The Contributions of Past Immigration Flows to Regional Aging in the United States

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ABSTRACT

During the fifty years, the elderly population in the United States experienced many changes as a consequence of shifts in internal migration propensities, declines in mortality and fertility levels, and fluctuations in immigration flows. In this paper, we examine the impacts of these changes on elderly population growth and distribution patterns. We utilize 1960, 1970, 1980, 1990 and 2000 census data, 2010 ACS data, and multiregional demographic models to analyze elderly population growth rates, age compositions, and spatial distributions over time. The contributions of immigrants who came in the 1960s and 1970s to the 2010 regional elderly populations are identified and compared those from the immigrants who arrived in the 1980s and 1990s in the 2030 projections. The projection model used to generate counter-factual scenarios allows us to calculate these contributions and conclude that the driving force behind the observed changes has been net aging-in-place.

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1. INTRODUCTION

The elderly population of the United States has assumed ever larger shares of the total national population during the past century. Whereas, persons 60 years and older constituted six percent of the national population in 1900, they accounted for 19 percent of that population in 2010. Driving this march toward an older population have been the remarkable increases in average life expectancy (from 47 years in 1900 to 79 years in 2010), and corresponding decreases in the birthrate (from 32 per thousand to 13 per thousand).

The temporal pattern for the foreign-born elderly population during this same period, however, has been quite different. The 20th century began with immigrants accounting for 31 percent of the elderly (60+ years) population and for 14 percent of the total U.S. population (Figure 1 and Table 1). It ended with these two percentages taking on close to identical values: 12 percent and 13 percent, respectively. The dynamics that have produced this evolution over the past century are particularly interesting because of particular immigration laws passed by the federal government over the past century, laws which collectively have influenced immigration numbers and compositions.

---------- Figure 1 and Table 1 about here ----------

Few immigration restrictions were imposed on flows of foreign-born into the United States prior to 1875. Significant limitations on the numbers, characteristics, and national origins of immigrants began to be enacted into laws after that date. Starting with the Chinese Exclusion

Act of 1882, and continuing with the Immigration Act of 1891 and the Immigration Act of 1924, the enactment of federal regulations on immigration slowed, largely because relatively few immigrants entered the United States during the years of the Great Depression and World War II. Applications for admission increased shortly thereafter, however. Recognizing that many of the old immigration laws were outdated, Congress passed the Immigration and Nationality Act of 1952 and Amendments to it in 1965 and 1976. These were followed in the 1980s and 1990s by the Immigration Reform and Control Act of 1986 (IRCA), the Immigration Act of 1990, and the Illegal Immigration Act of 1996. These pieces of legislation produced rather dramatic demographic consequences for levels of immigration, age structures and spatial patterns of settlement (Table1). Figure 2 presents the changes in national age composition over time that arose partly as a consequence of the changes in the regional immigration levels over time and space (Rogers et al. 1999). (The regional age pyramids, too numerous to exhibit here, generally show the same profiles.) Figure 3 exhibits the changing regional geographies of the elderly foreign-born and native-born populations.

---------- Figures 2 and 3 about here ----------

For the first 90 years of the 20th century, the growth rate of the elderly foreign-born population in the United States was lower than that of the elderly native-born population (Figure 4B). Between 1950 and 1990, the elderly foreign-born population actually declined in size and exhibited a negative growth rate for almost 30 years. Only in the 1990s did the elderly foreign-born population begin to exhibit higher annual growth rates than its native-born counterpart, a consequence of the immigration reforms of 1965 and the relative low fertility levels of the native-born population during the Depression years.

The impacts on the elderly foreign-born population of contracting or expanding levels of immigration have tended to be felt some thirty years later, whereas the impacts of contracting and expanding levels of fertility on the elderly native-born population become manifest some sixty years later. Thus the dramatic drop in the elderly foreign-born growth rates that began in the 1950s occurred roughly thirty years after the Immigration Act of 1924, and the increases in elderly foreign-born growth rates that occurred during the 1990s happened some thirty years after the Immigration and Nationality Act Amendments of 1965 (Figure 4A). Among the elderly native born, however, growth rates fell to near zero in the early 1990s, sixty years after the very low birth rates of the Depression era.

----- Figure 4 about here -----

In addition to the differences by nativity observed for the elderly population in the U.S., substantial regional variations also developed over time (Figure 5). The elderly foreign-born populations of the South and West regions increased in size during the entire 20th century. Moreover, the South showed no major declines in annual growth rates between 1940 and 1970, such as occurred in the other three regions before the year 2000.

----- Figure 5 about here -----

In contrast to the elderly foreign-born population, the elderly native-born population grew at a relatively stable rate until the 1980s, at which point the rates began to decline. Indeed, the elderly native-born populations in the Northeast and Midwest were smaller in the 1990s than they were in the 1980s. The relatively high rates of growth of the elderly native-born populations in the West and of the elderly foreign-born populations in the South arose partly as a consequence of the relatively small initial populations in those two regions during the first half

of the century.

The race/ethnic composition of U.S. immigrants was significantly altered by the immigration reforms introduced by federal legislation passed in 1965. A major feature of the Immigration and Nationality Act Amendments of 1965 was that the number of immediate family members of U.S. citizens eligible for immigration was no longer subject to numerical limits. A consequence of this provision was a dramatic increase in immigration from Asian and Latin American countries. With this increase came a sharp decrease in immigration from Europe and Canada. Whereas almost two-thirds of all immigrants to the United States during the 1950s originated in these two areas, by the 1990s, their contribution dropped to 14 percent. At the same time, Asia, which contributed only 6 percent in the 1950s, increased its share to 44 percent in the 1980s, and immigration from Latin American increased from 26 percent in the 1950s to 40 percent in the 1960s, a share that it has maintained since then (Smith & Edmonston, 1997).

2. DATA AND MODELS

2.1 Analyzing internal migration patterns of the elderly population

The 1940 Census was the first national census count to report origin-destination-specific migration flow data for the United States. Already by that time, elderly migrants were moving to the Sunbelt and exhibiting the two major national "migration sheds" identified by Friedsam (1951):

> "...concerning the major directions of the migration of the aged, the observation can be made that in general terms migration to the Pacific region comes in large part from west of the Mississippi while most of that to the South Atlantic comes from east

of the Mississippi." (Friedsam, 1951, p. 238)

Elderly migration patterns since the 1940 census most often have been studied using the question regarding the respondent's location of residence five years earlier. (The sole exception was the 1950 census, which adopted a one-year interval instead so as to avoid the immediate post-World War II period of readjustment.) We disaggregate the elderly population into native-born and foreign-born subpopulations by separating those who were born in the United States and its territories (or born abroad to at least one American parent) from those who were not. For our projection exercises we obtained the necessary input data on mortality, fertility, and migration from the standard Vital Statistics and Census Bureau sources. Where necessary (e.g., the case of emigration) we used conventional methods of indirect estimation. For details, the reader should consult Rogers et al. (1999) and Rogers and Raymer (1999a).

2.2 The multiregional demographic model of elderly population growth

To identify in greater detail the demographic sources of regional increases or decreases in the elderly population, we have developed an exercise in quantitative historical demography: the reconstruction of the regional demographic dynamics of the elderly foreign-born and native-born populations in the United States from 1950 to 2010. (Inadequate data on internal migration prevents us from going back to 1900.) These estimated dynamics help us answer a number of interesting questions about the evolutions of regional elderly populations from 1950 to 2010. Our method uses an "open" multiregional projection model framework (Rogers 1995) to identify the contributions to regional population growth made by each of the principal demographic components of change: fertility, mortality, international migration (immigration and emigration),

and internal migration (in-migration and out-migration). In an earlier paper (Rogers et al. 1999), we describe this framework in some detail and use it to illuminate the demographics of the total (not elderly) U.S. multiregional population from 1950 to 1990. This paper updates that work by including more recent data obtained from the 2000 Census and the 2010 American Community Survey, both downloaded from the IPUMS website (Ruggles et al. 2010).

Using data drawn largely from the U.S. Census Bureau's published and unpublished records, including various Public Use Microdata Sample (PUMS and IPUMS) files of the Censuses of Population, we develop an empirical multiregional projection model that begins with the population counts for each age group in each region that are reported by a decadal census at time *t* and then survives that population forward five years at a time. The elements of the projection process incorporate the decremental effects of mortality and emigration and introduce the incremental effects of fertility and immigration and the redistributive impacts of internal migration. The five-year contribution of immigration is expressed as a distribution with age and region-specific numbers, but the projection model accounts for emigration by combining emigration rates with death rates to make use of the standard methods for decrementing the population in a multiregional life table population projection. In addition, the open multiregional projection model is adapted to simultaneously project the foreign-born and native-born populations separately, so that the demographic processes can be differentiated, while still allowing the foreign-born population to contribute births to the native-born population total. That is, the foreign-born population generates births, but these births are treated as increments to the first age group of the native-born population in each region.

