MYTH OF THE INDUSTRIAL SCRAP HEAP:
A REVISIONIST VIEW OF TURN-OF-THE-CENTURY AMERICAN RETIREMENT

Susan B. Carter
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ABSTRACT

Using the census survival method to calculate net flows across employment states between

1900 and 1910, we find that approximately one-fifth of all men who reached the age of 55

eventually retired before their death.   Many of these retirees appear to have planned their

withdrawal from paid employment by accumulating assets, becoming self-employed, and then

liquidating their assets to provide a stream of income to finance consumption in old age.   This

"modern" retirement behavior, we argue, has important implications for the economic history of

capital and labor markets, of saving and investment, of insurance and pensions, and of the family

economy.

Susan B. Carter
Department of Economics
University of California, Riverside
Riverside, CA 92521

Richard Sutch
Institute of Business and Economic Research
University of California, Berkeley
Berkeley, CA 94720
and NBER

Myth of the Industrial Scrap Heap:
A Revisionist View of Turn-of-the-Century American Retirement

Retirement today refers to planned, voluntary leisure following years of remunerative labor.[1] An essential feature of this modern concept of retirement is economic independence from both paid labor and the support of grown children. Modern retirement is thus predicated upon the ownership of assets -- especially financial assets, housing, and claims on private and public retirement programs -- which yield a stream of income that substitutes for both returns from labor and transfers from children.

Because retirement requires most individuals to accumulate assets during their prime working ages, dating the appearance of modern retirement has important consequences for a variety of issues in American economic and social history. The standard of living, financial security, and social status of the elderly is one set of issues that has attracted a good deal of attention.[2] The economic history of capital and labor markets, of saving and investment, of insurance and pensions, and of the role and operation of the family economy are also intimately bound up with the history of retirement.[3]

This paper presents new evidence on the early history of retirement in America with particular relevance for economic history. We show that during the first decade of this century over a fifth of males employed at late-middle age left employment before their death. According to the traditional account, the specialization, speed and strain of the new industrial order forced many older men out of work and onto the "industrial scrap heap."[4] In contrast, we find that the transition out of employment was most common among the self-employed who presumably had some control over their pace of work and the timing of their departure from employment. Our analysis suggests that many men planned their retirement by saving; investing in assets such as land, tools, shops, and inventory; becoming self-employed; and eventually ceasing productive activity and presumably living off of the stream of earnings generated by their assets. In their economic independence from both paid labor and the support of grown children, these were "modern" retirees. While we cannot assess their standard of living, financial security, or social status, we do identify heretofore neglected implications of their behavior for themes in American economic history.

Our evidence is drawn primarily from the manuscripts of the enumerations of the U.S. censuses of 1900 and 1910. We adapt an old method of estimating geographical migration -- the census survival technique -- to estimating the migration from one occupational state (employment, self-employment, out of the labor force) to another.

predictable and comfortable stream of retirement income.

CHALLENGES TO THE TRADITIONAL VIEW

The origin and early history of retirement in the United States has received considerable attention from social and economic historians in recent years.[9] At least three potential problems with the standard account have been revealed. First, empirical work reported by Jon Moen and Dora Costa has directly challenged the view that farmers did not retire or retired at significantly later ages than other workers.[10] Costa, analyzing a longitudinal sample of Union Army veterans in 1900 and 1910, concluded that, "at the beginning of the twentieth century farmers were no less likely to retire than nonfarmers."[11] Moen argued that earlier studies of farmer retirement improperly conflated rural residence and farm occupation. Making use of microdata samples as well as published census statistics, Moen argued that, "the rural nonfarm household was becoming a retirement household for older men."[12] Moen suspected that many farmers moved into the nonfarm rural sector when they retired.[13] Costa and Moen each concluded by challenging the role of sectoral shifts in accounting for economy-wide changes in retirement behavior over time.[14] They also argued for renewed attention to long-term factors such as rising incomes. In their view, rising standards of living on and off the farm brought significant changes in household structure and labor force participation over the life-cycle. Both authors downplayed the role of institutional change except, as in the case of veterans' pensions, where such change directly transfered income to older persons.[15]

A second problem with the traditional view revealed in the recent literature is that the fraction of older males recorded with a gainful occupation *and not unemployed* was low and remarkably stable over the entire period from 1870 to 1937 at about two-thirds of all men age 60 and over. While the fraction of older males recorded with a gainful occupation fell over this period, Roger Ransom and Richard Sutch found that the fall was due entirely to the fact that a smaller and smaller fraction of older men experiencing long spells of unemployment were being recorded as gainfully occupied. The fraction of older males actually employed did not change over time.[16] This finding is significant for two reasons. First, it means that fully one-third of older males did not have access to labor income as early as 1870. Unless we are prepared to believe that a third of males 60 and older were physically incapacitated, this

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statistic challenges the traditional view that in earlier times people worked until illness or disability precluded further employment. Second, since Ransom and Sutch accepted the traditional view that farmers retired at later ages than other workers, they conjectured that retirement rates in the non-agricultural sector must have *fallen* over time to offset the increase in the overall rate predicted as a result of the sectoral shift out of agriculture.[17] This is the opposite of the traditional view which saw retirement increasing as a result of the growing industrial imperative.[18]

A third finding that is difficult to reconcile with the traditional view is evidence of high rates of personal saving in the late-nineteenth century. Both the studies of national income by Simon Kuznets, Robert Gallman, and Lance Davis and Gallman and the studies of individual family budgets by Michael Haines, Ransom and Sutch, and Susan Carter, Ransom and Sutch suggest that personal saving rates were historically and comparatively high in the United States around the turn of the century.[19] Davis and Gallman's estimates put average national saving at about 20 percent for the period 1884 to 1903. The budget studies find average saving rates of families with some positive savings in the range of 20 percent of family income.[20] It is particularly remarkable that the high saving rates revealed by the budget surveys pertain to working-class families with presumably only modest bequest motives for saving. The low retirement rates during this period suggested by the traditional view would make it difficult to explain why the individual impulse to save should have been so high around 1900 and why it failed to rise as retirement supposedly increased. Authors who have accepted the traditional view of retirement rates have calculated that only a very strong bequest motive for saving could explain the high level of wealth accumulation in this period.[21] This is a logical possibility, but one that most economic historians would find implausible because empirical studies using data from the period reveal a hump-shaped pattern of saving and wealth-holding by age.[22] The decline in wealth at older ages suggests not bequests, but rather the classic life-cycle saving model.[23]

It is important to note that none of the evidence presented by the revisionists bears directly on the standard of living, financial security, and social status of the elderly -- the principal focus of social histories of retirement. It is true, as Carole Haber and Brian Gratton point out, that:

> Even those with seemingly adequate resources faced considerable insecurity if they chose to retire outright. In the free market of the late nineteenth and early twentieth centuries, governments did not ensure against losses if pension plans collapsed or banks failed.[24]

The evidence presented by revisionists does not bear directly on the *permanence* of nonemployment either. Because of the uncertainties they faced, even individuals who amassed substantial assets might have been reluctant to sever irreversably their attachment to the labor force. If we could follow individuals through time, we might see them entering and leaving the labor force repeatedly throughout their later years. Thus a nonemployment rate of one-third might, in the extreme, mean that men were out of employment one-third of the time, with no one permanently retired.[25] Available statistics for the period cannot rule out this possibility.

The revisionists have, however, raised issues relevant to the economic history of the United States. For example, if nonemployment rates of older males were high and constant over the period 1870 to 1937 then Social Security emerges as just one of several determinants of the high nonemployment rates of older males in the post-World War II period. A 33-percent nonemployment rate in 1900 together with retirement on the part of farmers not facing the "industrial imperative" would mean that institutions providing alternatives to labor income such as government or private pensions, accumulated wealth, and tontine insurance, were more influential in the early period than is generally thought.[26] This would be true regardless of the permanence of nonemployment.

This paper develops new evidence on the life-cycle pattern of male employment and nonemployment at the turn of this century. We argue that workers' occupations just prior to nonemployment are good indicators of the causes and nature of subsequent nonemployment. Since the type of longitudinal data that would allow us to measure occupation changes directly does not exist for this period, we have devised a method that allows us to infer occupation for cohorts of workers. We apply this new methodology to sample data contained in the Integrated Public Use Microdata Series (IPUMS) drawn from the federal censuses of 1900 and 1910. Both of these data sets are large random samples of the manuscript returns of the 1900 and 1910 population censuses.[27]

WHO LEFT EMPLOYMENT? A CROSS-SECTIONAL MEASURE

To establish the context, we begin by examining the cross-sectional pattern of employment by age. Figure 1 presents the percent of the population of males employed in all occupations at each age in 1900 and 1910. These data display a shape like a flat-topped butte. In both 1900 and 1910 the male employment rate rises sharply until about age 20, remains roughly constant from 20 through about 55

years of age, and then slopes more gently back down.[28] A hill-shaped pattern is evident in Figure 2 which displays both the proportion of the male population at each age employed as farmers and in a second curve the population in all other gainful occupations ("not-farmers") in 1900 and in 1910.[29] As is the case in Figure 1, the solid line portrays 1900 statistics while the dashed line represents 1910. The sum of the employment rates for farmers and for not-farmers will, of course, be the overall employment rate shown in Figure 1. The most striking feature of Figure 2 is the large difference in the age at which the employment peak occurs for farmers as compared with all other workers. For farmers the employment peak occurs at about age 60; for not-farmers the peak occurs a full forty years earlier at about age 20.

