that for the non-institutional persons who were aged 70 and over in 1984 and had at least one surviving child in 1984 (N=3,468), the propensity to become temporally closer to their adult children between 1984 and 1988 was enhanced by the recent decline in their physical health. He also found that "the conjunction of declining health and widowhood increased both the *degree* of non-coresident proximity and the *likelihood* of transition to coresidence" (Silverstein 1995: 29). To detect the effects of race/ethnicity, he used a single dummy variable to represent both blacks and Hispanics in his multivariate models and found that this variable did not have a statistically significant effect either on the propensity to converge (i.e.

to become closer to a child) or on the degree of convergence. But, it did have a significant negative effect on the propensity to diverge. The negative effect suggests that relative to elderly whites, elderly blacks and Hispanics are less prone to make amenity-oriented interstate migrations, which tend to increase the average distance from their children.

Using the longitudinal data of the NSFH, Rogerson, Burr and Lin found that for the respondents who were aged 60 and over at the initial survey in 1987-88 and had at least one surviving child with a valid distance measure at both the initial survey and the second survey in 1992-93 (N=1,285), "an increase in functional limitations is the most consistent predictor of geographical convergence between elderly parents and their adult children", and that "the onset of widowhood during the observation period leads to a greater likelihood of living with an adult child" (Rogerson et al. 1997: 121). By using a single dummy variable to represent both blacks and all other minorities in their multivariate models, they found that this dummy variable does not have any statistically significant effect on (1) the odds of convergence versus no change, (2) the odds of divergence versus no change, (3) the odds of living independently versus no change, and (4) the odds of living jointly versus no change. It is likely that the complete lack of statistically significant effect of this dummy variable is partly due to the smallness of the sample size and the grouping of blacks with other minorities.

Using the cross-sectional data of the 1987-88 NSFH, Clark and Wolf (1992) studied the effect of the migration of the elderly (aged 60 and over, with at least one child aged 19 or over, N=2,714) on the proximity to their children in a multivariate framework. They defined migrants as those who had moved more than 25 miles in the five years before the survey. They also represented proximity by a dummy that assumes the value of 1 if the parent in question coresided

with a child or if the distance to a child was within 10 miles at the time of the survey. They found that the effects of elderly migration on the proximity to children had a curvilinear age pattern:

> Among the 'young old', migrants are less likely to live near a child than are non-migrants.[2] However, the older migrants are, the more likely it is that they live near at least one child. By age 77, migrants are more likely than non-migrants to be in close proximity to a child. (Clark and Wolf: 87)

They also found that widowed respondents were more likely to live near a child than were those of other marital statuses, but that functionally limited older parents were no more and no less likely to live near a child than were other parents. They did not attempt to examine the potential effect of race on the parent-child proximity. Another multivariate study of the same data by Lin and Rogerson (1995) showed that elderly blacks and whites did not differ significantly in the proximity to their closest and second-closest children.

Although the effects of race/ethnicity on the parent-child proximity and on its change appear to be largely non-significant, both LSOA and NSFH data provided rather clear evidence that the increase in functional disability significantly increases the elderly's proximity to their children, and that this effect is reinforced by becoming widowed. Is this increase in proximity mainly achieved by the movement of the elderly or the movement of their children? Speare and McNalley's (1992) analysis of the data of the Survey of Income and Program Participation indicated that more than two-thirds of elderly parents who became geographically closer to their children did not move

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[2] The finding that among the 'young old', migrants are less likely to live near a child than are non-migrants may or may not mean that the greater parent-child distance of the migrants is due to the migration of the elderly. It may be mainly due to the adult children's previous out-migration from their parental homes. For an interesting discussion and some empirical evidence of this possibility, see Bultena and Marshall (1970).

themselves, suggesting that the increase in proximity was mainly due to the movement of their children. On the other hand, an analysis of the LSOA data by Bradsher and her associates (1992) showed that the elderly's propensity to change residence was enhanced by the increase in instrumental disability, and that this enhancing effect was particularly strong for the recently widowed. Together with the above-mentioned finding of Clark and Wolf (1992), this finding suggests that the migration of the weakened elderly may have contributed significantly to the reduction in the distance from their children.

What remains unclear in the empirical studies is the strength of the attractions of the healthy and married elderly by their adult children. There are several reasons for expecting that it can be quite strong. First, a non-coresident child may reside in an amenity-rich region and provide information and help to facilitate the migration of her or his healthy and married parents to that region. This type of migration is likely to happen, because migration can enable the elderly to enjoy not only environmental amenities but also the visits with their children. Second, some healthy elderly couples may move to the vicinity of their children in order to maintain exchanges of services and affections, including the interactions with grandchildren. Third, some elderly may feel safer by moving closer to their children before the decline in health or the loss of spouse. For these reasons, our study will include the elderly of all marital statuses and different ages. We use age as a crude proxy for health status.

It is common for researchers of elderly migration to put their studies in the context of the three-stage developmental framework of Litwak and Longino (1987): (1) amenity-oriented migrations mostly by relatively young, healthy, and married couples; (2) migrations of the partially disabled or widowed elderly toward their adult children or other kin; and (3) movements of the

seriously disabled elderly into institutions. However, we think that it is more meaningful to put our study in the context of the theory of modified extended family (Litwak 1960a, 1960b and 1985). The theory is well grounded in empirical evidence and generates a relatively optimistic prospect for the future of older populations in today's industrialized society.

The modified extended family (MEF) consists of "a series of nuclear household units that are semi-independent of each other" (Litwak 1985: 101-102). In contrast to the classical extended family (CEF) that discourages differential geographical and occupational mobilities, the MEF legitimizes them (Litwak 1960a and 1960b). Because such differential mobilities are essential for the advancements of family members in the formal institutions of an industrialized society as well as for enhancing the productivity of modern economy, the MEF is consistent with the basic nature of modern society, whereas the CEF is not. Despite being prone to be separated by geographical location and social status, most of the members of the MEF are able to maintain substantial exchanges of services and affections among themselves by using modern technologies (e.g. telephones, cars, air planes, and money in the banking system).

An important challenge for the MEF occurs when some member (usually an elderly parent) experiences a long-term disability that requires the continual proximity of another non-coresident member who is willing or obliged to provide daily instrumental assistance. Since an elderly parent who has retired from the formal institution of employment is free from job-related mobility constraints, it is likely that she or he may migrate to the vicinity of an adult child soon after or even before the onset of long-term disability. The assessment of this likelihood is essential for judging the viability of the MEF as a humane subsystem in an aged society. A negative result of this assessment would imply a high risk that the family system may degenerate into the isolated

nuclear family system whereby the elderly with long-term disability can expect little instrumental assistance from their children. It would then imply the need for the large-scaled proliferation of formal institutions for the elderly as a practical way of dealing with the aging trend.

DATA AND STATISTICAL MODEL

This research uses the 8 percent data from the 1990 census PUMS files: the 5 percent State PUMS files combined with the 3 percent PUMS-O files. By comparing the state of residence in 1985 and the state of birth, each US-born individual who resided in the United States in 1985 is identified as either a (same-state) "**native**" or a "non-native". The sample used in this study of primary migration includes all black and (non-Hispanic) white natives who were **aged 60 and over** in 1990. Among the elderly natives, **primary migrants** are defined as those whose 1985 and 1990 states of residence were different, with the remaining individuals defined as "stayers".

In order to retain the information on the key personal factors and to make the input data files for the statistical model into manageable sizes, the sample weights of all black and white elderly natives are used to create a multidimensional tabulation. The dimensions of the tabulation include: (1) race (black, white), (2) educational attainment (less than high school, high school graduation, some college, college graduation), (3) marital status (single, married, widowed, divorced, separated), (4) age in five-year groups (60-64, ..., 80-84, 85+), (5) gender (female, male), (6) poverty status (poor, non-poor, unknown), (7) state of residence in 1985, and (8) state of residence in 1990. Poverty status is defined according to the official poverty line. Only about 4% of the elderly natives had unknown poverty status.

Our multivariate statistical model is a two-level nested logit model formulated in the

following way. For an elderly native with personal attributes *s* and residing in state *i* in 1985, we specify that her/his migration behavior in 1985-90 depends on (1) a departure probability $P(s, i)$ at the upper level, and (2) a set of destination choice probabilities, $P(j \mid s, i)$ for all *j* not equal to *i*, at the lower level. By assuming that the elderly native makes the migration decision by maximizing her/his quality of life, these probabilities can be derived as functions of observable explanatory variables in the following two sub-models (Kanaroglou, Liaw and Papageorgiou 1986).