The population projection reflects the age- and period-specific fertility, mortality,

emigration, and internal migration processes of the foreign-born population and the immigration distribution reflects the foreign-born entering the country during the period. But the projected population distribution is not the true foreign-born population because it includes the foreign-born contribution to native-born births. One therefore needs to transfer the foreign-born births from the appropriate region-specific element of the projected population distribution to the first age groups in the regional native-born populations. Of course, this problem does not appear if the evolution of only the elderly population is of interest. The "birth" component then becomes the "aging-in" component, i.e., total births are replaced in the accounting equation by the number of persons aging-in to enter the first elderly age group, i.e., those becoming 60 to 64 years of age during the 5-year time interval. For example, consider the growth of a region's elderly population from t to t+1. This growth can be expressed in the following manner:

$$P_{(t+1)} = P_{(t)} + A_{(t,\,t+1)} - D_{(t,\,t+1)} + IN_{(t,\,t+1)} - O_{(t,\,t+1)} + I_{(t,\,t+1)} - E_{(t,\,t+1)} \qquad (1)$$

where P represents the total elderly regional population, A are the numbers of total persons aging-in to the elderly population, D are the numbers of total persons dying out of the elderly population, IN is in-migration from the other regions in the system, O is the out-migration from the region in question to the other regions, I is the immigration component, and E is the number of emigrants. The last four terms identify the contribution of net migration, while the difference between A and D defines the contribution of net aging-in-place.

Equation (1) describes total regional population growth as a summation of the initial population and the increments and decrements contributed by the principal demographic sources of growth. Each nativity-specific population is treated separately. However, one difference in the two accounting equations needs to be noted. To describe the growth of the elderly native-born

population in each region, we set the *I* and *E* components to zero by assumption, because of the relatively insignificant contributions made by the two components to the growth of that population. Thus, we have

$$P_{NB(t+1)} = P_{NB(t)} + A_{NB} - D_{NB} + IN_{NB} - O_{NB} \quad (2)$$

Equation (2) may be contrasted with the corresponding accounting equation for the foreign-born population, which retains the immigration and emigration components:

$$P_{FB(t+1)} = P_{FB(t)} + A_{FB} - D_{FB} + IN_{FB} - O_{FB} + I_{FB} - E_{FB} \quad (3)$$

The numbers that correspond to each source of growth, except for *E* and *I*, may be obtained in the process of projecting the population distribution forward and then identifying and summing over the appropriate elements.

3. RESULTS

3.1 Have interregional elderly migration patterns changed?

Our calculations are set out in Tables 2 and 3. They show that for the 1995-2000 period, for example, the migration patterns did not deviate sharply from pre-2000 trends, as Figure 6 makes clear. At the national scale, interregional migration levels held steady, falling between 2.4 to 2.6 percent over five succeeding censuses. And, if one were to identify a "break" with past trends, it would more likely have been the 1975-80 period and not the years thereafter. With the exception of the South, generally the same pattern was exhibited by each of the other three regions --- a peak in 1975-80 and not thereafter.

----- Tables 2 and 3 and Figure 6 about here -----

The Northeast's peak was especially pronounced, and according to Figure 7, it appeared

in both the elderly foreign-born and native-born migration patterns. In general, elderly foreign-born out-migration flows from the four Census Regions over time exhibited different levels from those of the elderly native-born outflows. For example, they seem to have been more reluctant to leave the West, and it was not until after 1975 that their corresponding levels from the South declined below the national level. But, in the aggregate, their national levels always exceeded the corresponding levels for the elderly native-born population.

----- Figure 7 about here -----

The data in Table 3 demonstrate that the West experienced similar levels of net migration gain over the five census migration periods. The Northeast and Midwest experienced increases in net migration losses over time, while the South experienced increased gains from 121 thousand in 1955-1960 to 354 thousand in 1995-2000. In assessing our findings, the reader is reminded that our analyses focus on the 60 years and older age group at the beginning of each time interval

3.2 What drives regional elderly population growth: Migration or aging-in-place? (to be updated)

Policy analysts all too often adopt a somewhat narrow view of expected regional changes in elderly populations by focusing only on the contribution of elderly migration to demographic change and ignoring the usually larger contribution of aging-in-place. Because much of elderly migration is selective of individuals and is undertaken near the age of retirement, the relatively young elderly migrants are on average more likely to be married, better educated, wealthier, and healthier than the non-migrant elderly population that they join (Biggar 1980; Rogers, 1992). Consequently, regional elderly populations that grow mostly from net aging-in-place (for

example, New York) are more likely to need more health services and exert a larger per capita demand on the government funds than regions that grow mostly from net migration, such as Florida (Rogers & Woodward 1988).

Regions in which the elderly population grows mostly by net aging-in-place are losing their relatively younger, well-off members and gaining older more dependent elderly persons in exchange. A shrinking tax base and an aged population with many dependent on local service institutions is the likely result. Regions in which the elderly population grows mostly by net migration, however, may benefit from the expenditures of pension and retirement funds that increase local demands for retail goods and services, without adding significant demands to the collective public welfare burden or to the pressure for social services for the aged. The Older Americans Act allocates federal funds for state-run programs in the basis of the number of people age 60 and over, without reference to the differences in the average socioeconomic characteristics of elderly residents in the states. Thus principal origin states, such as New York, may be "short-changed" in favor of important destination states, such as Florida. Therefore, both sources of growth of the elderly population should be examined jointly in studies of the policy impacts of the changing interstate geography of elderly persons. The sources-of-growth method outlined in Rogers and Woodward (1988) has been applied by Rogerson (1996) to study the state-level population growth of the elderly population in the United States. He found that the spatial pattern of the rate of entry into the elderly cohort among non-movers is a particularly strong influence in determining changes in the proportion of a state's population that is elderly.

Finally, a country's elderly population is not spread uniformly across the national territory. Geographical concentrations of elderly persons arise at destinations with high amenities

as elderly migrants move across longer distances in search of amenity-rich communities with sunnier and warmer climates and recreationally diverse environments. But such concentrations also arise as a consequence of net aging-in-place --- the "natural increase" component of elderly population change that is the numerical difference between pre-elderly persons and who remain in the region and enter the first elderly age group there (i.e., elderly "births") and elderly persons who die during the unit time interval.

Earlier in this paper we set out a multiregional projection model that is "open" to international migration streams and that is responsive to historical changes in each demographic process. Using the outputs of that model, we now wish to contrast the foreign-born and native-born contributions to population growth. To do this we have added together their respective components of growth and obtained the total for each region. In addition, to simplify the presentation of our analysis, the growth components for each pair of adjacent five-year periods have been added together to describe the historical growth by decade. For a particular region, such as the Northeast, say, over a given decade, for example from t to t+1, total elderly population growth, $G_{NE}(t,t+1)$, can be partitioned as follows:

$$G_{NE}(t,t+1) = \{\text{Foreign-Born Contribution}\} + \{\text{Native-Born Contribution}\}$$

$$= \{P_{FB(t+1)} - P_{FB(t)}\} + \{P_{NB(t+1)} - P_{NB(t)}\} \quad (4)$$

$$= \{(A_{FB}-D_{FB}) + (IN_{FB}-O_{FB}) + (I_{FB}-E_{FB})\} + \{(A_{NB}-D_{NB}) + (IN_{NB}-O_{NB})\} \quad (5)$$

$$= \{FB \text{ Net Aging-in-Place} + FB \text{ Net Internal Migration} + FB \text{ Net Immigration}\}$$

$$+ \{NB \text{ Net Aging-in-Place} + NB \text{ Net Internal Migration}\} \quad (6)$$

In Equation (5) the foreign-born contribution is disaggregated into the net aging-in-place, net internal migration, and net immigration components. Each of the net components is

calculated as the difference between the respective incremental and decremental contributions. The native-born disaggregation is dealt with in a similar way, but the net immigration component is set to zero by assumption. Finally, each component, presented as numbers of persons in the above equations, is divided by the base population to derive the appropriate relative contribution to the total regional decadal rate being analyzed. The results of such a decompositional analysis are illustrated in Figure 8.

----- Figure 8 about here (to be updated) -----

The demographic component principally responsible for the decline in the elderly foreign-born population between 1950 to 1980 was negative net aging-in-place. Only in the 1980s did net immigration become an important contributor. And as shown in Figure 8, the regional sources of growth for the elderly foreign-born population differed in relative importance. For example, the factors that contributed to population decline in the Northeast (after 1960) were negative net aging-in-place and negative net internal migration. After 1970, positive net immigration acted to offset the loss due to net internal migration, but the elderly foreign-born population still declined because of negative net aging-in-place. The Midwest's elderly foreign-born population declined during the entire 40-year period under study, because net aging-in-place and net internal migration were both negative during this time interval. Although net immigration rates in the Midwest were positive after 1970, they were low relative to the other two components of change. Interestingly, the South region's most important contributor to population growth was net internal migration (followed by net immigration after 1970). Finally, the elderly foreign-born population in the West grew substantially after 1970 because of high net immigration rates. Net internal migration also contributed to that region's

growth, but not as significantly as it did in the South. In fact, during the 1980s, net internal migration in the West played a relatively minor role, when compared to the growth impacts of net aging-in-place and net immigration.

