The Wage Mobility of Low-Wage Workers in a Changing Economy, 1968 to 2014

Michael A. Schultz

The Wage Mobility of Low-Wage Workers in a Changing Economy, 1968 to 2014

MICHAEL A. SCHULTZ

How are changes in the low-wage labor market affecting the mobility of workers out of low-wage work? I investigate changes in the wage mobility of workers starting employment spells in low wages using the Panel Study of Income Dynamics from 1968 to 2014 and discrete-time event history analysis. About half of all low-wage workers move to better wages within four years. Effects on mobility rates are significant by age, gender, race, education, occupation, and job characteristics. Mobility rates out of low-wage work have declined since the late 1990s. Little progress has been made in closing the gaps in mobility for women and nonwhites over time. I find evidence for the decline of firm internal labor markets and lower mobility for part-time workers over time.

Keywords: occupations, labor markets, inequality, time

The last decade for the U.S. labor market was tumultuous. Low-wage and nonstandard work have expanded since the turn of the century (Howell and Kalleberg 2019). A weak labor market in the early 2000s was punctured by the Great Recession in 2008. A long and slow recovery followed. Looking further back, the U.S. labor market has changed substantially since the 1970s (Kalleberg 2011). Women have entered the labor force in large numbers, deindustrialization hit hard in the 1980s and quickened the service transition. Union membership declined steadily, and the education expansion continues to lead to a more-educated labor force. Companies restructured and changed hiring practices, resulting in the decline of firm internal labor markets.

What are the consequences of these changes for low-wage workers' chances of moving to better wages? Research reveals the increasing economic insecurity of Americans since the 1970s (Western et al. 2012). Increases are documented in the life-course risk of poverty (Sandoval, Rank, and Hirschl 2009), income instability (Hacker 2006; Western et al. 2016; Latner 2018), and occupational mobility during a worker's

Michael A. Schultz is a doctoral candidate in sociology at the University of North Carolina at Chapel Hill.

career (Jarvis and Song 2017). In these analyses, the 1990s are a pivotal turning point. A growing literature analyzes the mobility of workers out of low-wage work (Knabe and Plum 2010; Aertz and Gürtzgen 2012; Mouw and Kalleberg 2018). However, studies of mobility out of low-wage work that include change over time are rare (Mouw and Kalleberg 2018; Campbell 2012; Bernhardt et al. 2001). Most research on this topic in the United States includes data from little more than a decade and consequently offers little attention to changes over time (Connolly, Gottschalk, and Newman 2003; Boushey 2005; Andersson, Holzer, and Lane 2005; Salverda and Mayhew 2009). New analyses are needed to understand how the macro changes up through the Great Recession in the U.S. labor market since the 1970s changed mobility patterns for low-wage workers.

This article contributes to closing this gap in the literature by analyzing mobility rates for U.S. workers entering low wages between 1968 and 2013. Longitudinal data come from the nationally representative Panel Study of Income Dynamics (PSID). Mobility rates over time are estimated using discrete-time event history models for entering in low-wage work from better wages or unemployment. Two research questions motivate this study. How have mobility rates out of low-wage work changed since the late 1960s? Are changes in mobility rates over time explained by changes in the low-wage labor market's occupational structure, the behavior of firms, or the demographic and skills of low-wage workers?

LITERATURE REVIEW

David Howell and Arne Kalleberg, in their introduction to this issue, describe three prominent accounts for how the U.S. labor market has changed since the 1970s (2019). I draw on the two polar accounts, the perfect competition model with its interest in skill-biased technological change (SBTC), and the institutional model to formulate hypotheses for how macro changes in the economy may have affected mobility rates out of low-wage work. Changes in mobility rates over time are likely due to two factors: changes in the characteristics of low-wage workers (demographics and education), or changes in the characteristics of available jobs (occupation and work hours).

The institutional account argues that the characteristics of the available jobs have worsened (Kalleberg 2011). The growth of the service sector has resulted in occupational polarization (Dwyer and Wright 2019; Goos, Manning, and Salomons 2009; Massey and Hirst 1998), including a growth of jobs at the low end in personal services (Wren 2013). The theory is these jobs are worse than previously available jobs because they are non-union (Boushey 2005; Brady, Baker, and Finnigan 2013; VanHeuvelen 2018), more likely to be part time (Kalleberg 2011), have nonstandard work arrangements (Kalleberg, Reskin, and Hudson 2000; Kalleberg 2000), and are less likely to be linked to occupational and internal labor markets (Cappelli 1999; Andersson, Holzer, and Lane 2005; Farber 2010; Handwerker 2018). The result is an expected increase in the low-wage labor market, or at least an expansion of the lowest mobility parts of the low-wage labor market. Previously better-paying jobs and acceptable low-wage jobs have become dead-end, undesirable jobs. The institutional account predicts lower mobility out of low-wage work since the 1970s due to worsening job characteristics. Institutional theorists recommend improving the conditions of these bad jobs through regulation (such as a $15 minimum wage or mandatory health insurance coverage) or government transfers (such as the highly successful Earned Income Tax Credit).

In contrast, the perfect competition account argues that the skills of low-wage workers are not keeping up with the up-skilling of jobs resulting from technological change, including the introduction of the computer (Goldin and Katz 2008; Acemoglu and Autor 2011; for a critique, see Card and DiNardo 2002). The focus of SBTC theorists is on the middle-skill jobs primarily in the middle of the wage distribution that have become automated or deskilled because of technological change. David Autor and David Dorn find that local labor markets with high levels of middle-skill, routine nonmanual work in 1980 had greater expansions of low-skill, low-end service work in the following decades than otherwise comparable markets

(2013). The low-wage labor market is thought to be expanding to receive this influx of semi-skilled workers who did not have enough skills to obtain jobs further up the skill ladder. The perfect competition model expects mobility out of low-wage work to either be the same because SBTC mainly affects middle-skill jobs, or lower because of overcrowding in the low-wage labor market. The emphasis on workers' skills leads to the recommendation to invest in education and training to increase the skills of workers to match the available jobs.

Labor Market Changes and the Mobility Out of Low Wages

Research distinguishes between the composition of the labor market in terms of demographics and education, on the one hand, and the structure of the labor market in terms of occupational characteristics and firm behavior, on the other. Numerous previous labor market studies have shown that older workers, non-white racial groups, women, and women with children experience weaker labor market outcomes than their education and labor-force experience would predict (Boushey 2005; Knabe and Plum 2010; Andersson et al. 2005; Cockx and Picchio 2012; Campbell 2012; Kronberg 2013; Wilson and Roscigno 2016; Ren 2019). If the demographic change in the low-wage labor market is toward groups that face more stigma in the labor market, mobility rates could decrease over time.

The jobs that have declined due to occupational polarization are often thought of as predominantly male manufacturing jobs. However, research has shown that predominantly female office and clerical support occupations have in fact seen some of the largest declines (Mouw and Kalleberg 2010; Autor and Dorn 2013). This leaves the expected gender transformation of the low-wage labor market unclear. The United States as a whole has become more racially diverse since the 1970s, which should be reflected in the low-wage labor market. The wage gaps for women (England 2010) and blacks (Semyonov and Lewin-Epstein 2009) have closed since the 1970s. They did so partly in response to the declining wage position of white men. Similarly, gaps in mobility rates out of low-wage work by gender and race could decline because of fewer opportunities for white men rather than more opportunities for women and blacks. On the other hand, the program of mass incarceration begun in the 1970s disproportionately affected blacks and could result in lower mobility out of low wages as a consequence of less access to stable jobs (Pager 2007).

Many young workers enter low-wage work as they complete their education and transition to the labor market and move quickly to higher wages (Salverda and Mayhew 2009). Colin Campbell reports that 76 percent of young workers in low-wage jobs move to better wages in eight years (2012); William Carrington and Bruce Fallik report 65 percent (2001). The lengthening of young adulthood and the longer transition from school to work in recent years make it likely that more young workers are entering low-wage work than in the past (Smith, Crosnoe, and Chao 2016; Maume and Wilson 2015). All else being equal, more young workers should increase mobility rates out of low wages overall.

Low-wage workers in their prime earning years (thirty-four to fifty-four) are significantly less mobile out of low wages, and mobility declines with age in the United States (Salverda and Mayhew 2009). Ted Mouw and Kalleberg find that among an older sample (mean age of thirty-nine) without a college degree, only 13 percent moved out of low-wage jobs within three years (2018).