It is tempting to view such cross-sections as if they represented the experience of a typical cohort as it aged. In this case, a synthetic cohort approach would imply a significant life-cycle occupational and employment pattern. That is, it would appear from Figure 1 that men at the turn of the century entered employment in their late teens and began leaving in their late fifties. It would also appear from Figure 2 that most men began their employment careers in an occupation other than farmer and that many then moved into farming in their twenties and thirties. Many farmers as well as not-farmers eventually left employment prior to their death. On balance there would appear to have been net withdrawals from *both* farming and all other occupations into nonemployment after about age 60.

Of course, in a rapidly changing economy, this synthetic cohort approach based on cross-section data may be misleading. If cohort effects are strong, they may completely overshadow true life-cycle patterns. For example, an increasing fraction of young workers and newly-arrived immigrants entering not-farmer pursuits will cause cross-sectional evidence such as that presented in Figure 2 to suggest bigger differences in farm and not-farm withdrawal patterns than was truly the case.

WHO LEFT EMPLOYMENT? A LIFE-CYCLE MEASURE

To assess the transition of workers between the statuses we have labeled as farmers, employed "not-farmers," and nonemployment we adapt the intercensal cohort-component method of measuring net migration, also known as the census survival method.[30] The technique first produces an estimate of the population which would be expected in each occupation at the end of the decade had there been no occupational shifts or withdrawals from the labor force. The actual population reporting the occupation

is then subtracted from this expected population to obtain an estimate of the *net* flow out of (or into) that employment status over the period between the two censuses.

Because our estimate measures net flows we cannot say how many *individuals* change employment states over the decade. Instead, the net figures indicate the minimum number of transitions by individuals. If individuals moved freely among employment states then the number of transitions by individuals might be substantially larger than what we show. Our net figures measure a *cohort's* transition across employment statuses between two censuses.

As an illustration of the technique, consider the number of individuals aged, say, 26 in 1900 who reported themselves as having a given occupation, say physician. Ten years later these individuals, if still alive, would be 36 years old. If we check the number of doctors reported in the census of 1910 who were age 36 *and* who reported themselves as having been in the United States at least ten years, however, we will, in general, find a different figure. This is because some doctors recorded at age 26 in 1900 will have died and some will have moved abroad. Also others will have joined the profession during the intervening ten years (perhaps some were medical students in 1900). Still others may have left the profession for any of a variety of reasons, including retirement. If we subtract out the net losses from the 1900 group of doctors due to death and migration abroad, we have an estimate of expected number to be found in 1910 had there been no net flow into or out of the medical profession from other labor market states during the intercensal period. From this it is easy to obtain an estimate of the net flow into (or out of) the profession.

One attraction of this technique is that the information required to perform the calculations is readily available in the public use microdata samples from the federal censuses. The numbers of males in each occupation by age in 1900 and the numbers resident in the United States since 1900 in each occupation ten years later, in 1910, can be extracted from the two data sets. The only other required information is an estimate of the mortality rate and foreign out-migration rate for each age- and occupational-group. We approximate these rates by the census survival rate for the entire population of males at each specific age, estimated directly from the public-use samples. Note that for this purpose migration abroad is equivalent to death and that out-migration rates are captured in the census survival rates.

To measure accurately net flows across occupational sectors we must first compute census survival rates. Appendix Table 1 displays the population and our age-specific census survival rates for males. The 1900 figures for the "Number in Cohort" are a 1/760th representative sample of the entire civilian, non-institutionalized population; the 1910 figures are a representative 1/250th sample of the civilian, non-institutionalized population but excluding those who immigrated to the United States after 1899.[31] The "survival ratio" is the quotient of the sample population in 1910 of a given age divided by the sample population in 1900 exactly 10 years younger multiplied by 250/760 to adjust for the difference between sampling frequencies. The high values at young ages reflect the fact that the young are unlikely to die between census dates. Other differences among survival ratios at different ages reflect the distortions in the age distribution caused by misreporting and underenumeration.[32] We are forced to assume that mortality and emigration rates are independent of occupational status, since we have no reliable basis for estimating mortality or emigration rates by occupation.[33]

Estimates of men's net flows into employment in all occupations between 1900 and 1910, by age, produced according to the census-survival technique are presented in Figure 3. The solid line displays these flows as annualized average rates. The age recorded on the horizontal axis is the average age of a cohort over the decade.[34] Positive values of the rate represent flows *into* employment. We have expressed these positive flows as a percentage of the number not employed at each age. These rates therefore indicate the fraction of the nonemployed who become employed over the year. Alternatively we might call this the "net employment hazard." The age at which net flows are zero -- between age 52 and 53 in Figure 3 -- represents the age at which the number entering employment exactly equals the number leaving employment for nonemployment. Negative values of the rate represent net flows *out of* employment. We have expressed these negative flows as a percentage of the number employed. These rates therefore indicate the percentage of the employed who become nonemployed over the year (the "net nonemployment hazard"). Also presented in Figure 3 is the annualized average death rate for males at each age, computed according to the same method used to determine our employment rate.[35] Summary statistics calculated from these flow data are presented in Table 1. To dramatize the change that has taken place since the turn of the century, we also include Figure 4, which presents comparably measured rates of flow into and out of employment and into death for males in the decade of the 1980s.[36] The net flow estimates calculated using the census survival method and presented in Figure 3 and Table 1 are consistent

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in a qualitative way with the impression given by the cross-sectional data displayed in Figure 1. Both figures suggest flows into employment for men in their teens and twenties. Both suggest that men departed from employment beginning in their mid-fifties.[37]

The data presented in Figure 3 and Table 1 highlight two important facts about men's employment transitions at the turn of the century. First, a considerable fraction of men left employment for nonemployment at that early date. While deaths exceeded nonemployment as a cause of exit from employment in the 1900 to 1910 decade, transitions to nonemployment were not inconsequential. Men between the ages of 60 and 75 left employment at an average rate of about 2 percent per annum. The cumulative data suggest that 21.5 percent of all men working at age 55 would shift to nonemployment before their death. Since we measure only net movements, we cannot rule out the possibility that some who were not employed in 1900 were reemployed by 1910. Nonetheless, since the net movement is clearly *away from* employment, each movement from nonemployment back into employment was more than offset by movements in the opposite direction. It may have been true, as the traditional view insists that, "only the wealthiest, the sickest, or the few guaranteed regular retirement income left work permanently."[38] Nonetheless, since far fewer than 21.5 percent of older males were ill and disabled in this period, these findings suggest that late-life nonemployment (whether permanent or not) was motivated by a much broader range of motives.[39]

A second important fact revealed by the data is that turn-of-the-century nonemployment began at a relatively young age. The average age of males leaving employment was 66.7 years, the median was 67.[40] While this is older than the 62-year median age of retirement for men in the 1980s, it is not elderly. This finding casts further doubt on the traditional view. Moreover, this relatively youthful nonemployment age meant that even with the turn-of-the-century mortality rate, nonemployment was not a brief episode for those who chose this course. The average number of years of life remaining at age 67 was 10.6.[41] If these men were not financially independent, their long episode of nonemployment would have meant a heavy burden for families or social agencies attempted to provide for them.[42]

Figure 5 presents net transition flows for farmers in a format identical to that in Figures 3 and 4. Figure 6 repeats the exercise for all occupations other than farmer. The statistics displayed in Figures 5 and 6 reveal the differences between the timing of employment flows into and out of farming and the flows into and out of all other occupations.[43] Figure 5 indicates positive net flows into the occupation

"Farmer" continuing through age 50. In their fifties, farmers left the occupation at a rate of less than one percent a year. But at about age 58 the exit rate doubled. Farmers in their sixties and through their mid-seventies left the occupation at a rate of about two-percent per annum.

Flows into and from "not-farmer" employment, presented in Figure 6, reveal that departures from that sector proceeded in two distinct phases. The first phase began when men were in their mid-twenties. Since net inflows into total employment (Figure 3) were positive at these ages, these net outflows from not-farmer represented a shift to self-employed farming rather than to nonemployment. Net outflows from not-farmer averaged 0.5 percent per annum so that over this thirty-year period of the life-cycle 14 percent of workers left other jobs -- probably as farm laborers -- to become farmers. What we are seeing is evidence of an upward step on the "agricultural tenure ladder," that is, the progression over the life-cycle from farm laborer to tenant farmer to farm owner-operator. This agricultural tenure ladder is an important component of American lore. As one Census document put it, it is the process in which a man, "starting in life with a limited capital, or with nothing but his own energy and enterprise, may after a time acquire the ownership of a farm."[44] The second departure phase evident in Figure 6 began when men were about 55 years of age. The rate of net outflow then doubled from 0.5 percent at age 55 to 1.0 percent by age 60. The rate then doubled again to 2.0 percent by age 65 and remained above 2.0 percent through age 75. Since at these ages there is also a net outflow from all employment, on balance this cohort was exiting from employment altogether.[45]

One important implication of these results is to suggest a partial reconciliation of the traditional and revisionist views. For the moment let us follow the terminology adopted by Durand and call the transition out of each sector "retirement" from that sector.[46] Then, the mean age at retirement for farmers implied by the transition rates in Figure 5 is 65.5 years. The mean age of retirement from employment other than farming is only 58 years. The views of Durand and his associates would appear to have been correct. If we consider employment over the entire life cycle, then farmers left their occupation at substantially later ages than those who were not farmers. This perspective, however, conflates movements up the agricultural ladder with departures from employment. To avoid this confusion we should start our calculations of the mean age of retirement for not-farmers beginning at age 55 when net transitions into employment are clearly negative. At this age and beyond, those remaining in the not-farmer sector are almost entirely individuals without the intention (or perhaps without the capability) of

moving into farming. Summing retirements beginning at age 55 yields a mean age of retirement from employment other than farmer of 67.5 years. Costa is vindicated. Focusing on the behavior of older males only, the retirement age of farmers and others appear quite similar.[47] Workers subject to the industrial imperative do not appear to have moved into nonemployment at an earlier age or at higher rates than self-employed farmers.

