Long-Run Patterns of Interstate Migration in the United States: Evidence from the IPUMS, 1850-1990

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Abstract

Using data from the Integrated Public Use Microdata Series of the U.S. Census (IPUMS), this paper presents evidence on trends in interstate migration over the past 150 years. Two measures of migration are calculated. The first considers an individual to have moved if she is residing in a state different from her state of birth. The second considers a family to have moved if it is residing in a state different from the state of birth of one of its young children. The latter measure allows us estimate the timing of moves more accurately. Our results suggest that overall migration propensities have followed a U-shaped trend since 1850, falling until around 1900 and then rising until around 1970. We also present evidence on historical differences in internal migration rates by age, sex, race, nativity, and region.

1. Introduction

The mobility of the American population has played an important role in the country's economic development. The settlement of the frontier and urbanization are two of the great themes of American economic history. Efforts to study the history of internal migration in the United States have been hampered by a variety of data limitations, however. Since 1940 researchers have been able to make use of data on recent migration experience collected in the Census, the Current Population Survey, and panel data sets.[1] For evidence that extends prior to that date, however, researchers have been obliged to rely on indirect measures calculated using either census survival methods or data on the native population's state of residence and state of birth.[2] For the study of internal migration, such data have major limitations: the census survival method only measures net migration (rather than gross flows in and out of a location), and both measures are aggregate and thus are of limited use in examining the factors affecting individual migration decisions.

In this paper we explore several ways of utilizing individual-level data from population censuses assembled in the Integrated Public Use Microdata Series (IPUMS) to derive new measures of long-run trends in the migration of the native born within the United States. By using information on age in combination with state of birth and state of residence, we can follow interstate migration patterns for successive synthetic birth cohorts of individuals from 1850 through 1990. This allows us to describe life-cycle patterns in migration and how these may have changed over time. One shortcoming of these data is that they do not contain information about the timing of past migration. However, we are able to identify

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[1] See Shryock (1965, ch. 1).

[2] The Census survival approach calculates net migration for a state or region as the difference between the actual change in population between successive censuses, and the predicted change, based on national survival rates for each age group within the population. The state-of-birth/state-of-residence approach looks at changes in the numbers living outside the state in which they were born between censuses. See Kuznets and Thomas (1957-1964) provide the most extensive explanation of these methods.

recent family moves by matching children with their parents and comparing a child's state of birth with current state of residence.

Our results reveal a number of important features of internal population redistribution. For instance, the life-cycle pattern of migration propensities is evident in our data: not surprisingly, moving is for the young. Less expected is our finding that the decline of migration propensity over the life cycle has become steeper over the past century and a half. In the late 1800s, migration propensities declined only gradually over an individual's life, whereas for more recent cohorts, the vast bulk of moving occurs between the ages of 15 and 35.

We also explore regional patterns of migration and differences by gender and race. Disaggregating the data by region of birth, we find that the basic shape of the time trend of migration rates holds for each region. Individuals born in the Northeast region have had the lowest migration propensities over much of the past 140 years, although regional differences had narrowed substantially by 1990.

Turning to differences by gender and race, we find that before 1920, adult men were more likely to have left their state of birth than were adult women, but in recent decades this gender difference has essentially disappeared. Only during the Great Migration of African-Americans during the middle of the twentieth century did overall migration propensities of blacks exceed those of whites: both before and since, African-Americans have been less likely to leave the state of their birth than whites. The evidence based on the migration of families with children indicates that black families continued to have lower migration rates than whites after World War II, suggesting that the Great Migration consisted disproportionately of single and/or childless individuals.

In the next section we briefly review the literature on internal migration in the United States, its causes and effects. The third section describes our measure of lifetime migration based on state-of-birth and summarizes our findings on cohort and life-cycle migration patterns, as well as differences by sex,

race, and region of birth. The fourth section describes the family migration measure based on child's state of birth, and presents estimates of migration rates by race, nativity, and region. The fifth section offers conclusions and directions for further research.

2. Internal migration in the United States since 1850

The geographical mobility of Americans is a well-known trait of the national character. According to figures cited by Greenwood (1997), as of 1970 the average American would make nearly twice as many residential moves during her or his lifetime as would the average resident of Britain or Japan. Migration has played a central role in the geographical redistribution of the U.S. population. Figure 1, replicated from Eldridge (1964), shows the sources of "displacement" of the population by region from 1870 to 1950. The lighter bars, representing the effect of natural increase (essentially, births minus deaths), are to the right (left) when the region's rate of natural increase is greater (less) than the national average. The darker bars, representing the effects of migration, include both internal migration and changes in the population of foreign born.

Figure 1 shows the centrality of westward migration in the population increase of the West, the role of out-migration from the South in offsetting the South's high rate of natural increase, and the net effect of European immigration to the Northeast in offsetting lower rates of natural increase there. Figure 2, taken from the same source, separates the net migration flows into the internal migration of the native born and the immigration of foreign-born whites. Until the 1920s, net migration into the Northeast and North Central regions was dominated by European immigrants, while internal migration played a dominant role in the South and West. A large portion of the southern migration after 1910 consisted of African-Americans (the Great Migration). Because these are net migration flows, they obscure much of the underlying population movement. For example, after 1910, the net migration from the South was largely into the Northeast and North Central regions, which in turn contributed the bulk of the migrants to the

West.

Since 1950 there have been important changes in internal migration patterns. Most crucially, since about 1970 the flow of migrants out of the South has been reversed, with the South becoming the region with the largest net in-migration (Greenwood 1997). Around the same time, the longstanding historical pattern of net migration from nonmetropolitan to metropolitan areas also reversed. During the postwar period, differences in employment growth across states can be attributed primarily to migration, rather than differences in rates of natural increase (Blanchard and Katz 1992).

Accounts of internal migration have often stressed locational differentials in wages or incomes as the driving force of migration patterns (see Greenwood 1997 for an overview of the literature). Migration can be seen in this sense as a process of equilibration of the national labor market. A test of this hypothesis over a long period is provided by Gallaway and Vedder (1971). Using published census data from 1850, 1880, 1900, 1920, and 1960, they examine the determinants of interstate migration flows, as measured by the number of individuals born in one state but residing in another. They find that the migration into a state increases with its per-capita income and decreases with its population density and distance from the state of origin. Over these years, the estimated elasticity of migration with respect to income increased, while that with respect to distance fell. The latter result is consistent with declining costs of moving over the period.

Although Gallaway and Vedder find a significant role for income differentials, other studies of this effect have obtained mixed results (Greenwood 1997). Recent research also suggests that other economic variables– in addition to local average wages or incomes– should be considered important determinants of migration. Differences in employment growth or unemployment rates have been found in some studies to have a greater impact than wage differentials.[3] Theoretical models that assume

[3] See Treyz, et al (1993) and Blanchard and Katz (1992). The theoretical claim that unemployment rates should affect migration decisions was made by Todaro (1969), and has recently been explored using historical data by Hatton and Williamson (1992).

heterogeneous worker skills imply that migration propensities should depend not only on the mean wage but also on the dispersion of wages (skilled workers want to migrate to places where skills are highly rewarded). This prediction is confirmed empirically by Borjas et al (1992).

Given Gallaway and Vedder's finding that internal migration redistributed labor from low-to high-wage states, it might be surmised that internal migration played a large role in the well-known convergence of state per-capita incomes over the past 120 years. Rosenbloom (1990, 1996) has argued that regional convergence in wage rates during the late nineteenth and early twentieth centuries, at least outside of the South, coincided with the emergence of cross-regional labor-market institutions and informational flows. However, the direct evidence linking labor-market and income convergence during the twentieth century is not strong. Barro and Sala-i-Martin (1991) find that migration explains only a small part of overall economic convergence across states. And as Kim (1998) notes, the process of convergence involved not only within-sector wage convergence but also convergence in industry composition, which may have been due to causes other than the integration of labor markets.

One enduring puzzle relating to convergence within the United States is the persistent difference in real wages (and per capita incomes) between the South and the rest of the country. The catch-up of the South, particularly after the Great Depression, was a significant source of economic convergence within the U.S. (see Wright 1986, Barro and Sala-i-Martin 1991, Mitchener and McLean 1999). Yet why did labor migration fail to narrow this gap before the 1940s? Wright (1986) has argued that prior to the New Deal, the southern labor market remained isolated from the rest of the country, in large part because the demand for low-skilled labor in the industrializing North was satisfied by European immigrants, while flows of information and migrants between North and South were never established. Fishback (1998) has also noted that for a time southerners found high-wage opportunities by moving westward within the South. Better evidence on gross migration flows between the South and the rest of the country will help us better assess the degree and causes of southern isolation.

The path dependence of migrant flows when migrant stocks affect the propensity of migration has been emphasized by Carrington et al (1996) as a significant factor in the delay of African-American migration to the North, in spite of the lower wages and greater social and political oppression of blacks in the South.[4] An alternative explanation of the delayed timing of the Great Migration is that prior to the 1920s black employment opportunities in the North were severely constrained by competition from unskilled European immigrants, given the racial preferences of northern employers (Collins 1997). The special obstacles to black migration do not, of course, provide an explanation for the persistent North-South wage gap for white workers.

Migration decisions are shaped not just by income and employment opportunities, but by the personal characteristics of migrants as well as their social connections in the receiving regions. The migration propensity of adults tends to decline with age and to increase with education. The age effect appears to be attributable to changes in family status and career that are correlated with age (Sandefur and Scott 1981). Unemployed individuals are more likely to move than the employed, other things equal (DaVanzo 1978). Married couples are less likely to move if both individuals are in the labor force (Greenwood 1997). A distinct advantage of using the individual-level samples of the PUMS to examine historical migration behavior is that it becomes possible to control for the impact of demographic characteristics and family labor allocation decisions on migration probabilities.

3. Cohort migration patterns revealed by state of birth, 1850-1990

The IPUMS assembles data on 55 million Americans from thirteen census years spanning the

[4] For reviews of the evidence on the importance of the stock of fellow migrants from the same source location in explaining migration flows (so-called chain migration), see also Greenwood (1975) and Rosenbloom (1994). The presence of fellow migrants may reduce migration costs by providing credit or housing and may increase expected benefits of moving by providing information on work opportunities and actual contacts or referrals with local employers.

period from 1850 through 1990.[5] It combines census microdata files produced by the U.S. Census Bureau since 1960 with new historical census files produced at the University of Minnesota and elsewhere.[6] Each census included in the IPUMS data included questions on the state of birth and state of residence of the native-born population along with questions about each individual's age at the time of the census. Using these data we were able to determine for each individual whether he or she was living in the state in which he or she was born or in a different state, and correlate this with the individual's age. Before turning to these data we consider their relationship to more direct measures of migration that are available for 1940 and later.

Reliability and limitations of measuring migration using state of birth

Using information on state-of-birth and state-of-residence to measure gross migration will understate the size of gross migration flows for several reasons. First, it can only tell us whether a person has ever moved, and thus the number and exact timing of moves cannot be known. Second, some individuals who have moved during their lifetime will be missed by our measure, because they have moved away from their state of birth and later returned to it.[7] Data on short-period migration rates drawn from the 1940 census indication that despite the undercounting present in the state-of-birth data, they nonetheless appear likely to reflect important aspects of migration behavior.