The lower mobility rate of prime-age workers can be explained several ways. Prime-age low-wage workers are more likely to have either accumulated a job history in low-wage work and or experienced spells of unemployment. An underappreciated finding in the comparative literature is the high rates of movement in the United States between low wages and unemployment and vice versa (Mason and Salverda 2010). Consequently, analysis of mobility out of low wages that do not properly account for unemployment spells may be picking up the wage-scarring effects of unemployment (Gangl 2006). Low-wage job experience for prime-age workers may be stigmatized by employers and equivalent in employer's minds to unemployment.

Another possible explanation is that prime-age workers may experience a low rate of wage mobility because they are less educated than young workers. Because of ongoing educational expansion, young workers are more likely to have higher education than older workers and thus are more likely to move out of low wages. From a human capital perspective, where education and labor market experience are proxy for a worker's skill, the higher likelihood of remaining in low wages is because workers with less education are less skilled (Autor and Dorn 2013). The returns to labor market experience for less-educated workers declined significantly by the 1980s, making the longer labor market experience of prime-age workers of little value (Bernhardt et al. 2001; French, Mazumder, and Taber 2005).

Alternatively, from a positional good and credentialism perspective, what matters is a worker's education credentials relative to other workers in the labor market (Sørensen 1983; Frank 1985; Kalleberg 2007; Horowitz 2018). Workers with fewer educational credentials would be screened out by employers offering higher wages. This effect is compounded for less-educated prime-age workers because they are more likely to have less education relative to the labor market as a whole and less likely to update their credentials with further training. An increase in young, more-educated workers into the low-wage labor market would result in a reduction in the mobility rate for less-educated workers from a positional good perspective. The overall mobility rate for low-wage workers could increase, decrease, or stay the same depending on whether the proportion of young educated workers is larger, smaller, or stays the same relative to the proportion of prime-age workers with less education.

Occupations in the low-wage labor market are not equal in providing routes to higher wages (Boushey 2005; Holmes and Tholen 2013; Mouw and Kalleberg 2018). Mouw and Kalleberg (2018) use a novel measure of skill similarity based on the movement of workers between occupations to advance the occupation- and task-specific human capital literature (Kambourov and Manovskii 2009; Gathmann and Schönberg 2010; Yamaguchi 2012; Sanders 2014). They find more mobility due to returns

to occupational experience for low-wage workers from manual (construction and machine operators) and skilled service (bartenders, cooks, receptionists, and sales workers) than among low-end service occupations (food service workers and cleaners). Similarly, David Maume and George Wilson find that the lower wage growth of 2000s cohort of young workers in the National Longitudinal Study of Youth (NSLY) relative to the 1980s cohort is partially explained by their higher employment in low-end service occupations (2015). A shift in the composition of the low-wage labor market toward low-end service work would result in decreased mobility rates over time.

Deindustrialization and the transition to the service economy resulted a decline of the middle and a growth in high-end occupations, whether defined by skills or by wages (Massey and Hirst 1998; Goos, Manning, and Salomons 2009; Holmes and Tholen 2013; Kalleberg 2011; Dwyer and Wright 2019). These studies of occupational polarization also find a growth in low-skill and low-wage occupations. Jennifer Hunt and Ryan Nunn reveal that the growth in low-end occupations is likely an artifact of this literature's primary method of differentiating between high, medium, and low-wage occupations using the occupational mean or median wages (2019; see also Mishel, Shierholz, and Schmitt 2013). This approach hides the variation in wages across occupations. Variation in wages within occupation has grown substantially since the 1980s even though the explanatory power of occupations in explaining wage inequality has grown more (Mouw and Kalleberg 2010).

Unions raise wages not only for union workers (VanHuevelan 2018), but also for non-unionized workers (Brady, Baker, and Finnigan 2013). Their decline could lead to an expansion of the low-wage labor market, or more likely to wages in manual occupations sharing workers with industries such as manufacturing that were union strongholds and de-unionized. Heather Boushey finds that working for a union does increase the odds of mobility out of low-wage work (2005). Formal pay scales and firm job ladders pushed by unions likely lead to an increase in wage returns to experience in union jobs (Freeman and Medoff 1984).

Finally, changes in firm behavior since the 1970s have resulted in increased flexibility in staffing arrangements, including the decline of the firm internal labor market (Kalleberg and Berg 1987; Cappelli 1999; Kalleberg 2000; Farber 2010; Kalleberg and Mouw 2018) and the disconnection of lower-skill workers from firm internal labor markets through domestic outsourcing (Weil 2014; Bernhardt et al. 2016; Handwerker and Spletzer 2015). Labor markets based on promotion within firms are unlikely to have gone away completely, particularly in government and union jobs (Newman 2008; Holmes and Tholen 2013). Researchers have found that changing firms rather than building tenure within the firm is a primary route out of low-wage work (Bernhardt et al. 2001; Andersson, Holzer, and Lane 2005, Bolvig 2005; Newman 2008; Heinze and Gürtzgen 2010; Pavlopoulos et al. 2014). Some firms pay higher wages because of either lower industry competition or through employing fewer higher skilled workers. Elizabeth Handwerker finds that increased establishment occupational concentration over time explains a substantial portion of the growing between-establishment inequality (2018). Firm mobility to a high-premium firm may be more difficult to achieve in recent years because firms have outsourced lower-paid work such as janitorial and food services to firms specializing in providing these services.

The growth of low-end service occupations in industries such as retail and hospitality led to an increase in part-time work and temporary work (Kalleberg 2000, 2011; Wren 2013). Less-skilled temporary workers are more likely to move to unemployment (Gash 2008). Part-time workers may share the experience of job instability with temporary workers as companies turn to the greater use of nonstandard employment relationships in order to protect their core workers (Kalleberg, Reynolds, and Marsden 2003; Pedulla 2013). Temporary and part-time workers have less opportunity to get occupational and firm experience and have lower mobility rates. The extent to which part-time work is a form of nonstandard work arrangements is unclear because it could be an individual choice for flexibility (Kalleberg 2007, 2011). A decline in mobility out of low-wage work among part-time workers over time could be a result of changing preferences for flexibility or a signal that part-time work is a soft form of temporary work and should receive more attention (Kalleberg 2003; Lambert, Henly, and Kim 2019).

In sum, the overall trend in mobility rates out of low-wage work over time is likely attributable to a combination of the changes in the demographic and educational composition of the low-wage labor market and structural changes in occupational characteristics and firm behavior. Untangling the overall trend requires paying particular attention to changes in the size and mobility rates of six groups: young, educated workers; prime-age, less-educated workers; workers in low-end service occupations; part-time workers; workers with multiple years of occupational experience; and workers with more years spent unemployed.

Mobility Out of Low-Wage Work in the United States

Table 1 presents a summary of research on the mobility of low-wage workers in the United States using longitudinal survey data. A few features stand out. Most studies are limited to less than a decade or to two birth cohorts in analyses of the NSLY. Only two more recent studies cover a longer period, but they analyze young workers and workers persistently in low wages respectively (Campbell 2012; Mouw and Kalleberg 2018). The one study analyzing all low-wage workers (ages sixteen to sixty-five) analyzes year-to-year transitions (Salverda and Mayhew 2009). Both of the analyses of young workers (ages sixteen to twenty-four) use the PSID.

