Geographic Mobility and Annual Earnings in the United States

by Patrick J. Purcell*

The geographic mobility rate of U.S. workers has declined in recent decades. Labor mobility has historically indicated variations between local areas in earnings and other economic conditions. Because average career earnings determine Social Security retirement benefit levels, changing trends in geographic mobility and earnings may have implications for workers' future benefits. I use administrative data on earnings from the Social Security Administration's Continuous Work History Sample to examine trends in geographic mobility from 1994 to 2016 and to compare the earnings of working-age adults who moved to another county or state with the earnings of those who did not. I find that the relative difference in earnings between movers and nonmovers changed little during the observation period. Although some researchers have suggested that declining labor mobility has resulted from a decline in the earnings gains workers can realize by moving, this finding suggests that such a link is unlikely.

Introduction

The economy of the United States is highly dynamic in terms of the number of jobs it creates and the ease with which workers move from one job to another (Hyatt and others 2018). A key element of this dynamism is the willingness of workers to relocate in response to geographic differences in wages and employment rates. Consequently, Americans are often perceived as being more geographically mobile than residents of other developed nations (Pingle 2007; Frey 2009). This perception is supported by evidence that historical internal migration rates have been higher in the United States than in most other developed countries (Cooke 2011; Molloy, Smith, and Wozniak 2011; Partridge and others 2012). Worker mobility plays an important role in mitigating geographic differences in employment and earnings (Pingle 2007; Levy, Mouw, and Perez 2017). For example, when workers respond to adverse income shocks by relocating, they also promote a macroeconomic adjustment to regional downturns in employment (Bayer and Juessen 2012). Through this mechanism, geographic mobility "has been shown to smooth out spatially-asymmetric macroeconomic shocks and the effects of industry restructuring" (Partridge and others 2012).

Researchers have noted a decline in the geographic mobility of Americans of working age over the last several decades and have suggested several explanations for this trend, including the possibility that the earnings gains movers can realize have declined over time. Some researchers have also found evidence of a coinciding decline in the rate at which workers change employers (with or without relocating). To date, the relationship between geographic mobility, employer change, and earnings remains largely unexplored because the data underlying such research have typically come from household surveys, few of which follow a large sample of individuals over a long period. However, an administrative data file such as the

Selected Abbreviations

CWHS	Continuous Work History Sample
OLS	ordinary least square
SSA	Social Security Administration

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Social Security Administration's (SSA's) Continuous Work History Sample (CWHS) includes long-term information on workers' earnings, their employers, and their county of residence. Thus, the CWHS is ideally suited for a study of trends in geographic mobility, employer change, and earnings.

Policymakers might ask whether the decline in geographic mobility is cause for concern. Because labor mobility has been a means through which workers have adjusted to adverse shocks in local employment and earnings (Blanchard and Katz 1992), declining mobility rates could lengthen spells of unemployment if unemployed workers are less likely to move to places with higher labor demand. On the other hand, geographic mobility may have declined because improvements in information and communications technology have enabled better matching of individuals to jobs within local labor markets (Molloy, Smith, and Wozniak 2017).

This article uses data from the CWHS for the period from 1994 through 2016 to address the following questions:

- What do administrative earnings records from SSA reveal about trends in geographic mobility and changing from one employer to another over the observation period?
- What personal characteristics and local economic variables are associated with mobility and employer change, and did the statistical relationships change during this period?
- How do the earnings of movers and nonmovers compare, and did the relative earnings of movers and nonmovers change during this period?

This information may help policymakers better understand how geographic mobility is related to workers' earnings, which ultimately determine Social Security benefit levels.

This article is organized into eight sections, including this introduction, arranged as follows:

- The three sections that follow this introduction review the relevant literature, describe the data and methods used in this study, and present descriptive statistics on geographic mobility and employer change in three 3-year periods (1994–1996, 2004–2006, and 2014–2016).
- The fifth section presents the results of logistic regressions examining the statistical relationships between mobility and selected personal and geographic variables; and between employer change and those variables.
- The sixth section presents statistics on the average annual earnings of individuals before and after relocating and compares them with the earnings of workers who, in the same period, did not relocate.
- The seventh section presents the results of a regression analysis examining the statistical relationship between earnings change over time and selected personal and geographic variables.
- The eighth section summarizes and concludes.

Previous Studies

Geographic mobility in the United States has declined steadily for more than 40 years (Frey 2009; Cooke 2011; Partridge and others 2012; Molloy, Smith, and Wozniak 2017). Analysts have identified several possible causes for the long-term decline in migration. Pingle (2007) suggested that lower levels of migration in the 1980s and 1990s were due in part to a reduction in military enrollment, given that servicemembers move more often than civilians do. Frey (2009) attributed much of the decline to increases in the median age of the population and in homeownership rates. Winkler (2011) found that homeownership makes workers less likely to move in response to labor market shocks. Cooke (2013) suggested that an increasing prevalence of two-earner couples, greater household indebtedness, and the development of modern information and communication technologies have contributed to lower rates of geographic mobility. Karahan and Rhee (2014) estimated that the increasing median age of the population, and that trend's secondary effects on the labor market, could account for about half of the long-term decline in geographic mobility in the United States.[1] Foster (2017) attributed up to one-third of the long-term decline in geographic mobility to increases in the median age and the share of the population comprising historically less-mobile racial/ethnic groups, but concluded that rising homeownership rates and the increasing prevalence of dual-earner couples had negligible effects on mobility.

In contrast with the studies cited above, Molloy, Smith, and Wozniak (2017) concluded that older median ages, rising homeownership rates, and other observable demographic and socioeconomic factors played minimal roles in the decline in mobility. Kaplan and Schulhofer-Wohl (2017) found that neither older median ages nor the greater prevalence of two-earner households could explain the decline in mobility. They estimated that convergence in regional wage rates and improvements in information and

communications technology might explain more than half of the decline in interstate migration rates from 1991 to 2011.

Some researchers have identified a downward trend in the movement of workers from one employer to another which coincides with the decline in geographic mobility, and several have suggested that the two declines are related. Examining data covering the late 1960s to the late 2000s, Molloy, Smith, and Wozniak (2014) suggested that the most plausible reason for both declines was a reduction in the earnings gains from making such transitions and that the decline in financial gains from changing employers caused the decline in geographic mobility. Then, in their 2017 article, the authors again contended that declining rates of employer change and geographic mobility were related and that the former caused the latter. Examining data from the Panel Study of Income Dynamics, Gittleman (2019), too, observed a decline in employer-change transitions and estimated that the increasing median age of the workforce was responsible for about three-fifths of the decline. By contrast, Hyatt and others (2018) concluded that declines in earnings gains from migration explained little of the long-term decline in geographic mobility.

The studies cited above demonstrate the disagreement about the causes of declining geographic mobility in the United States over the last several decades. Although some researchers have attributed the decline mainly to a rising median age and increasing homeownership rates, others have suggested that convergence in regional wage rates and improvements in communication technology are more likely causes. Furthermore, not all research has found a decline in employer-change transitions concurrent with the more widely documented decline in geographic mobility.

People who move to a new geographic area are not a random cross-section of the U.S. population (Borjas, Bronars, and Trejo 1992). Several studies have found evidence of self-selection among movers based on age, education, and annual earnings. Gabriel and Schmitz (1995) and Rodgers and Rodgers (2000) found that workers who moved to a new location had higher annual earnings prior to moving relative to nonmovers with similar characteristics. Dahl (2002), Wozniak (2010), and Levy, Mouw, and Perez (2017) all found that college-educated individuals are more geographically mobile than those who did not attend college. Kennan and Walker (2011) reported that younger and more educated people are more likely to move to a new area than those who are older and less educated. They also noted that multiple movers and returning movers account for a large share of moves. Coen-Pirani (2010) observed that recent immigrants to the United States migrate to new locations more frequently than nonimmigrants do, and that differences in geographic mobility rates across states are not fully explained by differences in age and education. At least one study (Yankow 2004) found that unemployed persons are significantly more likely to move than employed workers are.

Just as movers are not randomly selected from the population, neither are the locations to which they relocate. In general, people tend to move to locations that pay higher wages for their particular skills (Borjas, Bronars, and Trejo 1992). Kennan and Walker (2011) observed that geographic differences in average wages are a significant determinant of where workers choose to live. Likewise, Kaplan and Schulhofer-Wohl (2017) concluded that movers tend to go to states where their particular occupations are better paid. The systemic differences between movers and nonmovers, and between places that attract movers and those that do not, have earnings implications. Dahl (2002) estimated that self-selection of more educated workers to states with higher returns to education can bias the estimated return on a college education upward by 10–20 percent. In addition to being more likely to move than are those with less education, college graduates respond more to differences in local labor market conditions when choosing where to live (Wozniak 2010). Levy, Mouw, and Perez (2017) also found that wage- and unemployment-rate differences substantially affect the destination choices of workers who move. Ganong and Shoag (2017) found that rising housing prices in high-income areas, by eroding the gains from moving, have deterred moves among low-skill workers.

Both the self-selection of movers and the higher average wages in their chosen destinations can affect postmove earnings; however, because of limitations in the available data sets, relatively few studies have examined the postrelocation earnings of movers. Using data from the Current Population Survey (CPS) Displaced Workers Files, Raphael and Riker (1999) concluded that geographic mobility has a substantial and significant positive effect on the earnings of displaced workers.[2] Yankow (1999) studied data from the National Longitudinal Survey of Youth (NLSY) and found that young interstate migrants realized significant earnings gains over the 5-year period following

a move and concluded that the earnings gain was not caused by movers being disproportionately drawn from the upper tail of the distribution of skills and abilities. Rodgers and Rodgers (2000) analyzed data from the Panel Study of Income Dynamics and estimated that men's real earnings 6 years after moving were 20 percent higher than they would have been otherwise. The authors also found that almost all earnings gains occurred among men who were younger than 40 in the year they moved. Kennan and Walker (2011) studied data from the NLSY and found that among white men with a high-school education, expected gains in earnings influence geographic mobility, but the analysis did not include measures of postrelocation earnings. Bayer and Juessen (2012) combined data from the CPS with administrative data from the Internal Revenue Service and found persistent income gains from geographic mobility.

Data and Methods

The present analysis was conducted on individual earnings histories from the CWHS, which contains earnings records that represent 1 percent of all Social Security numbers (SSNs) ever issued. To maintain the CWHS at 1 percent of all SSNs, SSA adds the earnings records of a random selection of newly issued SSNs each year. The records of deceased workers remain in the CWHS, allowing researchers to study the annual wages of entire birth cohorts over time. When necessary, SSA updates the CWHS earnings records for adjustments and corrections to SSA's Master Earnings File. For research purposes, the CWHS—with its large number of earnings records, longitudinal structure, and accuracy—has several advantages over household surveys. Specifically, most household surveys consist of smaller samples, collect data for relatively short periods, and are subject to participant nonresponse and recall errors.