In 1940, the census asked individuals where they were residing in 1935. Thus we can examine the correlation of ever-moving (since birth) and 5-year moving, as well as the frequency of return

[5] Data from the 1890 and 1930 censuses are not included in the IPUMS data set. The original manuscript schedules of the 1890 census were destroyed by fire, and the 1930 data are still subject to the 72-year census confidentiality rules. We have not reported results for 1980 here either, because of incomplete identification of states in the available samples.

[6] For 1970 and 1990 we use the 1 percent samples. In most of the years prior to 1970, the IPUMS provides 1 percent random samples. But at the moment the 1860, 1870, 1900, and 1910 samples are preliminary and thus contain smaller numbers of cases.

[7] These problems have been recognized for some time. An early exploration is Ross and Truxal (1931).

migration to the state of birth. Toward this end we have drawn a sample of all individuals in the 1940 IPUMS satisfying each of the following selection criteria: (1) known state of birth (state or DC); (2) known 1935 state of residence (state or DC); (3) known 1940 state of residence (state or DC); (4) ages 5-79 (1935 residence is only available for individuals 5+). The total sample satisfying these criteria contains 1,079,554 individuals.

In the full sample, 23.79% reported a state of residence in 1940 that was different from their state of birth, while 5.72% reported residing in different states in 1935 and 1940. Table 1 shows these percentages broken down by age-group. The age pattern revealed by the table suggests that the probability of having moved in the past 5 years is greatest for young adults, while the probability of having ever moved since birth appears to be cumulative, as one would expect. If we view the age profile of ever moving as representing the life cycle probabilities for an individual (implicitly assuming away cohort effects), the age profile also indicates that the largest likelihood of leaving the birth state is during young adulthood (the profile is steepest then). If, further, most interstate moves involved leaving the state of birth, changes in the percent living outside their state of birth across successive age groups (second column) would represent approximate 10-year migration propensities. Comparing the second and third columns of the table, the 10-year rates based on state of birth tend to be roughly equal to or smaller than the 5-year rates, suggesting that the state-of-birth measure underestimates gross migration rates. This bias appears to be proportionally greater for older individuals.

A better sense of the extent of the downward bias is provided by Table 2, which examines individuals who changed state between 1935 and 1940. State-of-birth/state-of-residence data will be a better measure of gross migration the greater the proportion of migrants who are leaving their state of birth for the first time. Table 2 decomposes the population of individuals who moved within the past 5 years into three categories: (1) those who left their state of birth between 1935 and 1940; (2) those who returned to their state of birth after having lived elsewhere in 1935; and (3) those who were not living in

their state of birth in 1935 and moved to another (third) state by 1940. Note that the second of these categories consists of people who did migrate but who will not be counted as movers in our state-of-birth based measure, because in 1940 they are once again in their state of birth.

On the whole just over half (54.4%) of 5-year moves involved leaving the state of birth. Not surprisingly, the percentage of 5-year moves that involved leaving the birth state was greater among the younger age groups, especially those under 30. By the time an individual was in her or his 40s, only a little more than one-third of moves involved leaving the state of birth. Clearly, age profiles of migration based on leaving the birth state are going to be excessively concave, because an increasing proportion of moves are not picked up by the measure. It is also noteworthy that in each age group the proportion of moves that involved returning to the state of birth from elsewhere was between 14 and 20 percent, with no strong age pattern.

Individuals who have moved at least once in their lifetime are more likely to move again. This can be seen in Table 3, which gives the percent who moved between 1935 and 1940, conditional on whether they had moved between birth and 1935. In each age category, those who had left their birth state by 1935 were much more likely to move to another state between 1935 and 1940. This is true even when we don't count those who returned to their state of birth between 1935 and 1940 (last column). Thus there appears to be persistent heterogeneity in migration propensities. Whether this is a trait of individuals or perhaps a characteristic of locations that tend to receive migrants (e.g. more volatile economic opportunities, hence receiving but also sending away many migrants) remains to be determined.

Life-cycle migration patterns using state-of-birth

Using data on age at each census it is easy to group individuals born in the same span of years—that is by "birth cohort"—and follow changes in the proportion living outside their state of birth across successive censuses. The result is a lifetime profile of migration behavior for each cohort. Figure

3 depicts lifetime migration profiles for successive 10-year birth cohorts, beginning with individuals born in 1800-09, and ending with individuals born in 1980-89. Each profile depicts the cohort's "propensity to migrate," that is the fraction of the cohort living outside their state-of-birth as a function of cohort age.[8] Since the first census data we have are from 1850, we can only observe the earliest cohorts at relatively old ages. By the same token, we obviously do not have data for the most recent birth cohort beyond 1990, and so cannot extend their cohort migration profiles beyond age 0-9.

As the profiles make clear, out-of-state migration had a strong life-cycle component. The movement of children aged 0-9 years presumably reflects the migration of their parents, but the relatively sharp rise in migration propensities in the age ranges 10-19 and 20-29 reflects the preponderance of young people among the geographically mobile.[9] Although propensities to migrate continue to rise at late ages, the rate of increase begins to slow after age 30, and the profiles for each cohort flatten out considerably after about age 40. Comparing successive panels of Figure 3 it appears that migration has tended to become more concentrated at younger ages for recent cohorts. While the migration profiles of recent cohorts rise sharply at first and then level off, the profiles for cohorts born in the first part of the nineteenth century appear to have risen more gradually and sustained their increase over a longer period of time.

As Figure 3 suggests, comparisons of migration propensities over time will be distorted unless they control for changes in the age structure of the population. Figure 4 plots migration propensities as a function of age at each census. Moving up from one line to the next at each census it is possible to trace out the cross-section of migration propensities at each date. It is also possible to recover the cohort

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[8] The propensity to migrate is computed as the weighted average of a migration variable that is set equal to one if the person is living outside his/her state of birth, where the weight is the IPUMS person weight variable that reflects the sampling weights necessary to produce a representative national average.

[9] As noted above, comparisons of state-of-birth and state-of-residence do not allow us to trace the subsequent migration experiences of individuals once they have left their state of birth. Some proportion of those individuals who left their state of birth went on to move again at older ages.

migration profiles as is illustrated by the dashed line that follows the cohort born between 1840 and 1849 across successive censuses.

As Figure 4 makes clear, lifetime migration propensities exhibit a downward trend after 1850. Comparing migration propensities when each cohort is between 50 and 59, when the migration profiles in Figure 3 are relatively flat, the proportion of each cohort living outside its state of birth fell from around 46 percent for the cohorts born at the beginning of the nineteenth century to a low of around 36 percent for the cohorts born in the late nineteenth century, before recovering slightly to around 42 percent for the cohort born in the 1930s. It is interesting that the trough in migration propensities among the native born—which is apparent across all age groups—coincides with the period of heaviest foreign migration into the country.

Differences by sex and race

Using the IPUMS data it is simple to calculate migration propensities for a variety of population subgroups as well. Here we consider differences in migration by sex and race. The top two panels of Table 4 show the proportions of males and females living outside their state of birth by age group at each census from 1850 through 1990. The migration behavior of each birth cohort can be followed by reading down and to the right across each panel. The cohort born between 1860 and 1869, for example was in the 0-9 age group at the time of the 1870 census, and in the 10-19 age group at the 1880 census.

The third panel of the table shows female migration propensities in each age group as a percentage of the corresponding migration propensity for males at the time. In the first two age categories migration propensities are nearly equal, reflecting the fact that many of the people in these younger age categories must have moved as part of larger family groups. After age 20, however, female migration propensities fall below those of males. The differential is most pronounced prior to 1920, when women were 10 to 15 percent less likely to have migrated outside their state of birth than were men.

Beginning with the cohort of women born in the 1890s, who were aged 20-29 at the time of the 1920 census, the gap between men and women fell to around 5 percent, and in recent years there has been little difference in migration rates.

Table 5 is arranged like Table 4, but here we compare migration propensities by race.[10] Because the censuses of 1850 and 1860 provide information only for free blacks, we begin our comparisons with the 1870 census. A complex pattern of racial differences is apparent. As we might expect in the aftermath of slavery, black migration propensities were substantially lower than white propensities in 1870 and 1880. But it appears that the life-cycle pattern of black migration was rather different from that of whites, with migration less likely at younger ages, and considerably more likely after age 20. This difference is apparent in the consistent pattern of variation by age at each census. Whereas black children (ages 0-9) were less than half as likely as white children to be living outside their state of birth, the ratios rose sharply at older ages, reaching 85-90 percent of white levels for blacks over age 50. The relatively low rates of migration among black children are a persistent phenomenon. By 1900, only 63 percent as many black as white children were living outside their state of birth. This figure increased to a high of 90 percent in 1970, but then slipped back to 65.9 percent in 1980 and 76.1 percent in 1990.[11]

Although there was some racial convergence in migration rates after 1880, the gap really did not begin to close until the 1910s. In 1920, blacks aged 20-29–the cohort born in the 1890s—were the first to be more likely than whites to be living outside their state of birth, though only slightly so. The absence of data from 1930 means that our next set of observations do not come until 1940, but by this time, the cohort

[10] Until the Great Migration, the vast majority of the nation's black population was concentrated in the Southeast and South Central regions of the country. Thus it might in some sense be more appropriate to compare black migration patterns with those of southern whites. Although we do not reproduce them here, separate regional estimates like those in Table 5 made for the Southeast and South Central regions result in roughly similar patterns of racial variation. The rise of black relative to white migration rates did begin somewhat earlier in the Southeast than it did nationally, and somewhat later in the South Central, region, but otherwise little would be changed by substituting regional tables for the single national calculation discussed in the text.

[11] See section 4 below also.

of blacks born in the 1890s was 25 percent more likely to be living outside their state of birth than were whites born at the same time. The impact of the Great Migration is apparent in the figures for 1940 and after. By 1940, the migration propensities of blacks between 20 and 59—the oldest of these individuals corresponded to the post-Reconstruction generation born in the 1880s—had all surpassed those of whites. At subsequent censuses, the migration propensities of these cohorts remained well above those of whites. Interestingly, however, black migration propensities have fallen for more recent cohorts. The decline is apparent in the cohort born in the 1940s, and beginning with the cohort born in the 1950s, black migration propensities were once again persistently below those of whites.

Variations by region of birth

There are good reasons to expect that tendencies to migrate would vary depending on location. Migration decisions reflect the influence of both push forces in the region of origin and pull forces at the destination. Clearly differences in local conditions would influence the magnitude of push forces encouraging migration out of any location. While the same opportunities were available—at least in principle—to all potential migrants, access to information about these opportunities and the cost of movement in response to them may have varied. For both these reasons, then, we might expect that migration propensities would vary by region of birth.

As we have seen, migration propensities varied considerably over the life cycle. Comparing the full set of information about the migration of each cohort by region is cumbersome, however, and there is the risk that patterns will be obscured by the wealth of detail. One solution, which allows us to focus sharply on regional differences in out-migration at each point in time, is to compare migration propensities for a single age group across time and space. Figure 5 shows one such comparison, plotting migration propensities by region of birth for individuals aged 30-39 at the time of each census. Because of the small numbers born in the West we do not plot migration propensities for this region prior to 1880.