WERE FARMERS' RETIREMENTS UNDERSTATED?

The census survival method of measuring net migration also allows us to measure net flows across household types occupied by men as they aged. We follow Moen and consider three household types: farm, rural nonfarm, and urban.[48] Did farmers' retirement coincide with a movement from a farm to a rural-nonfarm household as Moen suggested?

Figure 7 presents our estimates of annualized net flows into farm and rural-nonfarm households for males between 1900 and 1910, by age.[49] Both flows are expressed as a fraction of the total rural population at the beginning of the decade. Not surprisingly, the figures reveal a substantial out-migration of young men from farm households. For males between the ages of 15 and 27 the rate of outflow exceeded three percent per annum. Because the rural-nonfarm flows are very low for youths at these ages, our calculations indicate a substantial net flow of youths off of farms and directly into urban areas.

About the age when farmers were retiring (57 to 68, see Figure 5) we see a modest net outflow from farm households coupled with a net inflow of comparable size into nonfarm rural households. Our findings thus lend support to Moen's suggestion that some farmers coupled their withdrawal from farming with a move from a farm house to a rural nonfarm house.[50] Earlier studies which identified retired farmers with those without a gainful occupation but living in a farm household would appear to have missed many retirements of farmers.

SELF-EMPLOYMENT AND RETIREMENT IN THE NONFARM SECTOR

Our discussion of transitions between the farmer and not-farmer sectors emphasized the highly visible role of the agricultural tenure ladder. Many men who eventually became farmers began their careers as wage laborers. We have argued that these men's achievement of their career objective in their twenties and thirties was the proximate cause of the early age at which employment begins to decline in

the not-farmer sector. Not all men who began their employment careers as not-farmers aspired to become farmers, of course. In 1900, 39.3 percent of the male population lived in urban areas, and, as we have indicated, many youthful rural residents moved to the city in search of work opportunities outside of agriculture. To better understand the meaning of nonemployment within the large and growing nonfarm sector, we now turn our attention to *nonfarm* employment transitions. For ease of exposition in what follows we have aggregated the urban residents with the nonfarm rural residents. Analysis of these two sectors separately show that there was little difference in their transition rates.

We distinguish between the self-employed and the wage and salary workers within the not-farm sector. Recall that one of the reasons suggested for believing that farmers might retire at later ages than other workers is the fact that most farmers were self-employed. According to Durand:

> Even a man who has become physically unable to do more than a very little work may
> continue operating a farm with the help of his sons or of hired labor, long after the age
> at which he would have to leave the labor force if he were an urban wage earner.[51]

Farmers' freedom from the constraints of age-based employment policies was presumably shared by the nonfarm self-employed. They, too, could call upon sons or hired help to substitute for their own personal involvement in the business. In 1910 an impressive 15.5 percent of urban male employment was self-employment. An implication of the traditional view is that these nonfarm self-employed ought to have had far smaller retirement propensities than their peers who worked as wage laborers.

While the 1910 Census provides information on the status of gainfully occupied workers (employer, employee, or "on own account"), this information was not collected in 1900. This fact precludes a straightforward application of our method for calculating the flows into and out of self-employment and its counterpart, wage and salary work. To make the flow calculations using the census survival method we identified 37 occupations in which 70 percent or more of male employment was self-employment. These self-employment-intensive occupations account for 88.3 percent of all employment among self-employed males in 1910. If we exclude the farmers, the remaining occupations account for 68.2 percent of male nonfarm self-employment. Only 1.5 percent of male wage employment in 1910 was in these self-employment-intensive occupations.[52]

Figure 8 presents our estimates of net flows into nonfarm self-employment and wage labor. To provide a context for interpreting these flows we also include Figure 9, displaying annualized average rates of flow into urban and rural areas, calculated as a fraction of the population in each of these regions in 1900. Figure 8 suggests very large rates of flow into wage and salary labor by young men. A glance at Figure 9 suggests that these flows represent, in part, the labor market entry of rural youths who moved to the city for work. Many others, of course, were young men raised in the city. Not shown, because they have been excluded from this analysis, are immigrants arriving after 1900 who also took up wage and salary employment.

This very rapid positive inflow into wage labor ceases abruptly for men in their early twenties. From age 24 through age 54 there is a net outflow from wage labor that averages about one percent per annum. Figure 9 shows *positive* net flows into urban areas for men in this age group, so, on balance at least, urban men did not return to the rural sector to become farmers. Instead, as Figure 8 shows, there were positive flows into nonfarm self-employment. Men left wage labor in their twenties, thirties, and forties and became self-employed retailers, manufacturers, and providers of professional and personal services. As a consequence of this mid-life transition, nonfarm self-employment rose with age. In the age group in which men were leaving employment for nonemployment (age 55 and older in 1910) the nonfarm self-employment rate was 16.2 percent overall and 24.8 percent in urban areas.[53]

The retirement propensities of farmers, the nonfarm self-employed, and wage and salary workers are summarized in Table 1. "Retirement" is defined as a departure from the occupational sector after age 55 -- that is, after the age in which net flows into employment overall have ceased. Some men who were unemployed at age 55 may have became reemployed over the decade. Nonetheless, since after age 55 the number of men in the cohort who left employment over the decade exceeds the number who became employed, the number becoming reemployed must have been smaller than the number leaving employment for nonemployment. Thus, Table 1 shows true *cohort* retirement propensities.

The first row in Table 1 shows the fraction of men employed at age 55 who leave employment before they die.[54] Overall 21.5 percent do so. Among the self-employed farmers and the nonfarm self-employed -- the retailers, manufacturers, and providers of professional and personal services -- the rates are 25.2 and 21.4 percent, respectively. These rates are slightly higher than the 19.8 percent rate for wage and salary workers. According to this measure, and contrary to the traditional view, wage and

salary work was a more congenial institution for older workers than either farm or nonfarm self-employment. Retirement does not appear to have originated as an "industrial imperative." Perhaps the self-employed as a group could be considered more successful than the life-long wage workers and thus better situated to afford retirement.

These conclusions receive further support from the calculations reported in line 2 of Table 2 showing the singulate mean age of transition to nonemployment for men by sector. Wage and salary workers moved into nonemployment at about the same age as the nonfarm self-employed and at a *later* age than self-employed farmers. Once again, retirement does not appear to have originated as an "industrial imperative."

The third line in Table 1 indicates the average years of life remaining after the transition to nonemployment for all workers, and according to sector. These calculations suggest that workers who lived to retirement could expect about 10 years of nonemployment before their death. Assuming that these men began work at about age 15, their mean age of transition to nonemployment implies about 50 years of gainful work. Ten years of *nonemployment* is thus equivalent to about 20 percent of their working lifetime. Recall that empirical estimates for this period put the saving rate among households with positive saving at about 20 percent of income. Together these two pieces of evidence are consistent with the hypothesis that many men at the turn of the century saved a substantial fraction of their income during their working years to finance a lengthy period of nonemployment in later life.

AN URBAN OCCUPATIONAL LADDER?

We have shown that retirement was more common among self-employed farmers, retailers, manufacturers, and providers of professional and personal services than it was among wage and salary workers. The meaning of this finding for the nature of retirement in the early part of the century, however, depends upon the relative economic status of the self-employed. While there is general agreement that self-employed farmers were better off than farm laborers, there is little agreement about the relative economic status of the nonfarm self-employed in this era. Nineteenth-century writers viewed self-employment as the embodiment of the American Dream, the top-rung on the ladder of economic opportunities.[55] Modern writers have tended to view self-employment as failure -- "disguised unemployment," according to Stanley Lebergott.[56] If self-employment represented success, then our

discovery of a progression from wage labor to nonfarm self-employment to retirement would imply the existence of an urban occupational ladder, similar to the well-known ladder in agriculture. It would mean that in the city as well as in the countryside a man "starting in life with a limited capital, or with nothing but his own energy and enterprise," could, "after a time" own and direct his own business. Since the self-employed moved into nonemployment at younger ages and at greater rates than those who were not, the success of the self-employed would suggest that much nonemployment represented relatively comfortable, planned, modern retirement.

Alternatively, perhaps, nonfarm self-employment was "disguised unemployment" -- the last refuge for the failures and cast-offs of a vibrant but demanding industrial sector. In this scenario many men were fired from their wage-earning positions as they aged and forced to move to some low-productivity job such as rag-picker or apple peddler before withdrawing from gainful work altogether. Such a finding would suggest that male nonemployment at older ages was involuntary and meant a low economic status. Anticipating difficulties in supporting themselves later in life, many men would attempt to save during their wage-earning years. Nonetheless, publicly-funded old-age pensions would have been required for many to restore the elderly to their pre-industrial level of security.