The corresponding patterns for the elderly native-born population showed two principal regional differences: (1) a clear separation of net aging-in-place levels, with the Northeast and West significantly exceeding those of the Midwest and South, and (2) an equally clear difference in net internal migration levels, which were positive for the South and West, and negative for the Northwest and Midwest. (Since the relatively insignificant immigration and emigration numbers of the elderly native-born population were ignored in this analysis, no temporal paths for these two variables are presented.) Finally, the net aging-in-place component and not net migration was overwhelmingly the most important contributor to the regional growth rate.

3.3 Has immigration altered elderly dependency ratios?

The United Nations Population Division (2000) report on "Replacement Migration" has captured a surprising amount of attention from international audiences. The report sets out alternative scenarios to identify the levels of immigration that would be necessary between the years 2000 and 2050 in order to offset projected declines in population totals, numbers of working-age persons, and ratios of workers to the over-65 population. (Because the age composition of immigrant streams is generally younger than that of the host population, it is widely believed that a large influx of immigrants makes the host country's population significantly younger.) Its controversial central conclusion is that the necessary immigration levels for virtually all countries of Europe as well as Japan may require huge influxes of immigrants.

The UN study focuses on eight low fertility countries including the United States. For the U.S., the study reports a year 2000 "potential support ratio" (i.e., the ratio of "potential workers" to pensioners calculated as the number of persons age 15-64 years divided by the corresponding number 65 and older) of 5.28 and projects it to stand at 2.82 fifty years later. It finds that to maintain a constant ratio of 5.2 from the year 2000 until the year 2050 it would be necessary to admit an average of 10.8 million immigrants every year until 2050, which would give rise to a U.S. population exceeding 1 billion persons.

Our own multiregional projection model may be adopted to generate a similar scenario over the 50-year historical period from 1950 to 2000 to identify the contribution that immigration made during those years to make the nation's population younger and its worker-to-elderly ratio smaller. Adopting the slightly older 65+ threshold in order to make our numbers comparable with those of the UN study, we find the results set out in Table 4 below.

----- Table 4 about here -----

Our potential support ratio in year 2000 is 5.32, slightly higher than the UN's figure for the year 2000 and significantly lower than our ratio for the 1950 U.S. population (7.96). So our answer to the question regarding immigration's impact on elderly dependency ratios is yes. The comparatively younger composition of the growing immigrant influx since 1965 did indeed act to lower elderly dependency ratios below what they otherwise would have been or, equivalently, raise the worker-to-elderly potential support ratios above what they otherwise have been. The relatively small size of the foreign-born population, however, did not allow it to fully counteract the impacts on dependency of the aging native-born population. So despite the increasing worker-to-elderly ratio of the former (up from 1.93 in 1970 to 6.66 in 2010) the decreasing

corresponding ratio of the latter (down from 7.00 in 1970 to 4.92 in 2010) led to an aggregated "all-born" ratio that continued its decline to stand at 5.13 in 2010, exceeding the corresponding ratio for the native-born population (5.13 > 4.92).

3.4 Counterfactuals (to be updated)

Our multiregional "sources of growth" projection model also may be used to generate counterfactual scenarios that allow us to calculate the contribution made by immigration to the growth of the United States total national population, along the lines followed by Passel and Edmonston (1992). We next adopt their procedure to carry out the same calculations for elderly regional populations over the period 1950-2010.

Our projections from 1950 to 2010 served as the basis for developing the counterfactual immigration scenarios, with which we could approximate the contributions to the total U.S. population made by the following immigration cohorts: pre-1950, 1950 to 1965, 1965 to 1980, and 1980 to 1990. To accomplish this task, we simply set the immigration component to zero in the population projections reflecting three separate scenarios: no immigration after 1950, no immigration after 1965, and no immigration after 1980. In these three scenarios, our principal interest revolved around the consequences, for the surviving stock of foreign-born persons, of eliminating immigration from the projections. Note that the populations are "linked" together, so that, for example, the elderly foreign-born population in the South could still grow (via internal migration), even if immigration to that region were halted.

In 1950, approximately 4.1 million out of 18.3 million elderly persons residing in the United States were foreign born. Because of mortality, this cohort totaled only about 1.4 million

persons by 1990, and in recent decades it has been augmented by immigrants who entered the country after the immigration reforms of 1965. Thus by 1990, 37.4 percent of the elderly foreign-born population consisted of immigrants who came after 1965. These immigrants have settled disproportionately in the West, accounting for 6.8 percent of elderly residents in that region compared to a corresponding 1.1 percent in the Midwest.

The contributions of immigration to the regional elderly foreign-born population totals are illustrated in Figure 9 revealing the changes that occurred after 1965. Not surprisingly, we find that the 1965-1980 and 1980-1990 immigration cohorts substantially changed the elderly foreign-born numbers in the South and West regions, accounting for 43 and 48 percent of those numbers, respectively. The corresponding percentages in the Northeast and Midwest were more modest in comparison (31 and 22 percent, respectively).

----- Figure 9 about here (to be updated) -----

Most affected by the post-1965 immigration has been the elderly population of the West. Fully 1 out of every 4 elderly foreign-born residents in that region in 1990 arrived in the United States during the previous decade. At the other extreme is the elderly foreign-born population of the Midwest, where only 1 out of about every 14 elderly residents in 1990 was a post -1980 immigrant. Contrast this with the corresponding situation in 1970. In all four regions roughly 9 out of 10 elderly residents were foreign-born persons who entered the country before 1950. Twenty years later their representation in the elderly foreign-born population shrank to anywhere between 3 out of 10 (in the West) to 5 out of 10 (in the Midwest).

It is clear that immigration has been the principal contributor to the growth of the elderly foreign-born populations in all four regions. But how has it affected to the shifting elderly age

structures of those populations? In order to examine this question, we need to separate immigration from the other demographic sources of growth and to look specifically at the age compositions of regional immigrants. For example, take the subset of the foreign-born population who arrived after 1965, and project them forward from 1965 to 1990, say, distinguishing them from the other "established" immigrant cohorts who arrived before 1965. Figure 10 shows how these immigrant cohorts have contributed to the age distribution of the foreign-born population in 1990, in all four regions. It reveals, once again, that relatively few of the older foreign born are immigrants. This is certainly more the case in the Northeast and the Midwest than in the South and West, where recent arrivals make up a higher proportion of the oldest age groups, indicating that the more recent elderly foreign-born immigrants are more likely to settle in the West and the South. In general, the recent immigrants are particularly more likely to live in the West, where their numbers are larger than in the other regions. The Northeast and the South have similar age distributions for the recent immigrant cohorts, but in the Northeast the "established" immigrant cohorts are more dominant at the older ages. Somewhat surprising is the relatively low representation of recent cohorts in the Midwest.

----- Figure 10 about here (to be updated) -----

4. DISCUSSION

During the last half of the 20th century, the elderly population in the United States experienced many changes as a consequence of shifts in internal migration propensities, declines in mortality and fertility levels, and fluctuations in immigration flows. These changes have led a number of scholars to study the underlying population dynamics over the past decades. Some have focused

on internal migration patterns (Golant 1990). Others have analyzed the significance of the other important component of the dynamics: aging-in-place (Rogers & Woodward 1986). Still others have examined the impacts of immigration (Espenshade 1994). A recent report, summarized in the New York Times, calls attention to the "The New Face of New York's Seniors," arguing that the immigrants among them are an especially vulnerable subset of the city's senior population (C Gonzales-Rivera, August 3, 2013).

In this paper we have addressed these aspects of elderly population demographics and have come to several interesting conclusions. First, on the subject of changing internal elderly migration patterns, we found little evidence that the 1980s heralded a break with past trends and introduced a new migration spatial structure. Our analysis of the 1985-90 data finds no evidence of such a break and, if one did occur earlier, then a return to past trends came surprisingly quickly. Indeed, if a break were to be identified, it more likely would be the 1975-80 period and not later.

If migration trends did not change significantly, what drove the demographics of elderly growth and redistribution? Using available data, indirect estimation techniques, and a multiregional projection model, we reconstructed elderly population changes for each five-year period between 1950 and 2000, for the four U.S. Census regions. In carrying out this reconstruction we partitioned historical elderly regional growth rates in several ways. First, we decomposed these rates to separately identify the contributions of the foreign-born and native-born populations. Second, we decomposed total regional growth rates for each of the four decades into increments and decrements that were attributable to the foreign-born and to the native-born populations. This allowed us to assess the importance of the three sources of elderly

population growth and redistribution: net internal migration, net aging-in-place, and net international migration. Our analysis of the data reveals that the driving force behind the changes was net aging-in-place.

Recent interest among policymakers about the possible population rejuvenating effects of immigration has led the United Nations (2000) to issue a draft report on the topic. We consider this question and find only a little evidence of its impact, given past, recent, and current levels of inflows. Our analysis indicates that although immigration's impact has indeed contributed to higher worker-to-elderly ratios (or, equivalently, to lower elderly-to-worker dependency ratios), the amount of immigration over the past decades has been insufficient to counteract the much stronger countervailing impact of population aging. Finally, several counterfactuals are presented that illuminate the contributions of past immigration to current aging.