The CWHS includes data on Social Security taxable wages in covered employment from 1951 forward. Covered employment refers to jobs (or self-employment) subject to Social Security payroll-tax deductions. Wages in covered employment are taxable up to an annually adjusted threshold amount called the taxable maximum. Workers' taxable wages in covered employment are the basis on which SSA determines both eligibility for Social Security benefits and the amounts of those benefits. Prior to 1978, the CWHS tracked only covered earnings; since then, it has also included annual wages in noncovered employment and earnings above the annual maximum taxable amount.[3]

This article describes results derived from the 2016 CWHS, the most recent file available when the analysis was conducted. The 2016 CWHS includes 3,467,451 individual person-records, of which 52.0 percent are for men and 48.0 percent are for women. The earnings analyzed in this article consist of annual wages and salaries in both covered and noncovered employment, including those exceeding the annual taxable maximum. Self-employment earnings are also included. Men's and women's annual earnings are analyzed separately. I restrict the analysis to earnings accrued from ages 25 through 49, which are the ages with the highest employment rates and the highest rates of geographic mobility (Bureau of Labor Statistics 2019). For brevity, I refer hereafter to all wage, salary, and self-employment income simply as "earnings." All annual earnings have been indexed to 2016 values using the Consumer Price Index for All Urban Consumers.

Geographic mobility can be defined several ways. The three most common definitions identify a move as relocating either to a different state, to a different county *or* state, or to a different commuting zone.[4] In this article, I define geographic mobility as moving to a different county or state. Individuals who move to a new address in the same county are not considered movers. One benefit of defining geographic mobility at the county level is that the 3,142 counties and county-equivalents in the United States range from the rural and sparsely populated to the urban and densely populated. Moreover, counties (unlike commuting zones) have stable borders that are not affected by population growth (Partridge and others 2012). This is helpful for studying long-term trends. Finally, many of the local-area economic statistics that indicate the factors that may influence a worker's decision to move to a new location—including median household income and unemployment rate—are available at the county level. Thus, in this article, the terms "movers," "mobility," and "relocation" refer to workers who moved to another county or state.

Another aspect of mobility is its duration. To compare the earnings of people who moved with the earnings of people who did not move, it is necessary to identify not only those who moved to a new location, but also to differentiate those who remained in their new location from those who either moved again or returned to their original location. Thus, for this analysis, I restrict the definition of "movers" to those who relocated to a different county or state *then remained in that new location* for the ensuing 5 years.

Likewise, among those who did not move in a given year or years, it is necessary to differentiate those who remained in their original location from those who moved in later years. I thus define "nonmovers" as individuals who did not move in a given year of observation and continued to reside in the same county 5 years later.

Not all moves, particularly short-distance moves, result in a worker changing employers. Similarly, most changes of employer occur without requiring a move to a new county or state. Therefore, I examine trends in geographic mobility and employer change separately and in combination. Specifically, I explore the overall geographic mobility rate, then the overall employer-change rate. Then, among movers, I estimate the proportion who also changed employers; and among those who changed employers, I estimate the proportion who also moved.

The CWHS includes data on county and state of residence for all years since 1993 in which an individual had earnings.[5] I examine average rates of geographic mobility and employer change in three 3-year periods (1994–1996, 2004–2006, and 2014–2016), which span nearly the entire range of years for which data on county and state of residence are available in the CWHS. I compute annual earnings, rates of geographic mobility, and rates of employer change as 3-year annual averages because multiyear trends are less susceptible to statistical anomalies than are single-year data.

Geographic Mobility Rate and Employer Change Rate

Charts 1 and 2 respectively show the annual average percentage of men and women who moved during each of the 3-year observation periods. The percentages are plotted for five age groups. In each age group, the plots show mobility rates in each 3-year period for men or women overall and for those in the lowest and highest quartiles of average annual earnings in the 3-year period ending with (and including) the year they moved. Because I observe events that occur over a 3-year period, some individuals do not remain in the same 5-year age group for the full period. For example, some men who were aged 25–29 in 1994 were in the 30–34 age group in 1996. However, these small changes in the composition of each age group during the observation periods had no material impact on either the descriptive statistics or the regression model results discussed later.

Chart 1 shows that, among all men (shown in red), the proportion who moved declined monotonically with age. In all three periods, men aged 25–29 were more than twice as likely as men aged 45–49 to have moved. From 1994–1996 to 2004–2006, there was little change in the rate of geographic mobility in any of the 5-year age groups; but from 2004–2006 to 2014–2016, geographic mobility fell among all age groups, possibly reflecting the lingering effects of the 2007–2009 recession (Partridge and others 2012; Goetz 2014).

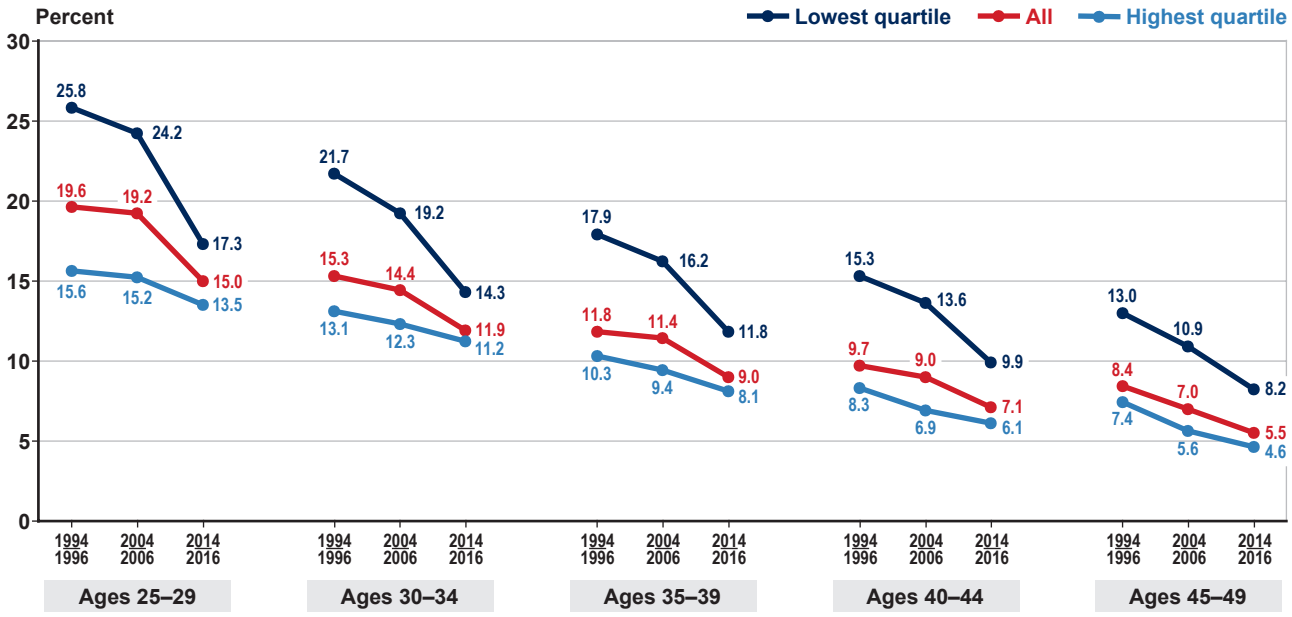
Geographic mobility rates among men in the lowest earnings quartile (shown in dark blue) declined between 1994–1996 and 2014–2016, but in all five age groups and in all three periods, annual geographic mobility rates were higher among men in the lowest earnings quartile than they were among all men in the same age group. Within each age group, the annual geographic mobility rates of men in the highest earnings quartile (shown in light blue) were lower than those of men overall, and were substantially lower than those of men in the lowest earnings quartile. As with the lowest earnings quartile, the percentage of men in the highest earnings quartile who moved declined between 1994–1996 and 2014–2016.

Chart 2 shows the annual average percentage of women who moved during each of the 3-year observation periods. Women were slightly less likely than men to have moved in each period. As was the case with men, the proportion of women who moved declined monotonically with age. Among all women, those aged 25–29 were almost three times more likely to have moved to a new county or state than those aged 45–49. From 1994–1996 to 2014–2016, the rate of geographic mobility declined in each of the 5-year age groups.

Among women whose 3-year average annual earnings placed them in the lowest earnings quartile for their age group, geographic mobility rates were higher than those of all women in the same age group. Similar to the trend among men, geographic mobility rates among women in the lowest earnings quartile declined between 1994–1996 and 2014–2016.

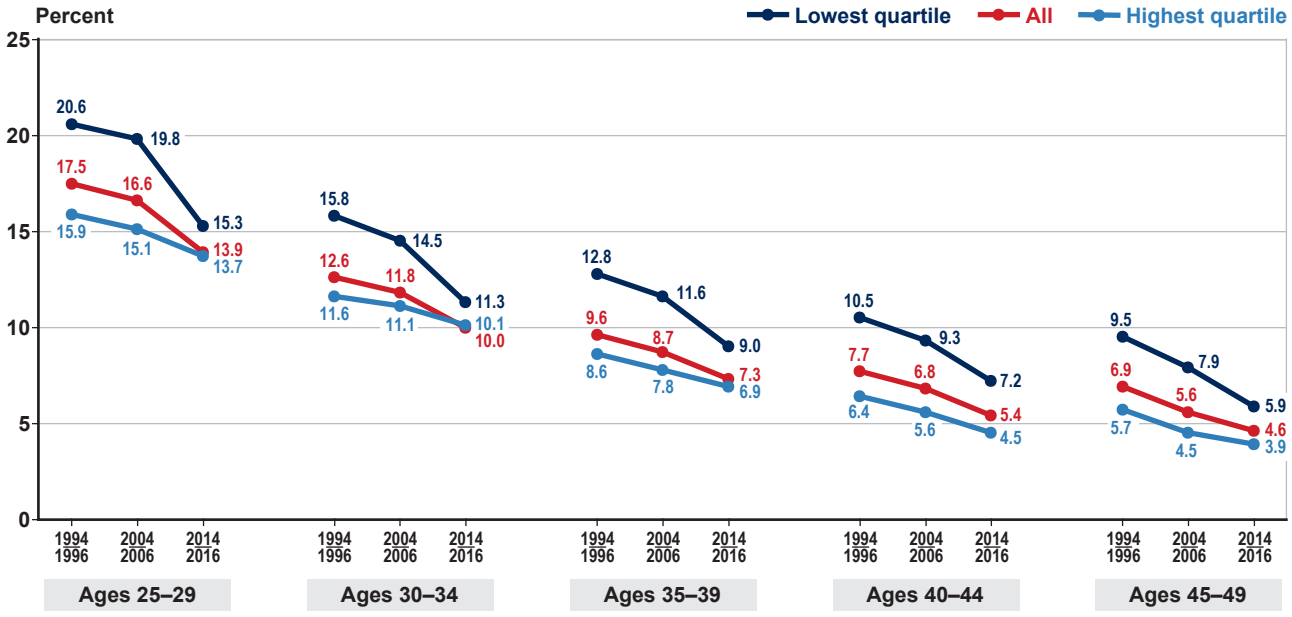
Within each age group, women in the highest earnings quartile had lower annual geographic mobility rates than did women overall and their mobility rates were substantially lower than those of women in the lowest earnings quartile. As was true of women in the lowest earnings quartile, the percentage of women in the highest quartile who moved declined between 1994–1996 and 2014–2016.

Chart 1.
Men who moved to another county or state, by age group: Overall and by selected earnings quartile, various periods 1994–2016 (annual average percentages)



SOURCE: Author's calculations using CWHS data.

Chart 2.
Women who moved to another county or state, by age group: Overall and by selected earnings quartile, various periods 1994–2016 (annual average percentages)



SOURCE: Author's calculations using CWHS data.