A difficulty in comparing study results arises from the different definitions used for low-wage work ranging from minimum wages (Carrington and Fallik 2001; Boushey 2005) to $5 wage growth (Connolly, Gottschalk, and Newman 2003). The Organization for Economic Cooperation and Development defines low-wage work at two-thirds of the median hourly wage for full-time workers (OECD 2018). In contrast, a landmark comparative multicountry study used two-thirds of the hourly median wage for all workers (Gautié and Schmitt 2010). Others have suggested that two-thirds of the mean

Table 1. Studies of Mobility Out of Low-Wage Work in Using Longitudinal Survey Data

Author and Year	Time Period	Age at t0	Observation Window	Survey	Low-Wage Threshold or Approach	Model
Mouw and Kalleberg (2018)	1996–2011	All employed	2.5 years	SIPP	Two-thirds of the median for selection into low-wages and three-quarters of the median for mobility out	Discrete-time event history analysis and conditonal logit to identify stepping-stone occupations
Maume and Wilson (2015)	1979–2010	18–30	Up to 12 years	NSLY79, NSLY97	Wage growth of individuals by latent class based on wage profile	Latent class trajectory models followed by ordinal logits to predict latent class membership
Campbell (2012)	1969–2005	23–24	8 years	PSID	Three-quarters of the median hourly wage	Logit for probability of being in low-wages at two through eight years
Salverda and Mayhew (2009)	1995–2001	16–65	1 year	PSID	Two-thirds of the median hourly wage	Five probit for one-year transitions
Andersson, Holzer, and Lane (2006)	1993–2001	25–54	Up to 10 years	LEHD, nine states	Workers persistently in the bottom quartile between 1993 and 1995	Logit for probability of escaping low wages in 1999 to 2001

Study	Years	Age	Duration	Data	Sample	Method
Boushey (2005)	1992–2003	24–54	2 years	SIPP	Minimum wage	Logit for probability of remaining in low wages two years later
French, Mazumder, and Taber (2005)	1983–2003	18–28	4 years	SIPP	Wage growth for young workers never enrolled in school	Regression to explain changes in wage growth
Connolly, Gottschalk, and Newman (2003)	1986–2000	18–40	4 years	SIPP	Wage growth of individuals in poverty households	Descriptive analysis of mean wage growth and probit to predict greater than $5 wage growth
Carrington and Fallick (2001)	1979–1994	14–22	Up to 15 years	NSLY79	Minimum wage	Probit for post-education year-to-year probability of remaining in minimum wages
Bernhardt, Morris, Handcock, and Scott (2001)	1966–1994	14–34	Up to 15 years	NLSM66, NSLY79	By educational group, of particular interest here are the low educated	Growth curve model with person random effects predicting wage growth over age

Source: Author's compilation.

rather than of the median is the most appropriate measure, given rising income inequality in the top half of the distribution but not in the bottom (Howell and Kalleberg 2019).

Most workers in the United States move out of low-wage work within the first few years. Wiemer Salverda and Ken Mayhew observe that 41.1 percent of low-wage workers escape to better wages in one year (2009). Young workers move out more quickly (Carrington and Fallik 2001; Campbell 2012). Mobility is lower for workers in persistently low-wage jobs, 27 percent in six years (Andersson, Holzer, and Lane 2005), and for low-wage workers in poverty households, 18 percent in four years (Connolly, Gottschalk, and Newman 2003).

Evidence indicates that the mobility out of low wages is cyclical and follows the economic cycle (French, Mazumder, and Taber 2005; Campbell 2012). Salverda and Mayhew find more movement between low-wage work and unemployment in the United States compared to similar countries in Western Europe (2009; Mason and Salverda 2010). Consequently, economic downturns may affect mobility out of low-wage work more in the United States. Helen Connolly and her colleagues find similar rates of mobility in the early and late 1990s (2003); Mouw and Kalleberg find lower mobility in the 2000s relative to the 1990s (2018).

A longer time frame is needed to untangle the effect of the economy from the long-term trend in mobility out of low-wage work. The current literature covers the entire period from 1980 through the late 2000s together. However, a patchwork of measures of low-wage work and approaches to modeling mobility make comparisons across time from the current literature infeasible. I begin to address this gap in the literature by providing an analysis of mobility out of low-wage work from 1968 to 2014.

Mobility and Selection

A central concern of the low-wage mobility literature is properly accounting for selection into low-wage work (Cappellari 2002; Aertz and Gürtzgen 2012; Mosthaf, Shnabel, and Stephani 2011; Cockx and Picchio 2012). Unobserved characteristics may be biasing estimates of mobility. The most common approach, following Mark Stewart and Joanna Swaffield (1999), is to use instrumental variables, usually parental background or social class. Alternative approaches include combining James Heckman and Burton Singer's mass points approach (1984) while restricting the sample to labor market entrants (Pavlopoulos and Fouarge 2010) and modeling the movement of workers between pairs of occupations conditional on the occupation's skill similarity (Mouw and Kalleberg 2018). Differences in country and time period make comparisons of mobility rates using alternative methodological approaches to selection difficult (Knabe and Plum 2010; McKnight et al. 2016).

DATA AND METHODS

The Panel Study of Income Dynamics is the longest-running nationally representative longitudinal survey in the United States. The original sample consists of approximately five thousand households selected in 1968 and their descendants. The survey was conducted annually through 1997 and biannually afterward. A key benefit of the PSID over the NSLY is that the sample is representative of the age structure and is not restricted to specific birth cohorts. When weighted to account for attrition and immigration since 1968, the PSID has been found comparable to the Current Population Survey (CPS) for poverty (Grieger, Danziger, and Schoeni 2009), and wage inequality (Heathcote, Perri, and Violante 2010).

I use all survey years of the PSID from 1968 to 2015 to select the analytic sample. Job and earnings information were collected for household heads and their spouses. The reference period for labor market earnings is the prior calendar year. I reconstruct each worker's occupational biography using all available information on current or (if unemployed) last and previous jobs. I then match job-year observations to the worker's hourly wages for that year calculated from the worker's total labor income and annual work hours. I use actual annual hours for salaried workers as well as hourly workers to reflect the increase in overwork (Cha and Weeden 2014). I top-code average weekly working hours at sixty hours a week and top- and bottom-code hourly wages at the 1st and 99th percentile.

I model mobility out of low-wage work using

discrete-time event history analysis to account for truncation and model time-varying covariates (Allison 1982; Mills 2011). Event history models are estimated using logistic regression, making the cross-group comparisons of coefficients biased due to heteroskedasticity (Mood 2010). I report the average marginal effects calculated over the sample because they remain unbiased for across group comparisons (Mood 2010) and facilitate interpretation of logistic regression (Williams 2012; Long and Mustillo 2018). Regression coefficients are available on request.

The baseline hazard for mobility is modeled using a cubic polynomial of the time since the start of the worker's current employment spell. Workers enter the analytic sample when they are observed starting to earn low wages between 1968 and 2013. I exclude all workers in low-wage jobs in their first observation in the sample. The exception are workers age twenty-five who enter the sample at the earliest possible age regardless of employment status and wages in the previous year. I follow workers who enter the sample until their first observation in a job with an hourly wage above the low-wage threshold, until they truncate due to sample attrition, or until the end of the observation window in 2014. I model mobility by employment spells because the probability of mobility out of low wages is higher for the unemployed who are pulled into low-wage work during tight labor markets. Workers who exit to unemployment remain in the sample. If they return to employment, they will contribute another employment spell to the analysis.

A comparison with the CPS reveals that the PSID underreports young low-wage workers (ages fifteen to twenty-four). The PSID collects job and wage information only for household heads and spouses. The missing young, low-wage workers are likely still members of their parents' or guardians' household. As a consequence, I limit my analysis to young-adult workers (twenty-five to thirty-four) and prime-age workers (thirty-five to fifty-four) who enter low-wage employment spells. About a third of all low-wage workers are younger than twenty-five

and about 6 percent are older than sixty-five (see figure O1).[1]

Workers who achieve wages above the low-wage threshold and then return to low wages are added back to the sample. A person-level random effect and a count of the number of times the worker has achieved mobility and returned to low wages are included to account for correlation between mobility spell outcomes from the same worker. The worker's employment status in the year before entering a low-wage employment spell is included to capture a worker's prior work history. The variable differentiates between coming from unemployment or better wages or being a young entrant who is newly able to enter the sample by turning twenty-five. Two variables continue counting across employment spells that do not end in mobility. The first is a count of years employed in low wages since entering the sample. The second is a count of the number of years unemployed or out of the labor force for more than four months. These choices reduce some of the error associated with unmeasured duration dependence in low-wage work by capturing as much of a worker's low-wage employment history as possible.

The primary results presented use the two-thirds of the median hourly wage for full-time workers. In a secondary analysis, I switch to the alternative two-thirds of the mean low-wage threshold for all workers. In a third set of models, I analyze the mobility of low-wage workers earnings below the lower threshold based on the median ($12.87 on average in 2015 dollars) to above the higher threshold based on the mean ($15.43 on average in 2015 dollars). The hourly wage thresholds are calculated from the CPS using similar measures of annual earnings and annual hours (for the low-wage thresholds in each year, see table O1). I group the years workers start a low-wage employment spell into thirteen entry periods following the economic cycle between 1968 and 2013 (see table O2). For example, the entry periods since 2000 are 2001 to 2003, 2004 to 2006, 2007 to 2009, and 2010 to 2013 (for more information on the methods, see the online appendix).