First of all it is apparent that national trends in migration rates have been reflected across regions. With the exception of the West, where settlement was still ongoing in the late nineteenth century, migration rates fell from mid-century to a trough near the beginning of the twentieth century, and then rose again. Pronounced differences in levels are apparent, however, especially prior to 1980, when migration propensities appear to have begun to converge substantially. In most years, the migration propensities were lowest among those born in the Northeast. While mobility from the two southern regions was quite high in the 1850s and 1860s, migration propensities for individuals born in these regions fell sharply after the Civil War, dropping below those for the North Central region. As population in the West has increased, so has the rate of out-migration from the region.

4. Migration of families with children

The largest drawback of migration measures based on an adult individual's place of birth is their inability to narrow down the timing of moves or measure repeat migration. For families with children, we can construct an alternative measure from census data that largely avoids these problems by comparing where the children were born with where the family was residing at the time of the census. For example, suppose a family living in Illinois reports that its five-year old child was born in Mississippi. Then we might conclude that the family moved sometime during the five or so years prior to the census date. In addition to allowing us to track migration over relatively short periods, the child-birthplace measure of migration has the advantage that we can use it to examine the internal migration of foreign-born as well as native-born adults.

To construct the child-based measure from the IPUMS, we matched children ages 0-9 with their parents. Our sample consists only of families with both parents present and residing in an identified state or D.C. at the time of the census. For the years 1850-1870, the census data do not permit direct identification of spouses and own children; for those years, we used the IPUMS imputed family

relationships, which are considered fairly reliable.

One child– referred to hereafter as the *reference child*– was selected at random from each household, a procedure that allows us to avoid the problem of multiple observations for each family, which would give disproportionate weight to families with more children in the 0-9 age range.[12] The unit of observation can thus be thought of as a two-parent family with at least one young child. Because we are interested in internal migration, an observation is included only if the reference child was born in the United States, in an identified state or D.C.[13] We conclude that the family moved sometime between the birth of the reference child and the census if the child's state of birth and the family's current state of residence are different.

Measuring the internal migration of adults using a child's place of birth suffers from two obvious flaws. The first is that there is not a one-for one correspondence between the child being born in a different state and the family having resided in that state at the time of the birth. Some births may take place while a family is traveling, or perhaps because a mother may live temporarily with a relative during the period of the birth. The second problem is that families with children may not be representative of the migration behavior of the population as a whole. Recent evidence suggests, for example, that migration propensities fall after marriage and with the coming of children (e.g., Sandefur and Scott 1981).

The importance of the first objection appears to be relatively small. Two types of evidence support our claim that when the child's state of birth and the family's state of residence differ, it is likely that the family actually moved during the interim. First, as we show below, the probability that the states of birth and residence are different increases substantially with the age of the child, as it should if

[12] In future research we will attempt to make use of the information on migration provided by multiple children.

[13] The results presented here are unweighted; a check for 1940 suggests that the results are quite similar when we apply census household weights.

migration is at work, because older children have been at risk of moving for a longer period of time.[14] Second, there is a high degree of correlation between the child-based migration measure and responses to the 1940 5-year migration question. The 1940 census asked individuals where they lived on April 1, 1935, 5 years prior to the census. Children born during the year following that date would have been reported as 4 years old at the time of the 1940 census, while children born during the year preceding that date would have been reported as 5. It seems reasonable, then, to compare the census 5-year migration measure with a child-based migration measure for reference children ages 4-5, an age range whose average birth date will be near April 1, 1935.

Within our 1940 family sample, the estimated interstate migration propensity based on the 5-year residence question is 5.87 percent, whereas the child-based estimate for 4-to-5-year-olds is 6.79 percent. The cross-tabulation of the two measures yields the following (in percent):

	5-year residence question	
Child-based	non-mover	mover
non-mover	92.2	1.01
mover	1.94	4.85

Although there is substantial overlap, there are cases in which the child-based measure indicates a move when the 5-year measure does not, and vice versa. The sources of these discrepancies are a topic for further inquiry, but it cannot be assumed a priori that the estimate based on the 5-year residence question is superior. For example, it seems plausible to us that parents' memories regarding where they were living when a child was born may be more accurate than their memories about where they were living on a specific date 5 years ago. Given the correlation between the measures, and the positive relationship

[14] If births away from home were the principal cause of discrepancies between state of birth and current residence, the incidence of this discrepancy would not increase significantly with the age of the reference child.

between the child-based migration rate and the age of the reference child, we are confident that the child-based measure is at least a reasonable approximation of family migration propensities.

The second problem is the extent to which adult individuals living in two-parent families with children are not representative of the migration behavior of the population at large. The safest way to proceed is to make no claims about the implications of our results for individuals who do not meet our sampling criteria. However, it is interesting to ask whether the types of individuals who end up in our sample show dramatically different migration rates from others. In particular, are individuals with children less mobile than those without? A simple comparison is again possible making use of the 5-year residence question from the 1940 census. Overall, 6.4 percent of all adult men reported having changed their state of residence between 1935 and 1940. Among prime-age men (ages 25-44), the rate was 7.7 percent. Prime-age men living with at least one own child under 10 had a migration rate of 6.7 percent, compared with 8.4 percent for prime-aged men without a child under 10.[15] Thus men with children were indeed less likely to move than men of similar age without children, but the difference is not dramatic. Perhaps coincidentally, in 1940, the migration rate of prime-age men with children under 10 was nearly identical to the overall migration rate of adult men.

Interstate migration propensities of families with children

Figure 6a presents estimates of interstate migration rates by age of the reference child, 1850-1970. The category "all 0-9" is an unweighted average of the migration propensities at each age.[16] For ease of viewing, Figure 6b removes all but three of the series from 6a, leaving only the migration rates for reference children of 1 and 9, and the 0-9 average.

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[15] These figures are based on the 1940 IPUMS, restricting the sample to men who reported an identifiable state or D.C. for both their current residence and their residence in 1935.

[16] This average holds the age distribution of children uniform and constant over time, although in fact it is subject to change due to fluctuations in fertility and child mortality.

The rough U shape of the series of migration propensities that appeared in the birthplace data for adults (see Figure 4) is also evident here. Migration rates tended to fall between 1850 and 1880 and began to rise after 1900, particularly after 1940. The older the child observed, the greater the likelihood of a move (the curves shift up with age), consistent with the older child's longer period at risk of migration.

The strong dip in migration rates between 1920 and 1940 is noteworthy. This dip is especially dramatic for nine-year-olds, and hardly evident at all for one-year-olds. A child of nine in 1940 was born in 1930 or 1931 and lived through the worst years of the Great Depression, when migration rates were apparently dramatically reduced. A child of one in 1940 was born in 1938 or 1939, when the economy was in recovery and migration had presumably picked up again. This evidence of age compression in migration rates in 1940 thus illustrates the promise of the children's birthplace measure as a means of pinpointing the timing of changes in migration propensity.

Migration propensities by father's race and nativity, and by region

Figure 7 shows the migration propensity averaged across reference children ages 0-9 by race of father, for the censuses since the Civil War. Both races share the general upward trend of mobility between the turn of the century and 1970. The figures are consistent with the finding from Table 5 that black children were less likely to move than white children over our entire period. The racial gap was proportionally greatest during the immediate post-bellum decades. As we have seen, in the population of adults as a whole, lifetime migration propensities were greater for blacks than whites after 1940 (Table 5). The clear implication is that adult black migrants were disproportionately single, childless, and/or single parents, as compared with white migrants. By 1990, the racial gap in migration propensities had closed completely, a change that may reflect convergence in migration behavior or possibly changes in

sample composition.[17]

Figure 8 tracks the migration propensities of native-born versus foreign-born fathers (whites only). Foreign-born fathers were less likely to move in every year. This contrasts with the behavior of the native-born, who were more likely to move again if they had moved once (see the discussion of Table 3 above). As in the black-white comparison, however, the broad trends are similar for both nativity groups.

Figures 9 and 10 show migration propensities by region. Figure 9, analogous to Figure 5, shows migration rates by the reference child's region of birth, and thus represents an estimate of the rate of out-migration by region. Rates for children born in the West begin in 1870 because of small sample problems prior to that year. Generally, families residing in the Northeast were least likely to move throughout the period covered. Consistent with Figure 5, southern families were highly mobile before the Civil War, with migration rates then collapsing during the war decade and remaining relatively low until after the Great Depression. Since 1940, families from the South and West have been the most likely to move.

Figure 10 shows migration rates by the family's region of residence at the time of the census and thus represents an estimate of the rate of in-migration by region. Not surprisingly, the West has by far the highest rate of in-migration over the entire period, with the South catching up in recent decades.

5. Conclusions

The IPUMS data show considerable promise for describing and analyzing internal migration over the past century and a half. In this paper we have presented two alternative measures of interstate migration derived from information on current residence and place of birth: one for individuals, based on the individual's state of birth, and the other for families with young children, based on the child's state of

[17] Between 1970 and 1990, the percentage of black families with children headed by a single parent increased substantially. Consequently, our sample of two-parent black families represents a declining proportion of all black families, and cannot be assumed to be representative of the characteristics and migration behavior of all black families.

birth. Both measures suggest that for the country as a whole, migration propensities followed a broad U-shaped trend after 1850, falling until around the turn of the century and then rising gradually over much of the twentieth century.

By using individual-level data we have been able to disaggregate by age, sex, race, and nativity. The evidence suggests that the life-cycle pattern of migration has changed, with moving much more concentrated during early adulthood in recent cohorts. Before 1940, adult women were less likely to move than men, but in recent decades there has been little gender difference. Similarly, prior to 1940, blacks were less likely to leave their state of origin that whites, but this pattern was reversed in the aggregate during the 1940s and 1950s. By contrast, migration rates of black families with children were lower than those for white families over the entire period, suggesting that the large migrant flow of blacks after World War II consisted disproportionately of single or childless individuals.

This paper has been entirely descriptive. In its next stage, our project will turn to examining the causal factors influencing migration patterns since 1850. Using individual-level data, we can examine the responsiveness of migration to local economic conditions and opportunities while controlling for demographic influences within a multivariate framework.

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Table 1: Two measures of migration status in 1940

Age group	Percent living in different state than born in	Change in column (1)	Percent living in different state than in 1935	Sample size
5-9	8.2		5.1	108,807
10-19	12.3	4.1	4.4	244,505
20-29	23.1	10.8	8.6	217,215
30-39	30.3	7.2	7.4	176,003
40-49	32.8	2.5	5.1	140,398
50-59	34.4	1.6	3.9	98,955
60-69	36.0	1.6	3.3	64,207
70-79	38.1	2.1	2.6	29,464

Source: Samples from 1940 IPUMS (see text).

Table 2: Distribution of 1935-1940 movers (percent)

Age group	Returned to birth state	Left birth state	Moved between two non-birth states
5-9	14.2	74.6	11.2
10-19	18.1	63.1	18.8
20-29	13.7	62.4	23.9
30-39	17.3	46.4	36.3
40-49	18.9	37.6	43.5
50-59	17.9	35.3	46.9
60-69	18.8	33.4	47.8
70-79	17.1	36.0	46.9
All ages	16.4	54.4	29.3

Source: Samples from 1940 IPUMS (see text).