Chart 3 shows the annual average percentage of men who changed employers during the three observation periods. In this analysis, a change in the Employer Identification Number (EIN) recorded in the CWHS from one year to the next indicates a change of employer.[6] In all three periods, more men changed employers than moved to a new county or state. The average annual rate of employer change declined with age, but even among men aged 45–49, about one-sixth changed employers in a typical year. Unlike geographic mobility rates, the annual employer-change rates did not substantially decline. For example, among all men aged 25–29, the annual average percentage who changed employers decreased less than 1 percentage point from 1994–1996 to 2014–2016. Among all men aged 45–49, the annual average employer-change rate increased from 16.2 percent in 1994–1996 to 18.0 percent in 2014–2016.

Men in their age group's lowest earnings quartile were much more likely to have changed employers than all men within that age group. For example, in the period 2014–2016, among men aged 25–29 in the lowest earnings quartile, an annual average of 54.8 percent changed employers, compared with 36.4 percent of all men in that age group. Among men aged 45–49 in the lowest earnings quartile, an annual average of 32.6 percent changed employers in the period 2014–2016, compared with 18.0 percent of men aged 45–49 overall.

In each age group, men in the highest earnings quartile were less likely to have changed employers than men overall. For example, 21.5 percent of men aged 25–29 in the highest earnings quartile changed employers annually in the period 2014–2016, compared with 36.4 percent of all men aged 25–29. Among men aged 45–49, 11.9 percent of those in the highest earnings quartile changed employers in the period 2014–2016, compared with 18.0 percent of all men aged 45–49.

Average annual rates of employer change did not decline among men in the highest earnings quartile between 1994–1996 and 2014–2016. Among men in the 25–29 and 30–34 age groups, the proportion who changed employers rose slightly over time. Among the three older age groups, the annual average proportion of men in the highest earnings quartile who changed employers was essentially the same in 2014–2016 as it had been in 1994–1996.

Chart 4 shows the annual average percentage of women who changed employers during the three observation periods. As with men, women changed employers more often than they moved to a new county or state. In each 3-year period, an annual average of about 36 percent of all women aged 25–29 changed employers. The annual average rate of employer change declined with age, but even among all women aged 45–49, about one-sixth changed employers in a typical year.

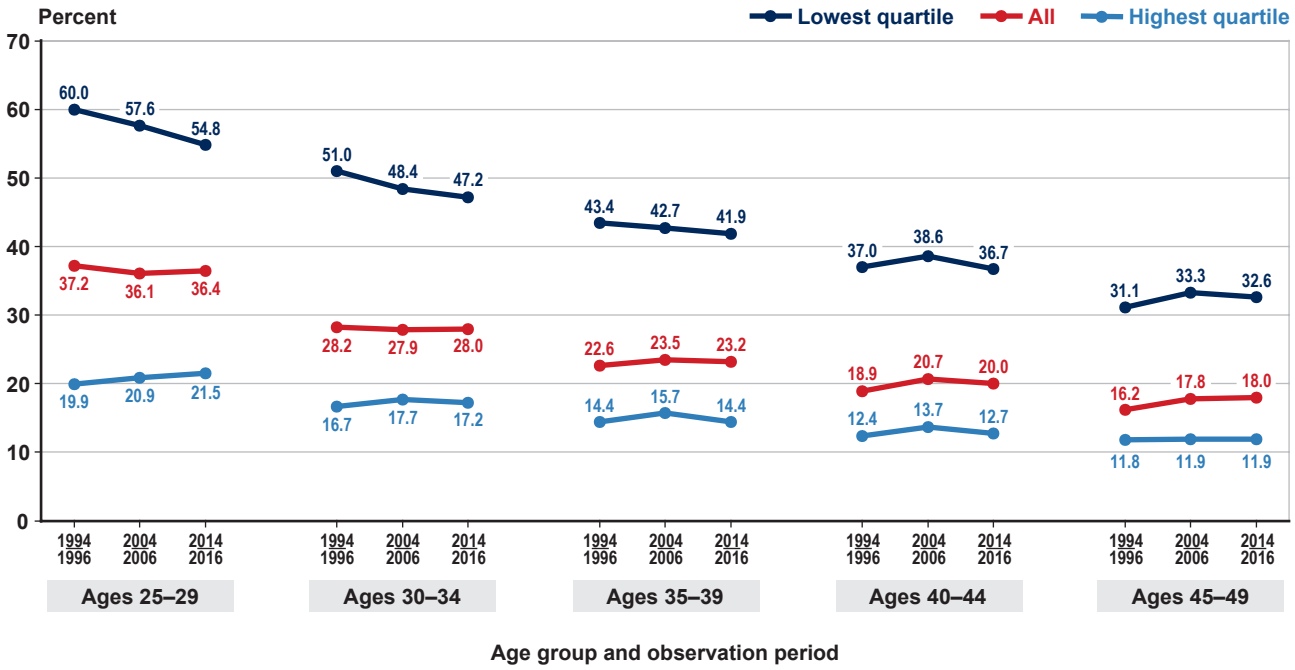
Unlike geographic mobility rates, average annual employer-change rates did not decline among women between 1994–1996 and 2014–2016. Of all women aged 25–29, an annual average of 36.4 percent changed employers in 2014–2016, up slightly from 35.6 percent in 1994–1996. Among all women aged 45–49, the annual average rate of employer change rose from 16.4 percent in 1994–1996 to 17.4 percent in 2014–2016.

In all three periods, women in the lowest earnings quartile for their age group were much more likely to have changed employers than were all women in that age group. Among women aged 25–29 in the lowest earnings quartile, an annual average of 51.3 percent changed employers during 2014–2016, compared with 36.4 percent of all women aged 25–29. Among women aged 45–49 in the lowest earnings quartile, an average of 28.4 percent changed employers each year during 2014–2016, compared with 17.4 percent of all women aged 45–49.

From 1994–1996 to 2014–2016, annual average employer-change rates declined for women in the lowest earnings quartile of each of the age groups younger than 40. Among women in the 40–44 and 45–49 age groups, the annual average proportion who changed employers was approximately the same in 2014–2016 as it had been in 1994–1996.

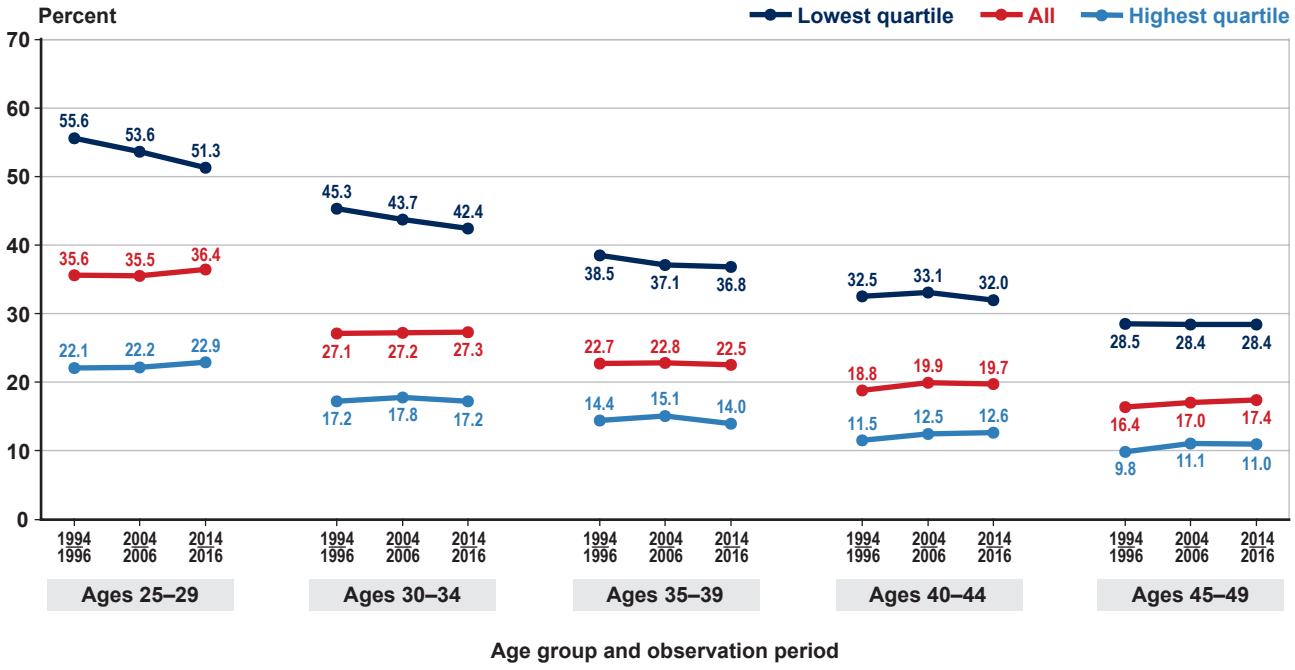
Women in the highest earnings quartile of their age groups were much less likely to have changed employers than were all women of the same age. In the highest earnings quartile of the 25–29 age group, 22.9 percent changed employers annually in the period 2014–2016, compared with 36.4 percent of all women aged 25–29. In the highest earnings quartile of the 45–49 age group, 11.0 percent of women changed employers annually in the period 2014–2016, compared with 17.4 percent of all women aged 45–49. With the slight exception of the 35–39 age group, average annual employer-change rates did not decline among women in the highest earnings

Chart 3.
Men who changed employers, by age group: Overall and by selected earnings quartile, various periods 1994–2016 (annual average percentages)



SOURCE: Author's calculations using CWHS data.

Chart 4.
Women who changed employers, by age group: Overall and by selected earnings quartile, various periods 1994–2016 (annual average percentages)



SOURCE: Author's calculations using CWHS data.

quartile between 1994–1996 and 2014–2016. Among women aged 25–29, 22.9 percent changed employers in 2014–2016, compared with 22.1 percent in 1994–1996. Among those aged 45–49, 11.0 percent changed employers in 2014–2016, compared with 9.8 percent in 1994–1996.

Moving to a new county or state often involves changing employers, but changing employers does not as often require moving to a new location. Chart 5 shows, for men who moved during one of the three observation periods, the percentages who also changed employers in that period (shown in blue). In each period, almost two-thirds of men aged 25–29 who moved also changed employers, and about half of men aged 45–49 who moved also changed employers. Among men in all age groups except 45–49, the proportion of movers who also changed employers declined slightly from 1994–1996 through 2014–2016. The proportion of movers who also changed employers would be higher except that some moves across county or state lines occur within a single commuting zone and therefore are less likely to involve a change of employers. For example, the Washington, DC commuting zone includes the District of Columbia, five counties in Maryland, and six counties in Virginia, making relocations across county or state lines without changing employers feasible for many workers there.

Chart 5 also shows, for men who changed employers, the percentages who also moved in the same observation period (shown in red). Although a majority of workers who move also change employers, most people who change employers do so without moving; and among men who changed employers, the proportion who also moved declined sharply from 1994–1996 to 2014–2016. Among men aged 25–29 who changed employers, the proportion who also moved declined from 35.2 percent in 1994–1996 to 26.0 percent in 2014–2016. Among men aged 45–49 who changed employers, the proportion who also moved declined from 25.9 percent in 1994–1996 to 15.6 percent in 2014–2016.

Chart 6 repeats Chart 5 for women. In each period and in all age categories, among women who moved, the proportion who also changed employers was similar to the proportion among the corresponding age group of men. In all three periods, among women aged 25–29 who moved, more than 60 percent also changed employers. Among women aged 45–49 who moved, about half also changed employers.