1. The online appendix includes the methodology as well as tables and figures designated in text with a leading O (https://www.rsfjournal.org/content/5/4/159/tab-supplemental).

Key Independent Variables

In line with the established literature on changes in the labor market across time, I distinguish between four sets of covariates: demographic, education and labor market experience, occupational, and firm characteristics. The demographic characteristics include age, race, gender, marital status, the presence of children, and the presence of children under six in the household. Age at the start of the employment spell is coded as a categorical variable with two groups, young adult (twenty-five to thirty-four), and prime age (thirty-five to fifty-four). I differentiate between racial groups using a variable for whites and nonwhites. Gender is a bounded by the limitation of the survey data to the male-female binary. Marital status is a three-category variable differentiating people who are never married, married, and previously married. The presence of children in the household and having a child under six are 0–1 variables, indicating the presence or absence of these children. Education is measured using a four-category variable of educational credentials (less than high school degree or equivalent, high school degree, some college, four-year college degree, or higher degree). The labor-force experience is captured using variables for employment status prior to entering low-wage work, years worked in low wages, and a count of years unemployed for four months or longer.

The occupation characteristics included in the primary analysis are working part-time hours (less than thirty-five hours a week), years of occupational experience, current occupation, and the occupation at the start of the low-wage employment spell. Current occupation is a time-varying variable. When considered with the fixed variable for occupation at spell start, the two occupation variables allow for an assessment of the effect of occupational moves on the odds of mobility. I differentiate between four large occupations: low-end service, manual, clerical, and mid-tier service, and professional and technical, aggregated using required occupational skills and environments from O*Net (onetonline.org). Workers build occupational experience by staying in the same occupation or moving to an occupation requiring similar skills. I follow Mouw and Kalleberg (2018) and use a measure of occupational skill similarity derived from workers moving between occupations in the CPS (for more detail on these measures, see the online appendix).

The only firm characteristic available for both household heads and spouses at the start of the survey is industry. Detailed industries are grouped into eight categories based on the 1990 census classification system: agriculture and mining; manufacturing and utilities; wholesale and retail trade; finance, insurance, and business services; personal services and entertainment; health care and social assistance; education and public administration; and other professional, scientific, and technical. Beginning with the 1981 wave, firm experience is available for heads and spouses. This PSID-generated variable is a count of all firm experience across periods of unemployment. From this measure, I derive variables for changing firms and a count of the number of firm changes since entering the sample. Measures of whether the individual worker is in job covered by a union (0–1) or works for the government at any level (0–1) become available for heads and spouses with the 1979 wave. I test the inclusion all of these variables in a supplementary analysis of the years from 1981 to 2014.

RESULTS

Figure 1 compares the trend in the size of the U.S. low-wage labor market in the PSID and CPS for workers between twenty-five and sixty-four years old using two alternative low-wage thresholds: two-thirds of the median hourly wage for full-time workers and two-thirds of the mean hourly wage for all workers (hereafter the median and mean threshold respectively). The size of the low-wage labor market is mostly stable from 1968 to 2014. About one-quarter of all workers in the United States are in low wages across this period using the median threshold (see Mason and Salverda 2010 for a consistent finding). The trend is dynamic. The percentage of low-wage workers swung down in the late 1970s, then came up slowly through the 1980s. The Great Recession brought the share of low-wage work to 28 percent.

In contrast, using the mean threshold, the low-wage labor market grew steadily, from 27

Figure 1. Size of U.S. Low-Wage Labor Market, 1967–2015
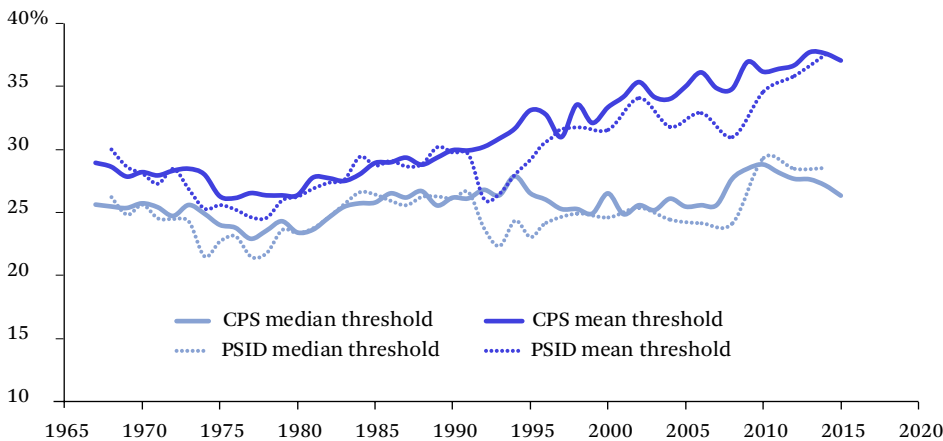
Source: Author's calculations based on the PSID (2018) and CPS (Flood et al. 2018).
Note: The median low-wage threshold refers to two-thirds of the median wage for full-time workers. The mean threshold is two-thirds of the mean wage for all workers.

percent in the 1970s to 37 percent in the early 2010s. The inflation-adjusted median hourly wage has been stable over this period. The mean hourly has increased, reflecting the growing inequality between the middle and top half of the wage distribution (Kalleberg 2011). The growth in the low-wage labor market over time when using the two-thirds of the mean threshold for all workers is partially due to the increasing threshold (see table O1).

The occupational composition of the low-wage labor market in the United States changed only minimally since the 1970s using the median hourly wage threshold (see figure O2). Most of the change occurred in the early 2000s. The proportion of low-wage workers in low-end service work stayed near 45 percent through the early 2000s before increasing to 52 percent by the early 2010s. A corresponding decrease occurred among clerical and mid-tier service workers and manual workers. Manual workers made up about 25 percent of all low-wage workers through the early 2000s before dropping to 20 percent. The decline in share for clerical and mid-tier service was slower and steadier, reaching 20 percent by 2000 and dropping to 15 percent by 2015. Workers in professional and technical occupations made up 15 percent of low-wage workers in 2015, almost double their share in 1968. Since 1980, the proportion of

manual workers in low-wage work increased from 20 percent to 30 percent (see figure O3). The proportion of workers in low-end service (46 percent) and professional and technical (11 percent) occupations in low wages held steady even as these occupations grew significantly over the period. About 22 percent of all clerical and mid-tier workers are in low wages.

The detailed occupations with the largest number of low-wage workers in low-end services are the typical occupations associated with low-wage work: 69.1 percent of housekeepers, 81.7 percent of childcare workers, 48.2 percent of retail salespeople, and 64.5 percent of servers (for the top ten largest detailed occupations in each of the four aggregate occupations, see table A1). Among the detailed manual occupations with the largest number of low-wage workers are sewing machine operators (66.5 percent), laborers and freight movers (37.7 percent), automotive service mechanics (25.4 percent), and construction laborers (34.7 percent).

What kind of professional and technical workers, many whom typically have a college degree, are in low-wage work? A small portion of workers in predominantly female occupations, including 12.7 percent of elementary school teachers and 37 percent of kindergarten and preschool teachers. The same pattern holds for clerical and mid-tier service. It is pre-

dominantly female occupations including bookkeepers (23.8 percent), office clerks (35.1 percent), and word processors (23.6 percent) that have the most low-wage workers in this aggregate occupation. The smaller percentage of workers in low wages in these occupations indicates that workers may be able to move out of low wages by staying in the same or moving to a similar occupation.