Table 2 reports the results of a probit analysis designed to assess the economic status of nonfarm self-employed males relative to their wage-earning peers in 1910. We focus our attention on men in two age groups. The first includes ages 24 through 51, the ages at which men were moving out of wage and salary work but before they began leaving employment altogether. The second group includes those aged 52 and older -- ages where men began employment for retirement. The dependent variable is a zero-one dummy which takes the value of one for the nonfarm self-employed. The independent variables include race and nativity, two markers of economic and social opportunity. Also included are indicators of household headship, literacy, home ownership, and a paid-off mortgage -- all markers of economic success.

The results of these probit analyses, reported in Table 2, suggest that in both age groups the nonfarm self-employed enjoyed higher economic and social status. All available markers of opportunity and success are positive predictors of self-employment. Literate household heads who owned their own home without mortgage debt were more likely to be self-employed than those without these characteristics. Whites and the native-born were more likely to be self-employed than blacks or the

foreign-born. The probability of self-employment increases with age in the younger age group, though in the older age group age plays no systematic role. Apparently, there was an urban occupational ladder similar to the occupational ladder in agriculture, up which men climbed by saving, using these savings to acquire assets which they then deployed in their owner-operated shops. While there were undoubtedly some rag-pickers in the group, on the whole the results suggest that many self-employed males outside the farm sector had acquired sufficient tangible assets to yield a stream of income that could substitute for both returns from labor and transfers from children. In other words, our findings should be viewed as evidence of the early appearance of modern retirement. The self-employed were, on average, more successful than their wage-earning colleagues, and they moved into nonemployment at younger ages.

CONCLUSIONS

Significant numbers of farmers retired at the beginning of the century.[57] Independent merchants, manufacturers, and providers of professional and personal services also retired. These self-employed males in the farm and nonfarm sectors retired at higher rates and younger ages than men employed in wage and salary work. Economy-wide, 21.5 percent of employed males 55 years of age and older left for nonemployment before their death. These findings have a number of important implications for American economic history at the beginning of the twentieth century.

First, the fact that nonemployment rates of older males were so high in the absence of institutions such as social security, employer pensions, and mandatory retirement rules -- which are held to account for much of the retirement today -- suggests a more significant role for income effects, private life-cycle wealth accumulation, and intergenerational support for retirement than is common in the literature. The high rates of nonemployment also suggest that much of the high saving propensity observed at the turn of the century can be explained by the life-cycle saving motive rather than a bequest motive.

Second, our finding that turn-of-the-century retirement was intimately bound up with self-employment both on and off the farm suggests that self-employment, like retirement, was a life-cycle phenomenon. On the farm there was an agricultural ladder that operated to move many men from wage labor, to farm tenant, to independent farm operator. In the city, there was an urban ladder that operated to move many men from employee to self-employed status. Of course, not all men achieved or even aspired to self-employment status. Those who remained as employees for their entire working life -- and

thus those whose retirement may have been affected by the policies of corporations and other employers -- were those with fewer assets and other markers of economic success and retired at rates *lower* than either farmers or the urban self-employed.

These two points taken together have three important implications for the study of retirement. One, the secular shift out of agricultural employment would tend to *lower* retirement rates, rather than raise them as the traditional view suggests. Two, this secular force pushing overall retirement rates down was augmented and strengthened by another secular trend -- the decline of nonfarm self-employment.[58] Three, since overall employment rates were in fact roughly constant between the turn of the century and the 1930s, the downward secular pressure on retirement rates caused by developments outlined in points one and two must have been offset by a general secular *rise* in retirement rates. Thus Ransom and Sutch were wrong to infer that nonfarm retirement rates were declining.

One final conjecture. Perhaps the ubiquity of self-employment at the turn of the century -- either as a farmer or in the non-agricultural sector -- is one of the features that helps explain the high retirement rates observed in 1900 and 1910 by Ransom and Sutch.[59] Becoming self-employed required the acquisition of assets -- land, animals, machinery, and farm buildings in the case of farmers; tools, shops, inventory, and retail establishments in the case of the urban self-employed. Later in life, these assets could be liquidated (or rented to others) to provide a stream of income to support consumption in old age. Surely this was not an irrelevant consideration when a man came to consider whether to retire and when.

If this last conjecture is on target then the evolution of retirement from 1900 to 1940 can be thought of as a gradual reduction of self-employment-mediated retirement (as farming and nonfarm self-employment declined) accompanied and offset by a gradual rise of retirement propensities of employees mandated by industrial work rhythms and corporate policy and financed by company pensions, worker savings, and ultimately by social insurance.

APPENDIX

Our analysis makes use of the 1900 and 1910 Integrated Public Use Microdata Series (IPUMS). These are large random samples drawn from the federal censuses of 1900 and 1910 and recoded to facilitate their comparability.[60] This appendix describes three differences in the procedures used to collect data on the labor force in 1900 and 1910 that were not remedied by the IPUMS. It also describes our method of addressing them.

The first difference has to do with the treatment of older, retired workers. In 1900 many retired older persons were recorded with their former occupations. In 1910 additional instructions to enumerators were added to help prevent the recording of retired individuals as gainful workers:

> Care should be taken in making the return for persons who on account of old age, permanent invalidism, or otherwise are no longer following an occupation. Such persons may desire to return the occupation formally followed, which would be incorrect. If living on their own income the return should be *own income*. If they are supported by other persons or institutions, the return should be *none*.[61]

As we have argued elsewhere, this change in instructions to enumerators had its primary effect in reducing the amount of recorded unemployment among older workers.[62] In this exercise, we therefore focus on *employment* rather than on gainful occupation. Employment refers to those in the population who report a gainful occupation minus an estimate of the unemployed, where the unemployed are computed as 1/12 of those reporting one month of unemployment, 1/6th of those reporting two months, and so forth for the period June 1, 1899 to May 31, 1900 and 1/52 of those reporting one week of unemployment, and so forth for 1909. As we have calculated them, employment rates in 1900 and 1910 are comparable in a straightforward way. Moreover, our focus on employment is appropriate for the purposes of this paper since we are interested in individuals' access to labor income. Those without a gainful occupation but also those unemployed would be deprived of labor income.

The second difference concerns the recording of unemployment. In 1910 the questions pertaining to unemployment were asked only of employees, and were not put to employers or those working on their own account. By contrast, in 1900 all workers, including the self-employed, were asked the question about the number of months of unemployment experienced. To handle this second problem we compute unemployment for *employees only*. Since the 1900 Census did not ask about the "class of worker" -- employee, employer, or "working on own account" -- we adopt the procedure developed by Carter, Ransom, and Sutch to create estimates of the "class of worker" in 1900.[63] On that basis we remove the

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unemployment of the self-employed in that year. Because the self-employed do not report much unemployment, our adjustment is small.

The third difference is that the methods used by Samuel Preston for sampling the institutionalized population in the 1900 and 1910 PUMS were slightly different.[64] In response, we simply excluded the institutionalized altogether. Thus, in our calculations the *Population* is the non-institutionalized civilians, 10 years of age and older who report both age and sex. Our exclusion of the institutionalized biases our results toward showing less movement out of employment and less retirement than would otherwise be the case. The numbers of institutionalized are small, however, and their exclusion does not materially affect our findings.

APPENDIX TABLE 1
DECENNIAL CENSUS SURVIVAL RATIOS FOR THE
MALE POPULATION BY AGE COHORTS, 1900-1910

Age of Cohort		Number in Cohort		Survival Ratio
1900	1910	1900	1910	
10	20	1,177	3,124	0.873
11	21	1,010	3,195	1.041
12	22	1,136	3,067	0.888
13	23	980	2,937	0.986
14	24	1,013	3,035	0.986
15	25	1,013	2,878	0.935
16	26	1,035	2,843	0.904
17	27	941	2,624	0.917
18	28	965	2,928	0.998
19	29	889	2,406	0.890
20	30	971	3,045	1.032
21	31	928	2,081	0.738
22	32	936	2,511	0.882
23	33	898	2,271	0.832
24	34	942	2,337	0.816
25	35	934	2,839	1.000
26	36	895	2,337	0.859
27	37	818	2,231	0.897
28	38	854	2,569	0.990

APPENDIX TABLE 1
DECENNIAL CENSUS SURVIVAL RATIOS FOR THE
MALE POPULATION BY AGE COHORTS, 1900-1910

Age of Cohort		Number in Cohort		Survival Ratio
1900	1910	1900	1910	
29	39	701	2,192	1.029
30	40	1,017	2,924	0.946
31	41	674	1,738	0.848
32	42	735	2,221	0.994
33	43	691	1,853	0.882
34	44	668	1,726	0.850
35	45	749	2,210	0.971
36	46	638	1,543	0.795
37	47	603	1,548	0.844
38	48	725	1,897	0.861
39	49	674	1,616	0.789
40	50	834	2,214	0.873
41	51	537	1,365	0.836
42	52	615	1,694	0.906
43	53	498	1,444	0.954
44	54	498	1,359	0.898
45	55	614	1,410	0.755
46	56	455	1,262	0.912
47	57	434	1,062	0.805
48	58	428	1,063	0.817
49	59	427	982	0.757
50	60	577	1,286	0.733
51	61	360	777	0.710
52	62	369	937	0.835
53	63	321	824	0.844
54	64	318	750	0.776
55	65	371	950	0.842
56	66	304	629	0.681
57	67	244	558	0.752
58	68	245	554	0.744
59	69	240	540	0.740
60	70	343	593	0.569

APPENDIX TABLE 1
DECENNIAL CENSUS SURVIVAL RATIOS FOR THE
MALE POPULATION BY AGE COHORTS, 1900-1910

Age of Cohort		Number in Cohort		Survival Ratio
1900	1910	1900	1910	
61	71	191	347	0.598
62	72	203	425	0.689
63	73	215	393	0.601
64	74	192	347	0.595
65	75	240	360	0.493
66	76	171	268	0.516
67	77	153	209	0.449
68	78	147	215	0.481
69	79	150	160	0.351
70	80	180	191	0.349
71	81	110	107	0.320
72	82	110	127	0.380
73	83	95	81	0.280
74	84	85	94	0.364
75	85	105	77	0.241
76	86	71	46	0.213
77	87	42	44	0.345
78	88	56	29	0.170
79	89	37	26	0.231
80	90	56	28	0.164
Total		37,851	98,552	0.856

Notes: The population for 1900 includes non-institutionalized males who report both age and sex and who do not have illegible responses for the question on unemployment. In 1910 population excludes those who immigrated to the United States in 1900 or later. To compute the survival rate we first adjusted each sample to estimate the actual population of males by age in each year. Since the 1900 IPUMS is a 1-in-760 sample of the population while the 1910 IPUMS is a 1-in-250 sample, we made our adjustment by multiplying the sample population by 760 and 250 respectively. We then divided this estimated population at each age in 1910 by the corresponding figure for 1900 to obtain the survival rates shown.
Source: See Table 1.