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U.S. Census Bureau (2013?) America's foreign born in the last 50 years. U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

Table 1. The regional evolution of the US elderly (60+) population, by nativity: 1900-2010

	Foreign-Born					Native-Born				
Year	Northeast	Midwest	South	West	Total	Northeast	Midwest	South	West	Total
A. Elderly Populations in Each Region										
1900	561,227	716,909	114,249	113,530	1,505,915	1,027,379	1,004,440	1,160,473	173,654	3,365,946
1910	699,313	838,446	124,926	174,582	1,837,267	1,265,548	1,351,888	1,492,361	269,610	4,379,407
1920	777,329	933,543	129,083	237,510	2,077,465	1,577,963	1,925,102	1,882,100	453,133	5,838,298
1930	1,088,150	1,079,672	158,009	322,378	2,648,209	1,993,086	2,583,798	2,482,581	677,353	7,736,818
1940	1,472,144	1,113,468	175,051	414,887	3,175,550	2,517,607	3,578,100	3,345,515	1,130,882	10,572,104
1950	2,021,920	1,215,775	235,825	611,641	4,085,161	3,201,985	4,671,195	4,523,005	1,826,311	14,222,496
1960	2,154,634	1,102,799	326,662	689,646	4,273,741	4,278,013	5,983,960	6,106,820	2,676,600	19,045,393
1970	1,852,040	866,576	431,816	712,871	3,863,303	5,618,711	7,245,968	8,287,072	3,735,046	24,886,797
1980	1,469,296	642,485	626,851	829,838	3,568,470	7,043,080	8,648,257	11,135,288	5,238,095	32,064,720
1990	1,203,278	507,821	791,924	1,052,167	3,555,190	8,170,555	9,836,412	13,560,675	6,708,205	38,275,847
2000	1,310,406	539,111	1,201,805	1,563,455	4,614,777	8,198,792	10,192,308	15,200,811	7,566,519	41,158,430
2010	1,762,013	721,556	2,072,127	2,596,344	7,152,040	9,258,931	12,054,878	19,233,950	9,851,331	50,399,090
B. Elderly Spatial Concentrations Across Regions										
1900	37.3	47.6	7.6	7.5	100.0	30.5	29.8	34.5	5.2	100.0
1910	38.1	45.6	6.8	9.5	100.0	28.9	30.9	34.1	6.2	100.0
1920	37.4	44.9	6.2	11.4	100.0	27.0	33.0	32.2	7.8	100.0
1930	41.1	40.8	6.0	12.2	100.0	25.8	33.4	32.1	8.8	100.0
1940	46.4	35.1	5.5	13.1	100.0	23.8	33.8	31.6	10.7	100.0
1950	49.5	29.8	5.8	15.0	100.0	22.5	32.8	31.8	12.8	100.0
1960	50.4	25.8	7.6	16.1	100.0	22.5	31.4	32.1	14.1	100.0
1970	47.9	22.4	11.2	18.5	100.0	22.6	29.1	33.3	15.0	100.0
1980	41.2	18.0	17.6	23.3	100.0	22.0	27.0	34.7	16.3	100.0
1990	33.8	14.3	22.3	29.6	100.0	21.3	25.7	35.4	17.5	100.0
2000	28.4	11.7	26.0	33.9	100.0	19.9	24.8	36.9	18.4	100.0
2010	24.6	10.1	29.0	36.3	100.0	18.4	23.9	38.2	19.5	100.0
C. Elderly Age Concentrations in Each Region										
1900	11.8	17.2	19.9	13.4	14.6	6.3	4.5	4.8	5.4	5.1
1910	10.5	17.9	16.9	12.4	13.6	6.6	5.4	5.2	5.0	5.6
1920	11.4	20.3	14.9	14.9	14.9	6.9	6.5	5.8	6.2	6.4
1930	15.1	24.8	19.3	17.7	18.6	7.3	7.5	6.7	6.7	7.1
1940	24.1	33.1	27.4	27.8	27.4	8.4	9.7	8.2	9.1	8.8
1950	38.2	44.9	30.7	36.7	39.2	9.4	11.2	9.8	9.9	10.1
1960	47.1	48.4	33.9	35.9	43.9	10.7	12.1	11.3	10.2	11.2
1970	45.0	46.3	32.8	30.9	40.2	12.5	13.2	13.5	11.5	12.9
1980	32.6	30.4	21.7	18.2	25.3	15.8	15.2	15.4	13.6	15.1
1990	23.0	23.8	17.3	13.5	18.0	17.9	17.1	16.8	14.9	16.7
2000	18.2	15.3	14.0	13.3	14.8	17.7	16.7	16.6	14.7	16.4
2010	20.5	16.2	16.3	18.4	17.9	19.8	19.3	18.8	17.0	18.7
D. Foreign-Born and Native-Born Percentage Shares of the Elderly Population in Each Region										
1900	35.3	41.6	9.0	39.5	30.9	64.7	58.4	91.0	60.5	69.1
1910	35.6	38.3	7.7	39.3	29.6	64.4	61.7	92.3	60.7	70.4
1920	33.0	32.7	6.4	34.4	26.2	67.0	67.3	93.6	65.6	73.8
1930	35.3	29.5	6.0	32.2	25.5	64.7	70.5	94.0	67.8	74.5
1940	36.9	23.7	5.0	26.8	23.1	63.1	76.3	95.0	73.2	76.9
1950	38.7	20.7	5.0	25.1	22.3	61.3	79.3	95.0	74.9	77.7
1960	33.5	15.6	5.1	20.5	18.3	66.5	84.4	94.9	79.5	81.7
1970	24.8	10.7	5.0	16.0	13.4	75.2	89.3	95.0	84.0	86.6
1980	17.3	6.9	5.3	13.7	10.0	82.7	93.1	94.7	86.3	90.0
1990	12.8	4.9	5.5	13.6	8.5	87.2	95.1	94.5	86.4	91.5
2000	13.8	5.0	7.3	17.1	10.1	86.2	95.0	92.7	82.9	89.9
2010	16.0	5.6	9.7	20.9	12.4	84.0	94.4	90.3	79.1	87.6

Notes: 1) Data from Gibson and Lennon (1999) were used for the foreign-born total elderly from 1900 to 1940, 2) data from U.S. Bureau of the Census (1975) were used for the all-born total elderly from 1900 to 1940, 3) Native-born were estimated from 1900 to 1940 as a residual, 4) data from IPUMS were used to obtain the regional proportions from 1900 to 1940 (with 1930 geometrically interpolated), 5) the 1950-1990 data came from Table 1 in Rogers and Raymer (1999b), and 6) The regional populations for 2000 and 2010 were downloaded from iPUMS (Ruggles et al. 2010), representing a 5% sample of the 2000 Census and the American Community Survey, respectively.

Table 2. Percentage elderly (60+) regional residents who migrated to particular regional destinations in the US: 1955-60 to 1995-2000

Origin Region	Period	Destination Region: Northeast	Midwest	South	West	Total
Northeast	1955-60		0.27	1.97	0.50	2.75
	1965-70		0.24	2.46	0.48	3.18
	1975-80		0.22	3.32	0.69	4.23
	1985-90		0.23	3.25	0.54	4.01
	1995-00		0.22	3.06	0.55	3.83
Midwest	1955-60	0.21		1.66	1.26	3.13
	1965-70	0.17		1.84	1.11	3.12
	1975-80	0.15		2.14	1.16	3.45
	1985-90	0.15		1.93	0.91	2.98
	1995-00	0.15		2.07	0.95	3.18
South	1955-60	0.40	0.61		0.47	1.48
	1965-70	0.40	0.58		0.39	1.36
	1975-80	0.42	0.54		0.48	1.44
	1985-90	0.44	0.64		0.50	1.58
	1995-00	0.49	0.62		0.56	1.68
West	1955-60	0.19	0.76	0.69		1.65
	1965-70	0.20	0.76	0.82		1.78
	1975-80	0.21	0.68	1.06		1.95
	1985-90	0.23	0.67	1.04		1.94
	1995-00	0.23	0.64	1.16		2.03
Total	1955-60	0.20	0.35	1.16	0.66	2.37
	1965-70	0.20	0.35	1.31	0.56	2.42
	1975-80	0.21	0.35	1.53	0.63	2.71
	1985-90	0.22	0.39	1.42	0.52	2.56
	1995-00	0.26	0.39	1.38	0.54	2.56