Among women who changed employers, the proportions who also moved were similar to the proportions among the corresponding age groups of men. From 1994–1996 to 2014–2016, the annual average percentage of employer-changing women who also moved declined sharply. Among women aged 25–29, this proportion declined from 31.3 percent in 1994–1996 to 24.5 percent in 2014–2016. For those aged 45–49, the proportion in 2014–2016 was 13.1 percent, down from 21.0 percent in 1994–1996.

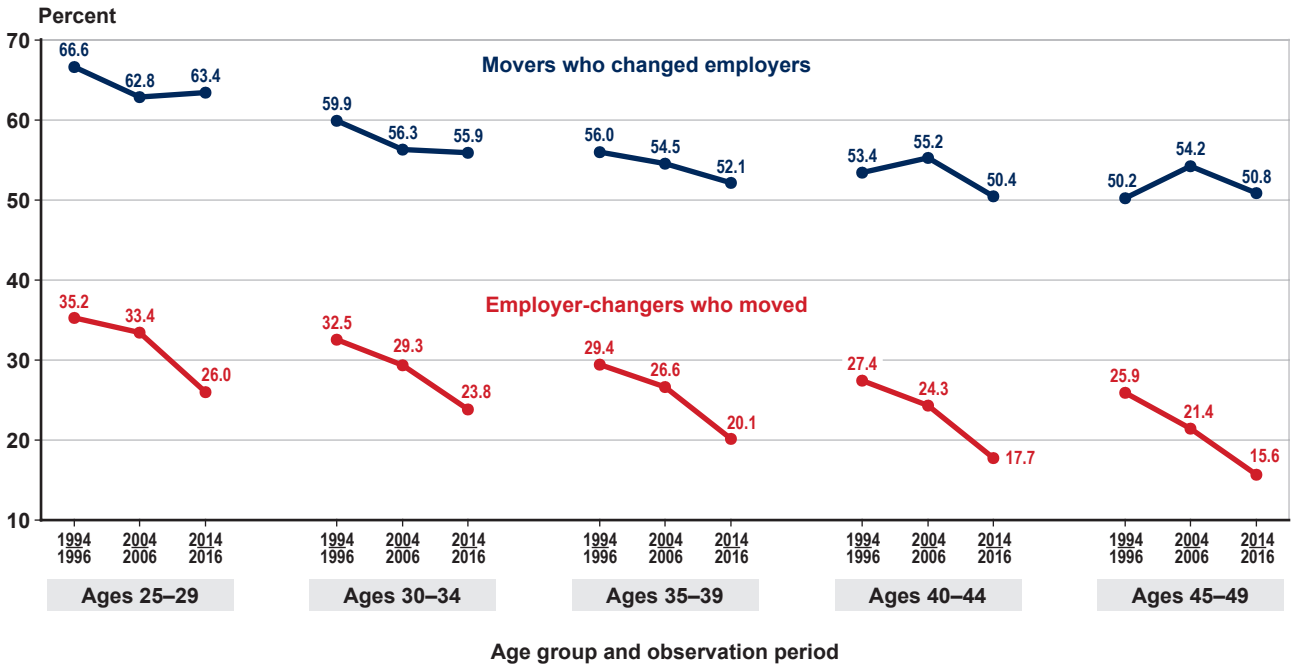
In summary, Charts 1 through 6 show that the average annual proportion of men and women aged 25–49 who moved to a new county or state declined substantially from 1994–1996 through 2014–2016. The proportion of men and women who changed employers, however, changed relatively little. The latter finding contrasts with some earlier studies that detected a downward trend in rates of employer change among American workers. Among men who moved, the proportion who also changed employers declined slightly over the period from 1994–1996 through 2014–2016. Among men who changed employers over that period, the proportion who also moved fell sharply. For women who moved, there was relatively little change in the proportion who also changed employers over the period from 1994–1996 through 2014–2016. For women who changed employers, the proportion who also moved declined substantially, mirroring the trend among men.

Multivariate Analysis of Geographic Mobility and Employer Change

This section discusses the results of several regression models that test the statistical relationship between a range of individual and geographic variables and the probability that an individual moved or changed employers. Table 1 shows the results for two logistic regressions: In model 1, the dependent variable indicates whether the individual moved to a new county or state in the previous calendar year, and in model 2, the dependent variable indicates whether the individual changed employers in the previous calendar year. Both models control for the 3-year observation period, age, race, foreign or domestic birthplace, region of residence, and whether the county of residence was metropolitan or nonmetropolitan.[7] Region and county are defined as the place of residence in the year before an individual moved or changed employer, or in the same year for a member of the comparison group who did not.

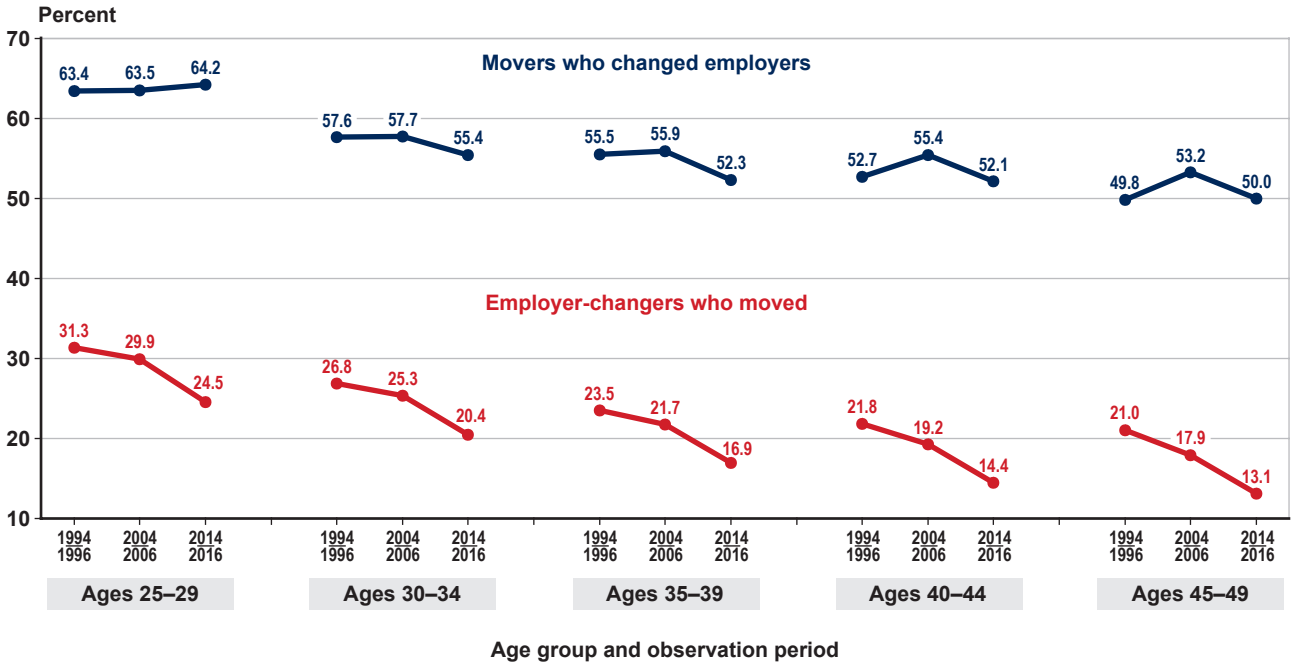
The main economic variables of interest in each regression are the quartile rank of each person's mean annual earnings in the 3 years before the year in which

Chart 5.
Interactions between moving and changing employers among men, by age group: Percentage of movers who changed employers, and percentage of employer-changers who moved, various periods 1994–2016



SOURCE: Author's calculations using CWHS data.

Chart 6.
Interactions between moving and changing employers among women, by age group: Percentage of movers who changed employers, and percentage of employer-changers who moved, various periods 1994–2016



SOURCE: Author's calculations using CWHS data.

Table 1.
Relationship of selected characteristics to the probability of having moved or changed employers in the past year among workers aged 25–49, by sex: Logistic regression results

Independent variable	Model 1: Moved in past year		Model 2: Changed employer in past year	
	Marginal effect [a]	Standard error	Marginal effect [a]	Standard error
		Men [b]		
Observation period				
2004–2006	-0.0047*	0.0022	0.0051*	0.0017
2014–2016	-0.0300*	0.0141	0.0077*	0.0026
Foreign place of birth	0.0057*	0.0027	-0.0234*	0.0080
Age (1-year increment)	-0.0037*	0.0017	-0.0038*	0.0013
White, non-Hispanic	0.0092*	0.0043	-0.0114*	0.0039
Region				
Midwest	0.0046*	0.0022	0.0025*	0.0009
South	0.0218*	0.0103	0.0249*	0.0085
West	0.0034*	0.0016	0.0201*	0.0069
Metropolitan county	-0.0697*	0.0327	-0.0035*	0.0012
Quartile of mean annual earnings [c]				
4th (highest)	-0.0599*	0.0282	-0.2541*	0.0867
3rd	-0.0579*	0.0272	-0.2253*	0.0769
2nd	-0.0379*	0.0178	-0.1411*	0.0482
Ratio of origin county to national—				
Unemployment rate	-0.0154*	0.0073	-0.0030*	0.0010
Median household income	0.0499*	0.0235	0.0396*	0.0135
		Women [d]		
Observation period				
2004–2006	-0.0050*	0.0025	0.0022*	0.0007
2014–2016	-0.0236*	0.0117	0.0048*	0.0016
Foreign place of birth	0.0013*	0.0006	-0.0249*	0.0084
Age (1-year increment)	-0.0038*	0.0019	-0.0055*	0.0018
White, non-Hispanic	0.0072*	0.0036	-0.0202*	0.0068
Region				
Midwest	0.0020*	0.0010	0.0093*	0.0031
South	0.0189*	0.0094	0.0243*	0.0082
West	0.0049*	0.0025	0.0219*	0.0074
Metropolitan county	-0.0640*	0.0319	0.0018*	0.0006
Quartile of mean annual earnings [c]				
4th (highest)	-0.0340*	0.0169	-0.2135*	0.0719
3rd	-0.0321*	0.0160	-0.1756*	0.0591
2nd	-0.0208*	0.0104	-0.0967*	0.0326
Ratio of origin county to national—				
Unemployment rate	-0.0140*	0.0070	-0.0166*	0.0056
Median household income	0.0447*	0.0223	0.0228*	0.0077

SOURCE: Author's calculations using CWHS data.

NOTE: * = statistically significant at the 0.01 level.

a. The change in the probability of the event represented by the dependent variable, either relative to the omitted categorical independent variable or in response to a one-unit change in a continuous independent variable, averaged across all observations in the sample.

b. Model 1: 3,759,864 observations; log likelihood = -1,208,341; Hosmer-Lemeshow test χ^2 = 248.4; probability > χ^2: <.0001.
Model 2: 3,762,224 observations; log likelihood = -1,857,042; Hosmer-Lemeshow test χ^2 = 10,009.5; probability > χ^2: <.0001.

c. In the 3-year observation period.

d. Model 1: 3,656,583 observations; log likelihood = -1,044,569; Hosmer-Lemeshow test χ^2 = 855.6; probability > χ^2: <.0001.
Model 2: 3,657,489 observations; log likelihood = -1,805,963; Hosmer-Lemeshow test χ^2 = 2,628.0; probability > χ^2: <.0001.

a move or employer change did or did not occur; and two indicators of local economic conditions. These economic indicators are the ratio of the 3-year average unemployment rate in the person's county of residence to the national 3-year average unemployment rate and the ratio of median household income in the person's county of residence to national median household income. For both men and women, 3-year mean annual earnings were ranked by quartile in each of the five age groups from 25–29 through 45–49. The county/national unemployment-rate ratio was based on 3-year averages computed from the Current Population Survey. For the period 1994–1996, the county/national household income ratio was based on data from the 1990 census. For the two later periods, the income ratios were based on data from the American Community Survey.