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ENDNOTES

1. In this essay we follow the literature and discuss the retirement trends of males only. The history of women's retirement is largely unexplored and would require a very different account.

2. See Fischer, *Growing Old*; Achenbaum, *Old Age*; Smith, "Life-Course"; Graebner, *History of Retirement*; Haber, *Beyond Sixty-Five*; Gratton, *Urban Elders*; Quadagno, *Old Age Security*; Salamon, *Prarie Patrimony*; Skocpol, *Protecting Soldiers*; and Haber and Gratton, *Old Age*.

3. For discussions of the relation between retirement and some of these economic issues in the modern period see Parsons, "Decline"; Lazear, "Retirement"; Hurd, "Research"; and Peracchi and Welch, "Trends."

4. According to Weiler, "Industrial Scrap Heap," the phrase "industrial scrap heap" is due to Epstein in a 1922 publication, *Facing Old Age*. We note, however, that "human scrape heap" and other terms that depicted the older worker without employment as discarded or cast off date from the first decade of the twentieth century. See for example Crissey and Wilhelm, "Human Scrap Heap."

5. The classic source for the traditional view with an economics focus is Durand, *Labor Force*. Two recent surveys of the literature, including contributions by historians and sociologists are Skocpol,

Protecting Soldiers, and Haber and Gratton, *Old Age*.

6. See Rodgers, *Work Ethic*.

7. In this traditional view, improvements in life expectancy magnified the negative effect of the forced retirement of industrial workers over time first by permitting a higher fraction of the population to live to retirement age and then by lengthening the life-span in the post-retirement period.

8. See Durand, *Labor Force*, p. 96.

9. See Achenbaum, *Old Age*; Graebner, *History*; Ransom and Sutch, "Labor"; Skocpol, *Protecting Soldiers*; Ransom, Sutch, and Williamson, "Inventing Pensions"; Margo, "Labor Force Participation"; Haber and Gratton, *Old Age*; Moen, "Rural Nonfarm Households"; and Costa, "Agricultural Decline" and "Pensions."

10. See Moen, "Rural Nonfarm Households"; and Costa, "Agricultural Decline" and "Pensions."

11. Costa, "Agricultural Decline," p. 4.

12. See Moen, "Rural Nonfarm Households," p. 66.

13. Mushkin and Berman, "Factors," p. 19, had earlier noted that "the movement of retired farmers from farms to towns and cities and the lesser movement of industrial and commercial workers to towns and rural farm areas when they retire" made it difficult to infer sector-specific retirement rates. Dorfman, "Labor Force Status," also called attention to this issue.

14. Achenbaum, *Old Age*, p. 104, relying on Bowen and Finegan, *Economics*, pp. 373-74, has also questioned the significance of the rural-urban migration to understanding retirement trends. Achenbaum's point, however, is not the same as Costa's and Moen's. Achenbaum emphasizes the fact that in the rural sector retirement rates were increasing at a rapid rate. Bowen and Finegan's data, however, apply to the period between 1948 and 1965 when the agricultural sector was already relatively small.

15. See Costa, "Pensions."

16. See Ransom and Sutch, "Labor," and Ransom, Sutch, and Williamson, "Retirement." The employment rate refers to the number at work divided by the population and differs from the labor force participation rate because it excludes the unemployed. While Ransom and Sutch's labor force

participation figures have been questioned by Moen, "Labor of Older Americans," and "Unemployment"; Margo, "Labor Force Participation," and others, the dispute is over the classification of unemployment between temporary unemployment and permanent unemployment (retirement). Their data on *employment* has met with acceptance. For a detailed discussion of the employment figures see Ransom and Sutch, "Trend," and Carter and Sutch, "Economic Activity."

17. See Ransom and Sutch, "Decline of Retirement."

18. Robert Whaples cites the declining work week and shorter work days as trends which improved the ability of older workers to remain on the job in this period. He also suggests that the gradual disappearance of men eligible for the Civil War veterans' pensions system increased employment rates between 1910 and 1920. See "Shortening of the Work Week," pp. 456-457.

19. See Kuznets, *Capital*; Gallman, "Gross National Product"; Davis and Gallman, "Share"; Haines, "Industrial Work"; Ransom and Sutch, "Impact"; and Carter, Ransom, and Sutch, "Agricultura."

20. For evidence of high rates of saving by working class men at an even earlier date (1850) see Alter, Goldin, and Rotella, "Savings."

21. See Darby, *Effects*; and Kotlikoff and Summers, "Intergenerational Transfers."

22. See Haines, "Industrial Work," and Ransom and Sutch, "Impact."

23. See Modigliani, *Life Cycle Hypothesis*. While historical studies of inheritance and bequests in America have revealed much about their importance in influencing the distribution of wealth, no scholar has reported a bequest motive or inheritance data strong enough to explain these high saving rates. See Williamson and Lindert, *American Inequality*; Chester, *Inheritance*; and Shammas, Salmon, and Dahlin, *Inheritance*; Menchik, "Is Family Wealth Squandered?" and Menchik and David, "Income Distribution." For a reassessment of the life cycle hypothesis in light of recent historical and modern empirical evidence on bequests see Modigliani, "Intergenerational Transfers."

24. Haber and Gratton, *Old Age*, p. 106.

25. See also Hayward, Crimmins, and Wry, "Retirement Life Cycle Change."

26. Here we paraphrase Margo, "Labor Force Participation," pp. 409-410. Also see Ransom and Sutch, "Tontine Insurance," on insurance; Ransom, Sutch, and Williamson, "Retirement," on the rise of private pensions; and Ransom, Sutch, and Williamson, "Protecting Soldiers," on Civil War veterans' pensions.

27. See Ruggles et.al., *Integrated Public Use Microdata Series*. IPUMS was prepared by a team at the University of Minnesota to facilitate cross-census comparison of the various public-use samples. Since our project involves such cross-census comparisons, we have selected the IPUMS rather than the original versions of the 1900 and 1910 Public Use Samples (PUS). All three files are based on the samples originally collected by Preston in the 1970s. See Graham, *1900 Public Use Sample*; and Preston, *Census of Population, 1910*. There are slight differences between the IPUMS and the PUS which were introduced during successive attempts to clean and edit the data. There are also slight differences in procedures used to collect data on labor force in 1900 and 1910 not addressed in the IPUMS efforts to improve comparability of the samples. We describe these differences and our methods of handling them in the data appendix to this paper.

28. The adjustment for unemployment was made by use of responses to the retrospective question in both censuses regarding months (1900) or weeks (1910) of unemployment experienced in the previous year. See the data appendix for details. In 1900 the "previous year" extended from June 1, 1899 to May 31, 1900 but in 1910 it referred to the calendar year 1909. Figure 1, estimated by these techniques, suggests that the employment rate in 1910 was at a higher level than in 1900. Lebergott's estimates of unemployment in *Manpower* are at least roughly consistent with this pattern since he indicates that there was a fall in unemployment from 5.75 percent (average for 1889 and 1900) to 5.1 percent in 1909. The consistency between our results and those of Lebergott is not surprising since Lebergott relied on published census figures to benchmark his annual unemployment series, though he made other adjustments as well, in particular to the figures for 1910. Subsequent estimates of unemployment by Romer, "Spurious Volatility," Weir, "Unemployment Volatility," and Carter and Sutch, "Depression of the 1890s" cannot readily shed light on this point since they accepted Lebergott's benchmark unemployment estimates. The recent availability of the PUMS opens an opportunity to reconsider these benchmark estimates, a topic which awaits further research.

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29. The precise definition of "farmer" in 1900 is all men with 1900 occupation codes 2, 16, 21, 23, and 31. For 1910 farmers are defined as all men with occupation codes 10, 14, 42, 43, 44, 79, 85, and 88. The reader should note that "farmer" includes *all* self-employed farmers irrespective of whether they own, rent, or sharecrop their farm. Farm laborers (who work for wages) are not included in the farmer group.

30. See Shyrock, Siegel, and Associates, *Methods*, pp. 357-8. The census rate of survival procedure was first introduced by Hamilton, "Rural-Urban," and Hamilton and Henderson, "Use." Sutch, "Breeding," pp. 199-210, gives an example of the method used to estimate geographical net migration. Sutch's appendix provides a detailed description of the procedure and discusses the accuracy and sensitivity of the method.