Table 3: Percent moving between 1935 and 1940 by birth-1935 migration status

Age group	Lived in same state at birth and in 1935	Moved between birth and 1935	
		Include return moves to birth state	Exclude return moves to birth state
5-9	4.0	25.0	11.0
10-19	3.1	15.7	8.0
20-29	6.6	17.1	10.8
30-39	4.8	14.2	9.6
40-49	2.8	10.0	7.0
50-59	2.1	7.5	5.4
60-69	1.7	6.1	4.4
70-79	1.5	4.5	3.3
All ages	4.0	12.1	7.8

Source: Samples from 1940 IPUMS (see text).

Table 4:
Age Specific Migration Propensities by Sex, 1850-1990

Males

	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	0.1007	0.108	0.0871	0.072		0.0709	0.0764	0.0858		0.0671	0.1131	0.143	0.178		0.1441
10-19	0.2116	0.2161	0.1804	0.153		0.1321	0.1436	0.1512		0.1245	0.1636	0.2164	0.2385		0.2349
20-29	0.3479	0.3565	0.3259	0.2915		0.2429	0.2622	0.259		0.232	0.2851	0.3673	0.3824		0.3444
30-39	0.4331	0.4366	0.4206	0.3866		0.3221	0.3355	0.3282		0.3071	0.3343	0.3742	0.399		0.3813
40-49	0.4673	0.4769	0.4588	0.4462		0.3718	0.3655	0.3496		0.3404	0.355	0.3821	0.3959		0.4225
50-59	0.5035	0.4778	0.4953	0.4886		0.4357	0.3977	0.3749		0.3554	0.3669	0.3915	0.3965		0.4282
60-69	0.5213	0.4995	0.4743	0.4914		0.474	0.4429	0.4035		0.3711	0.3744	0.3971	0.4044		0.4299
70-79	0.5337	0.5106	0.4735	0.4989		0.5186	0.4812	0.4531		0.3937	0.382	0.4037	0.4209		0.4422

Females

	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	0.1032	0.1056	0.0834	0.072		0.0743	0.0778	0.0856		0.0691	0.1134	0.143	0.18		0.1447
10-19	0.212	0.2175	0.1825	0.1551		0.131	0.1428	0.1478		0.1279	0.1567	0.2114	0.2362		0.2337
20-29	0.3133	0.3247	0.2915	0.2568		0.2128	0.2312	0.2468		0.2363	0.2884	0.3433	0.3618		0.3403
30-39	0.3797	0.3875	0.375	0.341		0.2825	0.2948	0.3026		0.3045	0.3296	0.3706	0.391		0.3819
40-49	0.4095	0.4134	0.4044	0.3978		0.3311	0.3234	0.3231		0.3233	0.3479	0.3731	0.3904		0.425
50-59	0.4516	0.4162	0.4384	0.4404		0.3864	0.3639	0.3463		0.3373	0.3487	0.3807	0.3813		0.4199
60-69	0.4687	0.4604	0.4319	0.4473		0.4252	0.3935	0.3767		0.3526	0.3548	0.3809	0.3917		0.4225
70-79	0.4661	0.4646	0.4385	0.4507		0.4519	0.4361	0.4093		0.3724	0.3688	0.3963	0.4029		0.4181

Ratio (Males = 100 for each age group and date)

	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	102.44	97.75	95.685	99.972		104.68	101.82	99.72		102.87	100.27	100.02	101.14		100.4
10-19	100.15	100.64	101.16	101.37		99.205	99.429	97.718		102.71	95.752	97.653	99.027		99.489
20-29	90.071	91.067	89.444	88.11		87.602	88.195	95.278		101.88	101.16	93.445	94.623		98.821
30-39	87.684	88.767	89.14	88.197		87.704	87.866	92.176		99.166	98.6	99.025	97.995		100.16
40-49	87.632	86.685	88.151	89.154		89.066	88.478	92.411		94.982	97.991	97.65	98.591		100.59
50-59	89.694	87.117	88.495	90.15		88.685	91.508	92.366		94.918	95.029	97.249	96.169		98.071
60-69	89.919	92.175	91.065	91.031		89.695	88.835	93.356		95.017	94.781	95.908	96.877		98.274
70-79	87.33	90.984	92.616	90.325		87.136	90.621	90.348		94.57	96.549	98.167	95.707		94.541

Table 5: Age Specific Migration Propensities by Race, 1850-1990

Whites

	Census														
	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	0.1022	0.1073	0.0927	0.0803		0.0754	0.0818	0.0895		0.0711	0.1172	0.1468	0.1816		0.1498
10-19	0.2135	0.2188	0.1922	0.1669		0.1374	0.1512	0.1555		0.1267	0.1594	0.2164	0.2408		0.2434
20-29	0.3321	0.3441	0.3218	0.2866		0.2315	0.2526	0.2524		0.2295	0.2772	0.347	0.3669		0.3514
30-39	0.4099	0.4154	0.4131	0.377		0.3082	0.321	0.3169		0.2971	0.3182	0.36	0.384		0.3884
40-49	0.4432	0.4487	0.4464	0.4351		0.3594	0.3545	0.3402		0.3241	0.3387	0.3642	0.3835		0.4223
50-59	0.4816	0.4504	0.4779	0.4726		0.4222	0.3939	0.3678		0.3441	0.35	0.3747	0.3786		0.4157
60-69	0.5016	0.4856	0.459	0.4741		0.4625	0.4284	0.3985		0.365	0.3619	0.3819	0.3888		0.4199
70-79	0.5008	0.4872	0.4615	0.4769		0.4902	0.4656	0.441		0.3867	0.3747	0.3984	0.4056		0.4214

Blacks

	Census														
Age Group	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	0.0906	0.0704	0.042	0.0292		0.0479	0.048	0.0579		0.0483	0.084	0.1211	0.1637		0.114
10-19	0.1354	0.1207	0.1154	0.0807		0.0926	0.0933	0.1069		0.1247	0.1661	0.2005	0.2183		0.1794
20-29	0.2851	0.2014	0.2343	0.2055		0.2006	0.2123	0.2558		0.2767	0.3684	0.4244	0.411		0.2857
30-39	0.318	0.322	0.308	0.2899		0.2617	0.283	0.305		0.3797	0.4539	0.489	0.4805		0.3377
40-49	0.3068	0.3605	0.3548	0.3479		0.2986	0.2822	0.3145		0.4038	0.4643	0.5082	0.4863		0.4423
50-59	0.3769	0.3634	0.4108	0.427		0.3454	0.2941	0.3052		0.3737	0.4376	0.492	0.4927		0.4997
60-69	0.2666	0.2897	0.4194	0.4495		0.3668	0.3466	0.3191		0.3342	0.3927	0.4562	0.4807		0.4978
70-79	0.4535	0.5084	0.4127	0.4615		0.4591	0.4032	0.3329		0.3417	0.3811	0.4186	0.4608		0.5099

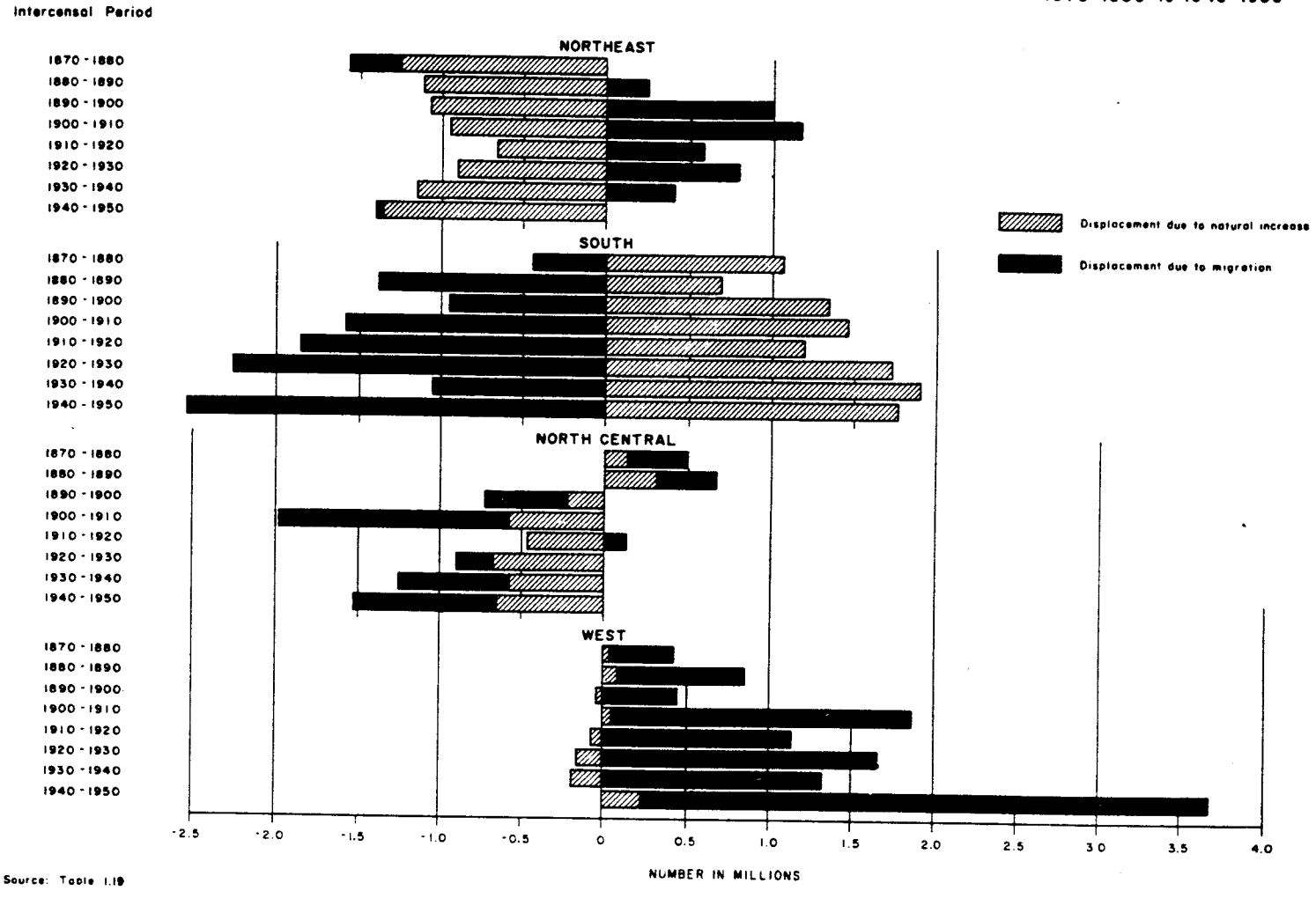
Ratios (Whites = 100 for each age group and date)