Table 1 shows the results of the two logistic regression models in which the samples consist of men and women aged 25–49. For each independent variable, the table shows the average marginal effect (with an indicator of statistical significance) and the standard error. The sample for each regression represents approximately 3.7 million observations over three 3-year periods.[8] In this sample, annual averages of 10.7 percent of men moved and 23.0 percent changed employers; the corresponding percentages for women are 8.9 percent and 22.0 percent.

In model 1, the average marginal effect represents the change in the probability of having moved to a new county or state either in response to a one-unit change in an independent variable or relative to the omitted reference variable, averaged across all observations in the sample. The marginal effects of the variables representing 2004–2006 and 2014–2016 were negative and statistically significant relative to 1994–1996, other things being equal. Among the other independent variables, men born outside the United States were slightly more likely to have moved than native-born men were. Non-Hispanic white men were more likely to have moved than other men. The probability of moving declined with age. Men residing in the Midwest, South, or West were more likely to have moved than men residing in the Northeast, and men who lived in metropolitan-area counties were less likely to have moved than men who lived in nonmetropolitan counties.

Chart 1 showed that men in the lowest earnings quartile for their age group had higher annual geographic mobility rates than did men in the top quartile. The same relationship is present in the regression results. Relative to men in the first (lowest) earnings quartile for their 5-year age group, the annual probability of moving was 3.8 percentage points lower for men in the second earnings quartile. For men in the third and fourth (highest) earnings quartiles, the annual probabilities of moving were 5.8 percentage points and 6.0 percentage points lower, respectively, than for men in the first earnings quartile.

The variables representing local economic conditions also had statistically significant relationships with the likelihood of moving. The probability of moving was 1.5 percentage points lower for men who resided in counties with local-to-national unemployment-rate ratios greater than 1 than that for men in counties with lower ratios. The probability of moving was 5.0 percentage points higher for men who resided in counties with higher than average local-to-national median household income ratios, all else being equal. Thus, although the probability of moving was negatively correlated with successively higher individual earnings quartiles, it was positively correlated with county median household income. Regressions run separately on men in each earnings quartile showed an average marginal effect for county median household income of 0.101 in the lowest earnings quartile compared with an average marginal effect of just 0.016 in the highest earnings quartile (not shown). This suggests that the characteristics of high-income counties, such as higher average educational attainment, may promote greater geographic mobility for lower earners in those counties, but that the effect dissipates as one's own earnings rise.[9]

In model 2, the average marginal effect represents the change in the probability of having changed employers either in response to a one-unit change in an independent variable or relative to the omitted reference variable, averaged across all observations in the sample. In this model, the average marginal effects of the variables representing the years 2004–2006 and 2014–2016 were small but positive for men and women alike. As Chart 3 showed, unlike geographic mobility, rates of employer change among men did not decline over time. In the regression analysis, men born outside the United States were less likely to have changed employers than were native-born men. Men who reported their race/ethnicity as non-Hispanic white were less likely to have changed employers than other men were. The probability of changing employers declined with age. Men in the Midwest, South, and West were more likely to have changed employers than those in the Northeast, and those in metropolitan

counties were slightly less likely to have changed employers than were men in nonmetropolitan counties.

Relative to men in the lowest earnings quartile, those in the other three quartiles were substantially less likely to have changed employers, all else being equal. Men in the fourth (highest) earnings quartile were 25 percentage points less likely to change employers than those in the first (lowest) quartile. The probabilities of employer change in the third and second quartiles were 23 percentage points and 14 percentage points lower, respectively, than those of men in the lowest earnings quartile. Residing in a county with a local-to-national average annual unemployment-rate ratio of 1 or more had a small but statistically significant negative correlation with the annual probability of changing employers.

For men who resided in counties in which median household income exceeded the national median household income, the probability of changing employers was 4.0 percentage points higher than average, all else being equal. Thus, although the probability of changing employers was negatively correlated with successively higher earnings quartiles, it rose with county median household income—the same pattern as that for the annual probability of moving. Further mirroring the results for geographic mobility, regressions run separately on men in each earnings quartile showed that the average marginal effect of county median household income was substantially larger for men in the lowest earnings quartile than for men in higher quartiles (not shown). This suggests that employer change may be easier for low earners in high-income counties, with the effect dissipating as one's own earnings rise.

For women, the average annual probability of moving had the same signs as those of men for the individual earnings quartile, county unemployment rate, and county median household income variables, but the average marginal effects for women were slightly smaller. For the average annual probability of changing employers, the signs for the three economic variables also were the same for both men and women. The average marginal effect of the county unemployment rate was slightly larger for women and those of the other economic variables were slightly smaller for women.

As Charts 5 and 6 illustrated, approximately two-thirds of men and women who moved to another county or state also changed employers, and about one-third of those who changed employers also moved to another county or state. By constructing two subsamples—one comprising individuals who changed employers and the other consisting of those who did not—and running the same logistic models described above separately on each subsample, we can examine the statistical relationship of selected personal and geographic traits to geographic mobility, conditional on having changed or not changed employers. Table 2 shows the results of logistic regressions run separately on men and women who changed employers in the previous year, and men and women who did not change employers.

Table 2, subsample 1 shows that, among men who changed employers in the preceding year, the independent variables representing earnings quartile have the same sign and approximately the same magnitude as in the regression run on the full sample of men (Table 1, model 1). The average marginal effects for high county unemployment rate and median household income, however, are larger for the subsample who changed employers. Other factors being equal, residing in a high-unemployment county had a stronger negative correlation with geographic mobility among men who changed employers than among the full sample. This may support the hypothesis that workers in economically disadvantaged areas are relatively less able to migrate to areas with better employment opportunities (Raphael and Riker 1999; Foster 2017). Similarly, the positive marginal effect associated with high county median household income was larger for the subsample of men who changed employers than for the sample as a whole. This could indicate that characteristics of higher-income counties, such as higher average educational attainment, promote greater geographic mobility.

For women who changed employers in the preceding year, each independent variable in the Table 2 regression estimating the probability of moving to a new county or state had the same sign as that for men, but the estimated average marginal effects were smaller in most cases.

Annual Earnings of Movers and Nonmovers

Data from the CWHS in Charts 1–4 show that annual geographic mobility rates declined substantially among both men and women aged 25–49 from 1994–1996 through 2014–2016. Annual rates of employer change remained relatively stable over that period among both men and women, except for those younger than 40 in the lowest earnings quartile, for whom employer change declined. Kennan and Walker (2011) found that the prospect of higher earnings in other locations is a significant incentive for geographic

Table 2.
Relationship of selected characteristics to the probability of having moved in the past year among workers aged 25–49, by sex and employer-change status: Logistic regression results

Independent variable	Subsample 1: Changed employer in past year		Subsample 2: Did not change employer in past year	
	Marginal effect [a]	Standard error	Marginal effect [a]	Standard error
		Men [b]		
Observation period				
2004–2006	-0.0184*	0.0040	-0.0015*	0.0007
2014–2016	-0.0830*	0.0182	-0.0149*	0.0067
Foreign place of birth	0.0216*	0.0047	0.0067*	0.0030
Age (1-year increment)	-0.0045*	0.0010	-0.0026*	0.0012
White, non-Hispanic	0.0292*	0.0064	0.0059*	0.0027
Region				
Midwest	0.0059*	0.0013	0.0036*	0.0016
South	0.0316*	0.0069	0.0132*	0.0060
West	0.0026	0.0006	-0.0012*	0.0005
Metropolitan county	-0.1534*	0.0337	-0.0437*	0.0198
Quartile of mean annual earnings [c]				
4th (highest)	-0.0616*	0.0135	0.0038*	0.0017
3rd	-0.0499*	0.0110	-0.0002	0.0001
2nd	-0.0356*	0.0078	0.0028*	0.0013
Ratio of origin county to national—				
Unemployment rate	-0.0430*	0.0094	-0.0065*	0.0029
Median household income	0.0705*	0.0155	0.0330*	0.0149
		Women [d]		
Observation period				
2004–2006	-0.0092*	0.0023	-0.0038*	0.0019
2014–2016	-0.0589*	0.0149	-0.0133*	0.0066
Foreign place of birth	0.0134*	0.0034	0.0028*	0.0014
Age (1-year increment)	-0.0052*	0.0013	-0.0022*	0.0011
White, non-Hispanic	0.0335*	0.0085	0.0034*	0.0017
Region				
Midwest	0.0006	0.0001	0.0010	0.0005
South	0.0329*	0.0083	0.0101*	0.0050
West	0.0116*	0.0029	-0.0015*	0.0007
Metropolitan county	-0.1456*	0.0368	-0.0407*	0.0201
Quartile of mean annual earnings [c]				
4th (highest)	-0.0259*	0.0065	0.0089*	0.0044
3rd	-0.0203*	0.0051	0.0057*	0.0028
2nd	-0.0162*	0.0041	0.0036*	0.0018
Ratio of origin county to national—				
Unemployment rate	-0.0328*	0.0083	-0.0053*	0.0026
Median household income	0.0639*	0.0161	0.0327*	0.0161

SOURCE: Author's calculations using CWHS data.

NOTE: * = statistically significant at the 0.01 level.

a. The change in the probability of the event represented by the dependent variable, either relative to the omitted categorical independent variable or in response to a one-unit change in a continuous independent variable, averaged across all observations in the sample.

b. Subsample 1: 2,897,620 observations; log likelihood = -655,974; Hosmer-Lemeshow test χ^2 = 287.2; probability > χ^2: <.0001.
Subsample 2: 862,244 observations; log likelihood = -469,430; Hosmer-Lemeshow test χ^2 = 584.3; probability > χ^2: <.0001.

c. In the 3-year observation period.

d. Subsample 1: 2,842,852 observations; log likelihood = -558,955; Hosmer-Lemeshow test χ^2 = 963.5; probability > χ^2: <.0001.
Subsample 2: 813,731 observations; log likelihood = -412,292; Hosmer-Lemeshow test χ^2 = 358.3; probability > χ^2: <.0001.

mobility. The charts in this section compare the annual earnings of men and women who moved to a new county or state with the earnings of those who did not move. Specifically, the charts show, for workers who moved in 1994–1996 or 2004–2006, average annual earnings in the 3-year period before moving and in the 4th through 6th years after moving, and compare them with the earnings in the same years of people who did not move. In this section, "earnings" refers to the median value of the 3-year annual average earnings for the members of a given age group in an observation period.

Chart 7 shows earnings among men in each of the five age groups for the periods 1994–1996 and 2004–2006. For men who moved, the chart shows earnings in the 3-year period up to and including the year of the move. Some methodological points bear repeating here: To provide meaningful comparisons, the earnings of men who did not move are shown for the same years. The sample includes only men who remained for 5 years in one residence—in either the mover's new location or the nonmover's same location. The sample thus excludes movers who returned, or who moved more than once in 5 years.