Destination Choice Sub-model:

$$P(j \mid i, s) = \frac{\exp(b'x[j, i, s])}{\sum_{k \neq i} \exp(b'x[k, i, s])}, \quad j \neq i; \tag{1}$$

where $x[j, i, s]$ is a column-vector of observable explanatory variables; b' is a row-vector of unknown coefficients.

Departure Sub-model:

$$P(i, s) = \frac{\exp(d + c'y[i, s] + u * I[i, s])}{1 + \exp(d + c'y[i, s] + u * I[i, s])}; \tag{2}$$

where $y[i, s]$ is another column-vector of observable explanatory variables; d, c' and u are unknown coefficients, with u being bounded between 0 and 1; and $I[i, s]$ is the so-called inclusive variable defined as:

$$I[i, s] = Ln\left(\sum_{k \neq i} \exp(b'x[k, i, s])\right). \tag{3}$$

The inclusive variable represents the attractiveness of the rest of the system perceived by the potential migrant in state i.

Assuming that the migration behaviors of all persons in the same cell of the multidimensional tabulation depend on the same set of $P(i, s)$ and $P(j \mid i, s)$, we estimate the unknown coefficients in equations (1) and (2) sequentially by the maximum quasi-likelihood method (McCullagh 1983; Liaw and Ledent 1987).

In constructing a relatively concise specification of a sub-model (to be called the **best specification** for simplicity), we only include the explanatory variables that are statistically significant (i.e. those whose t-ratios have a magnitude of at least 2.0) and substantively sensible.

The goodness of fit of a given specification of a sub-model is to be measured by:

$$\textbf{Rho-square} = 1 - L_g / L_o, \tag{4}$$

where L_g is the maximum quasi-log-likelihood of the given specification and L_o is the maximum quasi-log-likelihood of the corresponding null sub-model (i.e. the destination choice sub-model with $b' = 0$ or the departure sub-model with $c' = 0$). Note that the ceiling of Rho-square is much less than 1.0 so that a value of 0.2 may indicate a very good fit (McFadden 1974).

To help evaluate the relative importance of one subset of explanatory variables (say the variables representing the attraction of adult children) against another subset (say the variables representing environmental amenities), we will delete the two subsets of variables in turn from the best specification and then compare the resulting decreases in Rho-square: the greater the decrease, the more important the deleted subset of variables.[3] The decrease in Rho-square due to

[3] Another criterion for comparing the relative importance of two subsets of explanatory variables is the P-value, computed from the corresponding changes in the Chi-square statistic and the associated degrees of freedom. However, in our model, all the changes in Chi-square are so big that

the deletion of a subset of explanatory variables is denoted as **MCR** (**marginal contribution in Rho-square**) in Tables 2 and 3.

THE SPECIFICATION OF EXPLANATORY VARIABLES

The explanatory variable at the focus of this study is "adult children", which is defined in the following way. For a given race, consider a groups of elderly natives (aged 60 and over in 1990) who in 1985 resided in state i, which is by definition also their state of birth . Where could their adult children be located at the beginning of the 1985-90 migration interval? It is likely that most of their children were born in state i and were aged 30-59 in 1990. The distribution of these children at the beginning of the 1985-90 migration interval can be reasonably well estimated by examining the race-specific birth-to-1985 out-migration pattern of the 30-59 age group from state i. Let C[r,i] be the number of the individuals in the 30-59 age group who were born in state i and of race group r. Also let C[r,i,j] be the number of individuals in C[r,i] who made the birth-to-1985 migration from state i to state j, and let C[r,i,i] be the number of individuals in C[r,i] who remained in state i in 1985. The variable "**adult children**" is then defined as:

$$c[r,i,j] = C[r,i,j] / C[r,i] * 100\% \quad (5)$$

in the destination choice sub-model, and

$$c[r,i,i] = C[r,i,i] / C[r,i] * 100\% \quad (6)$$

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the Chi-square distribution function in languages like SAS and QUATTRO yields either a zero or an error message for the P-values of all deleted subset of variables, making the comparison impossible. Our experiences in other studies where the P-values are computable show that the ranking by decreases in Rho-square and the ranking by P-values are very similar.

in the departure sub-model. It is approximately correct to say that c[r,i,j] is the proportion of the adult children born in state i who had migrated to state j sometime between birth and 1985 and remained in state j in 1985 (the beginning of the 1985-90 time interval for studying elderly migration), whereas c[r,i,i] is the proportion of the adult children born in state i who remained in state i in 1985. We expect that c[r,i,j] should have a positive coefficient in the destination choice sub-model (implying that elderly migrants are more prone to be attracted to a potential destination where a higher proportion of their adult children are located), whereas c[r,i,i] should have a negative coefficient in the departure sub-model (implying that elderly potential migrants are less prone to depart from a native state where a higher proportion of their adult children have remained). Since the effects of "adult children" are expected to vary by race, marital status and age, we will also create interaction variables by multiply this variable to the dummy variables representing these personal attributes.

We represent environmental amenities by **coldness of winter**, **cloudiness**, and "**Gold Coast**", defined in the following way.

Coldness of Winter: For each state, this variable is defined as a weighted average of the heating degree-days of cities with records from 1951 to 1980, using city populations as the weights. The unit is 1000 degree(F)-days.[4]

Cloudiness: This is the weighted average of the numbers of cloudy days in a year of the cities within a state, with the weights being the population sizes of the metropolitan areas where the cities are located. The unit of the variable is10 days.

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[4] The data source for heating degree-days and cloudy days is US National Oceanic and Atmospheric Administration.

Gold Coast: This is a dummy variable assuming the value of 1, if the state in question is on the Atlantic Coast between Virginia and Florida or one of the three states on the Pacific Coast. In the context of the above two amenity variables, this variable is used represent the attractions of water, mountains, and scenic beauty (Longino 1995: 18).

Since it is expected that amenity-oriented migrations are more likely to be made by the elderly who are relatively young (recently retired), well educated, white, and married (Haas and Serow 1993), some of these place attributes may have some significant interactions with the dummy variables representing the distinctions in personal factors such as age, education, race, and marital and poverty statuses.

Our assessments of the importance of the attractions of adult children and environmental amenities are performed in the context of a set of other place attributes that are considered as covariates. These covariates represent cost of living, generosity of Medicare and Medicaid programs, home ownership proportion, violent crime rate, racial similarity, relative location between origin and potential destination, economic conditions, and the size of ecumene. To maintain the flow of the paper, their operational definitions are relegated to Appendix A. To achieve a high level of explanation and to be consistent with theories, these place attributes are also used to form interaction terms with personal factors. For example, in the destination choice sub-model, we use the interaction between (1) the log of distance and (2) the dummy variable representing post-secondary education in order to allow the distance-decay effect to be weaker on the migrants with post-secondary education.

EMPIRICAL FINDINGS

Destination Choices

The sharp difference in destination choice pattern between black and white elderly primary migrants can be vividly depicted by the migration flows from the southern states. Table 1 shows the three most attractive destinations, together with their percentage shares, of the race-specific elderly primary migrants from each of the southern states in 1985-90. For blacks, many of these destinations are the industrial states in the snowbelt (e.g. Illinois, New York, Michigan, Pennsylvania, Ohio, and Indiana). For whites, few of these destinations are in the snowbelt.

(Table 1 about here)

Although black migrants' preference for northern industrial states have sometimes been attributed to the relatively generous welfare and social programs of these states[5], it is more plausible to expect that the elderly black migrants were mainly attracted by their adult children, many of whom happened to be located in the industrial north. To get a sense of the validity of this expectation in a simple way, we examine the destination choice patterns of the widowed and married elderly primary black migrants from Alabama. Figure 1 shows that the northern industrial states that attracted large proportions of the widowed black migrants indeed tended to have large shares of their adult children. The relationship between the distribution of adult children and the destination choice pattern of the widowed elderly appears to be rather strong (R-square = 0.729). Figure 2 shows that the corresponding relationship is much weaker for the married elderly blacks (R-square = 0.341). The difference between the widowed and married elderly blacks is consistent with Litwak's characterization of the modified extended family in the sense that the elderly who

[5] For a list of references about the allegations that black migrants are attracted by higher welfare and social benefits, see Long (1988:149).

are less capable of living independently are more prone to move toward their adult children.