Age Group	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990
0-9	88.646	65.549	45.31	36.436		63.527	58.752	64.711		67.9	71.645	82.509	90.127		76.085
10-19	63.384	55.17	60.053	48.376		67.365	61.736	68.724		98.461	104.18	92.692	90.684		73.68
20-29	85.858	58.527	72.815	71.715		86.666	84.023	101.35		120.56	132.9	122.29	112		81.305
30-39	77.579	77.516	74.556	76.891		84.906	88.135	96.248		127.82	142.65	135.86	125.11		86.941
40-49	69.229	80.334	79.483	79.972		83.085	79.602	92.443		124.58	137.1	139.54	126.82		104.75
50-59	78.271	80.679	85.973	90.355		81.807	74.659	83.002		108.62	125.04	131.32	130.15		120.2
60-69	53.139	59.652	91.374	94.813		79.305	80.91	80.064		91.564	108.53	119.45	123.65		118.53
70-79	90.551	104.36	89.436	96.763		93.668	86.591	75.49		88.35	101.72	105.06	113.61		121.01

Notes and sources for figures

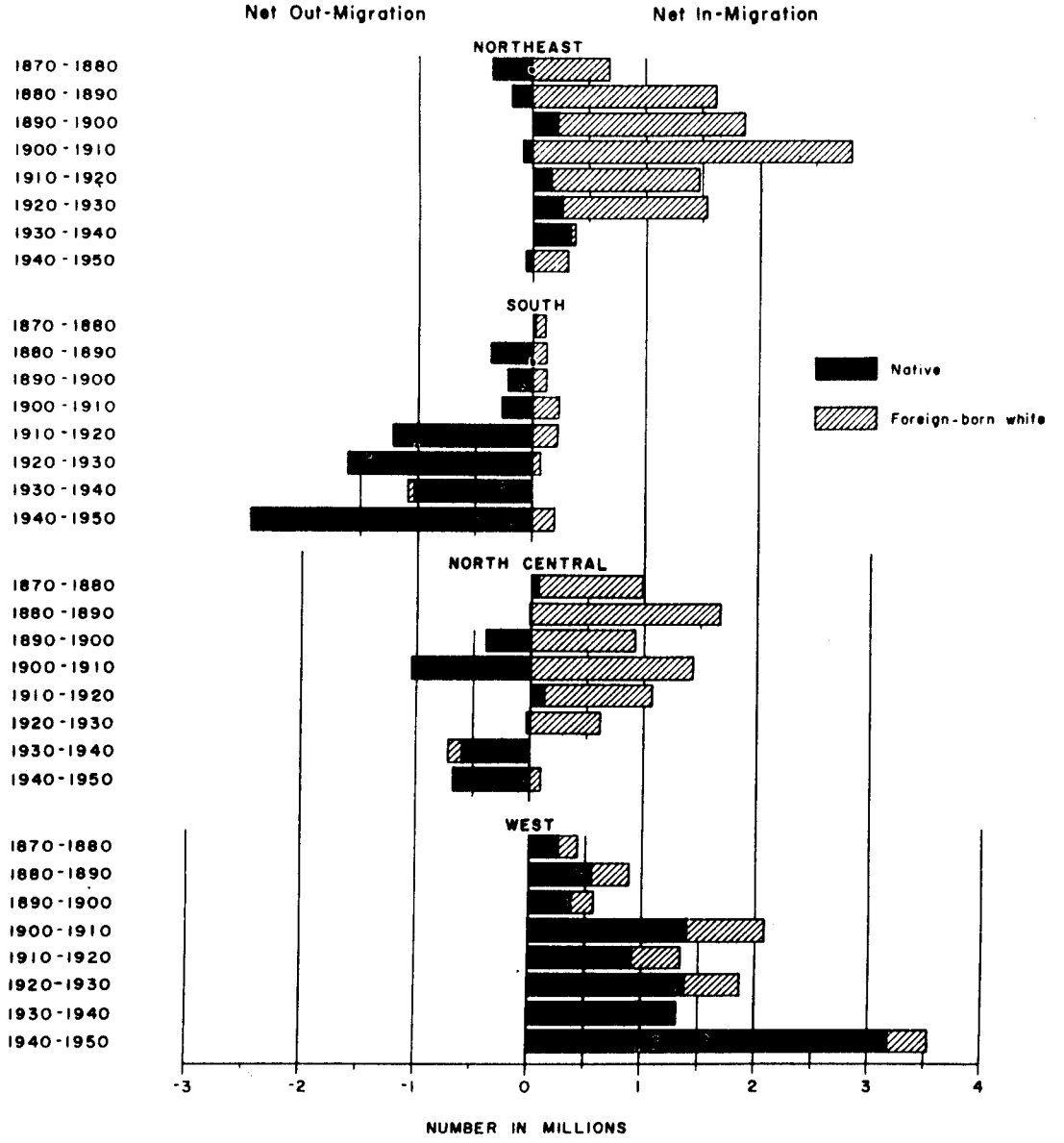
Figure 1: Eldridge (1964), Figure 1.21, p. 61
Figure 2: Eldridge (1964), Figure 1.22, p. 66
Figures 3-10: IPUMS samples (see text for details)

DISPLACEMENT OF POPULATION RESULTING FROM NATURAL INCREASE AND MIGRATION — Regions of the United States 1870-1880 to 1940-1950



Source: Table 1.19

NET MIGRATION OF NATIVES AND FOREIGN-BORN WHITES, BY REGIONS 1870-1880 to 1940-1950



Source: Table 1.21

Figure 3a:
Cohort Migration Propensities for
Cohorts Born between 1800-09 and 1860-69

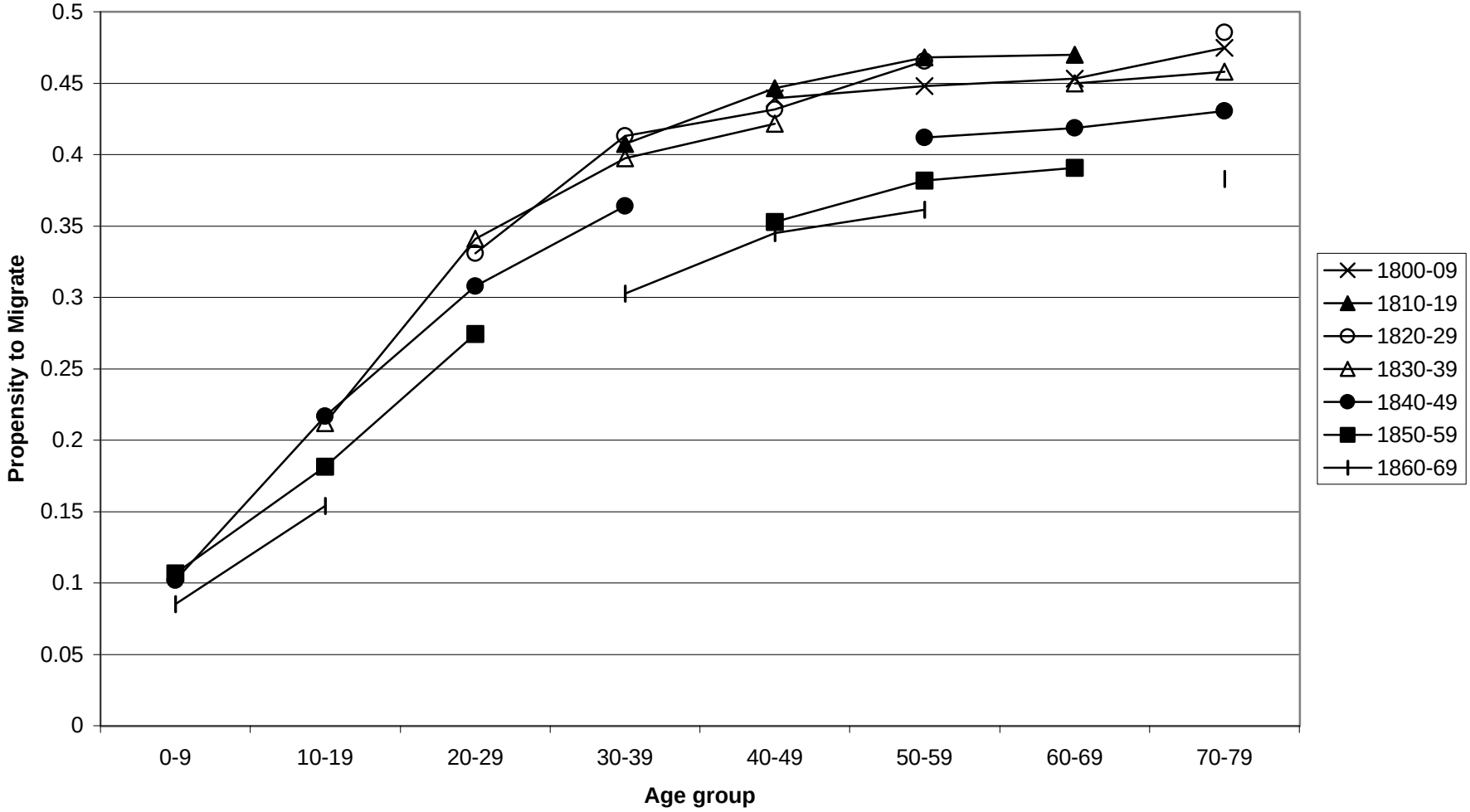


Figure 3b:
Cohort Migration Propensities
for Cohorts Born between 1860-69 and 1910-19