The earnings of men who moved in 1994–1996 were lower than those of nonmovers in all five age groups. Earnings among men aged 25–29 who moved during 1994–1996 were $24,603, or $3,233 (11.6 percent) less than those of nonmovers in the same age group ($27,836). Among men aged 45–49, earnings among movers were $59,786, or $5,046 (7.8 percent) less than similarly aged nonmovers ($64,832). Ten years later, the pattern persisted. Men aged 25–29 who moved during 2004–2006 had earnings ($28,079) that were $2,265 (7.5 percent) lower than those of nonmovers ($30,344). Among men aged 45–49, earnings among movers were $58,764, or $4,975 (7.8 percent) less than those of nonmovers ($63,739).

Chart 8 shows that for women, the relative earnings of movers and nonmovers were similar to those for men in 1994–1996, but differed slightly in 2004–2006. Earnings of women aged 25–29 who moved during 1994–1996 were $21,947 in the 3 years up to and including the year they moved, or $774 (3.4 percent) less than the earnings of nonmovers in the same period ($22,721). Earnings among women aged 45–49 were $35,045 for movers, or $3,116 (8.2 percent) less than those of nonmovers ($38,161). Ten years later, however, the pattern differed. During 2004–2006, the earnings of movers were lower than those of nonmovers for women in three of the five age groups, but were higher in the other two. For women in the 25–29, 40–44, and 45–49 age groups, the earnings of movers were lower than those of nonmovers. For women in the 30–34 and 35–39 age groups, the earnings of movers were higher than those of nonmovers.

Deciding whether to move to a new location might be influenced both by recent past earnings and by expectations about future earnings. Relatively low recent past earnings may prompt some workers to consider the possibility of earning higher wages elsewhere. In both 1994–1996 and 2004–2006, men's recent earnings were lower among those who moved than they were among men who, in the same period, did not. Among women, this relationship was also present in all five age groups in 1994–1996 and in three of the age groups in 2004–2006.

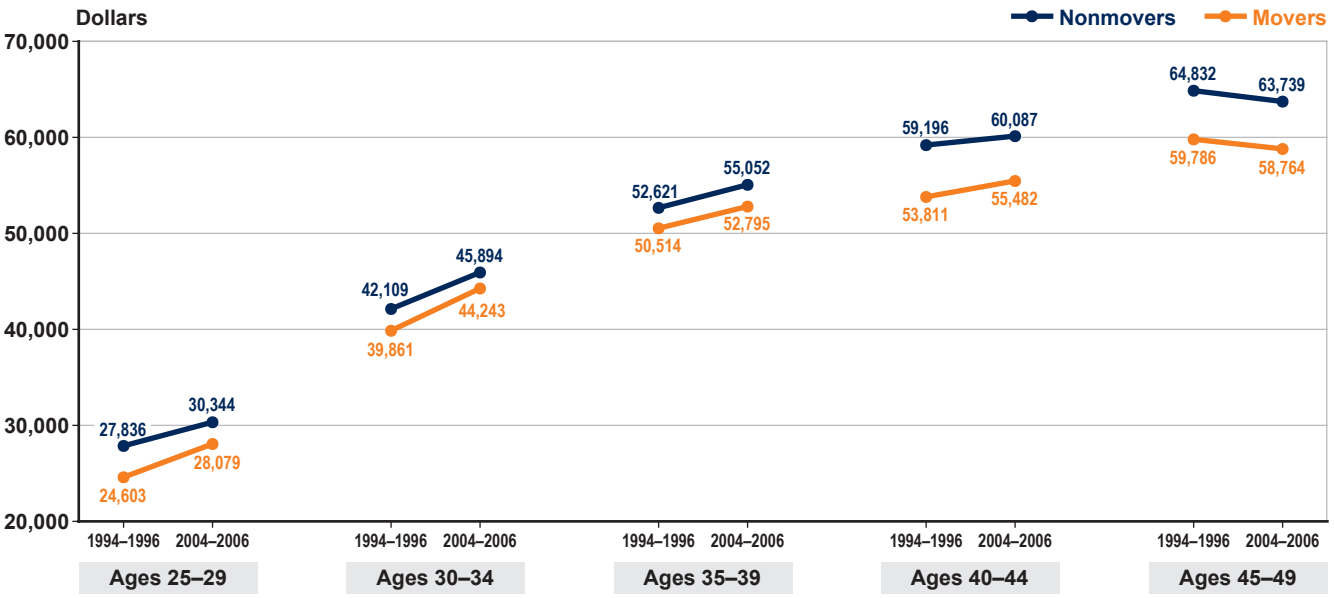
Chart 9 shows earnings in the 4th through 6th years after relocating among men who moved and in the same years among men who did not move. In both periods, men younger than 40 who moved had higher earnings 4–6 years after moving than their counterparts who did not move, even though movers had had lower earnings before they moved. Also in both periods, men aged 40–49 who moved had *lower* earnings 4–6 years after moving than men who did not move.

Among men aged 25–29 who moved during 1994–1996, postmove earnings were $51,606, or $4,691 (10.0 percent) higher than the earnings among nonmovers ($46,915). For men aged 45–49 who moved during 1994–1996, postmove earnings were $62,901, or $3,664 (5.5 percent) *lower* than the earnings of nonmovers ($66,565).

Ten years later, earnings had fallen for both movers and nonmovers, reflecting in part the effect of the Great Recession of 2007–2009. Among movers aged 25–29 during 2004–2006, postmove earnings were $48,813, or $5,396 (12.4 percent) higher than those of nonmovers ($43,417). Among men aged 45–49 who moved during 2004–2006, postmove earnings were $59,061, or $3,488 (5.6 percent) *lower* than those of nonmovers ($62,549).

Chart 10 repeats Chart 9 for women. In both periods, women aged 25–34 who moved had higher postmove earnings than women the same age in the same period who did not move, even though movers had had lower earnings before they moved. Also in both periods, women aged 40–49 who moved had *lower* postmove earnings than women the same age in the same period who did not move. Among women aged 35–39, the earnings of movers and nonmovers

Chart 7.
Men's earnings in the 3-year period ending with the year of relocation for movers, and in the same period for nonmovers, by age group, 1994–1996 and 2004–2006

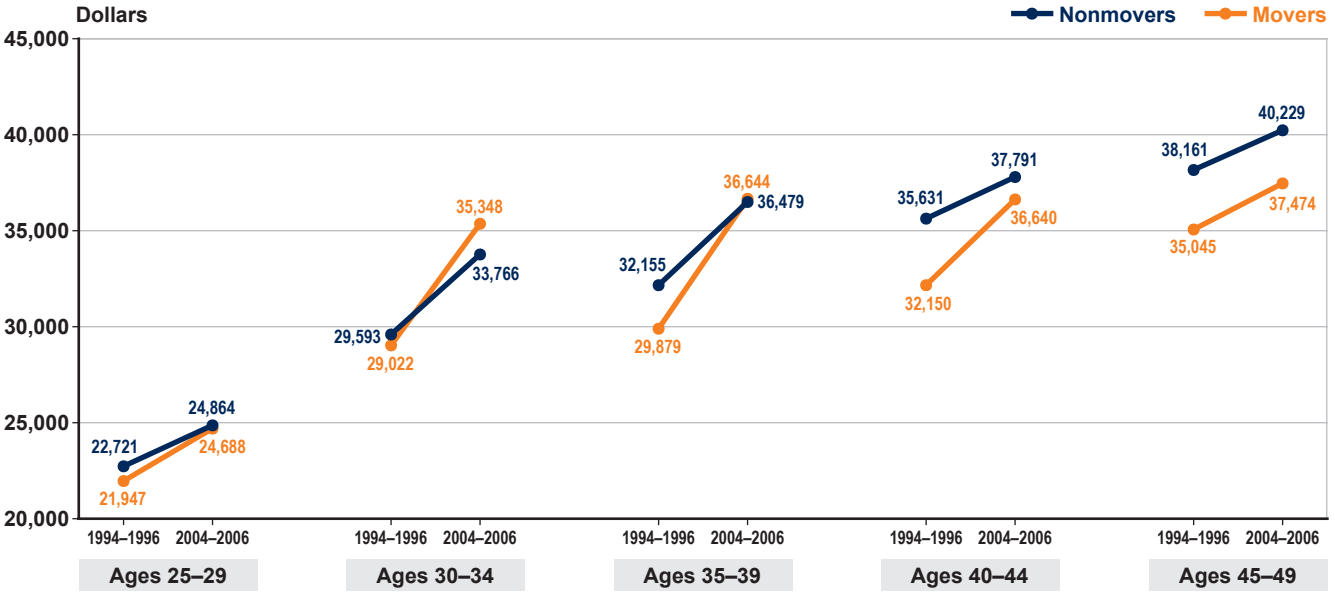


SOURCE: Author's calculations using CWHS data.

NOTES: Earnings are the medians of 3-year annual averages, expressed in 2016 dollars.

Earnings occurred in or prior to the move/nonmove observation period.

Chart 8.
Women's earnings in the 3-year period ending with the year of relocation for movers, and in the same period for nonmovers, by age group, 1994–1996 and 2004–2006

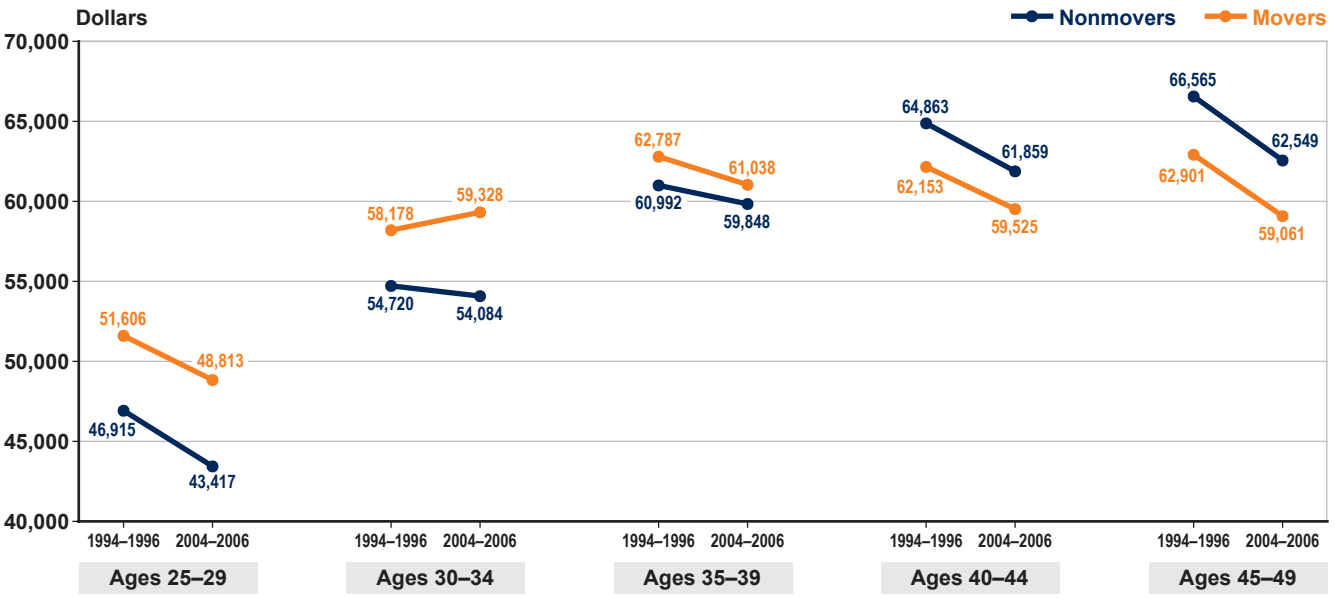


SOURCE: Author's calculations using CWHS data.