(Figures 1 and 2 about here)

How about the attraction of elderly *whites* by their adult children? Figures 3 and 4 show the relevant information for the widowed and married white primary migrants from Alabama. They suggest that the attraction by adult children was very strong and hardly differed between the widowed and the married (R-square = 0.912 and 0.910, respectively). Both widowed and married elderly whites were strongly attracted to Florida and Georgia, which had not only a large concentration of their adult children but also an attractive environment. Without multivariate analysis, it is difficult to know the differential attractions of these two factors. The main message from these figures is that the attraction by adult children should not be forgotten when attempting to explain the flows of elderly migrants into amenity-rich states.[6]

(Figures 3 and 4 about here)

We now turn to the estimation results of the destination choice sub-model. In the best specification, we find that the elderly primary migrants of both races and all marital statuses were attracted by their adult children,[7] that this attraction was somewhat stronger for the widowed who were relatively old (aged 75 and over), and that it was substantially stronger for whites than for

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[6] In two small-scale surveys of the post-retirement migrants from North Central states to the amenity-rich states of Arizona (N=199) and Florida (N=150), it was found that 54 percent of them "had at least one child located closer now than before their retirement", and that "The desire to be nearer children was, in fact, indicated by 31 percent of the Arizona migrants, and by 13 percent of those in Florida, as a primary consideration in their decision to retire outside their home communities" (Bultena and Marshall 1970: 91).

[7] Although the never-married elderly in general did not have a child, they represented a very small proportion of the elderly population and had little effect on the estimated results. Our interpretations of the statistical results about the attraction of children are not intended for this group.

blacks (Table 2). To be more specific, we can compute the estimated odds ratios for four separate groups of elderly migrants.

(1) For the whites who were younger than 75 and not widowed, the odds ratio is exp(0.291) =1.34, which means that if the share of adult children by a potential destination is increased by one percentage point, the odds that this potential destination is selected will be increased by a factor of 1.34.

(2) For the widowed whites aged 75 and over, the odds ratio is exp(0.291+0.020)=1.36.

(3) For the blacks who were younger than 75 and not widowed, it is exp(0.291-0.151)=1.15.

(4) For the widowed blacks aged 75 and over, it is exp(0.291+0.020-0.151)=1.17.

(Table 2 about here)

The estimated coefficients of the amenity variables show that the elderly migrants were in general prone to be attracted to potential destinations with warmer winter, more clear days, and being on the Gold Coast. Naturally, the group that was most subject to the attraction of warm winter was the non-poor married whites in the 65-69 age interval.[8] Compared to their white counterparts, all categories of blacks were much less attracted by destinations with warm winter.

[8] The age pattern of the odds ratios of Coldness for the unmarried and non-poor white migrants is: exp(-0.28)=0.76 for the 60-64 age group, exp(-0.28-0.19)=0.68 for the 65-69 age group,
exp(-0.28-0.08)=0.70 for the 70-74 age group, exp(-0.28)=0.76 for the 75-79 age group, and exp(-0.28+0.07)=0.81 for the 80+ age group. These odds ratios, together with other odds ratios that can be computed in a similar way, indicate that the white migrants of *every* age group tended to avoid the destinations with relatively cold winter, and that the white migrants of the 65-69 age group had the strongest aversion to cold winter (or equivalently the strongest attraction to warm winter). For the black migrants who were married, aged 65-69, and non-poor, the odds ratio of Coldness is exp(-0.28-0.19-0.11+0.45)=0.88, compared with the very low value of exp(-0.28-0.19-0.11)=0.56 for their white counterparts. In other words, the black migrants had much weaker aversion to destinations with cold winter than their white counterparts.

Although both black and white elderly migrants were subject to the attractions of the states on the Gold Coasts, the attractions were much weaker for the former than for the latter.

From the marginal contributions in Rho-square (Table 2), we see that although the explanatory power of Adult Children was much less than the combined explanatory power of climate and Gold Coast, it was stronger than that of Gold Coast. Compared with the covariates that are not the focus of this paper, Adult Children was less powerful than the combination of distance[9] and contiguity, but much more influential than cost of living, generosity of medical programs[10], racial similarity, labor market variables (on the 60-64 age group), and population size at destination. Overall, we find that Adult Children was one of the most important explanatory factors in the destination choice sub-model.

The large value of the Rho-square (0.3507) of the best specification in Table 2 indicates that the destination choice sub-model has a strong explanatory power. The observed and predicted shares of black and white elderly primary migrants by the 17 most preferred destinations are shown in Table 3. For whites, both observed and predicted destination choice patterns show (1) that Florida, sharing more than one-third of all migrants, was by far the most popular destination; (2) that two-thirds of the migrants were attracted to the top ten states; and (3) that the top 17 destinations, which included all of the well-known amenity-rich states, shared about three-quarters of the interstate primary migrants. It is important to note that two of the top three destinations of

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[9] The distance decay effect is flatter for the far away states of Alaska and Hawaii.

[10] Although both black and white migrants were attracted by the destinations with a more generous Medicare program, only white migrants were significantly by destinations with a more generous Medicaid program. In other words, our result does not support the idea that elderly blacks were more prone to be attracted by states with more generous government programs than were elderly whites.

the white elderly primary migrants, namely Florida and California, had the largest shares of non-native white adult children among all the states in 1985: 8.7% by Florida and 13.7% by California, compared with only 3.1% by New York.

(Table 3 about here)

For blacks, both observed and predicted destination choice patterns show (1) that there was no overwhelmingly important destination; (2) that California, rather than Florida, was the most preferred destination; (3) that northern industrial states like New York and Illinois featured prominently among the major destinations; and (4) that the top ten destinations' share was about 60% and the top 17 destinations' share was about 80% (Table 3). Even though Florida is much closer to the major concentration of elderly native blacks than is California, Florida attracted significantly fewer elderly black primary migrants (1,749) than did California (2,578). This difference is consistent with the fact that Florida had only 5.3% of the non-native black adult children in 1985, compared with California's 14.0%. Since New York had as many as 10.4% of non-native black adult children in 1985, it is not surprising that it was among the top five destinations of elderly black primary migrants.

Departure Choices

As expected, the estimated coefficients of Adult Children and its interaction term in the departure sub-model show that the concentration of the adult children in the state of birth had a significant retention effect on both native elderly blacks and whites, and that this effect was stronger for the widowed than for those of other marital statuses (Table 4). The coefficients of the environmental factors also turn out to be consistent with our expectation: the states on Gold

Coasts were in general more capable of retaining their elderly natives, whereas the states with colder winter were more prone to push out the elderly natives who were married couples or males at retirement age. The marginal contributions in Rho-square show that among the factors representing place attributes, Adult Children and environmental amenities, together with cost of living, were most important: they were more important than generosity in medical programs, home ownership proportion, violent crime rate, population size at origin, and location in the industrial heartland.[11]

(Table 4 about here)

The marginal contributions in Rho-square also show the typical finding that personal attributes were in general more important than place attributes in determining the departure propensities (Liaw and Ledent 1988). The large negative coefficient of Black (-0.95) indicates that native elderly blacks were much less prone to migrate than native elderly whites. This difference is also reflected by the observed departure rates: 1.4% for blacks versus 2.8% for whites. By contrast, the small positive coefficient of Male (0.04) indicates that the migration propensities did not differ much by gender. This is reflected by the small gender difference in the observed departure rates: 2.6% for females versus 2.8% for males. The estimated coefficients also show that the retirement peak of the departure (out-migration) schedule was quite clear for

[11] In the multivariate context, we found that Industrial Heartland had a significant retention effect on native elderly blacks and a significant push effect on native elderly whites. This finding suggests that most of the native elderly backs were much less affluent than the corresponding whites in the industrial heartland so that they were less prone to participate in amenity-oriented migration. The changes in the coefficients of other variables due to the deletion of this dummy variable (not shown in this paper) suggest that the black/white difference in the propensity to leave the industrial heartland was partly due to a high proportion of black adult children born in this region to remain within the region.

whites but hardly existed for blacks. The observed age-specific departure rates also display a retirement peak for whites: 3.2% for the 60-64 age group, 3.3% for the 65-69 age group, and 2.6% for the 70-74 age group. The corresponding rates for blacks are 1.3%, 1.2%, and 1.3%.