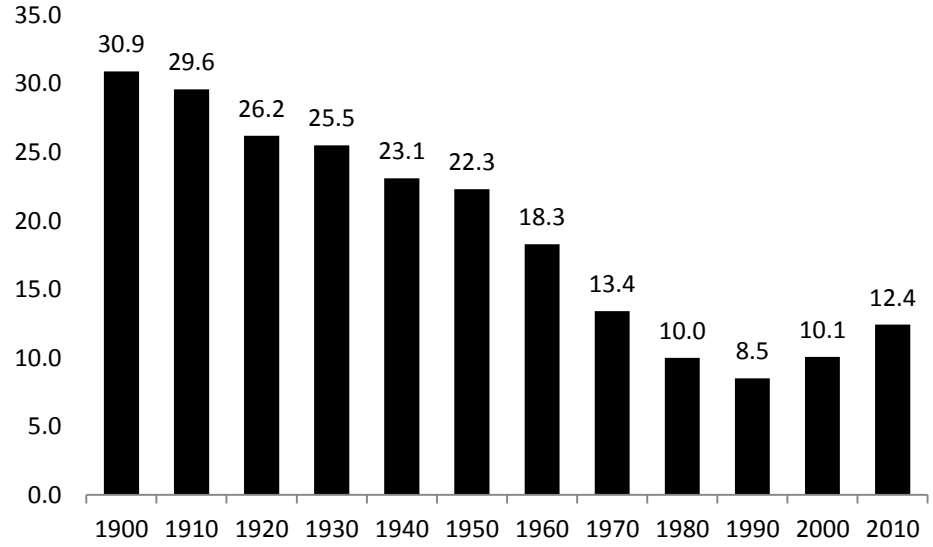
Table 3. In-, out-, and net migration patterns of the US elderly (60+) population, by region and nativity: 1955-60 to 1995-2000

		Foreign-Born Migrants			Native-Born Migrants			All-Born Migrants		
Period	Region	In	Out	Net	In	Out	Net	In	Out	Net
1955-60	Northeast	7	40	-33	25	81	-56	32	121	-89
	Midwest	9	31	-21	46	125	-79	55	156	-100
	South	45	9	36	140	55	85	185	64	121
	West	24	6	19	81	31	50	105	37	68
1965-70	Northeast	8	47	-38	31	121	-90	39	167	-128
	Midwest	8	25	-17	61	156	-95	69	181	-112
	South	52	9	43	209	70	139	261	79	182
	West	20	7	13	92	46	46	112	53	59
1975-80	Northeast	10	55	-45	45	204	-159	55	259	-204
	Midwest	9	23	-14	81	210	-130	90	233	-144
	South	59	15	44	335	108	226	394	123	271
	West	24	9	15	138	76	62	162	85	77
1985-90	Northeast	9	42	-33	61	245	-185	69	287	-218
	Midwest	7	17	-11	114	216	-102	121	233	-113
	South	49	14	36	392	150	242	441	164	277
	West	19	11	8	143	98	45	162	109	53
1995-00	Northeast	16	56	-40	104	319	-215	120	375	-255
	Midwest	15	25	-10	164	321	-156	179	346	-167
	South	70	28	42	560	248	312	630	276	354
	West	32	23	8	221	162	60	253	185	68

Table 4. US elderly dependency ratios, by region and nativity: 1950-2010

Nativity	Year	Northeast	Midwest	South	West	Total
Foreign-Born	1950	2.95	2.17	3.47	2.89	2.73
	1960	1.80	1.56	2.56	2.47	1.91
	1970	1.64	1.53	2.53	2.83	1.93
	1980	2.37	2.51	4.07	5.14	3.31
	1990	4.25	4.03	6.17	8.26	5.78
	2000	6.09	7.16	8.23	8.74	7.66
	2010	5.69	7.47	7.31	6.58	6.66
Native-Born	1950	10.58	8.61	9.36	9.91	9.46
	1960	8.71	7.08	7.53	8.43	7.77
	1970	7.50	6.61	6.60	7.92	7.00
	1980	6.18	6.06	5.95	7.09	6.22
	1990	4.93	5.06	5.21	5.76	5.21
	2000	4.59	5.02	5.14	5.57	5.08
	2010	4.62	4.79	4.90	5.42	4.92
All-Born	1950	7.66	7.24	9.07	8.10	7.96
	1960	6.25	6.14	7.26	7.13	6.62
	1970	5.85	5.98	6.37	7.01	6.22
	1980	5.39	5.77	5.84	6.79	5.88
	1990	4.84	5.01	5.26	6.09	5.26
	2000	4.79	5.12	5.35	6.08	5.32
	2010	4.79	4.93	5.13	5.66	5.13

A. Elderly (60+) population



B. Total (0+) population

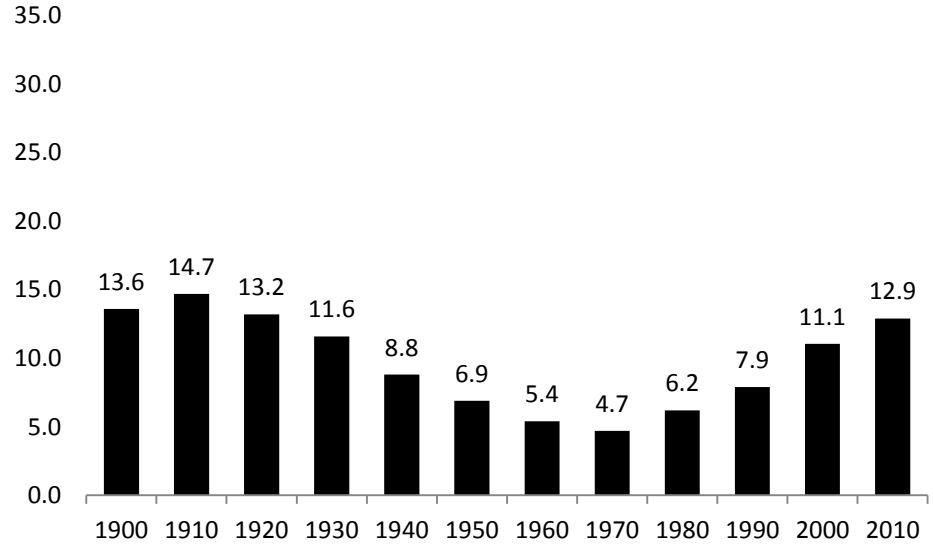
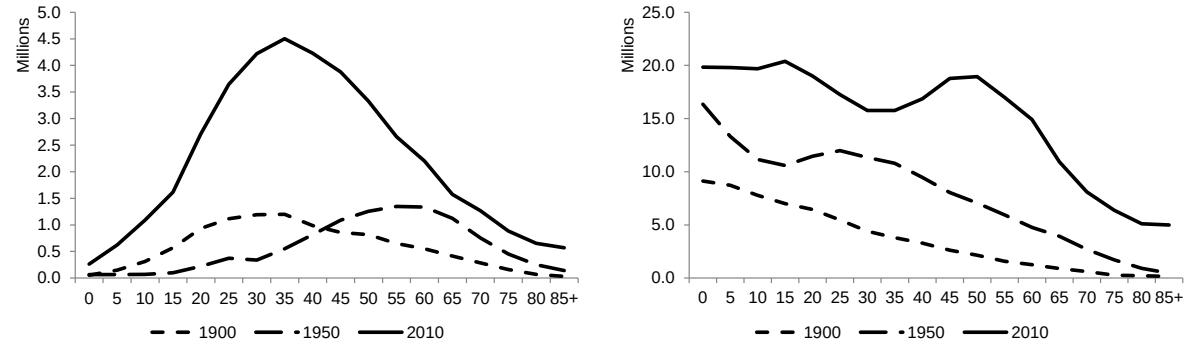