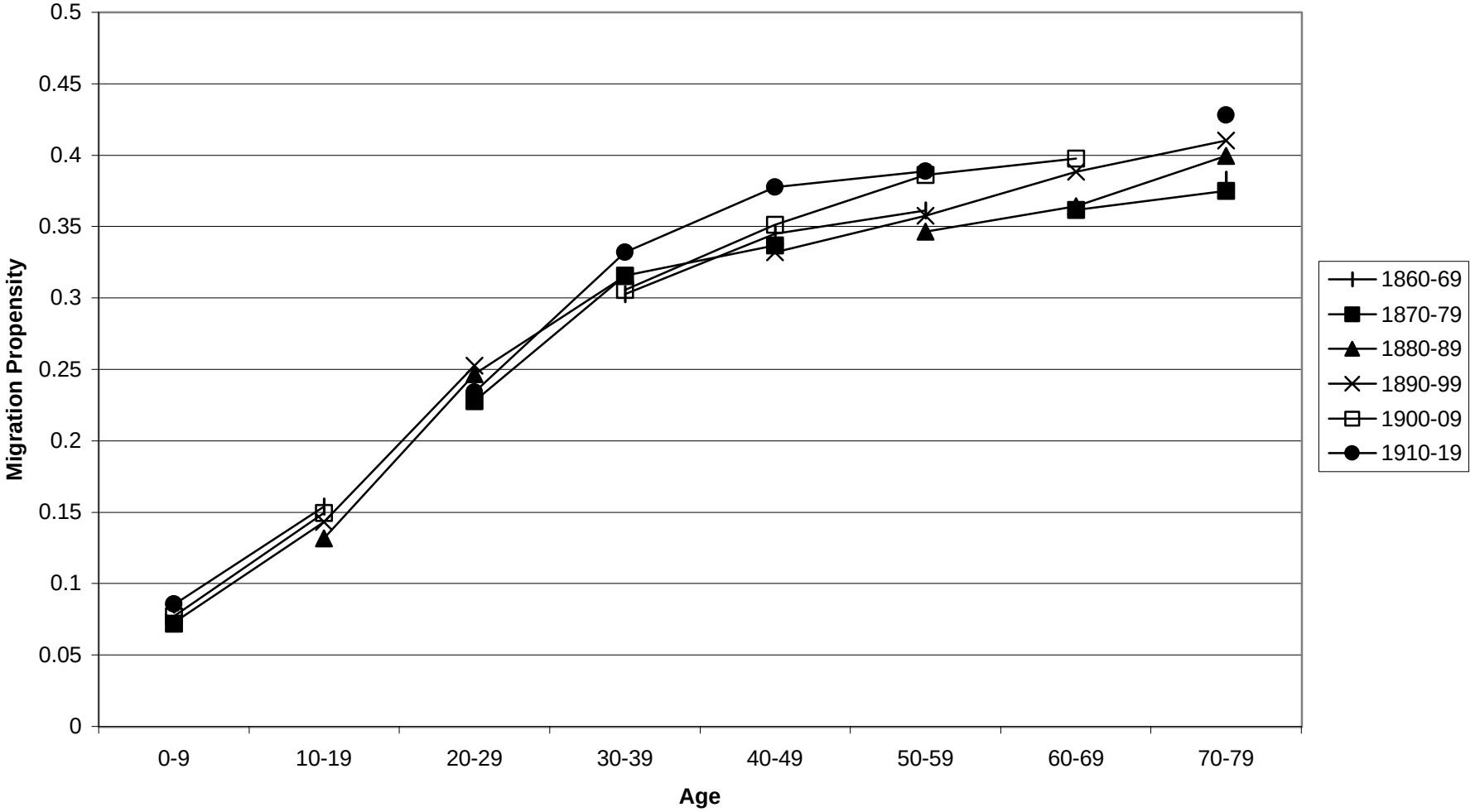


Figure 3c:
Cohort Migration Propensities for
Cohorts Born between 1910-19 and 1980-89