To the extent that educational attainment and poverty status serve well as proxies for socioeconomic status, the estimation result confirms that the higher the socioeconomic status, the greater the migration propensity. The estimated coefficients indicate that educational attainment had highly significant positive effects, which were stronger for whites than for blacks. The observed departure rates are consistent with this multivariate finding: the rates for whites with different levels of education were 2.0% (less than high school), 2.9% (high school), and 4.0% (college), whereas the corresponding rates for blacks were 1.2%, 1.6%, and 1.9%. With respect to the effects of poverty status, both the estimated coefficients and the observed departure rates show that those under the poverty line were less prone to migrate. However, without the control for other factors, the observed departure rates were unable to substantiate the multivariate finding that the negative effect of poverty was stronger for blacks than for whites.[12]

The estimated coefficients of the dummy variables representing marital status and their interactions with race, age and gender suggest that the effects of marital status were relatively complex. With the minor exception of never-married whites, the unmarried were more migratory than the married. Among the unmarried, the widowed were most migratory. The contrast between the widowed and the married was much greater for blacks than for whites. For each gender, the widowed's propensities to make primary migration increased monotonically with age beyond the

[12] The observed departure rates for whites are 1.8% (poverty) and 2.9% (non-poverty). The corresponding rates for blacks are 0.9% (poverty) and 1.5% (non-poverty).

early 70s. It is important to realize that these findings are obtained from a multivariate framework whereby other explanatory variables have already represented (1) the greater tendency of the widowed to be retained by the states with many of their adult children, and (2) the greater tendency of the married to be pushed out of the states with relatively cold winter. Mainly due to these two tendencies, the observed departure rates turned out to be somewhat lower for the widowed (2.4%) than for the married (2.8%).

To follow the main theme of this paper, we end this section by focusing on the marked difference between the black and white overall departure rates (1.4% versus 2.8%), which are perfectly predicted by the departure sub-model. This difference can be partly accounted for by the fact that elderly blacks had lower educational attainments, were more likely to be in poverty, and were less prone to migrate at retirement age. It can also be related to the fact that a high proportion of black adult children had made a life-time migration from the sunbelt to the snowbelt, whereas the opposite was true for white adult children. In other words, the difference in departure rates was also due to the fact that the attractions by adult children and environmental amenities countered each other for elderly blacks but reinforced each other for elderly whites.

Interstate Net Transfers of Elderly Primary Migrants

Based on earlier census data, the elderly migration process of the United States has been characterized as operating "like a giant parabolic mirror, collecting distinctive types of individuals from everywhere and concentrating them into certain places" (Morrison, 1990, p. 401). To a large extent, this was also true for the 1985-90 elderly interstate primary migration of both blacks and whites, although the regional concentration of the net gaining states was greater for whites

than for blacks. The main differences between the two races are that the net transfer was much more intense for whites than for blacks, and that the industrial heartland (now the rust belt) contained six of the ten largest net gainers of black primary migrants (Michigan, New Jersey, Indiana, Ohio, Illinois, and Wisconsin) but none of the net gainers of white primary migrants (Tables 5 and 6).

(Tables 5 and 6 about here)

To depict these differences in a concrete way, we mention that the top ten net gainers of elderly *black* primary migrants had a combined gain of only 8,540 persons, implying a net in-migration rate of 3.2%. By contrast, the combined gain of the top ten net gainers of elderly *white* primary migrants amounted to as many as 305,656 persons, implying a net in-migration rate of 8.1%. For blacks, the top gainer was California, which had a very modest net gain of only 2,363 migrants. For whites, the top gainer was Florida, which achieved a voluminous net gain of 208,476 migrants.

With respect to the major net losing states, the racial difference is also very great, though not as drastic as the racial difference with respect to major net gaining states. The top ten net losers of elderly *black* primary migrants had a combined net loss of only 9,032, implying a rather trivial net out-migrant rate of 0.9%, whereas the top ten net losers of elderly *white* primary migrants experienced a much larger combined net loss of 289,032, implying a moderately large net out-migration rate of 2.9%. For both races, the net out-migration rates of the major losing states were much smaller in magnitude than the net in-migration rates of the major gaining states, although the net out-migration volumes were about the same as the corresponding net in-migration volumes. This finding implies that the redistribution of the elderly natives of each race

was strongly oriented towards the states that used to have relatively small race-specific population more than 60 years ago. The estimation result of our nested logit model indicates that the keys to understand these major differences and similarities between black and white elderly migration are the attractions by adult children and environmental amenities.

EXPLANATION FOR THE UNEXPECTED FINDING OF LONGINO AND SEROW

In an article focusing on the characteristics of elderly return migrants, Longino and Serow formulated the hypothesis that "although there will be regional variation, return migrants are more likely to be older and more widowed and residentially dependent than nonreturn migrants for the nation and for all regional streams" (Longino and Serow 1992: S39). They tested this hypothesis with the census data on the 1975-80 interstate elderly (aged 60+ in 1980) in-migrants of the four census regions of the United States. The hypothesis was well supported at the national level but was significantly contradicted by the data of the Midwest. At the national level, among return migrants, 24.5% were aged 75+, 33.0% were widowed, and 75.6% lived independently, whereas among nonreturn migrants, the corresponding figures were 21.5%, 27.0%, and 79.5%, respectively. However, in the Midwest, these figures were 28.6%, 34.9%, and 76.7% for return in-migrants, compared with 32.2%, 41.4%, and 65.8% for nonreturn in-migrants.

Why was the hypothesis contradicted so sharply by the elderly in-migrants of the Midwest? Logino and Serow did not attempt to explain this contradiction specifically but speculated in the concluding section that for the elderly, "One's informal support system, composed of close friends and children, may more often be located at one's adult state of residence than at one's state of birth" (Longino and Serow 1992: S42). We think that the answer partly lies in this speculation, in

the sense that the attraction by adult children was recognized as a potentially important factor. But, a plausible answer also requires the recognition that many adult children may have migrated to a state that is neither the state of birth nor the state of previous long-term residence of the elderly.

In light of our findings about black and white elderly primary migrations, we propose the following explanation for the contradiction. A highly proportion of the 1975-80 nonreturn elderly in-migrants of the Midwest were black elderly migrants from the South, who were mainly attracted by the large numbers of their adult children who had migrated to the industrial states of the Midwest and remained there by 1980. Contrary to the dominant flow of white elderly primary migrants who were mostly around retirement age, married, and healthy and well-off enough to live independently, these black primary migrants were prone to be older and widowed, and had difficulty in maintaining independent residence.

CONCLUDING DISCUSSION

We have presented our study of black and white elderly primary migration in the context of Eugene Litwak's theory that the family system that is most viable in an industrialized and bureaucratized society is the system of modified extended family, which legitimizes the out-migration (as well as social mobility) of adult children for career advancement and encourages the migration of elderly parents to be close to their adult children for the assistance that requires proximity. In our opinion, this family system is much better than the alternative system of the isolated nuclear family or the highly individualized mass society, especially as population aging has become the dominant demographic trend of the new century.

By using a reasonable proxy for the location of adult children, we have shown that both married and unmarried elderly natives were strongly attracted by their adult children, although the attraction was stronger for the widowed. In the departure process, we found that the elderly (especially those who were widowed) were more prone to remain in the states where a high proportion of their adult children had remained. In the destination choice process, we found that the elderly migrants were more prone to move to states where a high proportion of their migrated adult children were located, and that this tendency was somewhat stronger for those who were widowed and aged 75 and over. These findings can be taken as hopeful signs of the viability of the modified extended family system. They also suggest that the elderly natives did not have a strong tendency to delay their migration towards their adult children until the loss of spouse or becoming very old.

We have also shown that the attractions by adult children and environmental amenities were weaker for elderly blacks than for elderly whites. This finding is related to the fact that a high proportion of black adult children had made life-time migration from the sunbelt to the industrial states of the snowbelt, whereas a high proportion of white adult children had made life-time migration in the opposite direction. Thus, the two types of attractions countered each other for native elderly blacks and reinforced each other for native elderly whites. As a consequence, the migration of the former was very small in volume and was somewhat oriented towards the snowbelt, whereas the migration of the latter was rather large in volume and was strongly oriented towards the sunbelt.

Due to the lack of data on the specific locations of non-coresident adult children, the importance of the attraction by adult children has not been assessed by other researchers in the

context of environmental amenities and other relevant factors. Thus, the empirical implications of this attraction remained largely unexplored. In this paper, we have demonstrated that it can help explain the "unexpected" contrast between return and nonreturn elderly in-migrants of the Midwest: the latter are older, more prone to be widowed, and less likely to live independently. We hope that our findings would provide a basis for encouraging the collection of the information on the specific locations of non-coresident adult children in censuses and surveys.