On average over the entire period from 1968 to 2014, 41.8 percent of workers entering low-wage jobs between the ages of twenty-five to fifty-four move to higher wages within two years, 55.4 percent in four years, and 62.9 percent in six years using the median threshold and the Kaplan-Meier method (Allison 1982). Cumulative mobility rises to 56.5, 70.3, and 77.7 percent in two, four, and six years for the about 10 percent of workers entering low wages in professional and technical occupations. Cumulative mobility goes down to 30.2, 43.2, and 51.5 percent for the majority of low-wage workers who start low-wage employment spells in low-end service occupations. Low-wage workers first observed in clerical and mid-tier service occupations experience mobility rates closer to those entrants to professional and technical occupations (50, 65.8, and 72.9 percent in two, four, and six years). Entrants into manual workers split the difference between these low- and high-end occupations with cumulative mobility similar to the rate for all low-wage workers (46, 59, and 65.8 percent in two, four, and six years). Prime-age entrants (age thirty-five to fifty-four) move out of low wages at similar rates on average to young adult (age twenty-five to thirty-four) entrants (43.3 to 40.3, 55.8 to 55.1, and 62.7 to 63.4 percent, at two, four, and fix years respectively).

Overall mobility out of low-wage work has declined in the 2001 to 2014 period relative to the 1968 to 1985 period (–2 percent at two years, –1.9 at four, –1.7 at six) and the higher mobility during the 1986 to 2000 period (–3.7, –4.5, and –4.8 percent at two, four, and six years since entering low wages) using the Kaplan-Meier method. The decline in mobility in the 2001 to 2014 period is strongest among for low-wage entrants into manual workers (–7.2, –7.3, and –6.4 percent at two, four, and six years) and into clerical and mid-tier service occupations (–3,

–5.1, and –4.9 percent at two, four, and six years). Low-wage entrants into professional and technical occupations have increased their mobility in the most recent period relative to the 1968 and 1985 period.

Descriptive Statistics by Employment Spell

The value of analyzing mobility using employment spells is to capture the negative effects of unemployment on mobility while accounting for the increased probability of mobility when the unemployed return to work. Experiencing an unemployment spell of longer than four months is common for low-wage workers (21.8 percent in two years, 39 percent in four years, 49.4 percent in six years). As expected, low-wage entrants into professional and technical occupations have the fewest unemployment spells (15, 30.5, and 36.4 percent by two, four, and six years); entrants into low-end service occupations have the most (24.2, 41.3, and 51.9 percent by two, four, and six years). Low-wage workers in the most recent period, from 2001 to 2014, have the fewest moves to unemployment (14.6 to 24.6, 29.7 to 42.8, and 39.7 to 52 percent by two, four, and six years) relative to the 1968 to 1985 period despite overall lower mobility out of low wages in the most recent period. They also return to low-wage employment more quickly in the more recent period (57.7 to 42.8, 73.1 to 53.5, and 79.3 to 58.7 percent by two, four, and six years).

The demographic and educational characteristics of entrants into low wages has changed since the late 1960s (see table A2). The employment-spell nature of these statistics results in workers who are most at risk for becoming unemployed produce more entrances into low-wage employment spells. Historically, more women than men have entered employment spells in low-wage work using the median threshold (for the median threshold, see table O2). Since 2000, parity has been higher; men and women are entering low-wage work at similar rates. The change is primarily driven by more men entering low-wage manual (50.9 percent between 1968 and 1985 to 23.4 percent between 2001 and 2013) and low-end service occupations (78.8 percent to 63.6 percent). The small share of women in manual occupations between 1968 and 1985 was likely concentrated

in the most low-paid jobs, such as textiles, and makes up a disproportionate share of manual workers in low wages. Nonwhite workers grew as a proportion of entrants into low-wage work, almost doubling from the 1968 to 1985 period (17.4 percent) to the most recent period after 2000 (31.5 percent). The largest growth in the share of nonwhite workers occurred among low-wage workers in professional and technical occupations; the largest concentration remains in manual and low-end service occupations.

The age composition of entrants into low wages has become older as more prime-age workers (age thirty-five to fifty-four) enter low-wage employment spells (51.4 percent between 1968 and 1985 to 60.1 percent between 2001 and 2013). This corresponds with a growth in workers entering low-wage jobs from employment in better wages (41.8 percent between 1968 and 1985 to 50.3 percent between 2001 and 2013). The proportion coming from unemployment or out of the labor force declined correspondingly because the share of young entrants has remained stable at around 10 percent.

Most workers entering low-wage work after 2001 have a high school degree, the same as in the late 1970s, but their share drops 10 percent, from 44.8 to 35.2 percent. The decline in the proportion of workers entering low-wage work with less than a high school education has been significant (26.4 to 12.2 percent) and is highest in manual occupations (44.6 to 19.4 percent). This is offset by a share of entrants with some college and, to a lesser extent, with a bachelor's degree or higher. Workers with at least a four-year college degree are most likely to be among the small share of entrants in low-wage professional and technical occupations (54.1 percent between 2001 and 2013). The share of entrants with a college degree has grown among entrants into the clerical and mid-tier occupations (12.5 percent between 1968 and 1985 to 20.1 percent between 2001 and 2013) and service and low-end service occupations (4.2 percent between 1968 and 1985 to 13.6 percent between 2001 and 2013).

The starting wages for entrants into low-wage jobs has declined about 4 percent across occupations relative to the median between 1968 to 1985 and 2000 to 2013 (53.2 percent to 49.7 percent). This decline is on average about 60 cents in 2015 dollars. The share of workers entering low-wage work in a low-end service occupation who started in part-time hours declined over time (40.7 percent to 28.3 percent), and increased among entrants into professional and technical occupations (18.6 percent to 27.1 percent). The measure of weekly hours can include hours from multiple jobs. As a result, if low-wage workers are more likely to have second jobs in the more recent period in order to reach full-time hours, it would show up as a decline in part-time work. The share of part-time work is lowest among entrants into manual occupations, 12.4 percent between 2001 and 2013.

Occupational experience is low and remains low for low-wage entrants across time (1.3 years from 1986 to 2000). This indicates that entrants into low wages have accrued little occupational experience or are changing occupations to others with different skill and task profiles where accrued experience is less transferable. The industries in which entrants into low wages are finding jobs are mostly stable over time. The most notable change is the decline in the share of entrants into the manufacturing and utilities industry corresponding to deindustrialization.

In the more restricted 1981 to 2014 sample, the proportion of workers entering low-wage work in a job covered by a union increased from 8.9 percent between 1968 and 1985 to 11.4 percent between 2000 and 2013. The increase is particularly strong for professional and technical occupations and for clerical and mid-tier service occupations; the share for entrants into manual occupations has declined. The share of entrants into government employment is stable overall but masks both an increase among entrants into professional and technical and clerical and mid-tier service occupations, and a decline among manual occupations. The greater proportion of workers entering union jobs may be in the public sector, where unionization rates have declined less (Kalleberg 2011). The greater proportion in low wages would indicate that the strength of these unions in raising wages may have declined, especially in the context of tighter government budgets.

Many workers start an employment spell in low wages with no firm experience. The high average firm experience (3.6 years) indicates a substantial portion of workers with greater

Figure 2. Mobility Rate Across Employment Spell by Entry Period and Occupation
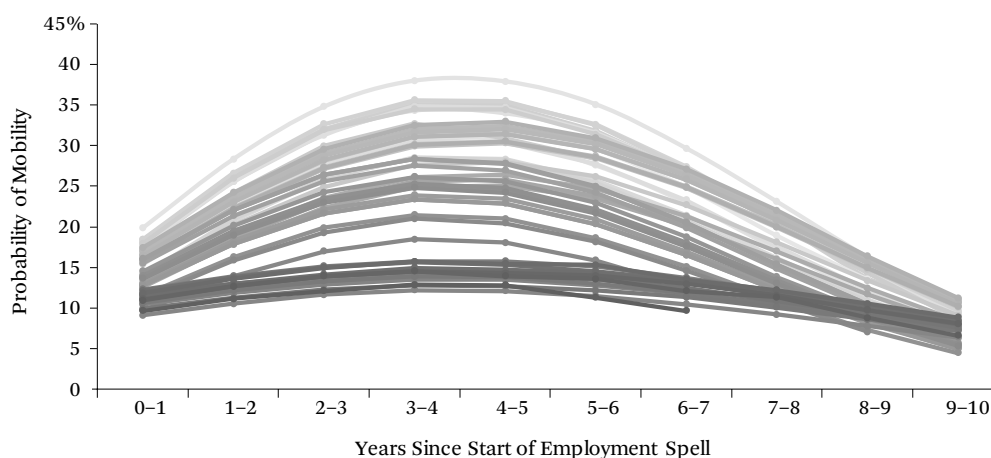
Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median age for full-time workers). Compiled from the four baseline models (m0) by starting occupation.

than five or ten years' of experience entering low-wage jobs. The growth in this metric over time fits with more workers falling into low wages from higher wages due to the declining value of their wages relative to inflation. At the same time, the average number of firm changes in a mobility spell doubles over time. The greater churn in the low-wage labor market between firms in the 2001 to 2014 period, combined with fewer entrants into low-wage jobs coming from four months or more of unemployment, indicates both the availability of low-wage work and its insecurity in recent years.