NOTE: Earnings are the medians of 3-year annual averages, expressed in 2016 dollars.

Earnings occurred in or prior to the move/nonmove observation period.

Chart 9.
Men's earnings in the 4th through 6th years after relocating for movers, and in the same period for nonmovers, by age group, 1994–1996 and 2004–2006

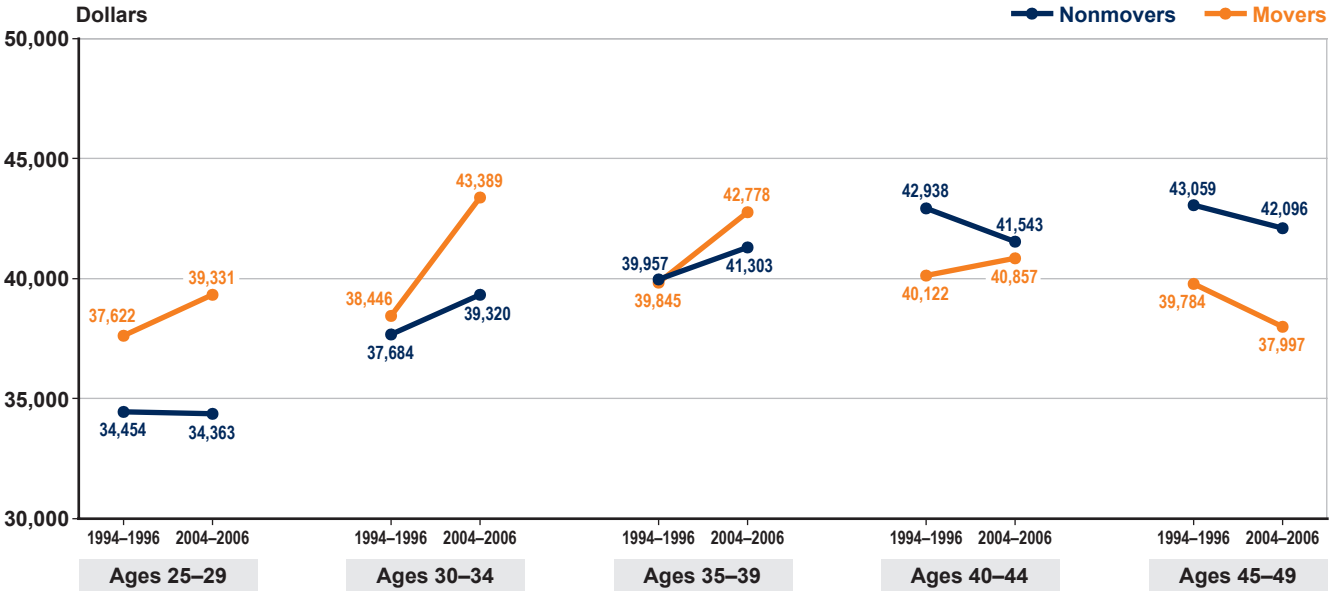


SOURCE: Author's calculations using CWHS data.

NOTES: Earnings are the medians of 3-year annual averages, expressed in 2016 dollars.

Earnings occurred in years following the move/nonmove observation period.

Chart 10.
Women's earnings in the 4th through 6th years after relocating for movers, and in the same period for nonmovers, by age group, 1994–1996 and 2004–2006



SOURCE: Author's calculations using CWHS data.

NOTE: Earnings are the medians of 3-year annual averages, expressed in 2016 dollars.

Earnings occurred in years following the move/nonmove observation period.

were about equal 4–6 years after the 1994–1996 period, and the earnings of movers were higher 4–6 years after the 2004–2006 period.

For women aged 25–29 who moved during 1994–1996, postmove earnings were $37,622, or $3,168 (9.2 percent) higher than those of nonmovers ($34,454). Among women aged 45–49 who moved in those years, postmove earnings were $39,784, or $3,275 (7.6 percent) *lower* than the earnings of nonmovers ($43,059).

Ten years later, the pattern was similar. Among women aged 25–29, the postmove earnings of those who moved were $39,331, or $4,968 (14.5 percent) higher than earnings in the same years of nonmovers ($34,363). Among women aged 45–49 who moved during 2004–2006, postmove earnings were $37,997, or $4,099 (9.7 percent) *lower* than the earnings in the same period among women who did not move ($42,096).

Overall, Charts 9 and 10 show that men and women younger than 40 who moved to a new county or state had higher real earnings 4–6 years after moving than those who did not move, even though their earnings before the move had been lower than those of nonmovers. For men and women aged 40–49, the opposite was true: Those who remained in the same location had higher earnings than movers in the period 4–6 years after the movers relocated to a new county or state. These results suggest that if an advantage in earnings growth accrues to those who move to a new location, it appears to occur mainly among workers younger than 40. One possible explanation for this finding is that people of different ages may move for different reasons. For example, younger people may move mainly in order to find better-paying employment, while older people might be more likely to move to be closer to family members in need of child care or elder care.

Multivariate Analysis of Earnings Change

Charts 7 through 10 show the average earnings of men and women by age in two different periods; however, earnings also vary with other personal characteristics and with local economic conditions. Tables 3 and 4 show, for men and women respectively, the results of ordinary least square (OLS) regressions in which the dependent variable is the change in the logarithm of real 3-year mean annual earnings between two periods, controlling for geographic mobility and other factors. Table 3 shows the results of a regression for men who either moved to a new county or state in one of two observation periods and remained in that location for at least 5 years or did not move during that period and remained in the same location for at least 5 years. The upper panel presents regression results for men born from 1945 through 1971 for the 1994–1996 observation period; the lower panel does so for men born from 1955 through 1981 for the 2004–2006 observation period. Table 4 presents the same parameters for women.

The dependent variable in the model is the change in the natural logarithm of real mean annual earnings between two 3-year periods. The change in the logarithm of earnings is approximately equal to the percentage change in earnings. The first observation period for those who moved is the 3 years up to and including the year of the move; mean earnings for nonmovers are calculated for the same 3-year period. The second observation period for those who moved consists of the fourth, fifth, and sixth years after the move; again, mean earnings for nonmovers are calculated for the same 3-year period.

The model includes the following conditional independent variables:

- Whether the individual moved to a new county or state (=1) or not (=0);
- Whether the individual changed employers (=1) or not (=0);
- Whether the individual both moved and changed employers (=1) or not (=0);
- Whether the individual is non-Hispanic white (=1) or not (=0);
- Whether the individual was born outside the United States (=1) or not (=0); and
- Whether the individual's county of residence (for movers, the former residence) is classified as metropolitan (=1) or not (=0).

The model also includes the following categorical independent variables:

- Quartile rank of the individual's average annual earnings in the 3 years prior to moving (or not moving) for persons of the same sex and 5-year age group. The first (lowest) quartile is the omitted category.
- The individual's birth cohort. The youngest cohort is the omitted category.
- The region of the individual's county of residence (for movers, the former residence). Northeast is the omitted category.

Finally, the model also includes two continuous independent variables. One represents the ratio of the 3-year average unemployment rate in the person's

Table 3.
OLS regressions for change in logarithm of men's 3-year average earnings from event year *n* to *n* +6

Independent variable	Parameter estimate	Standard error	*t* value	*p*-value [a]
	1994–1996 observation period (1945–1971 birth cohorts) [b]			
Intercept	0.6788*	0.0117	57.90	<0.0001
Moved to other county or state	0.0480*	0.0083	5.76	<0.0001
Changed employer	0.0481*	0.0039	12.41	<0.0001
Moved *and* changed employer	0.0894*	0.0120	7.45	<0.0001
Quartile of mean annual earnings				
4th (highest)	-0.5288*	0.0044	-120.37	<0.0001
3rd	-0.5223*	0.0044	-117.81	<0.0001
2nd	-0.4295*	0.0045	-95.79	<0.0001
Birth cohort				
1945–1949	-0.4416*	0.0047	-93.49	<0.0001
1950–1954	-0.3790*	0.0046	-82.22	<0.0001
1955–1959	-0.3225*	0.0046	-70.61	<0.0001
1960–1964	-0.2284*	0.0046	-49.15	<0.0001
White, non-Hispanic	0.0808*	0.0035	23.20	<0.0001
Foreign place of birth	0.0984*	0.0050	19.84	<0.0001
Region				
Midwest	-0.0033	0.0043	-0.76	0.4473
South	-0.0181*	0.0042	-4.26	<0.0001
West	-0.0028	0.0043	-0.66	0.5093
Metropolitan county	0.0466*	0.0045	10.30	<0.0001
Ratio of origin county to national—				
Unemployment rate	-0.0146*	0.0043	-3.43	0.0006
Median household income	0.0997*	0.0066	15.07	<0.0001
	2004–2006 observation period (1955–1981 birth cohorts) [c]			
Intercept	0.3903*	0.0136	28.64	<0.0001
Moved to other county or state	0.0532*	0.0084	6.33	<0.0001
Changed employer	-0.0040	0.0040	-1.01	0.3125
Moved *and* changed employer	0.1205*	0.0125	9.65	<0.0001
Quartile of mean annual earnings				
4th (highest)	-0.2910*	0.0043	-67.16	<0.0001
3rd	-0.2903*	0.0042	-69.01	<0.0001
2nd	-0.2636*	0.0041	-63.77	<0.0001
Birth cohort				
1955–1959	-0.3940*	0.0048	-81.62	<0.0001
1960–1964	-0.3452*	0.0048	-71.57	<0.0001
1965–1969	-0.2861*	0.0049	-58.38	<0.0001
1970–1974	-0.1894*	0.0051	-37.51	<0.0001
White, non-Hispanic	0.0817*	0.0036	22.47	<0.0001
Foreign place of birth	0.0905*	0.0046	19.64	<0.0001
Region				
Midwest	-0.0687*	0.0044	-15.46	<0.0001
South	-0.0068	0.0042	-1.60	0.1096
West	-0.0018	0.0045	-0.39	0.6965
Metropolitan county	0.0289*	0.0289	10.30	<0.0001
Ratio of origin county to national—				
Unemployment rate	0.0082	0.0067	1.22	0.2225
Median household income	0.0959*	0.0070	13.70	<0.0001

SOURCE: Author's calculations using CWHS data.

NOTES: For movers, "region" and "county" refer to prior location.

* = statistically significant at the 0.01 level.

a. Two-tailed test.

b. Sample size = 181,768. Dependent mean = 0.248. R^2 = 0.1655.

c. Sample size = 199,618. Dependent mean = 0.109. R^2 = 0.0780.