In light of the trend of the extremely rapid growth of the oldest old in the United States (Taeuber and Rosenwaike 1992), an important implication of our findings relates to the long-term care for the disabled elderly, who represented more than half of the nation's elderly population in 1990 (Torres-Gil 1996). Since friends and neighbors are not suitable substitutes for adult children as the major providers of long-term care (Litwak 1985), our findings suggest the viability that adult children remain the main providers of long-term care for the elderly. However, policy makers should realize that long-term care tends to be extremely burdensome (Brody 1985). If formal institutions are not set up to relieve part of this burden, the attraction of the elderly by their adult children may be weakened (Anderson 1977), leading to the degeneration of the modified extended family system and the massive institutionalization of the elderly.

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Appendix A: Definitions of the Place Attributes Used as Covariates in the Nested Logit Model

In assessing the effects of adult children and environmental amenities on the interstate migration behaviors of native elderly black and whites, we control for the effects of other place attributes by including them as covariates in the nested logit model. These covariates are defined as follows. The data sources that are not specifically identified below are indicated in Frey et al (1996).

Cost of Living Index: This is a State's cost of living in 1985, with the national average set at 100. Data source: MacMahon and Chang (1991).

Medicare: This is the 1987 Medicare payment per elderly recipient. The unit is $1,000 per person. Data source: USDC (1991:220).

Medicaid: This is the 1986 Medicaid payment per elderly recipient. The unit is $1,000 per person. The missing value of Arizona is replaced by the average of the other states. Data source: Health Care Financing Administration (1990).

Income: This is the income per capita of a state computed in the following way. First, we adjust the state-specific 1985 and 1989 nominal per capita incomes by the corresponding state-specific cost of living indices of the same years. Second, the 1985 and 1989 adjusted values are then averaged. The unit is $10,000 per person.

Employment Growth: For each state, this variable is the state-specific 1985-1989 growth of total civilian employment divided by the 1985 total civilian employment. The unit is "proportion per 4 years".

Ln(Distance): This variable is the natural log of the population gravity centers of origin and destination states. The unit is ln(miles).

Contiguity: For each potential destination, this is a dummy variable assuming the value of 1, if it shares a common border with the state of origin.

Racial Similarity: For the migrants of a specific race in the destination choice sub-model, this is the logit of the specific race's proportional share of the potential destination's population in 1985, computed indirectly from the data of the 1990 census. For the potential migrants of a specific race in the departure sub-model, this is the logit of the specific race's proportional share of the origin's population in 1985, computed indirectly from the data of the 1990 census.

Proportion Home Owners: This variable is the proportion (%) of the elderly (aged 65+) owning homes in 1990. Data source: the 1990 Census 5% PUMS.

Ln(Population Size): This the natural log of a state’s population size in 1985, computed indirectly from the data of the 1990 census. The unit is ln(1,000,000 persons).

Industrial Heartland: This is a dummy variable assuming the value of 1, if the 1985 state of residence was Delaware, Maryland, or Washington, D. C., or in the Middle Atlantic Division or the East North Central Division.

Figure 1. Attractions of Alabama's Black Widowed Elderly Primary Out-Migrants in 1985-90 by Their "Adult Children" Who Resided in Other States in 1985

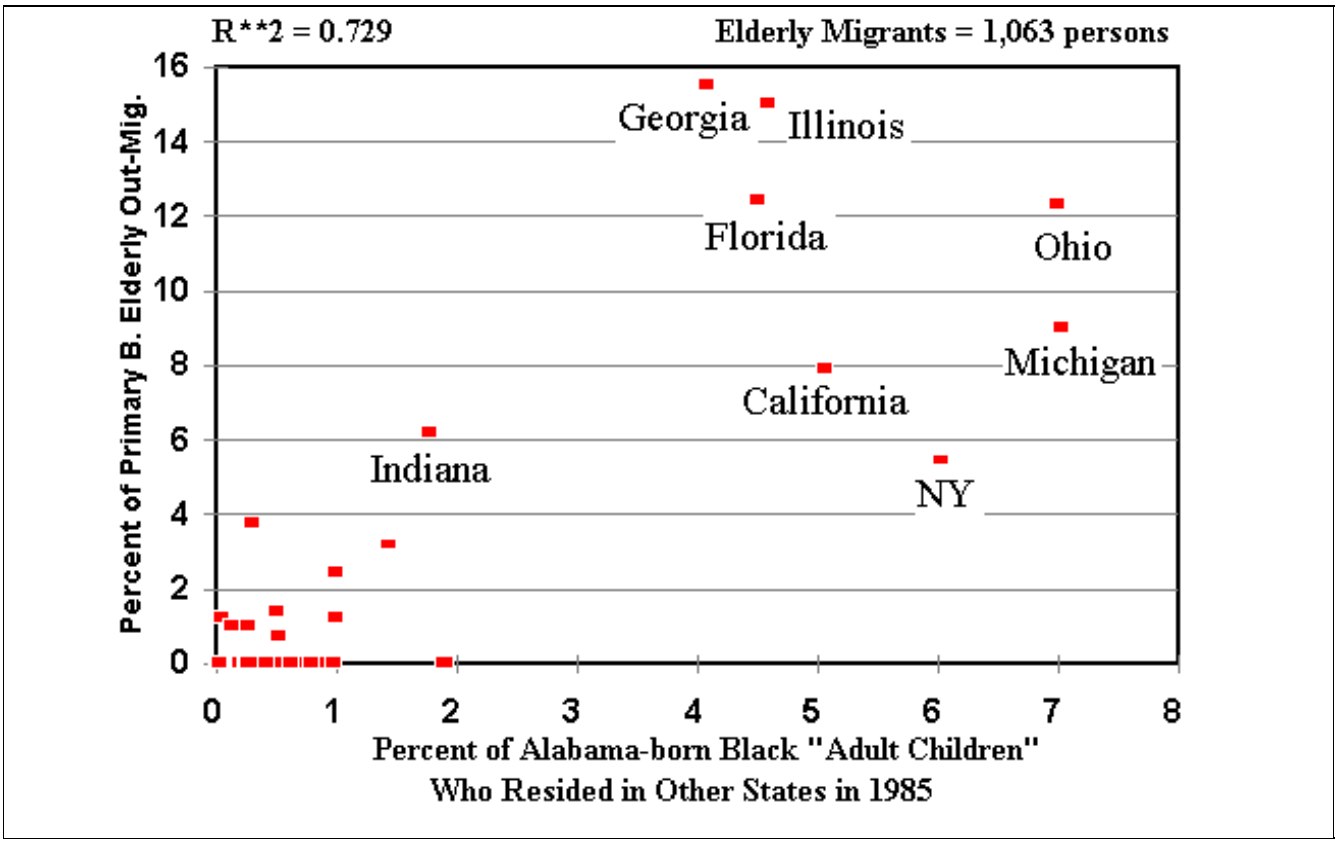

Figure 2. Attractions of Alabama's Black Married Elderly Primary Out-Migrants in 1985-90 by Their "Adult Children" Who Resided in Other States in 1985