31. A small number of individuals with illegible answers to the unemployment question have been excluded from the population total as well.

32. No true survival rate should exceed one and it is unlikely that the 1910 30-year-olds were markedly more robust than their 29- and 31-year old colleagues. These distortions reflect the underenumeration of infants and age heaping in the census reports. To the extent that the degree of underenumeration and age heaping at each age is uniform across the employment states and occupations under study, however, use of the census survival ratios will automatically correct for this bias. The use of life tables would introduce serious errors. See Price, "Two Sources," and Sutch, "Breeding."

33. Occupational mortality data was collected by the 1890 Census and employed by Uselding, "Dispraise," to compute mortality rates for 84 specific occupations and to rank these occupations in descending order of mortality risk. He found "professors" high on the list and "quarrymen" low. Ransom and Sutch, "Labor," p. 26, have questioned Uselding's interpretation of these data, however. They argued:

> Surely quarrymen, though, were at greater risk of industrial disease (in this case, silicosis) and accident than were college professors. We explain these rankings by suggesting that professors rarely changed careers or retired and therefore death was the primary way in which they left their profession. Quarry work, by contrast, was strenuous, hazardous, and unpleasant. No doubt many quarrymen changed to other occupations (or retired) before they died either because illness or injury necessitated such a change or because the threat of illness and injury led prudent men to quit while they were healthy.

Since occupational mortality statistics may be more misleading than enlightening, we make no use of

them. Note that our inability to distinguish the mortality of self-employed and wage and salary workers may bias our calculations against our hypothesis that the self-employed retired at greater rates than wage and salary workers. That is, assume that the superior economic status of the self-employed, indicated by the probit results reported in Table 2, result in lower mortality and outmigration rates for this group. Then, our method will underpredict the expected population of self-employed individuals at the end of the decade and exaggerate the expected population of wage and salary workers if no change in employment status had occurred. When compared with the actual populations, this error will underpredict the retirement rate of the self-employed (erroneously counting some of those who retired as having died or have migrated elsewhere) and over-predict the retirement rate of wage and salary workers.

34. The average annualized rate is computed as: $[(1 + m)^{0.1} - 1] * 100$ where "m" is the difference between the actual and expected employment at a given age divided by the appropriate base value. We have centered the annualized rates midway between the age of a cohort at the beginning and its age at the end of the decade.

35. Technically, this is the "annualized average death and outmigration rate." For brevity we refer to it as the death rate.

36. The same method was used to construct the death rate estimates presented in Figures 3 and 4. The underlying data are published census statistics on the male population by age in 1980 and 1990 and on the foreign born population in 1990 by year of entry into the United States. See U.S. Bureau of the Census, *1980 Census*; *1990 Census: General*; and *1990 Census: Foreign-Born*. The methods used to construct the employment figures presented in Figure 4 are *almost* identical to those used to construct the employment flows shown in Figure 3. The difference is that we were unable to remove from 1990 employment individuals who migrated to the United States since 1980. Our data is the Census Bureau's *Current Population Survey*, a large, scientifically selected sample of households designed to represent the civilian noninstitutional population. We have used the extracts from the CPS Outgoing Rotation Group Annual files made available by Feenberg. This source does not contain evidence on years in the United States. Because we were unable to remove recent migrants from the 1990 employment totals, our estimates of net inflows are biased upward. In other words, actual net outflows from employment began

at an even younger age and were larger in magnitude than Figure 4 suggests.

37. Quantitatively, the estimated rate of retirement implied by the two methods are somewhat different. The cross-sectional method implies that 32.4 percent of men 60 and older were retired in 1910. The flows calculated using the census survival method imply a retirement rate for this group of only 25.0 percent (see Table 1). The difference between the retirement rates implied by the two methods is probably best explained by the fact that the census survival method assumes the same mortality rate for men in all employment states. If retired individuals were better off, on average, than those who remained employed after the age of 59, then the steady-state retirement rate implied by our flows would be higher. There are additional reasons why the retirement rate of males 60 and older would be expected to be different when calculated from the cross-sectional data and census survival flows. First, the census survival calculations exclude "death-bed" retirements since they count only those who survive to the end of the year in which they retire; these individuals are included in the cross-sectional measure. Other sources of difference include: differences between the actual and steady-state age structures of the older male population; the inclusion of immigrants from the previous 10 years in the cross-sectional but not the census survival calculations; and cohort effects, especially the impact of federal pensions on the employment of Civil War veterans. On the employment effect of Civil War veterans' pensions see Ransom, Sutch, and Williamson, "Protecting Soldiers." Finally, the cross-sectional data do not, in general, reflect a steady state. If, for example, retirement rates were *falling*, then the steady-state retirement rate would be lower than the cross-sectional. For evidence consistent with a secular decline in retirement about the turn of the century see Whaples, "The Shortening" and Carter and Sutch, "Economic Activity." While these factors make it difficult to compare our flow calculations with cross-sectional ones, they do not impede our comparisons of retirement propensities across sectors. It is comparisons of flows across sectors which are the principal focus of this paper.

38. Haber and Gratton, *Old Age*, p. 105.

39. In 1880, the federal census included questions on disability, deafness, blindness, dumbness, idiocy, and insanity. See Ruggles, et al., *1880 Public Use*. Only 4.5 percent of males 60 and older were identified with one or more of these characteristics and approximately one half of these men reported occupations despite their afflictions. While the percentage might well be higher among the cohort of

Civil War veterans who would be 60 and above in 1900 and 1910, only 8 percent of the older male population at the turn of the century occupied this status. See Ransom, Sutch, and Williamson, "Protecting Soldiers."

40. These are "steady-state" estimates computed by applying the hazard rates shown in the figures. The results are also reported in Table 1 below. To compute these statistics we begin at the age at which employment peaks (where net flows into the sector are zero) and then remove from employment at each age the net departures. Our "median age of retirement" refers to the age at which half of all departures from employment into retirement have occurred. The "mean age of retirement" is calculated using an adaptation of the "singulate mean age of marriage." See Hajnal, "Age," pp. 111-36; and Shryock, Siegel and Associates, *Methods*, p. 167.

41. See calculations in Table 1.

42. While our emphasis in this paper is the contrast between our findings and the traditional view of retirement at the turn of the century, our data also highlights changes in retirement between the early part of the century and today. We note, for example, that while turn-of-the-century men in their late-60s and older left the labor force at higher rates than men in their late-50s, the difference between these ages is nothing like the discontinuity in the rate exhibited by the modern data for men in their late-fifties to mid-sixties. It would appear that corporate policies which set a standard retirement age and rules regarding benefits under Social Security affect the timing and presumably the rate of retirements in the modern period.

43. In both charts the outflows are calculated as a percentage of those remaining in the occupation and are thus the fraction leaving employment for nonemployment, or outflow transition hazards. The inflows are calculated as a percentage of those *not* in the occupation, including those in other occupations, and so are inflow transition hazards.

44. Goldenweiser and Truesdell, "Farm Tenancy," p. 83. See also Taylor and Taylor, *Story*; Bogue, *Praire*, pp. 62-64; and Cogswell, *Tenure*.

45. Our technique does not, in fact, allow us to say where farmers went when they left farming at these later ages. The fact that inflows into total employment (Figure 3) are negative at these ages and that farmers account for almost half of total employment at age 55 and older certainly suggests that most

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farmers left for nonemployment. On the other hand, if all farmers left farming for Nonfarm employment then the withdrawal rate from Nonfarm employment into nonemployment would have to have been roughly twice as great as those suggested by Figure 6.

46. Durand, *Labor Force*, p. 68.

47. Because Costa's sample includes only Civil War veterans, very few were less than 52 years of age even in 1900. See Costa, "Pensions," p. 303, Table I.

48. The census designated households as either farm or nonfarm. The census also indicated the size of the place in which the household was located. We used these census designations in combination to define our three categories. Our "farm" households are all census-designated farm households. They include a small number of households located in urban areas. Our "rural nonfarm" households are census-designated nonfarm households residing in a place with less than 2,500 inhabitants. Our "urban" households are census-designated nonfarm households residing in places with 2,500 inhabitants or more.

49. In 1900 a farm household was defined in terms of the occupation of household members. If any household member operated a farm, then the household was classified as a farm household whether or not the dwelling was located on a farm. In 1910, a farm household was defined as a household located on a farm. No reference was made to the occupation of household members. Moen, "Rural Nonfarm Households," p. 60, notes the definitional differences and the fact that the 1910 definition would result in lower estimates of labor force participation rates in farm and higher labor force participation rates in rural nonfarm households. He does not adjust his trend estimates for these definitional changes, however.

50. This move from a farm to a rural-nonfarm dwelling need not require an actual physical move since the definition of a farm household was based in part on the occupation of its inhabitants. This possibility, however, does not undercut Moen's point about the misleading nature of a focus on "farm households."

51. Durand, *Labor Force*, p. 69.

52. See the Appendix to Carter, Ransom, and Sutch, "Self-Employment," for more complete discussion of the self-employment proxy and a listing of the specific occupations included. The numerically largest of these occupations was Retail Dealers. This category alone accounts for about one-third of all nonfarm self-employed males in 1910. Unfortunately, the Census provides no detail regarding the type or size

of retail establishment these men owned and operated. Other numerically large categories for self-employed males are Manufacturers, Builders and Building Contractors, Physicians and Surgeons, and Real Estate Agents.