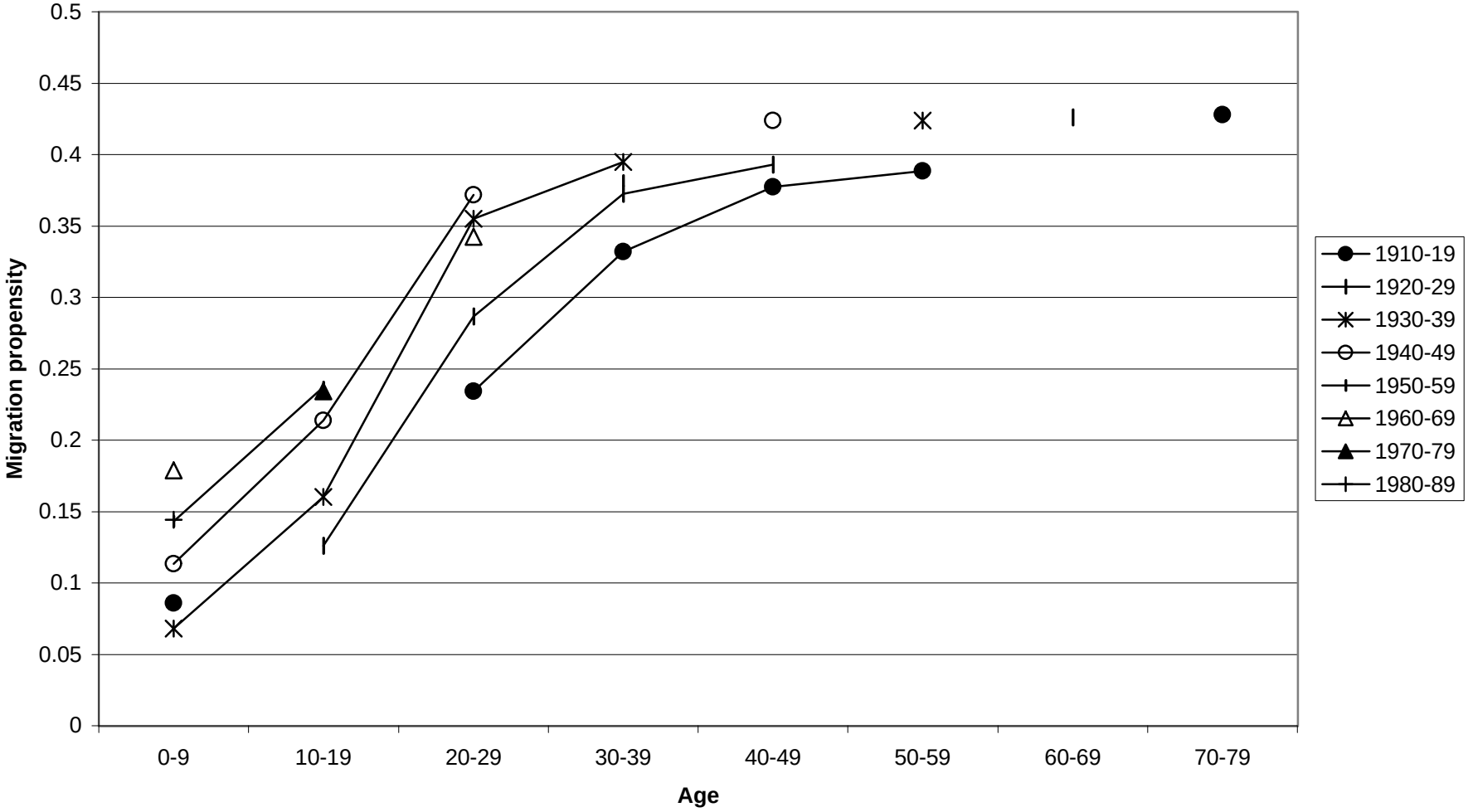


Figure 4:
Age Specific Migration Propensities, 1850-1990

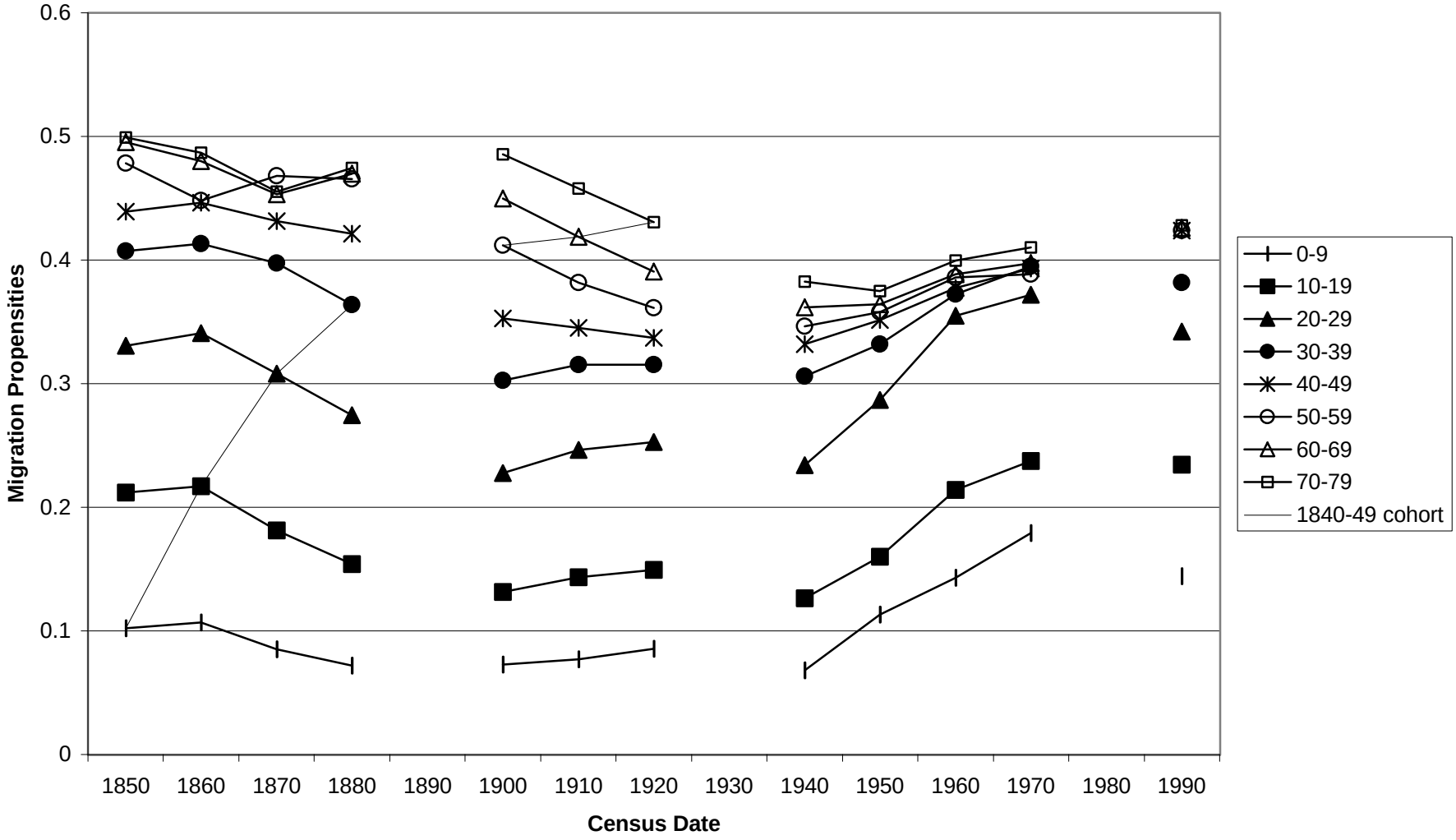


Figure 5:
Regional Migration Propensities 30-39 Year Age Group, 1850-1990 Census

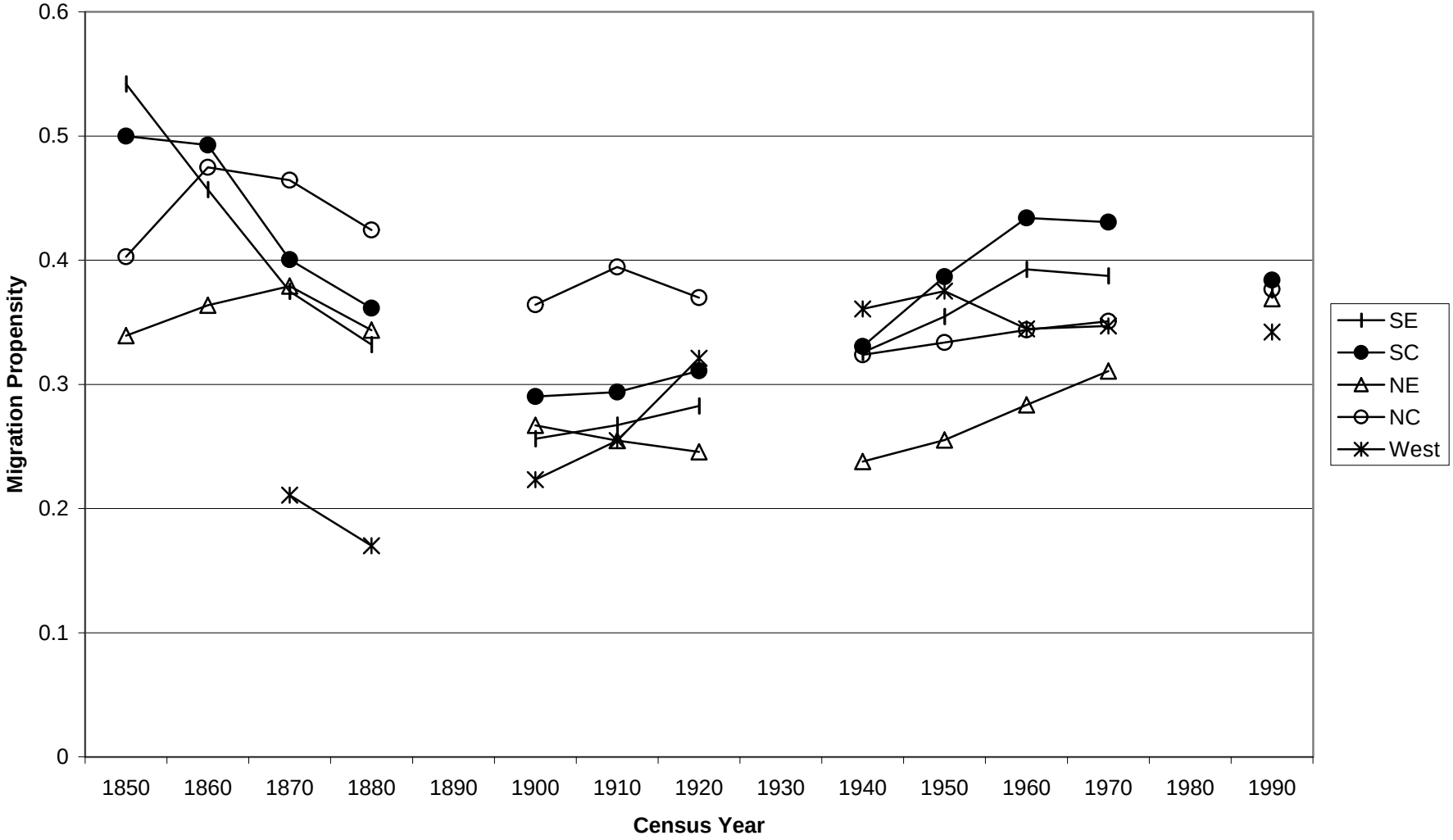


Figure 6a
Migration rate by age of reference child

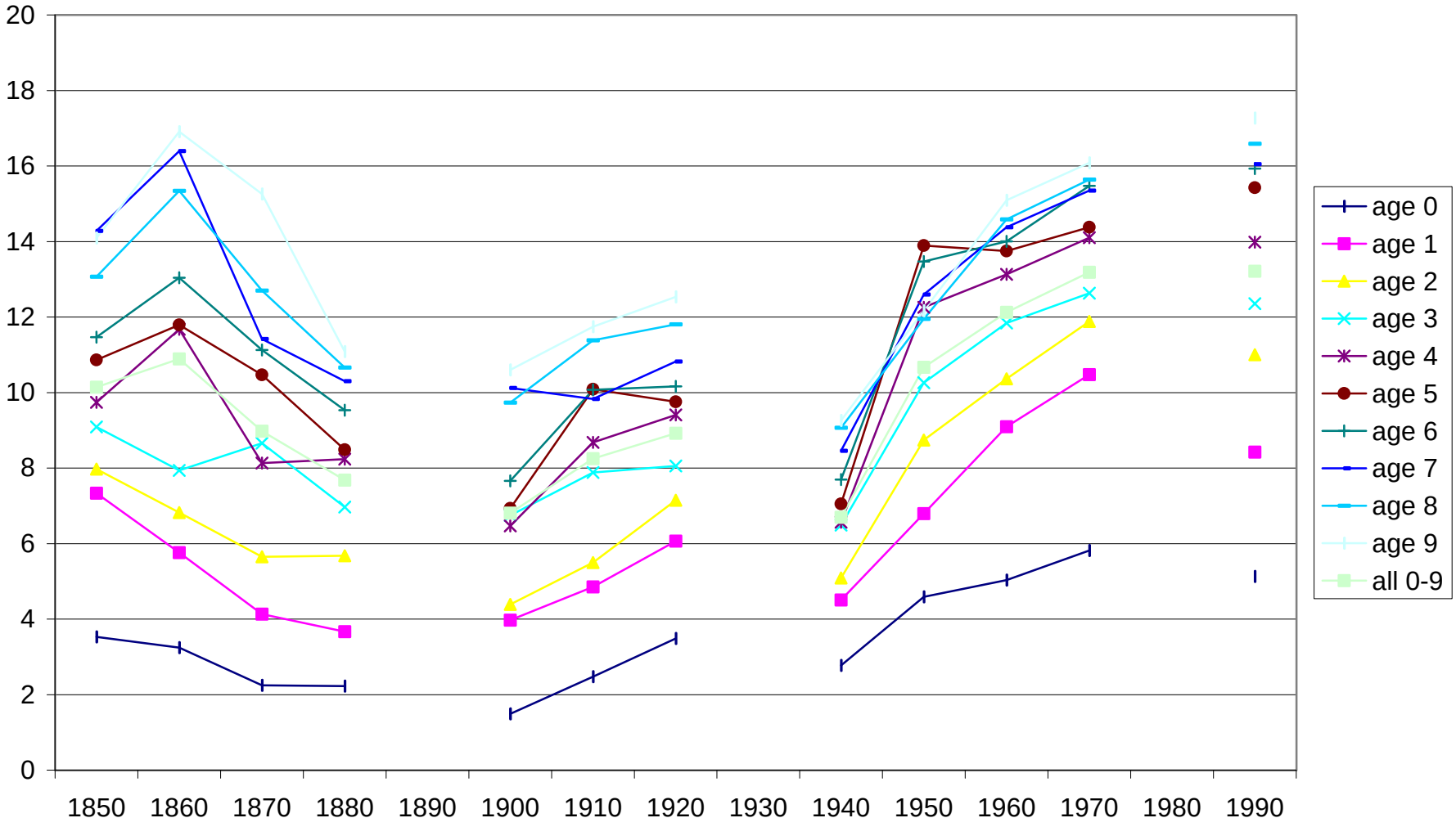


Figure 6b
Migration rate by age of reference child, selected ages

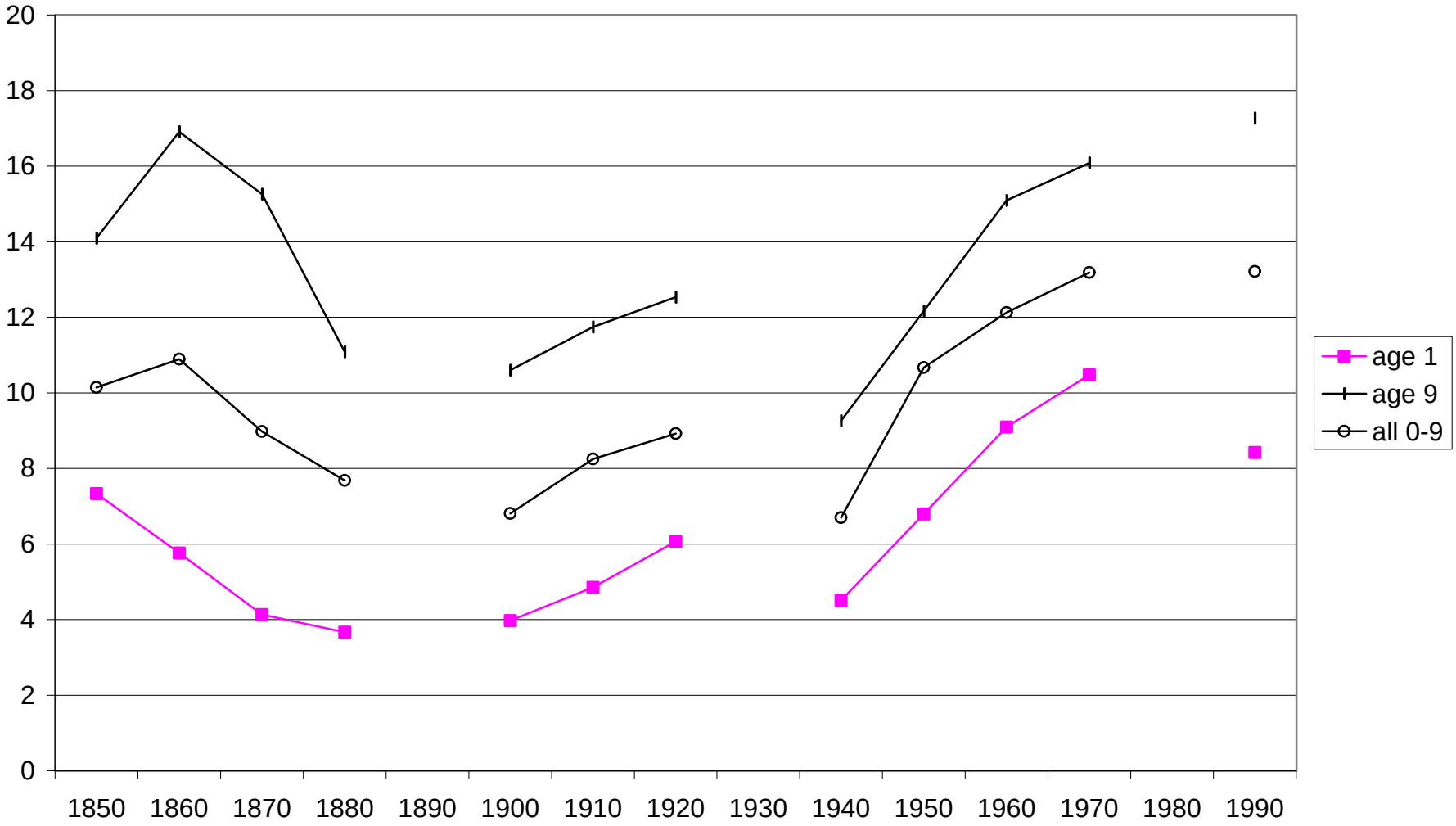


Figure 7
Migration rate by race of father,
unweighted average for reference child ages 0-9