Figure 1. Percentage foreign-born of elderly and total populations: 1990-2010

Foreign-born Native-born

A. Millions



B. Proportions

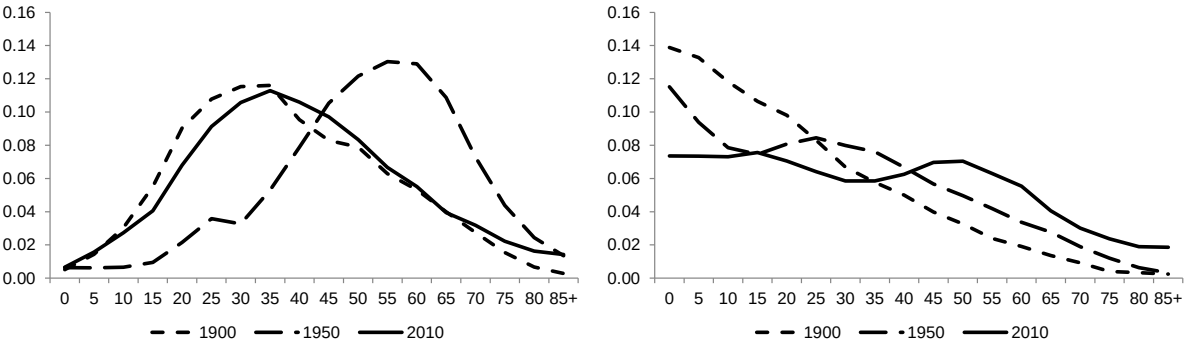


Figure 2. Age compositions by nativity: 1990-2010

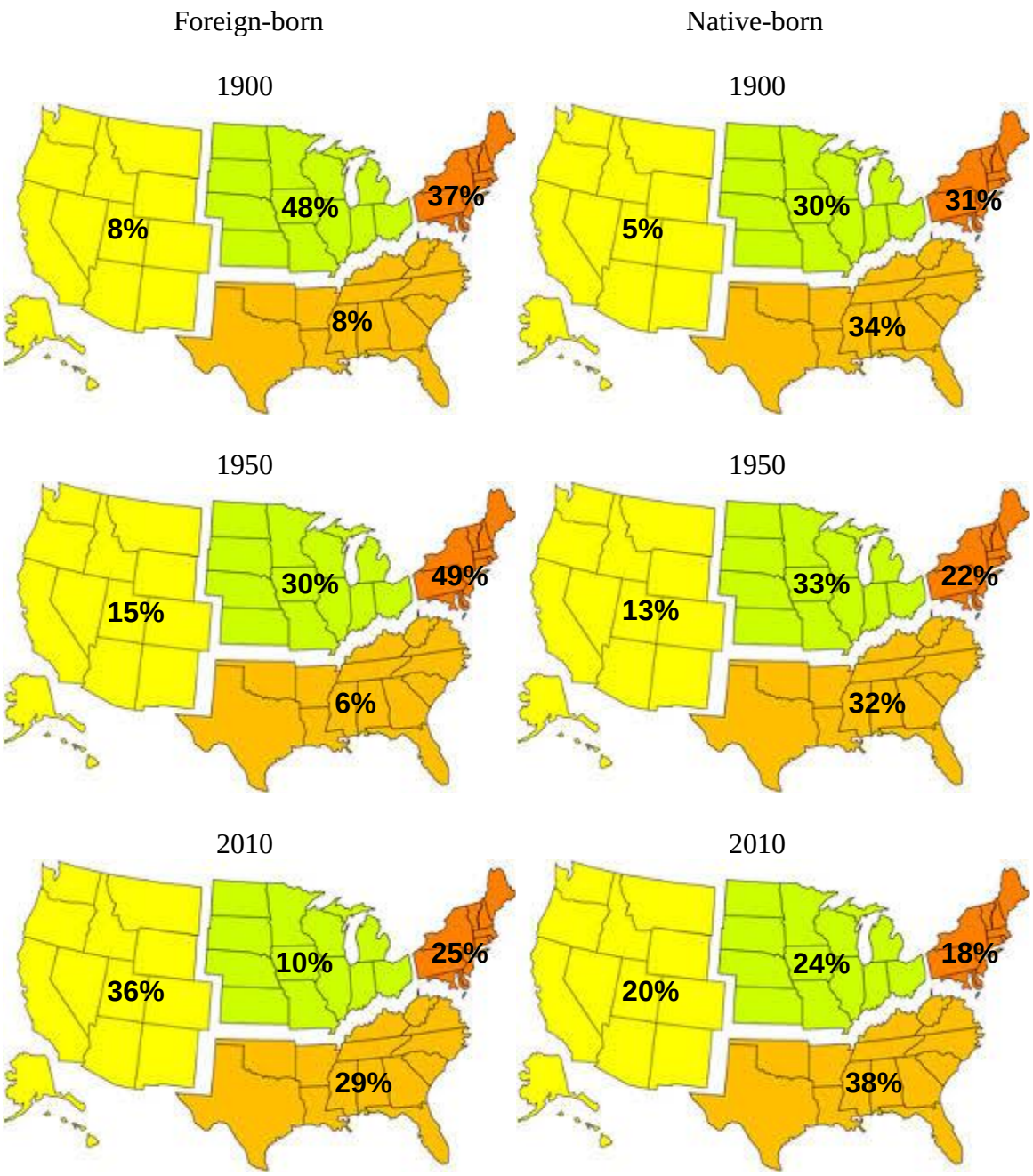
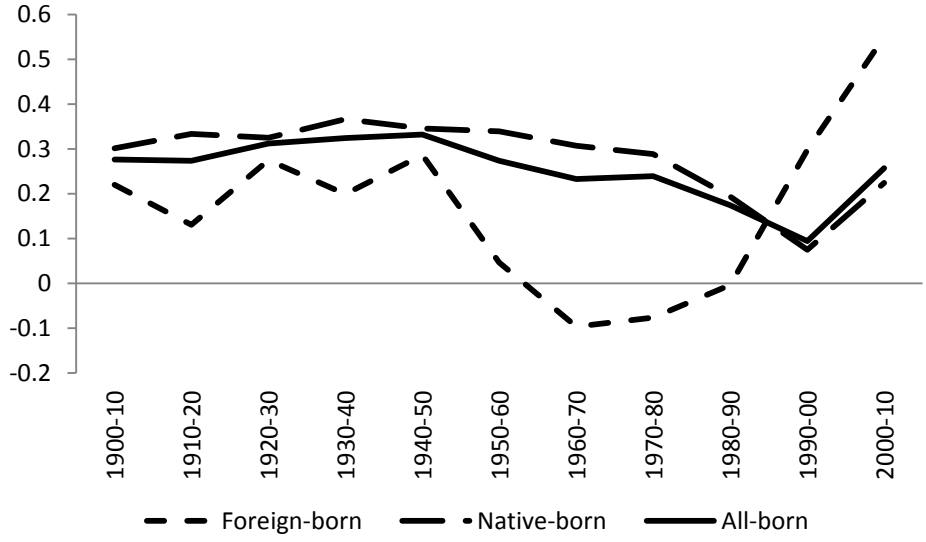


Figure 3. Spatial concentrations: Percentage distributions of elderly (age 60+ years) foreign-born and native-born populations, by region: 1900, 1950, and 2010

A. Elderly (60+) population



B. Total (0+) population

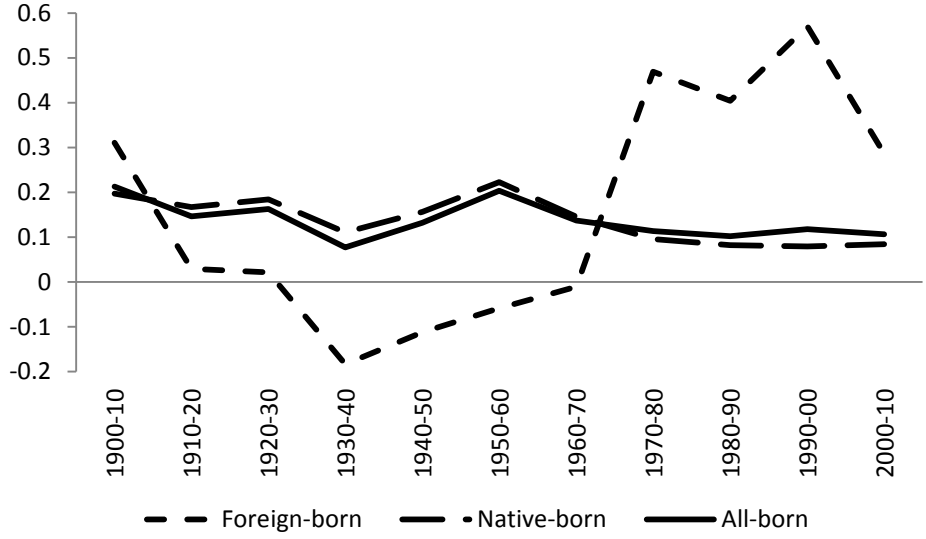
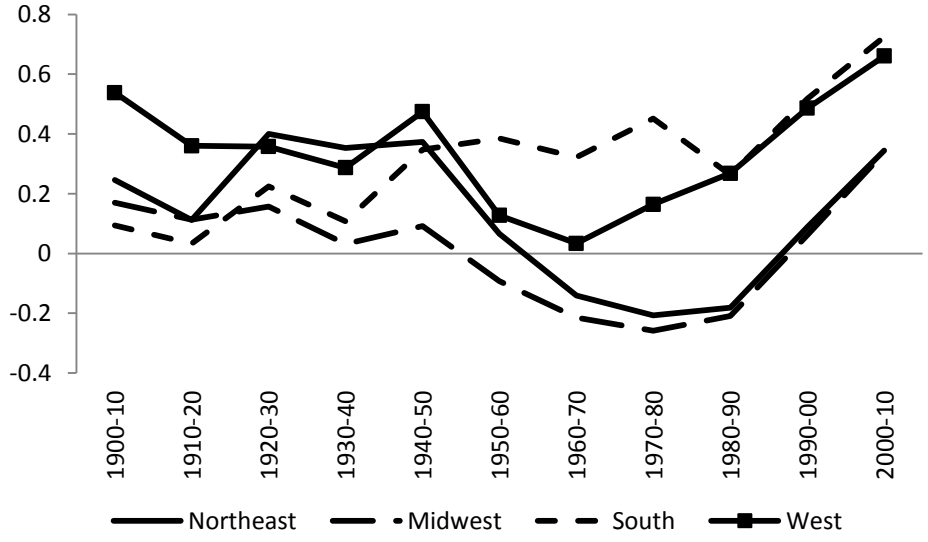