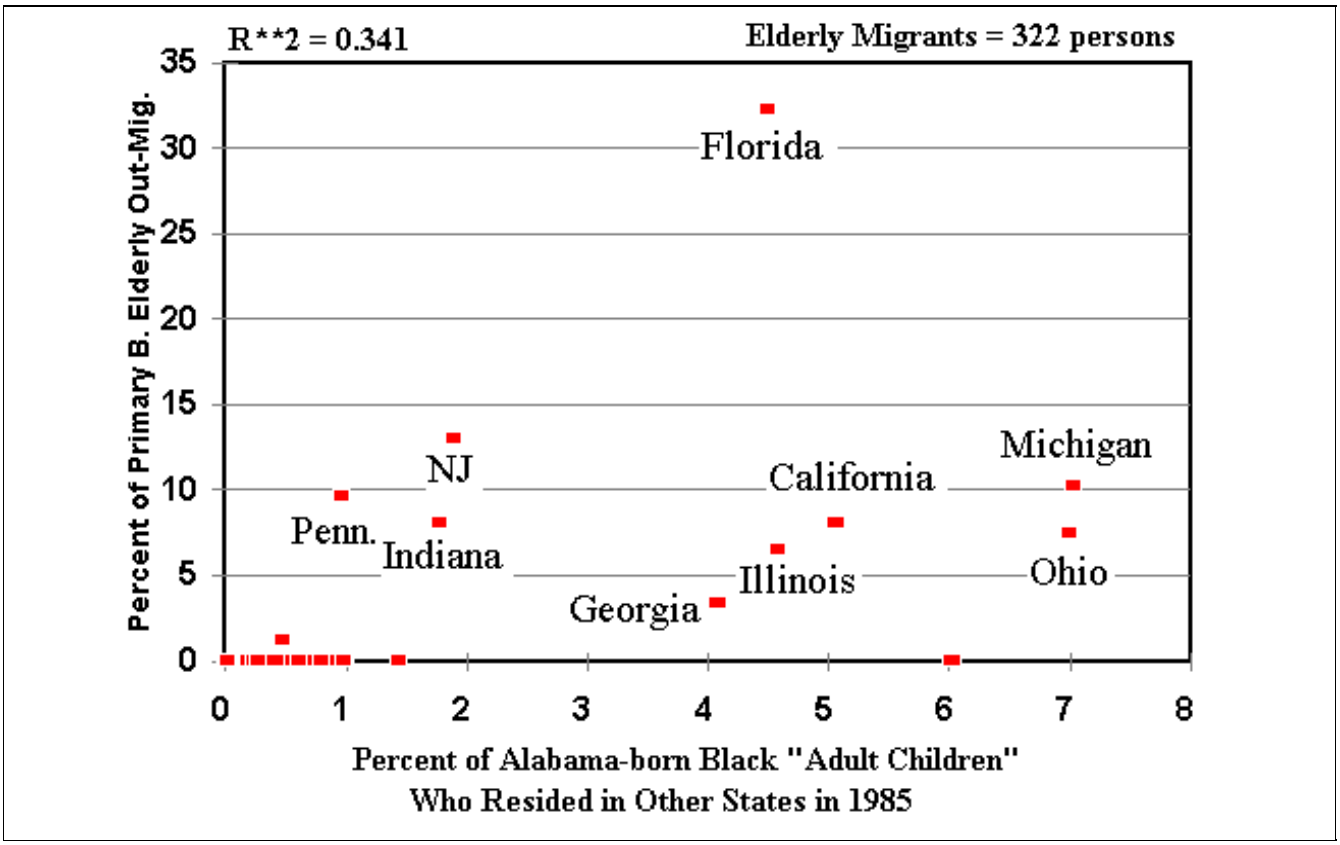

Figure 3. Attractions of Alabama's White Widowed Elderly Primary Out-Migrants in 1985-90 by Their "Adult Children" Who Resided in Other States in 1985

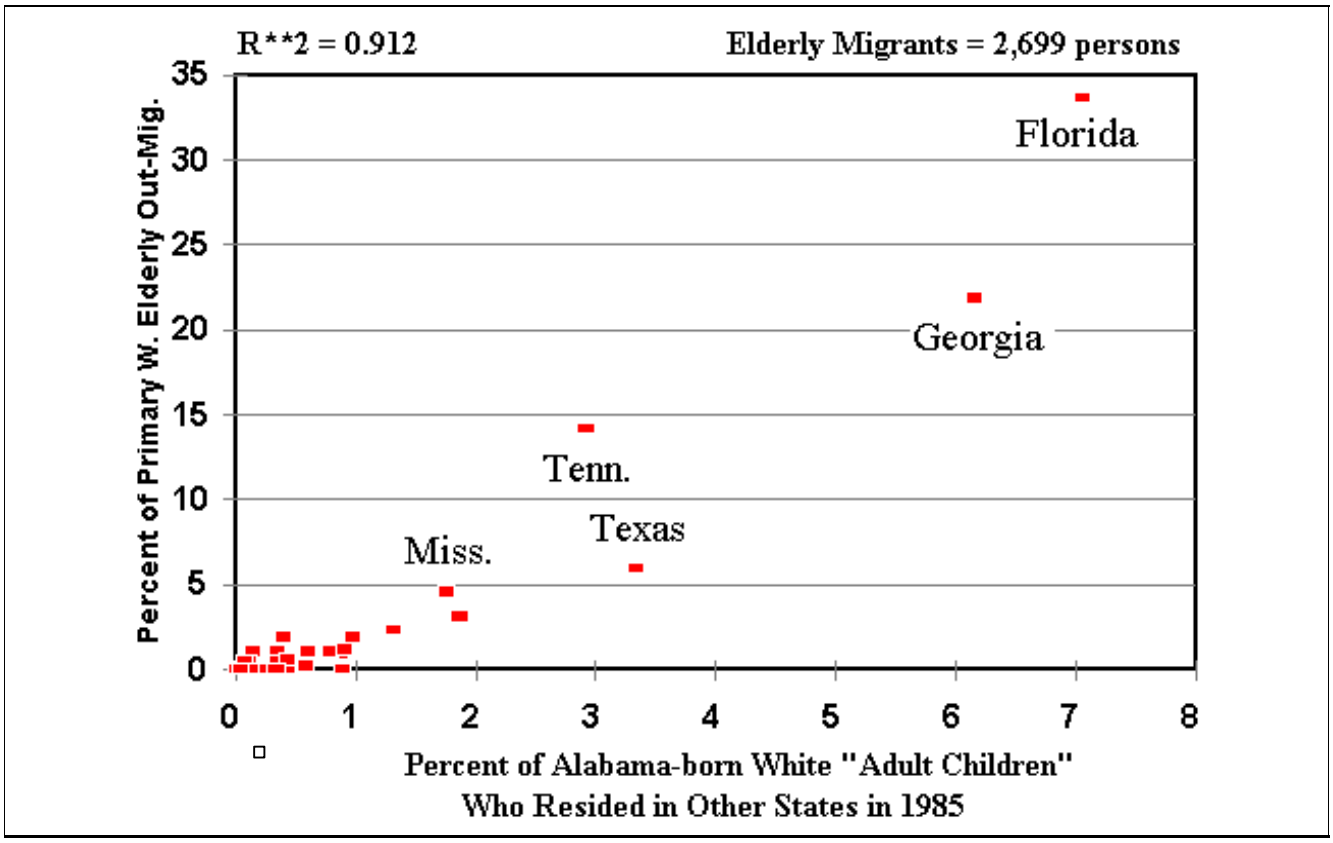

Figure 4. Attractions of Alabama's White Married Elderly Primary Out-Migrants in 1985-90 by Their "Adult Children" Who Resided in Other States in 1985