Predicting Mobility Out of Low Wages

The mobility rates out of low wage for workers age twenty-five to fifty-four vary across time. Significant variation is uncovered when accounting for starting occupation, as seen in figure 2. In this section, I present results from final discrete-time event history models with all of the covariates using the median threshold, describing the characteristics that significantly effect mobility (see figure A2) and the degree to which these effects have changed over time (see figure 3). I primarily refer to the effects for all low-wage workers. Where significant, I note variation by the occupation and age group that workers started in when they entered a low-

wage employment spell. When comparing effects of covariates across time, I follow the descriptive analysis and analyze effects for the three periods, from 1968 to 1985, 1986 to 2000, and 2001 to 2014.

Cumulative mobility over the employment spell is similar to the Kaplan-Meier estimates of mobility since entering low-wage work (see figure A1). Mobility out of low-wage work at two, four, and six years is marginally lower over the employment spell because workers moving to unemployment contribute multiple employment spells. Workers coming from unemployment on average have a 4.4 percent lower probability of mobility out of low wages relative to workers coming from better wages (for all of the average marginal effects, see table O3). The effect of coming from a better-wage job on mobility out of low wages is significantly higher from 2000 to 2014, at 6.5 percent, up from 3.9 percent in the first period. Each move to unemployment and subsequent count of years in unemployment or out of the labor force reduces the probability of moving out of low wages in the next employment spell on average by 2.9 percent. The average effect at two years of unemployment has declined from a high of 3.8 percent between 1968 and 1985 to 3.1 percent between 2001 and 2014. However, the effect at

Figure 3. Significant Changes in Average Marginal Effects for Covariates over Time
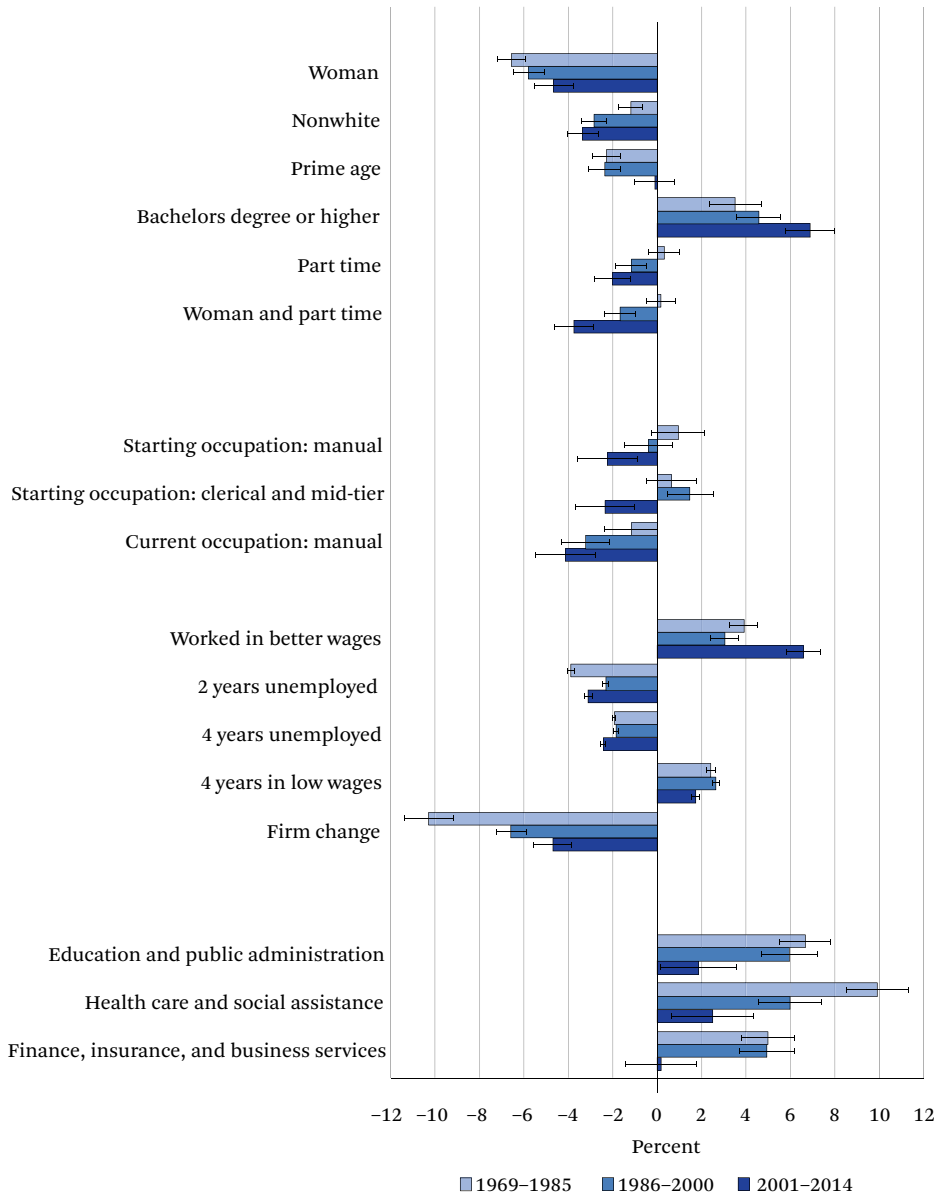
Legend: ■ 1969–1985 ■ 1986–2000 ■ 2001–2014

Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median wage for full-time workers). Reference categories: woman (man), nonwhite (white), prime age (young adult), bachelor's or higher (high school diploma), part-time (full-time), starting and current occupation (professional and technical), firm change (same firm), worked in better wages (unemployed), industry (agriculture and mining).

four years of unemployment increased from 1.9 percent to 2.4 percent from the first to the most recent of the three periods.

Young entrants (twenty-five years old and entering the sample in low wages) have no ob-

served years in unemployment by definition. Thus the predicted probability of being a young entrant is 2.9 percent plus the coefficient for young entry, which is insignificant for all low-wage workers. Young entry reduces mobility for

young-adult low-wage entrants (age twenty-five to thirty-four), indicating an age effect where older workers coming from unemployment in this age category have a higher probability of mobility (3.2 percent) than those entering the sample at age twenty-five. Prime-age workers had significantly less mobility in the first two periods, through 2000 (–2.2 percent), but not from 2001 to 2014.

Women (relative to men) and nonwhites (relative to whites) have lower mobility rates. For all low-wage workers, the average marginal effect of gender is three times larger for women (–4.5 percent) than for being nonwhite (–1.5 percent). Nonwhites have a lower probability of mobility out of low-wage work among prime-age workers and among entrants into manual occupations (–2.3 and –2.6 percent respectively). The effect for women is not significant among entrants into the predominantly female mid-tier service occupations and is stronger for young adults, entrants into low-end service occupations, and entrants into manual occupations (–5.5, –4.8, and –6.5 percent respectively). The average penalty for being a woman declined over time from a high of 6.5 percent between 1968 and 1985. The penalty for being nonwhite, however, increased over time. The change is due to the increase in the negative effect of being nonwhite among entrants into low-end service occupations in the most recent period. It is now on par with the constant effect over time for entrants into manual occupations. Married workers experience a higher probability of mobility than never-married workers. The effect of being married is two times stronger among entrants into low-wage manual occupations (2.4 percent). Being a woman with a child under age six in the household reduces the probability of mobility by 1.9 percent. The effect is two times as strong for low-wage entrants in professional and technical occupations.