Figure 4. Decadal elderly (aged 60 years and older) and total growth rates by nativity: 1900-2010

A. Foreign-born



B. Native-born

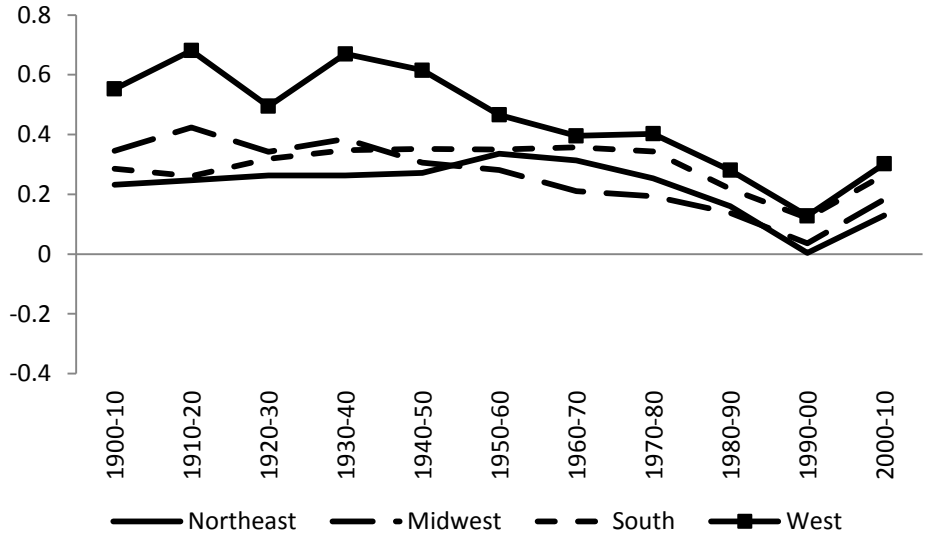


Figure 5. Decadal regional elderly (age 60+ years) growth rates by nativity: 1900-2010

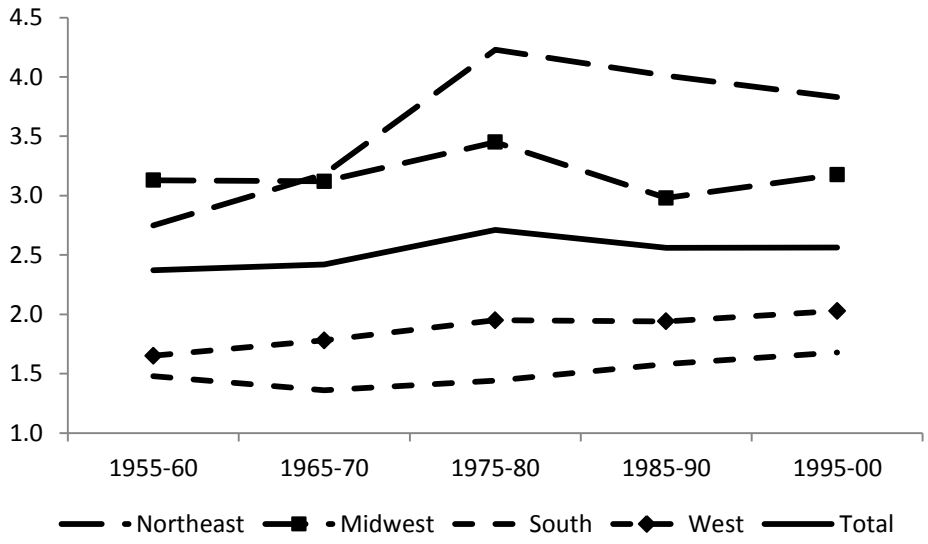
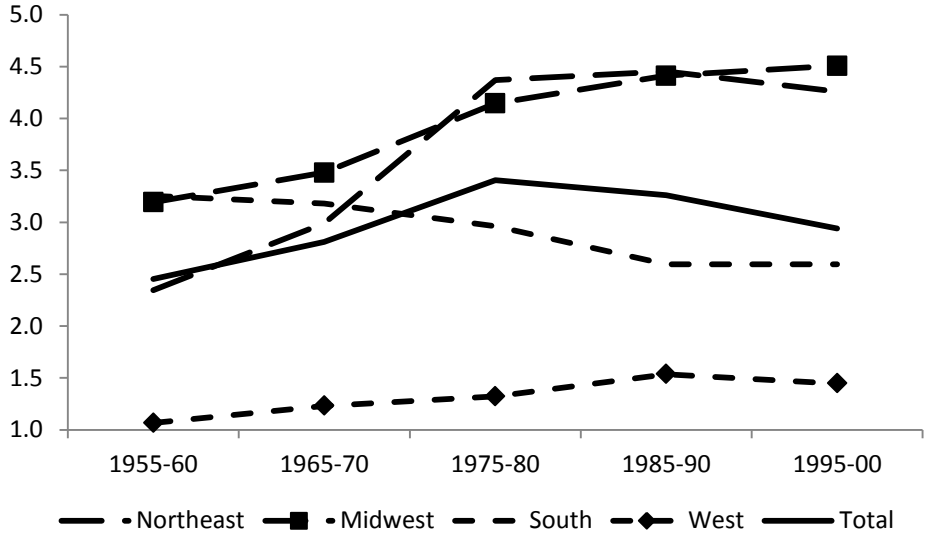


Figure 6. Percentage of elderly (age 60+ years) residents moving to a different region: 1955-1960 to 1995-2000

A. Foreign-born



B. Native-born

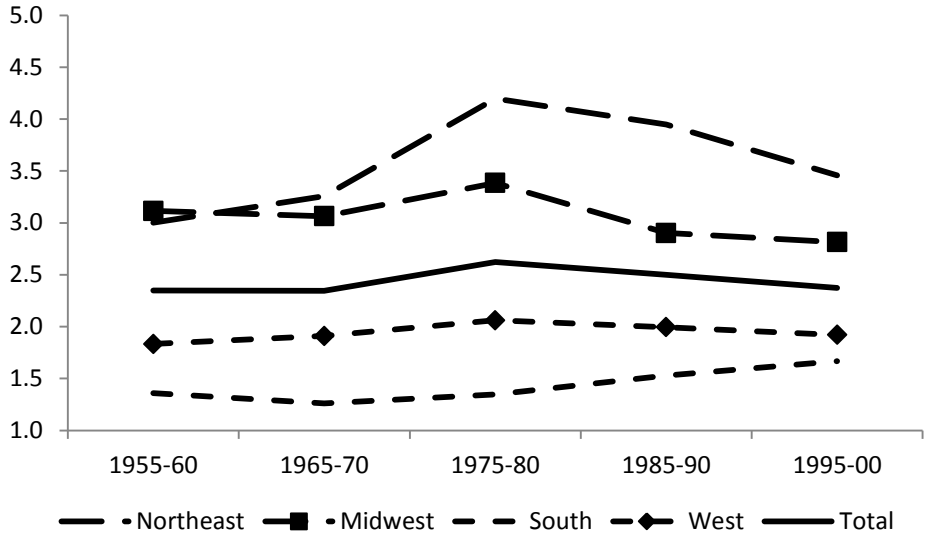


Figure 7. Percentage of elderly (age 60+ years) residents moving to a different region by nativity: 1955-1960 to 1995-2000