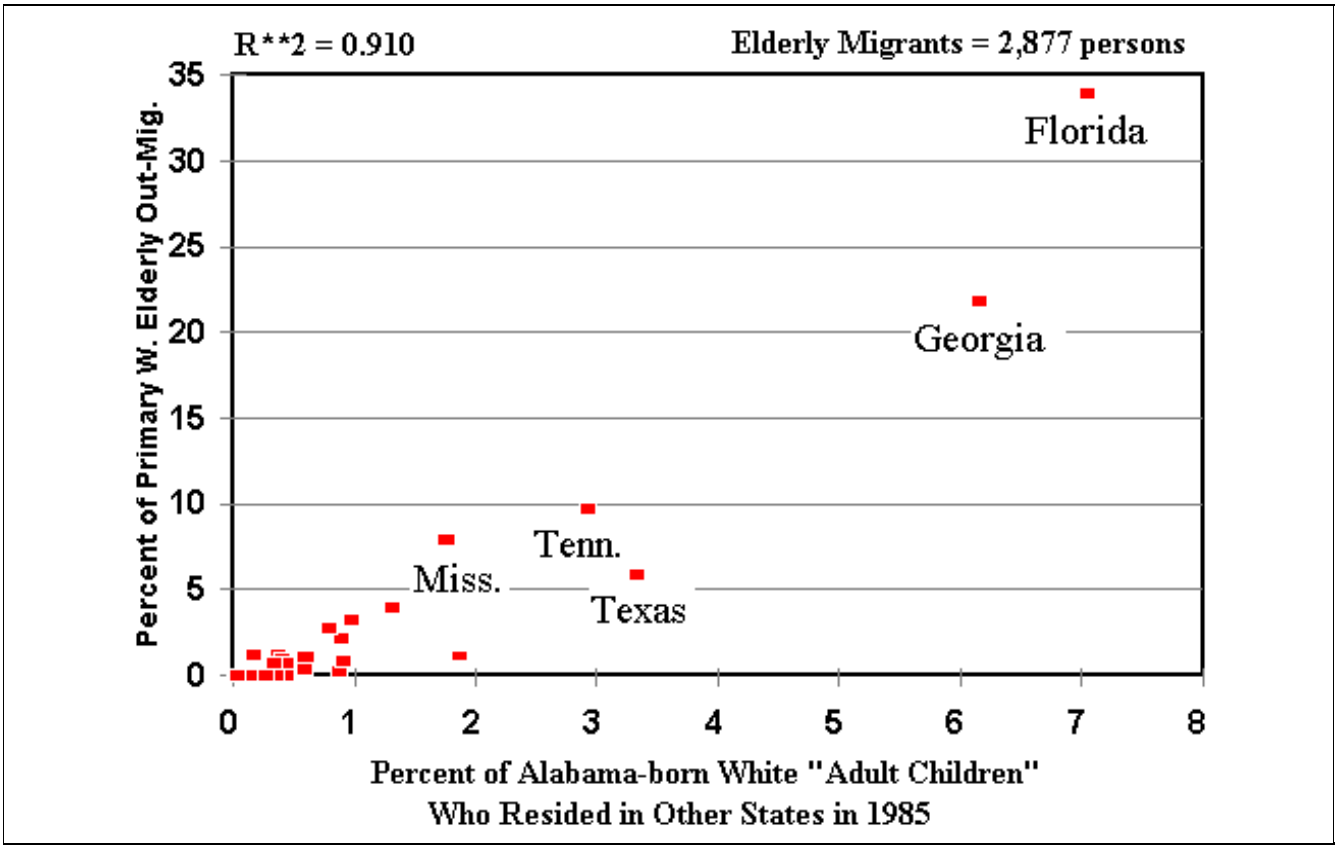

Table 1. The Three Most Preferred Destinations of the Black and White Elderly Primary Migrants from the Southern States in 1985-90.

Origin State	Best		Second Best		Third Best		Migrants
	Destination	Share(%)	Destination	Share(%)	Destination	Share(%)	(Persons)
			Blacks				
Virginia	Maryland	29.2	New York	17.7	New Jersey	13.6	1,312
W. Virginia	Virginia	19.1	California	12.5	Kentucky	12.5	168
N. Carolina	Virginia	19.3	New York	17.0	Maryland	11.7	1,434
S. Carolina	New York	16.4	Penn.	13.6	N. Carolina	12.9	1,639
Georgia	Florida	31.2	Ohio	12.2	New York	7.9	1,422
Florida	Georgia	17.6	New York	12.1	Maryland	8.5	637
Kentucky	Indiana	48.1	California	13.1	Illinois	11.4	511
Tennessee	Michigan	26.9	Illinois	17.2	Indiana	9.1	618
Alabama	Florida	16.3	Georgia	12.3	Ohio	12.2	1,881
Mississippi	Illinois	22.8	Tennessee	14.5	Louisiana	9.2	2,180
Arkansas	California	20.3	Illinois	14.9	Michigan	14.3	847
Louisiana	Texas	27.7	California	27.0	Ohio	5.5	1,536
Oklahoma	California	42.0	Texas	25.2	Michigan	7.4	421
Texas	California	49.5	Colorado	9.4	Oklahoma	8.1	1,308
			Whites				
Virginia	Florida	29.3	N. Carolina	21.4	Maryland	8.1	7,272
W. Virginia	Florida	28.3	Ohio	21.5	Virginia	9.7	6,736
N. Carolina	S. Carolina	25.5	Florida	22.1	Virginia	13.9	5,988
S. Carolina	N. Carolina	31.2	Florida	21.6	Georgia	19.1	2,183
Georgia	Florida	39.0	Alabama	12.3	S. Carolina	10.3	6,098
Florida	Georgia	30.0	N. Carolina	16.2	Alabama	9.1	3,005
Kentucky	Florida	25.5	Ohio	19.9	Indiana	17.6	9,838
Tennessee	Florida	18.7	Georgia	11.6	Mississippi	11.1	6,955
Alabama	Florida	33.3	Georgia	21.4	Tennessee	11.6	6,450
Mississippi	Tennessee	20.8	Louisiana	14.3	Alabama	12.4	3,184
Arkansas	Texas	22.0	California	10.6	Oklahoma	10.6	4,577
Louisiana	Texas	30.3	Mississippi	23.0	Florida	7.9	4,622
Oklahoma	Texas	28.9	California	13.6	Arkansas	8.1	6,505
Texas	California	14.4	Arkansas	12.0	Oklahoma	11.1	11,702

Note: Delaware,Maryland and Washington, D. C. are included in the Northern Industrial Region in this study.
Data source: 1990 PUMS.

Table 2. Estimation Result of the Destination Choice Sub-model for the 1985-90 Interstate Black and White Elderly (Aged 60+ in 1990) Primary Migrants in the United States.

Explanatory Variable	Best Specification		MCR*
	Coefficient	t-ratio	
1. Attraction by Adult Children			0.0264
Adult Children	0.291	62.7	
Adult Children * Widowed * Aged 75+	0.020	2.8	
Adult Children * Blacks	-0.151	-15.3	
2. Environmental Amenity			0.0563
2A. Climate			0.0298
Coldness	-0.280	-22.0	
Coldness * Married	-0.186	-21.1	
Coldness * Aged 65-69	-0.113	-12.8	
Coldness * Aged 70-74	-0.078	-7.9	
Coldness * Aged 80+	0.066	6.4	
Coldness * Poor	0.040	3.2	
Coldness * Black	0.449	15.8	
Cloudiness	-0.103	-24.8	
2B. Scenic Beauty and Recreational Opportunity			0.0070
Golden Coast	0.989	35.3	
Golden Coast * Blacks	-0.561	-5.4	
3. Relative Location			0.0305
Ln(Distance)	-0.566	-27.6	
Ln(Distance) * Married	-0.117	-5.8	
Ln(Distance) * Post-Secondary Education	0.043	2.6	
Ln(Distance) * Alaska	0.349	12.4	
Ln(Distance) * Hawaii	0.075	4.3	
Contiguity	0.710	22.7	
Contiguity * Blacks	-0.244	-2.9	
4. Cost of Living			0.0058
Cost of Living Index	-0.074	-31.8	
Cost of Living Index * Blacks	0.072	10.6	
5. Generosity of Medical Programs			0.0042
Medicare	0.334	9.4	
Medicaid	0.153	27.1	
Medicaid * Blacks	-0.179	-8.7	
6. Racial Attraction			0.0057
Racial Similarity	0.532	31.4	
Racial Similarity * Black	-0.191	-4.0	
7. Labor Market Variables			0.0015
Income * Aged 60-64	0.666	5.2	
Employment Growth * Aged 60-64	4.188	11.6	
8. Size of Ecumene			0.0015
Ln(Population Size)	0.174	11.1	
Ln(Population Size) * Blacks	0.420	8.2	
Rho-Square	0.3507		

* Marginal Contribution to the Rho-square

Table 3. Observed and Predicted Shares of Elderly Primary Migrants in 1985-90 by the Major Receiving States: By Race.