Table 4.
OLS regressions for change in logarithm of women's 3-year average earnings from event year *n* to *n* +6

Independent variable	Parameter estimate	Standard error	*t* value	*p*-value [a]
	1994–1996 observation period (1945–1971 birth cohorts) [b]			
Intercept	0.8151*	0.0148	55.00	<0.0001
Moved to other county or state	-0.0223	0.0116	-1.93	0.0536
Changed employer	0.0798*	0.0048	16.74	<0.0001
Moved *and* changed employer	0.0805*	0.0164	4.90	<0.0001
Quartile of mean annual earnings				
4th (highest)	-0.8281*	0.0051	-162.80	<0.0001
3rd	-0.7771*	0.0050	-156.15	<0.0001
2nd	-0.6742*	0.0049	-136.76	<0.0001
Birth cohort				
1945–1949	-0.2911*	0.0060	-48.87	<0.0001
1950–1954	-0.2043*	0.0058	-35.36	<0.0001
1955–1959	-0.1617*	0.0058	-28.07	<0.0001
1960–1964	-0.1479*	0.0059	-25.05	<0.0001
White, non-Hispanic	0.0078	0.0042	1.85	0.0643
Foreign place of birth	0.0462*	0.0065	7.10	<0.0001
Region				
Midwest	0.0089	0.0055	1.62	0.1052
South	-0.0211*	0.0053	-3.94	0.0001
West	0.0154*	0.0055	2.82	0.0048
Metropolitan county	0.0621*	0.0057	10.88	<0.0001
Ratio of origin county to national—				
Unemployment rate	0.0020	0.0054	0.37	0.7114
Median household income	0.1233*	0.0084	14.76	<0.0001
	2004–2006 observation period (1955–1981 birth cohorts) [c]			
Intercept	0.5663*	0.0154	36.02	<0.0001
Moved to other county or state	-0.0001	0.0104	-0.01	0.9920
Changed employer	0.0119*	0.0044	2.71	0.0067
Moved *and* changed employer	0.1064*	0.0152	7.01	<0.0001
Quartile of mean annual earnings				
4th (highest)	-0.6197*	0.0047	-131.67	<0.0001
3rd	-0.5861*	0.0046	-127.13	<0.0001
2nd	-0.5288*	0.0046	-115.55	<0.0001
Birth cohort				
1955–1959	-0.2558*	0.0053	-48.26	<0.0001
1960–1964	-0.1911*	0.0053	-35.83	<0.0001
1965–1969	-0.1652*	0.0055	-30.13	<0.0001
1970–1974	-0.1458*	0.0056	-25.89	<0.0001
White, non-Hispanic	0.0581*	0.0039	15.03	<0.0001
Foreign place of birth	0.0884*	0.0052	16.98	<0.0001
Region				
Midwest	-0.0526*	0.0049	-10.65	<0.0001
South	-0.0183*	0.0047	-3.88	0.0001
West	-0.0004	0.0051	-0.07	0.9442
Metropolitan county	0.0432*	0.0053	8.16	<0.0001
Ratio of origin county to national—				
Unemployment rate	0.0094	0.0075	1.26	0.2077
Median household income	0.1221*	0.0079	15.47	<0.0001

SOURCE: Author's calculations using CWHS data.

NOTES: For movers, "region" and "county" refer to prior location.

* = statistically significant at the 0.01 level.

a. Two-tailed test.

b. Sample size = 182,138. Dependent mean = 0.297. R^2 = 0.1884.

c. Sample size = 204,976. Dependent mean = 0.177. R^2 = 0.1211.

county of residence (for movers, the former residence) to the national 3-year average unemployment rate. The other represents the ratio of median household income in the person's county of residence (for movers, the former residence) to national median household income.

Table 3 shows that, other things being equal, moving to a new county or state had a small but statistically significant positive relationship with the change in the logarithm of men's 3-year mean earnings for both the 1994–1996 and the 2004–2006 movers. The coefficient for the *moved* variable increased slightly between the two periods. The coefficient for the *changed employer* variable was positive and significant for 1994–1996 movers. For 2004–2006, the coefficient was negative but not significant. The geographic-mobility and employer-change interaction variable was positive and significant in both periods. These results do not support the hypothesis that diminishing earnings gains from moving contributed to declining geographic mobility during this period.

The regression results for both observation periods also indicate that, all else being equal, men in the lowest earnings quartile experienced greater percentage gains in earnings than men in higher earnings quartiles, and men in the youngest age group experienced greater percentage gains in earnings than older men. In both periods, non-Hispanic white men experienced greater percentage gains in earnings than men in other racial/ethnic groups, and foreign-born men experienced greater percentage gains in earnings than native-born workers.

In both periods, men who resided in metropolitan counties experienced larger percentage increases in earnings than those in nonmetropolitan counties. The coefficient for high county unemployment relative to the national rate was negative and statistically significant in 1994–1996 but was not significant in 2004–2006. The coefficient for high county median household income relative to national household income was positive and statistically significant in both periods. In other words, men who lived in counties with above-average median household income experienced greater percentage increases in earnings than those who lived in lower-income counties, other things being equal.

Table 4 shows the regression results for women, which differ from those for men in an important respect: The independent *moved* variable was negative for both 1994–1996 and 2004–2006 movers, but the coefficient was not statistically significant in either period. Both the variable indicating a change in employer and the variable interacting geographic mobility *and* employer change were positive and statistically significant. These results suggest that, for women, employer change alone and geographic mobility combined with employer change were positively correlated with earnings gains, but geographic mobility alone was not.

Similar to men, in both periods, women in the lowest earnings quartile experienced greater percentage gains in earnings than workers in higher earnings quartiles, all else being equal. Likewise, women in the youngest age group experienced greater percentage gains in earnings than older women. The change in earnings for non-Hispanic white women was not significant for the 1994–1996 period, but was positive and significant for the 2004–2006 period. In both periods, foreign-born women experienced greater percentage gains in earnings than native-born women. As was also the case with men, in both periods, women in metropolitan counties experienced greater percentage increases in earnings than women in nonmetropolitan counties.

Earnings changes for women in counties with higher unemployment rates than the national rate were not statistically significant during either period. Earnings changes for women in counties with higher median household income than national median household income were positive and significant in both periods, as they were for men. Thus, women who lived in counties with above-average median household income experienced greater percentage increases in earnings than those who lived in lower-income counties, other things being equal.

Summary and Conclusion

This article uses CWHS data to examine trends in geographic mobility and employer change in the United States and to compare the annual earnings of movers and nonmovers over time. The data show that the average annual percentage of men and women aged 25–49 who moved to a new county or state declined substantially between 1994–1996 and 2014–2016. The decline occurred among both younger and older workers, but was larger among men and women younger than 40. The majority of the decline in geographic mobility rates among men and women occurred between 2004–2006 and 2014–2016. In contrast with the decline in annual rates of geographic mobility, there was little change in the average annual percentage of workers who changed employers during that span. Among men, average annual rates of

employer change were relatively stable, while among women they rose slightly. This result contrasts with the findings of some studies, which have reported a downward trend in employer change by American workers.

Among workers who moved to a new county or state, a majority also changed employers, and the proportion of movers who also changed employers was relatively stable between 1994–1996 and 2014–2016. By contrast, among men and women who changed employers, the percentages who also moved to another county or state declined substantially between 1994–1996 and 2014–2016.

Multivariate analysis indicates that younger workers, those with recent 3-year mean earnings in the lowest earnings quartile for their 5-year age group, and those who resided in counties with above-average median household income were relatively more likely to have moved. This was true both for the full samples of men and women and for the subsamples of those who had changed employers in the previous year. Among men and women who had *not* recently changed employers, those in higher earnings quartiles were slightly more likely to have moved than were those in the lowest quartile, possibly because they had been transferred or moved to another county within the same commuting area while remaining with the same employer.

In both 1994–1996 and 2004–2006, among men aged 25–49 who moved, median 3-year mean annual earnings before moving were lower than earnings in the same period among men who did not move. Among women who moved, median 3-year mean annual earnings before moving were lower than those of nonmovers over the same period in all five age groups in 1994–1996 and in three of five age groups during 2004–2006.

For men, gains in earnings after moving occurred mainly among those younger than 40. For those who moved in 1994–1996 or in 2004–2006, real annual earnings 4–6 years after moving were higher than those of men in the same age group who did not move, even though their premove median 3-year mean earnings were lower than those of nonmovers. By contrast, in both periods, men aged 40–49 who moved had *lower* real annual earnings 4–6 years after moving than men who did not move. Among women, too, gains in earnings after moving appear to have occurred mainly among those younger than 40, while women aged 40–49 who moved had lower earnings 4–6 years later than similarly aged women who did not move.

An OLS regression on the change in the logarithm of 3-year real mean annual earnings over time shows that for men, moving to a new county or state in either 1994–1996 or 2004–2006 had a small but statistically significant positive relationship with the change in earnings, other things being equal. The coefficient for the *moved* variable increased slightly between the two periods, suggesting that the gain in earnings associated with geographic mobility increased during that span. The coefficient on the *changed employer* variable was positive and significant in 1994–1996 but not in 2004–2006. The coefficient for the variable interacting both geographic mobility and employer change was positive and significant in both periods. Overall, the results do not support the hypothesis that diminishing earnings gains from moving contributed to declining geographic mobility of men in the United States during this time. In the regression on the change in women's earnings, the independent *moved* variable was not statistically significant in either 1994–1996 or 2004–2006. The *changed employer* variable was positive and significant in both periods, as was the variable interacting geographic mobility and employer change.

In summary, data from the CWHS reveal that the annual average proportion of men and women aged 25–49 who moved to a new county or state declined from 1994–1996 through 2014–2016, while the annual average proportion who changed employers remained relatively stable. Among men and women younger than 40, those who moved in 1994–1996 or 2004–2006 had higher 3-year average earnings 4–6 years later than those who did not move. Among men, moving to a new county or state was positively and significantly correlated with higher earnings 4–6 years later. Among women, the relationship between moving and earnings was not statistically significant in either period. The results suggest that the decrease in geographic mobility rates during this period is unlikely to have been caused by declining gains in annual earnings among those who moved.

Notes

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[1] As an example of such a secondary effect, Karahan and Rhee estimated that when the share of workers aged 40 to 60 in a state increases, that age group's lower migration rate tends to lower the migration rate of all workers in the state because firms recruit primarily from the local labor market.

[2] The Bureau of Labor Statistics (2018) defines displaced workers as "persons 20 years of age and older who lost or left jobs because their plant or company closed or moved, there was insufficient work for them to do, or their position or shift was abolished."

[3] The CWHS comprises two components, known as the active file and the inactive file. The active file contains the earnings records for workers with earnings from any employment (including self-employment), regardless of whether those earnings were covered under Social Security. The inactive file contains records only for workers who never had covered earnings posted to the Master Earnings File.

[4] The Department of Agriculture's Economic Research Service (2019) defines commuting zones as geographic units that reflect the local economy where people live and work.

[5] CWHS data for years before 1993 lack a variable that permits the researcher to identify whether the geographic code indicates the employee's place of residence or the employer's location.

[6] The Internal Revenue Service (IRS) issues an EIN for an individual firm, whether it is organized as a corporation, partnership, or sole proprietorship. If a firm has establishments in multiple locations, all such establishments have the same EIN. In some cases, the IRS may issue a new EIN for a given firm. Because these instances represent a small percentage of EIN changes in any given year, they do not greatly distort the estimated incidence of workers changing employers.

[7] Of the five demographic traits most commonly used as regressors—age, sex, race, marital status, and education—the CWHS includes variables describing only the first three.

[8] The observations represent person-years observed for a given subset of the 3,467,451 person-records in the CWHS data file.

[9] Separate analysis showed a correlation coefficient of 0.81 between state median household income and the proportion of adult state residents that had earned a bachelor's or higher degree.

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