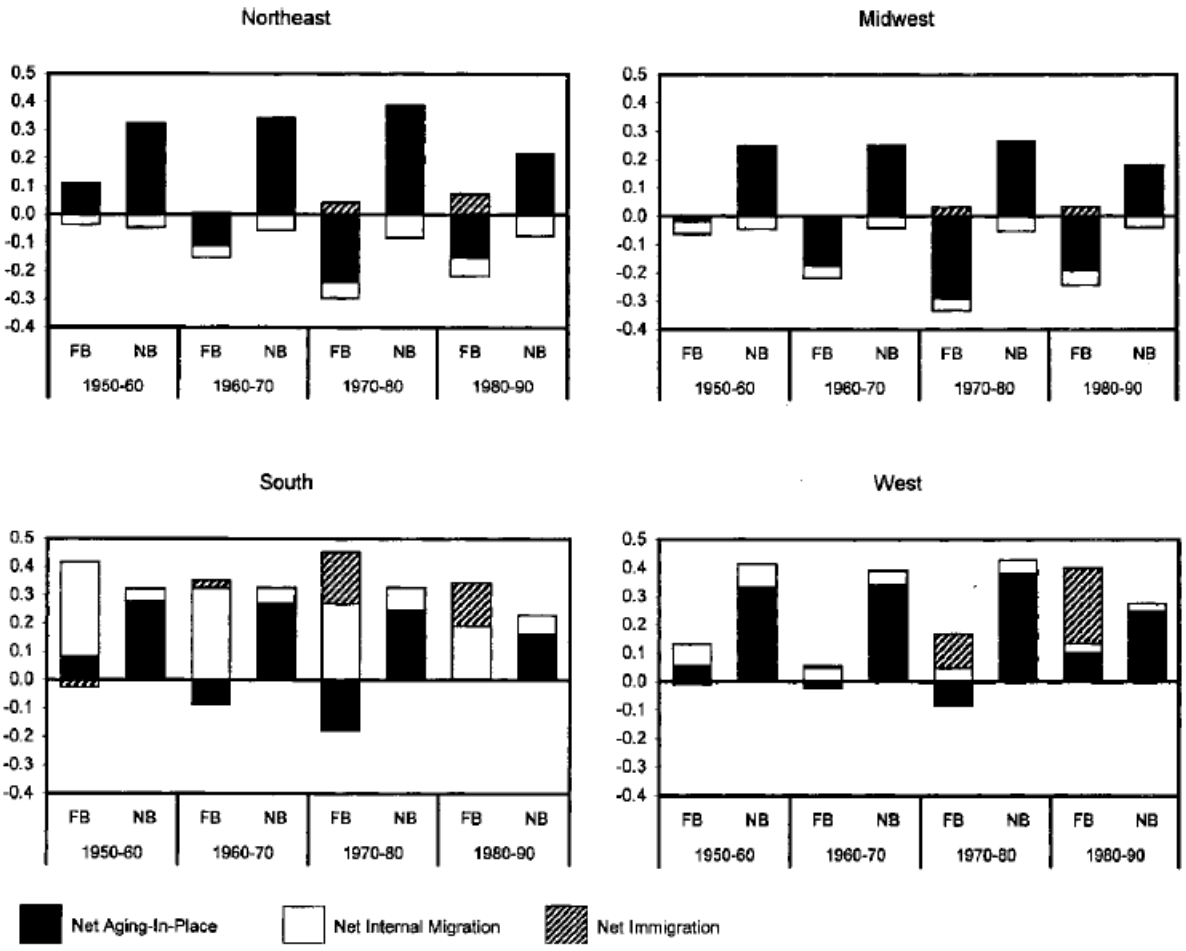


Figure 8 (to be updated). Components of decadal elderly (aged 60 years and older) growth rates, by region and nativity: 1950-1960 to 1980-1990

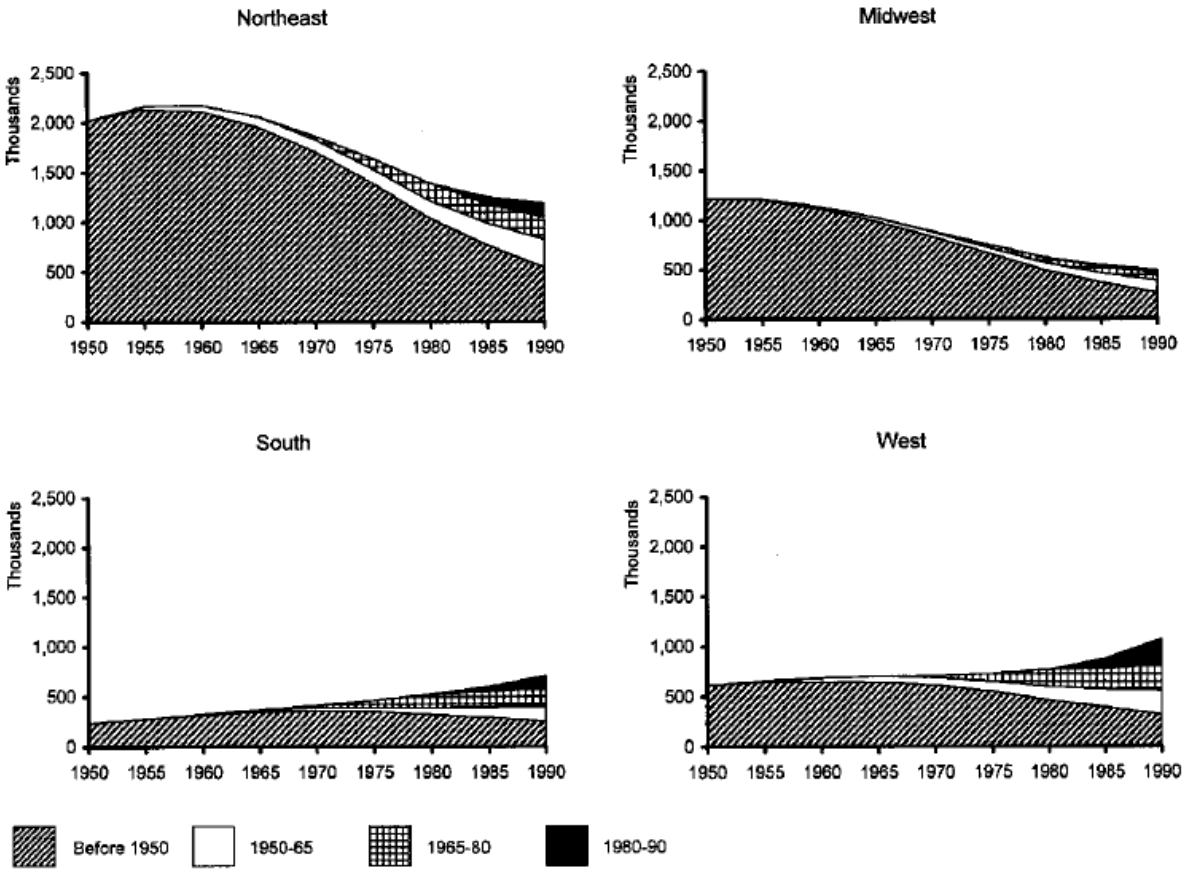


Figure 9 (to be updated). Contribution of immigration to the regional elderly (aged 60 years and older) foreign-born populations: 1950-1990

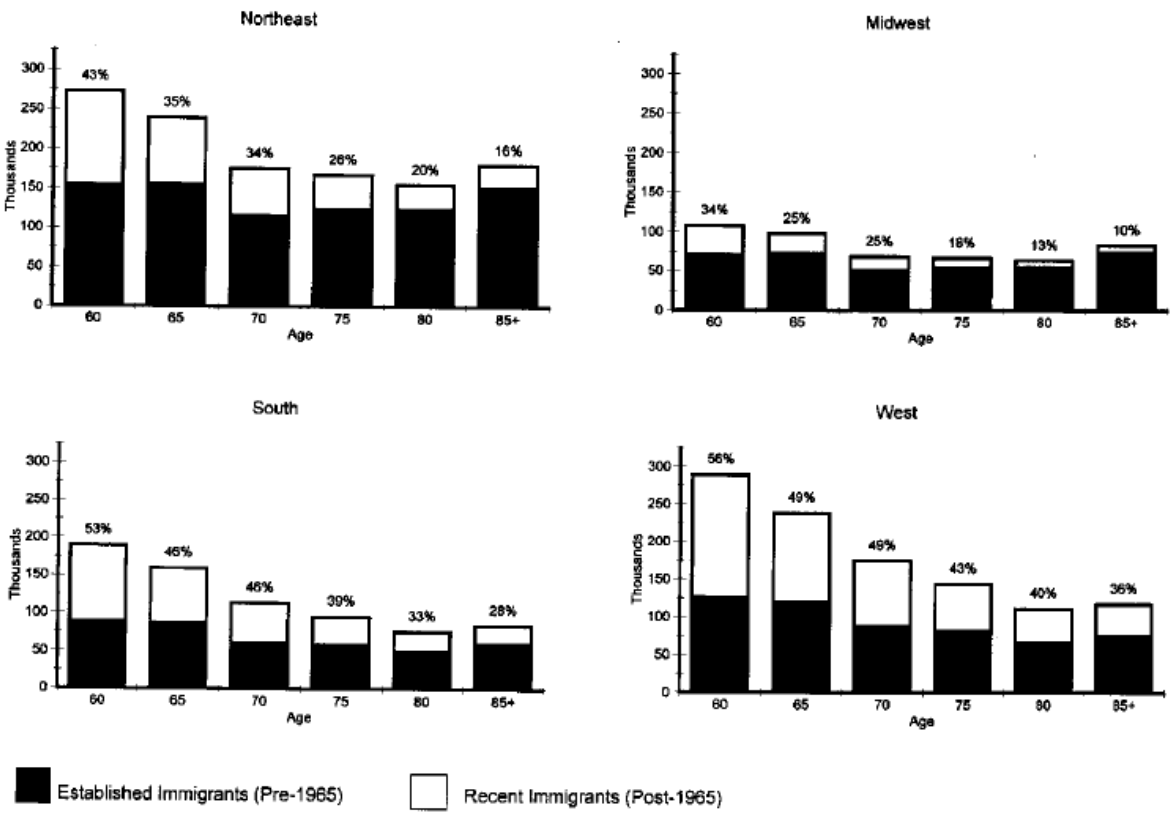


Figure 10 (to be updated). Elderly (aged 60 years and older) foreign-born population by age and region in 1990: Recent immigrants (post-1965) versus established immigrants (pre-1965). Percentage on top of the bars represent recent immigrants