53. Computed from the 1910 PUMS. See Preston, *Census of Population, 1910.*

54. Because these are net flows, the propensities shown in Table 1 indicate the *minimum* fraction of men in each sector who left employment before their death. If some men who departed later returned to employment, then gross transition probabilities would be even higher than those shown in Table 1.

55. See Rodgers, *Work Ethic,* for a summary and discussion of these views.

56. Lebergott, *Manpower,* pp. 108-109.

57. That this conclusion was also been reached by Moen, "Rural Nonfarm Households," and Costa, "Pensions," using different methods and data gives increased confidence in the finding.

58. Lebergott, *Manpower,* estimates that nonfarm self-employment fell from 14.3 to 11.6 percent of total employment between 1900 and 1930. See pp. 512-3.

59. Ransom and Sutch, "Labor" and "Decline."

60. See Ruggles, et al., *Integrated Public Use Microdata Series.*

61. U.S. Bureau of the Census, *Twenty Censuses,* p. 44, Paragraph 148.

62. See Carter and Sutch, "Economic Activity."

63. Carter, Ransom, and Sutch, "Self-Employment," Appendix A.

64. See Graham, *1900 Public Use Sample Users' Handbook,* and Preston, *Census of Population, 1910.* See also, Ruggles, "Sample Designs."

TABLE 1
COHORT RETIREMENT CHARACTERISTICS,
MALES 55 YEARS OF AGE AND OLDER BY ECONOMIC SECTOR, 1900 - 1910

	All Workers	Self-Employed Farmers	Self-Employed Nonfarm	Wage and Salary Workers
Based on Data Plotted in	Figure 3	Figure 5	Figure 8	Figure 8
Proportion of Men Retiring After Age 55[a]	21.5%	25.2	21.4	19.8
Singulate Mean Age of Retirement[b]	66.7 years	65.5	67.5	67.5
Average Years of Life Remaining after Retirement for Those Who Retire	10.6 years	11.2	10.3	10.3
Steady-State Employment Rate, Men 60 and Older[c]	75.0%	72.2	75.6	76.7
Percent of 55-Year Old Workers in Sector, 1910	100.0%	31.7	17.0	51.3

[a] Excludes all "death-bed" retirements and assumes no one lived beyond age 96.

[b] For a description of the method of calculation see footnote 38.

[c] These calculations begin with the actual employment rate of 60 year old males in 1910 (87 percent) and then apply the average mortality and out-migration rate and sector-specific retirement rates calculated according to the census survival method. See text for a fuller description.

Notes: These retirement characteristics refer to the behavior of the cohort. They were calculated as the steady-state implications of the transition flows reported in Figures 3, 5, and 8. See text for further explanation.

Source: Steven Ruggles, et al., Integrated Public Use Microdata Series (1993).

TABLE 2
ESTIMATED PROBABILITY OF SELF-EMPLOYMENT
EMPLOYED MALES, EXCEPT FARMERS, BY AGE GROUP, 1910

	AGES 24 TO 51			AGES 52 AND OLDER		
	Coefficient	t-statistic	Mean Value	Coefficient	t-statistic	Mean Value
Household head	0.322	19.249	0.620	0.283	7.152	0.801
Homeowner	0.259	12.274	0.213	0.300	7.766	0.443
Owns home free and clear	0.242	9.741	0.111	0.142	3.691	0.297
Literate	0.465	13.562	0.925	0.504	8.353	0.910
White	0.467	16.030	0.904	0.439	6.915	0.921
Native-born	0.029	1.965	0.697	0.050	1.793	0.682
Age	0.083	9.357	35.22	-0.023	-0.905	59.88
Age^2	-0.001	-7.544	--	0.000	1.055	--
Constant	-4.022	-24.305	1	-1.388	-1.711	1
N	55,670			11,849		
Mean, Dependent variable	0.155			0.254		
Log-likelihood	-22,247.415			-6,362.890		
Chi^2 (8)	3,599.50			706.49		

Notes: "Homeowners" are household heads who own their homes. "Owns Home Free and Clear" are home-owning household heads who report no mortgage. "Literate" refers to those who are able to read.
Source: Preston, *Census of Population, 1910.*

Percent
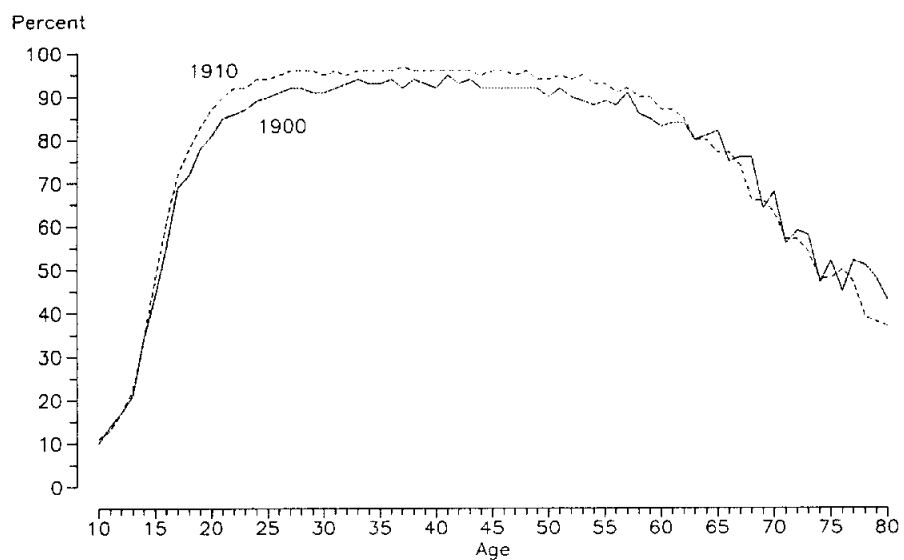
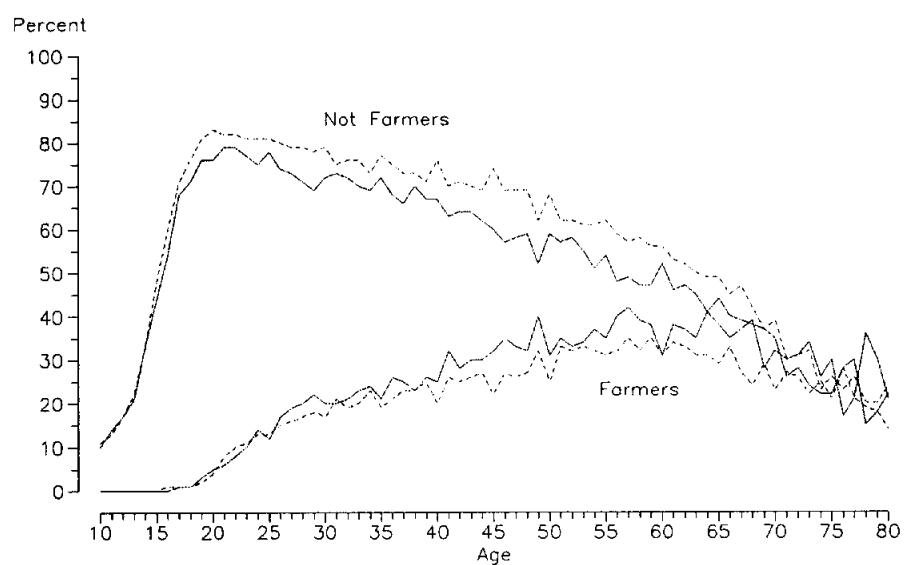**Figure 1: Employment Rates by Age, Males in 1900 and 1910**

Percent

Figure 2: Employment Rates by Age, Farmers and All Other Occupations, Males in 1900 and 1910
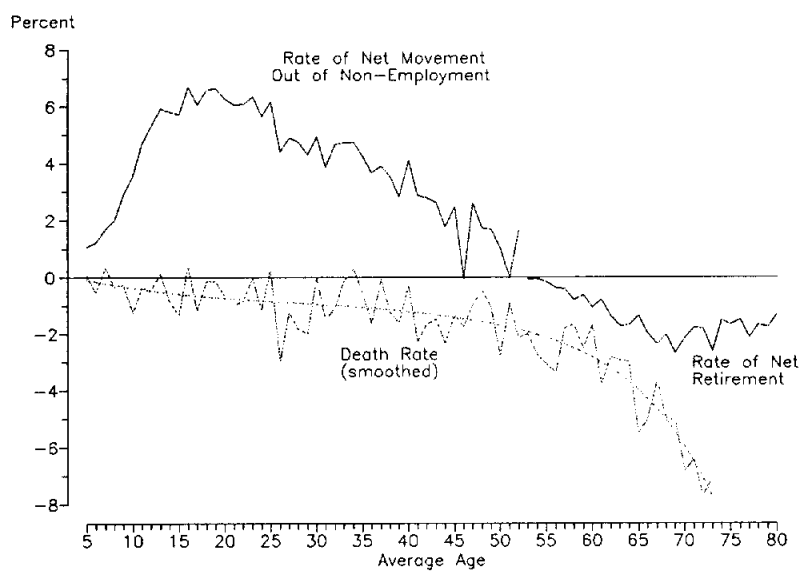
Figure 3: Annualized Net Transition Rates of Males into Employment and into Death by Age, 1900-1910
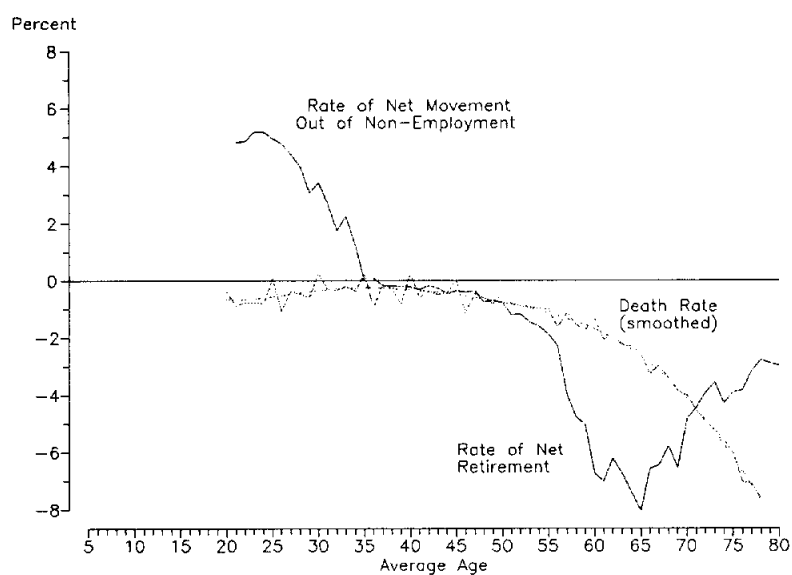