Education effects are large. Among all low-wage workers, a college degree increases the probability of mobility by 5.4 percent over a high school degree. The effect doubles for low-wage entrants into professional and technical occupations and is insignificant for low-wage entrants into manual occupations. Young-adult workers benefit more from a college degree

than prime-age workers on average (6.4 to 3.1 respectively). Entrants with less than a high school degree have a lower probability of moving out of low wages (–4.2 percent) relative to those with a high school degree; the effect for having completed some college is about half that of a college degree (2.6 percent). The negative effect for not having a high school degree lowers mobility out of low wages for entrants into clerical and mid-tier occupations (–13.5 percent) in particular. The average marginal effect of having a bachelor's or higher degree on mobility out of low-wage work almost doubled in the period from 2001 to 2014 relative to 1968 to 1985 and 1986 to 2000 in the model for all low-wage workers. The increased value of a bachelor's degree for mobility out of low-wage work is significant only for workers starting in low-end service occupations among the occupation and age models.

The effect is positive for greater employment experience in low wages on mobility, particularly for young-adult entrants where the effect is three times greater. The value at four years of low-wage experience has declined from 2.5 percent in the 1968 to 1985 period to 1.8 percent in the 2001 to 2014 period. Higher occupational experience increases the probability for mobility, but the effect is much lower (0.5 percent per year), indicating that general labor-force experience matters more for mobility than occupation-specific experience. A worker would need to build up seven years of occupational experience in their low-wage job to match the increased probability of mobility that comes from moving to an occupation with little or no skill similarity to their current job.

The effect of part-time work hours varies across time. In the earliest period, from 1968 to 1985, working part-time hours has little effect on mobility. In the next period, from 1986 to 2000, the sign turns negative. In the most recent period, from 2001 to 2014, part-time hours lower the probability of mobility by 2 percent. The switch-in sign for part-time work is primarily driven by young-adult workers and is stronger for a woman working part time.

The average marginal effects for starting occupation and current occupation need to be interpreted together. Starting an employment spell in a low-end service occupation, relative

to a professional or technical one, significantly lowers the probability for mobility out of wages (–2.1 percent). The negative effect of remaining in a low-end service occupation for workers starting a spell in this occupation is three times greater than moving to a professional and technical occupation. For these workers, moving to a manual occupation is little better than staying in a low-end service occupation. Moving up the occupational hierarchy from manual to clerical or mid-tier service and professional or technical occupations increases the probability of mobility. Only low-wage entrants into manual work increase their probability of mobility by staying in a manual occupation (0.9 percent) relative to moving to a professional or technical one. The negative effect of starting in a manual occupation relative to a professional or technical one is three times larger in the most recent period (2001 to 2014) and two times larger for a clerical or mid-tier occupation than in the first period (1968 to 1985).

The largest effects are for industry. Working in low wages in personal services and entertainment is no different than working in agriculture or mining, an industry with low mobility. Workers in health care and social assistance, education and public administration, and manufacturing and utilities have about a 7.5 percent higher probability of mobility out of low wages. Wholesale and retail trade as well as other professional, scientific, and technical industries have smaller effects more similar in size to having a college degree instead of a high school degree (4.9 and 3.5 respectively). The industry effects are strongest for professional and technical workers. Three industries see significant declines in their positive effects on mobility in the most recent period, from 2001 to 2014: finance, insurance, and business services; health care and social assistance; and education and public administration. The decline in mobility over time may reflect the decline in firm internal labor markets in the large institutions that dominate these industries, including hospitals, schools, and local government.

A supplemental analysis from 1981 to 2014 incorporates additional job and firm measures. Working in a job covered by a union increases the probability of mobility by 8.2 percent. The positive effect for working in a government job is 2.4 percent. The effect for firm experience is small but significant (1 percent for ten years of experience). The effect for firm changes on the probability of mobility attenuates over time. Changing firms decreased the probability of mobility out of low-wage work by 10.3 percent between 1981 and 1985. The effect diminishes by half to –4.7 percent in the most recent period, 2001 to 2014. The significance of this effect and its decline over time are driven by its significance among the largest share of low-wage workers, those entering low-end service occupations.

Explaining Mobility Rates Across Time

The second research question is whether demographic, education, occupational, and firm characteristics explain the different mobility rates across time. I use a stepwise series of discrete-time event history models to test the effect of including new sets of variables on the period effects. The baseline model (m0) includes only the effect of entry period on the hazard for the employment spell, along with a control variable for the number of previous successful exits from low wages. The second model (m1) adds demographic variables, followed by education and human capital variables, including the count of unemployment and employment status in the previous year (m2), then occupational variables (m3), and finally firm variables (m4). The base category for the entry period is from 1993 to 1996, a period with a tightening labor market when unemployment dropped from 7 percent to 5.5 percent.

Figures 4 and 5 present the average marginal effect of each entry period for each of the five model specifications for workers starting low-wage employment spells in low-end service and manual occupations. Most of the effects of entry period are not significantly different for professional and technical occupations and clerical and mid-tier service occupations; the overall entry period effects for all low-wage workers closely matches the trend for low-end service workers (see figures O4 through O6). The method here is to test whether the inclusion of each new set of variables explains the entry period effects and moves the effect toward zero in all periods. For example, if including education and human capital variables re-

Figure 4. Average Marginal Effect of Entry Period on Mobility, Low-End Service Entrants
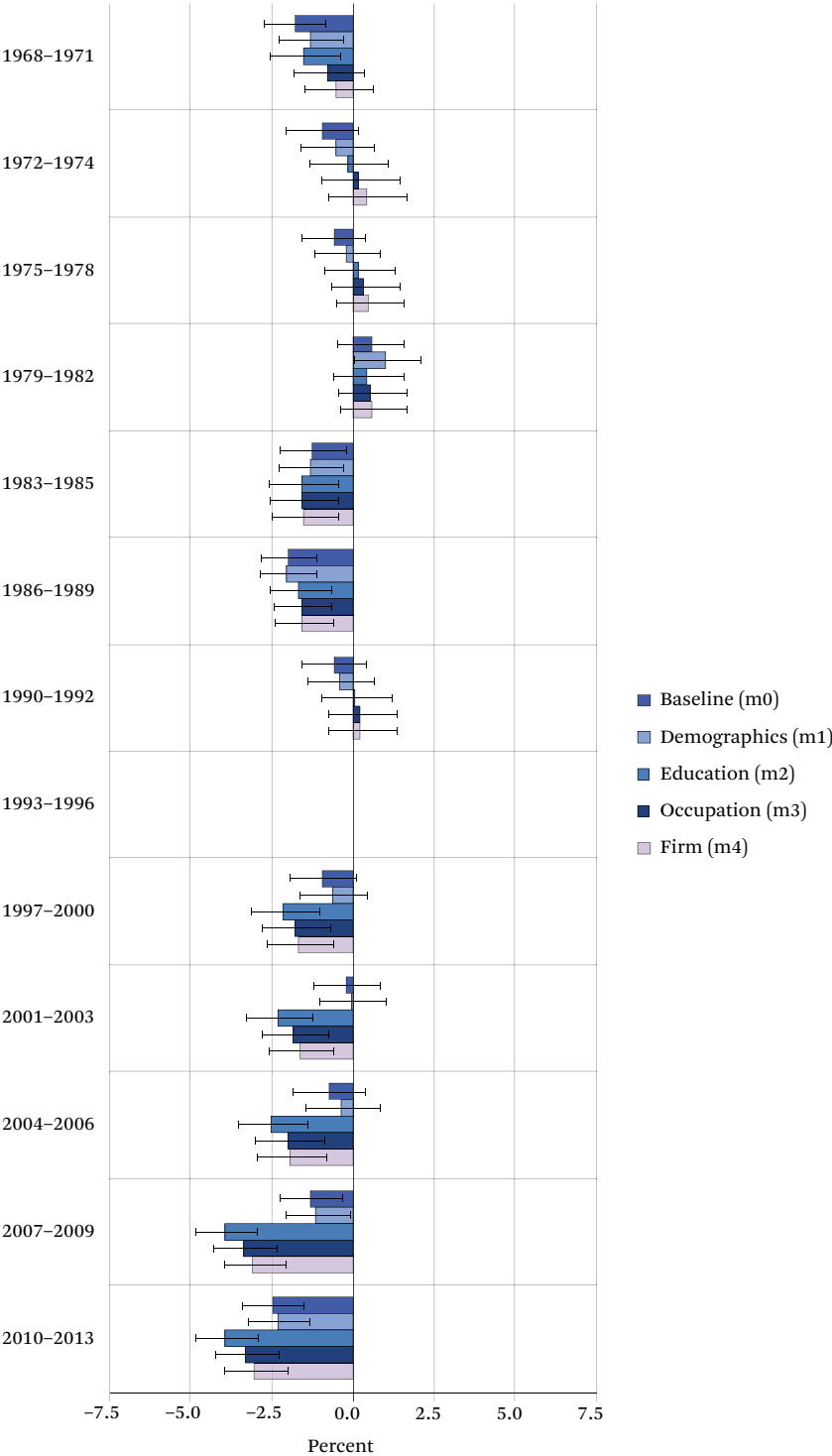
Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median wage for full-time workers).