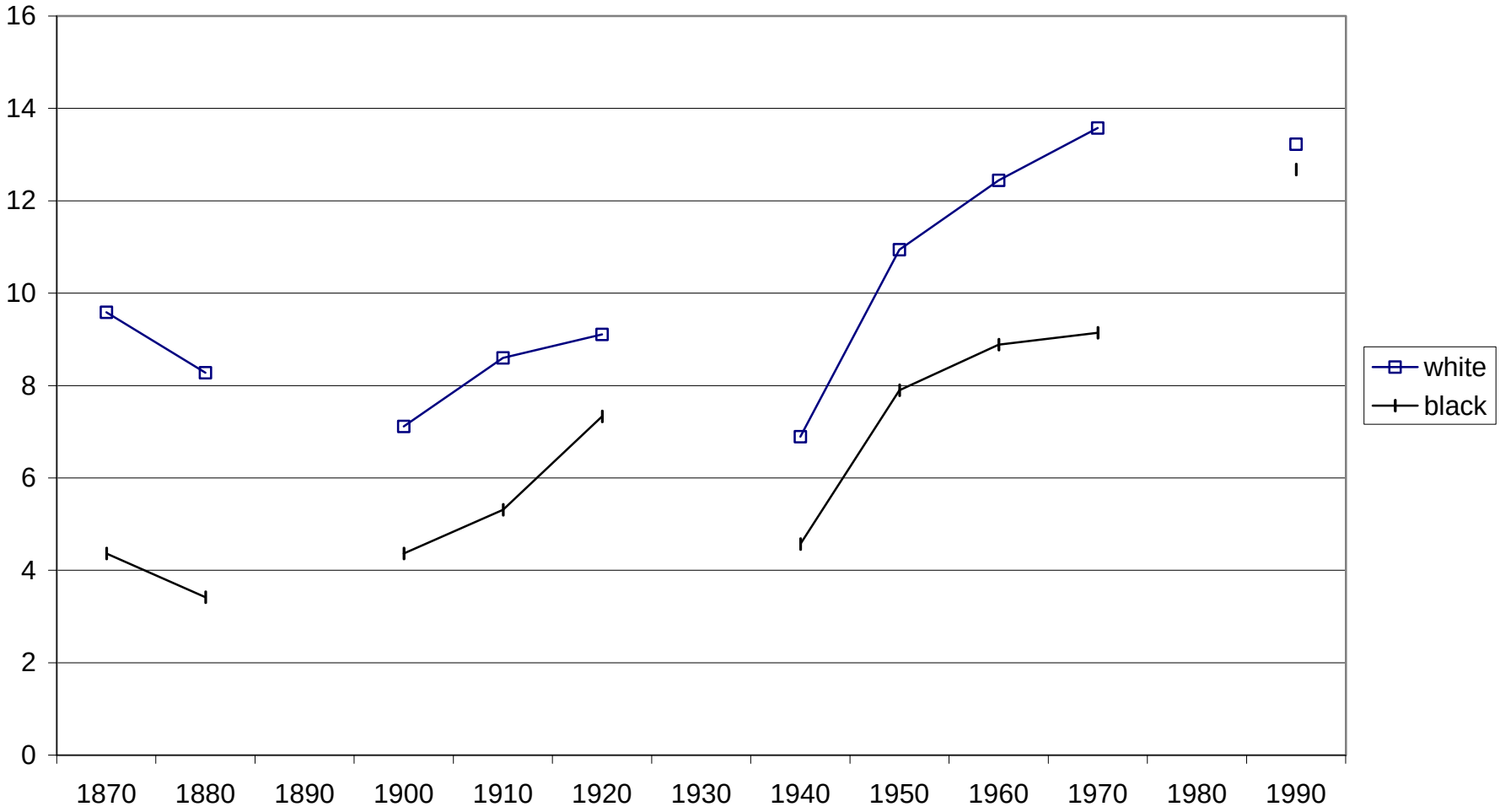


Figure 8
Migration rate by nativity of father, whites only,
unweighted average for reference child ages 0-9

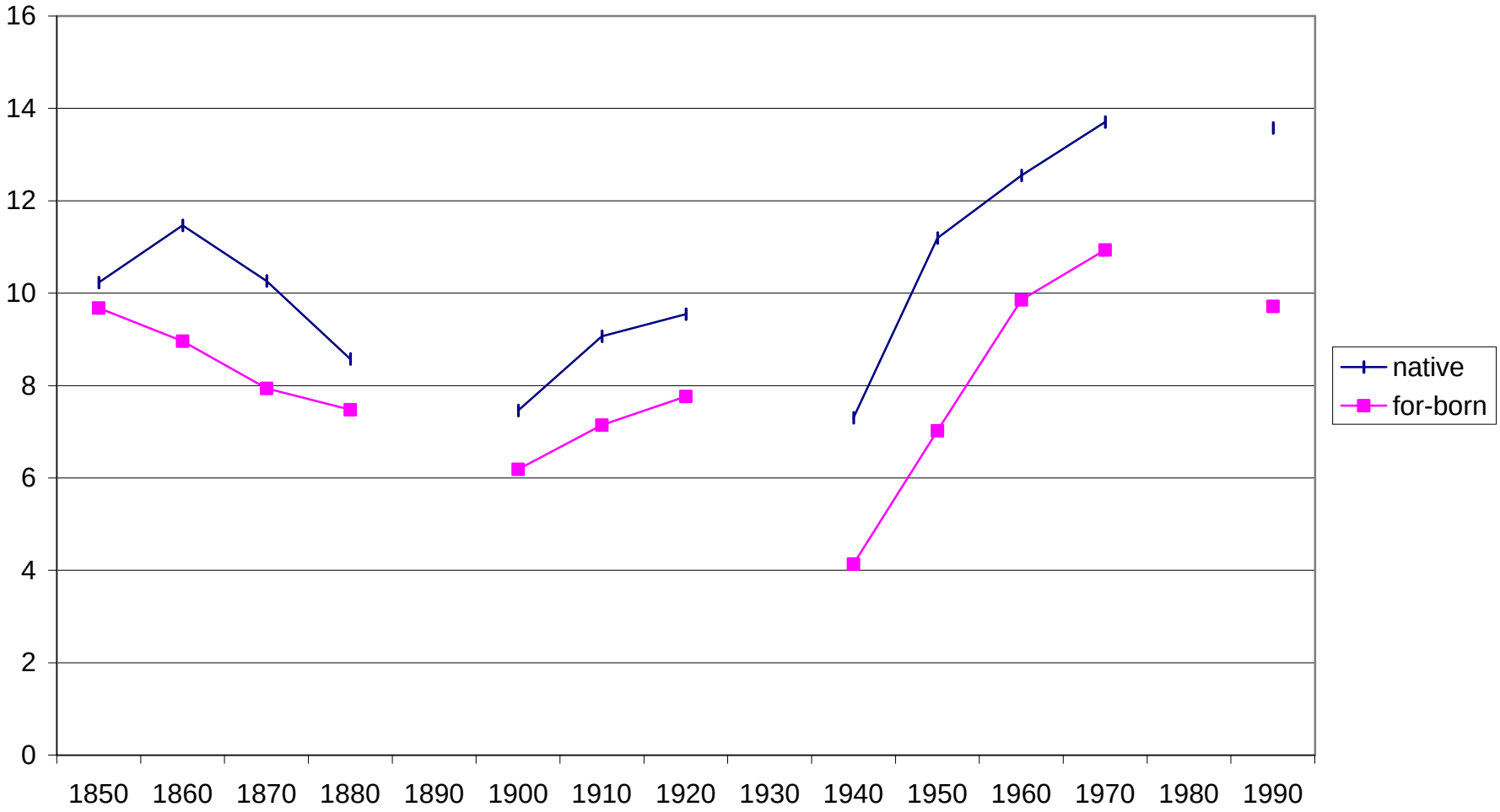


Figure 9
Migration rate by child's region of birth,
unweighted average for reference child ages 0-9

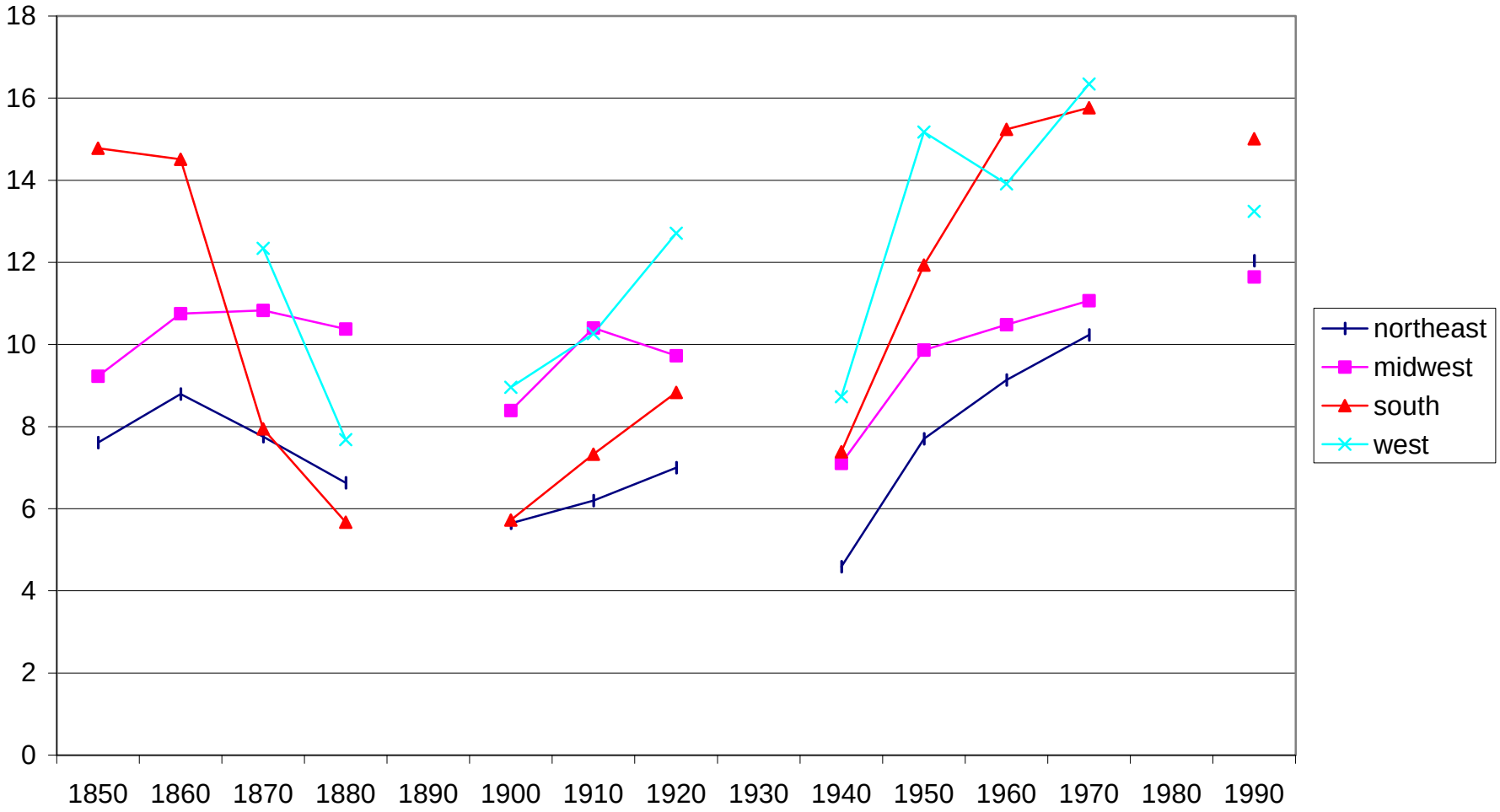


Figure 10
Migration rate by family's current region of residence, unweighted average for reference child ages 0-9