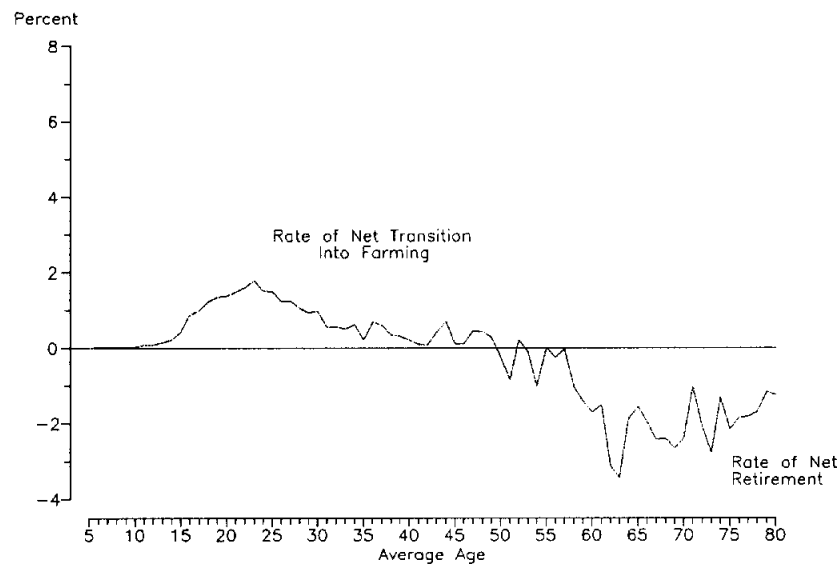**Figure 4: Annualized Net Transition Rates of Males into Employment and into Death, by Age, 1980-1990**

Percent

Figure 5: Annualized Net Transition Rates of Males into the Occupation of Farmer by Age, 1900-1910

Percent
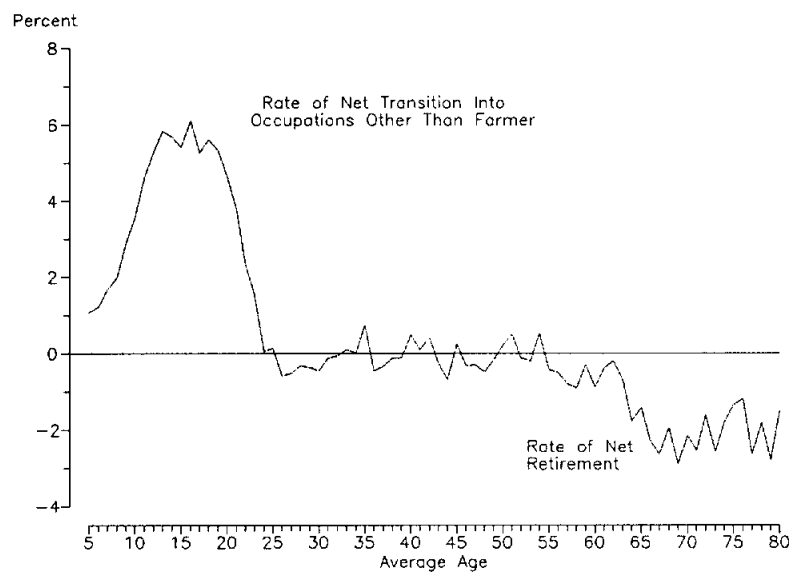
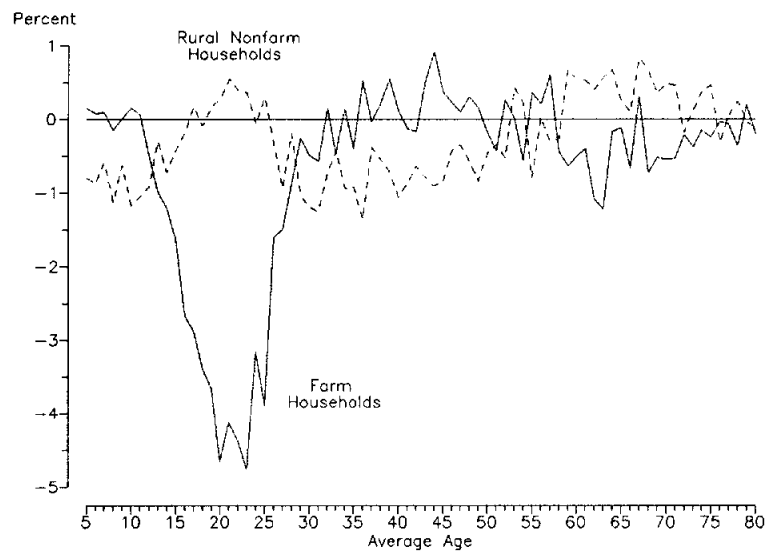**Figure 6: Annualized Net Transition Rates of Males into Occupations Other than Farmer by Age, 1900-1910**

Figure 7: Annualized Net Migration Rates of Males from Rural Areas, Farm and Rural Nonfarm Households, by Age, 1900-1910
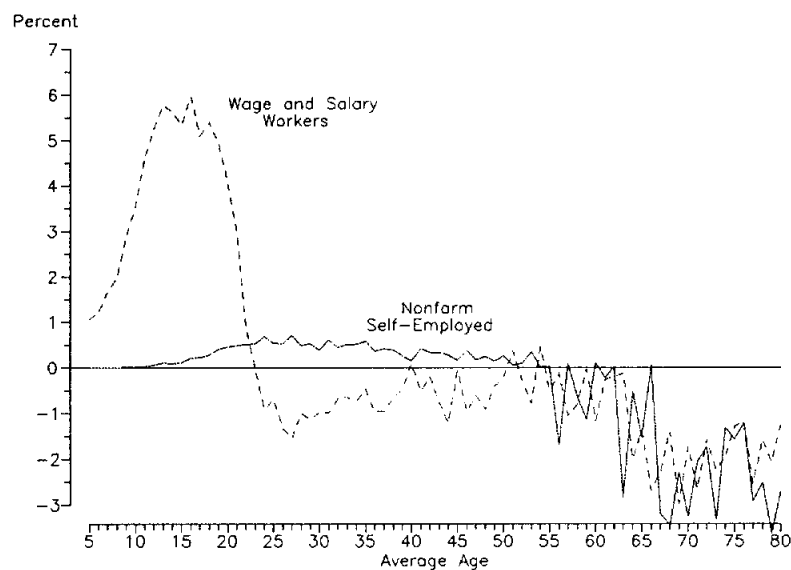
Percent

Figure 8: Annualized Net Transition Rates into Nonfarm Self-Employment-Intensive Occupations and Wage and Salary Work for Males by Age, 1900-1910
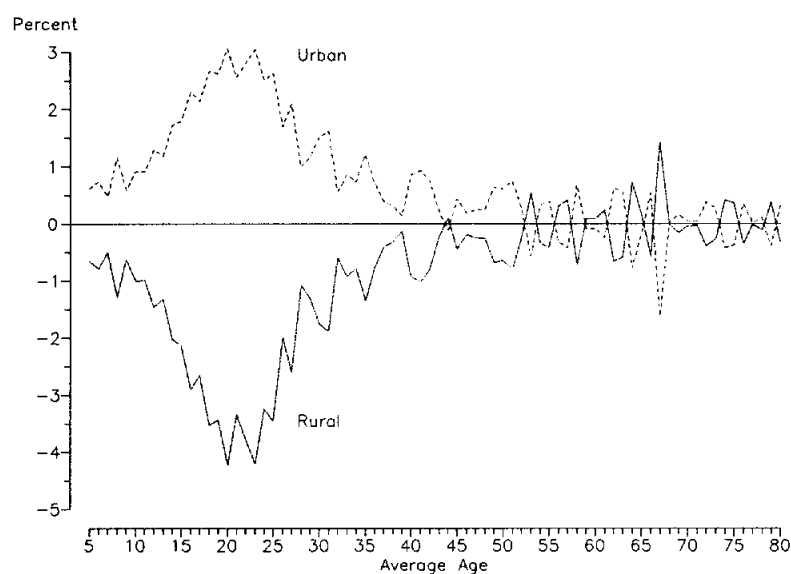
Percent

Figure 9: Annualized Net Migration Rates into Rural and Urban Households for Males by Age, 1900-1910