Rank	Destination	In-migrants		Share		Native Pop'n in 1985 (persons)	In-migration Rate	
		Observed (persons)	Predicted (persons)	Observed (%)	Predicted (%)		Observed (%)	Predicted (%)
				Blacks Aged 60+ in 1990				
1	California	2,578	2,860	11.2	12.5	15,328	16.8	18.7
2	Maryland	1,749	1,593	7.6	6.9	48,468	3.6	3.3
3	Florida	1,713	1,448	7.5	6.3	72,816	2.4	2.0
4	New York	1,394	1,881	6.1	8.2	59,925	2.3	3.1
5	Illinois	1,215	1,711	5.3	7.4	34,291	3.5	5.0
6	Georgia	1,120	1,187	4.9	5.2	151,891	0.7	0.8
7	Michigan	1,104	751	4.8	3.3	19,907	5.5	3.8
8	New Jersey	1,054	845	4.6	3.7	24,778	4.3	3.4
9	Virginia	1,001	745	4.4	3.2	108,049	0.9	0.7
10	Texas	958	871	4.2	3.8	172,117	0.6	0.5
	Top 10 Destination	**13,886**	**13,890**	**60.5**	**60.5**	**707,570**	**2.0**	**2.0**
11	Ohio	935	707	4.1	3.1	36,275	2.6	2.0
12	Penn.	802	731	3.5	3.2	56,421	1.4	1.3
13	N. Carolina	754	832	3.3	3.6	148,201	0.5	0.6
14	Indiana	679	311	3.0	1.4	12,426	5.5	2.5
15	D.C.	618	500	2.7	2.2	15,563	4.0	3.2
16	Tennessee	603	535	2.6	2.3	60,219	1.0	0.9
17	Missouri	458	453	2.0	2.0	21,533	2.1	2.1
	Top 17 Destination	**18,735**	**17,958**	**81.6**	**78.2**	**1,058,208**	**1.8**	**1.7**
	USA	**22,967**	**22,967**	**100.0**	**100.0**	**1,663,973**	**1.4**	**1.4**
				Whites Aged 60+ in 1990				
1	Florida	211,481	190,024	37.7	33.8	190,933	110.8	99.5
2	Arizona	31,871	28,654	5.7	5.1	24,475	130.2	117.1
3	California	31,605	41,458	5.6	7.4	711,631	4.4	5.8
4	Texas	20,589	21,371	3.7	3.8	1,090,723	1.9	2.0
5	New Jersey	19,687	11,769	3.5	2.1	614,173	3.2	1.9
6	N. Carolina	16,322	14,870	2.9	2.6	634,209	2.6	2.3
7	Penn.	12,591	12,932	2.2	2.3	1,888,668	0.7	0.7
8	Virginia	11,508	14,006	2.0	2.5	418,173	2.8	3.3
9	Georgia	10,496	22,507	1.9	4.0	463,153	2.3	4.9
10	S. Carolina	10,471	15,311	1.9	2.7	257,339	4.1	5.9
	Top 10 Destination	**376,621**	**372,902**	**67.1**	**66.4**	**6,293,477**	**6.0**	**5.9**
11	Nevada	9,893	7,138	1.8	1.3	7,351	134.6	97.1
12	Ohio	9,661	7,406	1.7	1.3	1,155,149	0.8	0.6
13	Tennessee	9,385	7,501	1.7	1.3	504,701	1.9	1.5
14	Arkansas	8,886	5,869	1.6	1.0	249,111	3.6	2.4
15	Oregon	8,268	5,259	1.5	0.9	131,205	6.3	4.0
16	Washington	8,218	4,934	1.5	0.9	227,559	3.6	2.2
17	Missouri	7,918	4,307	1.4	0.8	597,873	1.3	0.7
	Top 17 Destination	**438,850**	**415,315**	**78.2**	**74.0**	**9,166,426**	**4.8**	**4.5**
	USA	**561,435**	**561,435**	**100.0**	**100.0**	**20,170,529**	**2.8**	**2.8**

Table 4. Estimation Result of the Departure Sub-model for the Interstate Migrations by the Black and White Elderly (Aged 60+ in 1990) Native-born Americans in 1985-90.

Explanatory Variable	The Best Model		MCR*
	Coefficient	t-ratio	
Constant Term	-4.859	-18.9	
1. Race			0.0014
Black	-0.946	-9.5	
2. Gender			0.0013
Male	0.036	2.1	
3. Age			0.0025
Retirement Age (65)	0.159	6.8	
Retirement Age (65) * Black	-0.135	-1.7	
4. Marital Status			0.0057
Single	-0.167	-3.1	
Single * Black	1.311	9.8	
Divorced_Separated	0.747	16.6	
Div_Sep * Black	0.604	5.9	
Widowed	1.306	9.5	
Widowed * Black	0.620	6.9	
Widowed * Female * Aged 75-79	0.294	6.7	
Widowed * Female * Aged 80+	0.564	15.1	
Widowed * Male * Aged 75-79	0.345	4.4	
Widowed * Male * Aged 80+	0.479	7.7	
5. Educational Attainment			0.0054
Secondary	0.258	15.5	
Post-Secondary	0.600	34.8	
Post-Secondary * Black	-0.307	-3.4	
6. Poverty Status			0.0007
Poor	-0.211	-7.6	
Poor * Black	-0.515	-6.0	
7. Retention by Adult Children			0.0014
Adult Children	-0.016	-10.5	
Adult Children * Widowed	-0.016	-7.9	
8. Environmental Amenity			0.0015
8A. Climate			0.0011
Coldness * Married	0.106	14.8	
Coldness * Retirement-Aged Male	0.017	3.3	
8B. Scenic Beauty and Recreational Opportunity			0.0003
Golden Coast	-0.227	-8.1	
9. Cost of Living			0.0017
Cost of Living Index	0.030	20.1	
10. Generosity in Medical Programs			0.0008
Medicare * Aged 75+	-0.025	-2.1	
Medicaid * Aged 75+	-0.035	-6.4	
11. Home Ownership			0.0005
Home Ownership Proportion	-0.020	-11.0	
12. Social Environment			0.0003
Violent Crime Rate	3.253	7.7	
13. Size of Ecumene			0.0000
Ln(Population Size)	0.039	2.3	
14. Regional Effect			0.0007
Industrial Heartland	0.249	11.9	
Industrial Heartland * Black	-0.471	-5.4	
15. Attraction of Rest of System			0.0003
Inclusive Variable	0.076	7.9	
Rho-Square	0.0424		

* Marginal Contribution to the Rho-square

Table 5. The Top Ten Net Gainers of Black and White Elderly Primary Migrants in 1985-90: Observed and Predicted Patterns.

Rank	Top 10 Gainers	Net Migrants		Native Pop'n in 1985 (persons)	Net Migration Rate	
		Observed (persons)	Predicted (persons)		Observed (%)	Predicted (%)
			Blacks			
1	California	2,363	2,645	15,328	15.4	17.3
2	Maryland	1,411	1,017	48,468	2.9	2.1
3	Florida	1,076	844	72,816	1.5	1.2
4	Michigan	817	525	19,907	4.1	2.6
5	New Jersey	593	397	24,778	2.4	1.6
6	Indiana	564	171	12,426	4.5	1.4
7	Ohio	538	300	36,275	1.5	0.8
8	Illinois	466	1,214	34,291	1.4	3.5
9	Wisconsin	423	226	878	48.2	25.8
10	Nevada	289	117	41	704.9	284.8
	Total	**8,540**	**7,455**	**265,208**	**3.2**	**2.8**
			Whites			
1	Florida	208,476	187,470	190,933	109.2	98.2
2	Arizona	31,281	28,016	24,475	127.8	114.5
3	California	14,609	24,645	711,631	2.1	3.5
4	N. Carolina	10,334	7,820	634,209	1.6	1.2
5	Nevada	9,587	6,792	7,351	130.4	92.4
6	Texas	8,887	7,848	1,090,723	0.8	0.7
7	S. Carolina	8,288	12,721	257,339	3.2	4.9
8	Oregon	5,487	2,731	131,205	4.2	2.1
9	Georgia	4,398	16,681	463,153	0.9	3.6
10	Arkansas	4,309	1,408	249,111	1.7	0.6
	Total	**305,656**	**296,132**	**3,760,130**	**8.1**	**7.9**

Table 6. The Top Ten Net Losers of Black and White Elderly Primary Migrants in 1985-90: Observed and Predicted Patterns.

Rank	Top 10 Gainers	Net Migrants		Native Pop'n in 1985 (persons)	Net Migration Rate	
		Observed (persons)	Predicted (persons)		Observed (%)	Predicted (%)
			Blacks			
1	Mississippi	-2,011	-1,440	107,775	-1.9	-1.3
2	Alabama	-1,603	-1,627	130,151	-1.2	-1.3
3	S. Carolina	-1,280	-708	114,759	-1.1	-0.6
4	Louisiana	-1,232	-1,098	131,543	-0.9	-0.8
5	Arkansas	-698	-635	42,507	-1.6	-1.5
6	N. Carolina	-680	-897	148,201	-0.5	-0.6
7	New York	-474	449	59,925	-0.8	0.7
8	Kentucky	-393	-143	27,002	-1.5	-0.5
9	Texas	-350	-601	172,117	-0.2	-0.3
10	Virginia	-311	-605	108,049	-0.3	-0.6
	Total	**-9,032**	**-7,306**	**1,042,029**	**-0.9**	**-0.7**
			Whites			
1	New York	-112,337	-96,340	1,930,530	-5.8	-5.0
2	Illinois	-38,724	-44,639	1,189,369	-3.3	-3.8
3	Penn.	-32,200	-36,517	1,888,668	-1.7	-1.9
4	Mass.	-24,595	-24,588	754,614	-3.3	-3.3
5	Michigan	-23,101	-23,156	859,853	-2.7	-2.7
6	Ohio	-20,921	-25,627	1,155,149	-1.8	-2.2
7	New Jersey	-12,055	-15,007	614,173	-2.0	-2.4
8	Indiana	-8,597	-4,152	578,840	-1.5	-0.7
9	Iowa	-8,547	-6,718	428,723	-2.0	-1.6
10	Wisconsin	-7,955	-13,438	633,555	-1.3	-2.1
	Total	**-289,032**	**-290,182**	**10,033,474**	**-2.9**	**-2.9**

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