Figure 5. Average Marginal Effect of Entry Period on Mobility, Manual Entrants
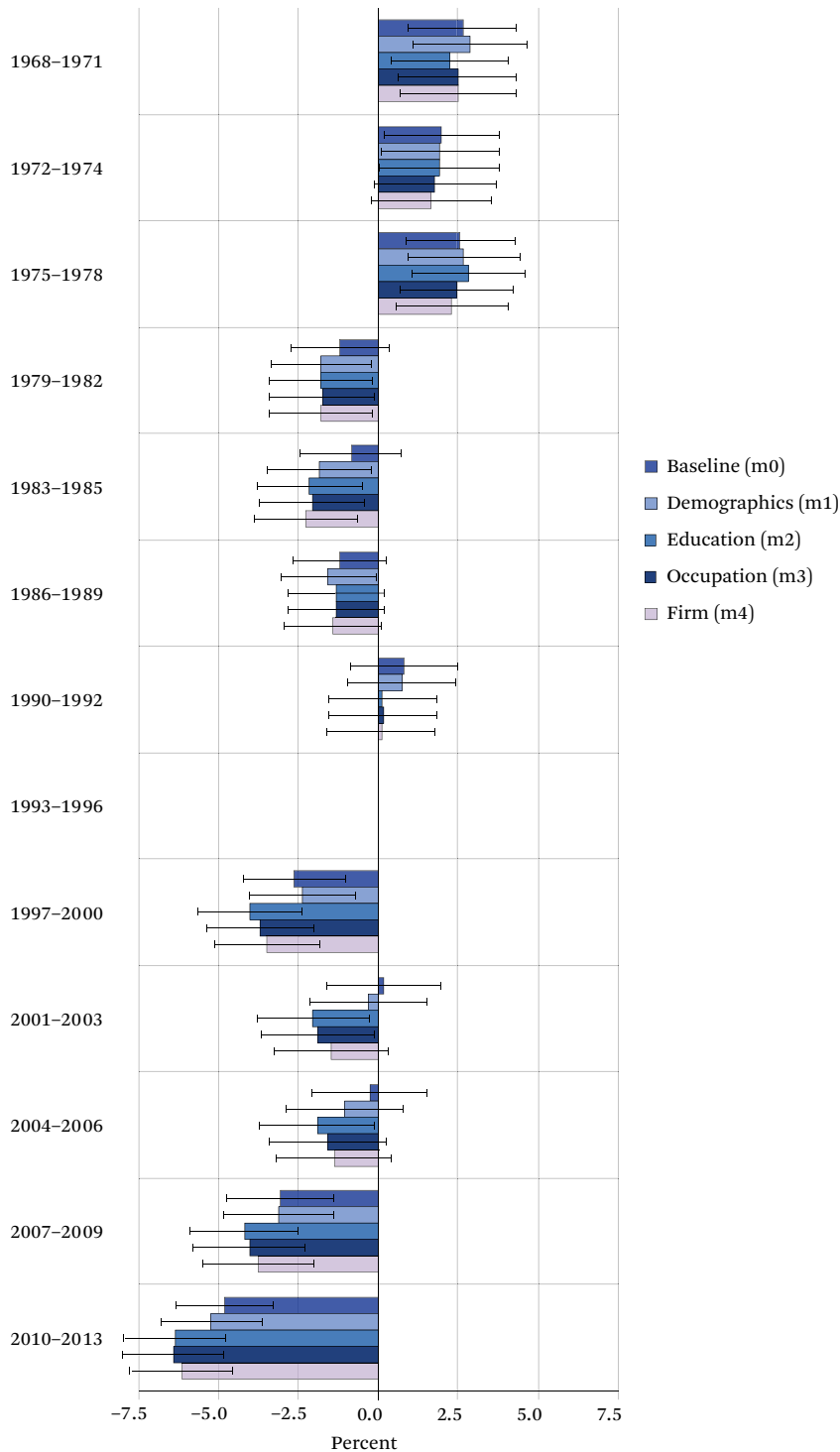
Baseline (m0)
Demographics (m1)
Education (m2)
Occupation (m3)
Firm (m4)

Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median wage for full-time workers).

moves these effects, then the interpretation is that higher (or lower) mobility rates in a given period were due to the workers' favorable (or unfavorable) education and human capital characteristics. The reverse is true if including these variables increases the entry period effects (moving them away from zero). This indicates that higher (or lower) mobility rate in the previous model is despite more unfavorable (or favorable) educational and human capital worker characteristics.

Starting with the analysis of low-end service occupations, only the 1986 to 1989 and the 2010 to 2013 entry periods have significantly lower mobility than the 1993 to 1996 reference period in the baseline (m0) and the second model including demographics (m1). Both are periods of high unemployment. Including education human capitals variables (m2) has a significant effect. All entry periods after 1997 have significantly lower mobility than the reference period. These significant negative effects vary in size from 2.1 in the 1997 to 2000 period to 2.5 percent in the 2004 to 2006 period to 3.9 from 2007 to 2009 and 2010 to 2013. This negative effect indicates that entrants with similar education, unemployment and work experience, and coming from better wages are doing worse in the more recent period. Further analysis (not shown), reveals that the variables for years unemployed, years in low-wage work, and status prior to entering the employment spell mostly drive this effect, not the inclusion of education.

Adding occupational (m3) and firm (m4) characteristics attenuates the negative effects of entry period among entrants into low-end service occupations. The attenuation is small (on average 0.4 percent), but enough to make the smaller effects for the three entry periods from 1997 to 2006 not significantly different from the reference period after including occupational characteristics. The similarly large effects for the periods since the Great Recession (2007 onward) remain significant. Including firm characteristics further attenuates the effects in these two recent periods, but these effects remain significant. The supplemental analysis from 1981 to 2014 with the inclusion of additional job and firm experience variables does not change this result.

The mobility rates for low-wage entrants into manual occupations is similar (see figure 5). One notable difference is the higher mobility in the first three periods, from 1968 to 1978 relative to the 1980s, the late 1990s, and the late 2000s. This fits with the decline in manufacturing jobs during the 1980s. As in the model for all low-wage workers, including education and unemployment history results in stronger effects after 1997. The exception is the early 2000s, which remain similar to the reference period (1993 to 1996). The housing boom in this period is a plausible explanation for why mobility is not lower in this period among manual workers. As in the model for all low-wage workers, including occupational (m3) and firm (m4) characteristics somewhat attenuates the entry period effects.

Mean Threshold

Switching to the higher mean-derived low-wage threshold, cumulative mobility out of low wages drops approximately 2 to 3 percent at two, four, and six years since entering low wages relative to the median using the Kaplan-Meier method. Most of the mobility out of low wages using the mean threshold is from workers entering above the median threshold. Mobility from below the median threshold to above the mean threshold is approximately 10 percent lower at two, four, and six years relative to the mean (see figures O7 and O8). The occupation differences in cumulative mobility remain stable across these alternative threshold specifications.

Mobility effects over time are marginally different when using the higher mean threshold (see figures O9 to O12). The entry periods from the late 1960s through the early 1980s, along with the 1990 to 1992 period have significantly higher mobility than those from the late 2000s for all low-end service workers. When the education and human capital variables are included, these earlier periods become significantly different from the reference period. In other words, there is a much clearer decline in mobility out of low-wage work from higher mobility up through the early 1990s and a steady decline afterward punctured by lower mobility after the Great Recession. The same patterns hold for mobility from below the median threshold to above the mean, although the pe-

riod effect sizes are half as large because the base level probability of mobility is lower. Manual workers have significantly higher probability rates above the mean from 1968 to 1978 using the mean threshold. The same minimal attenuation of entry period effects for the period after the late 1990s found using the median threshold with the inclusion of occupation and firm characteristics occurs when using the mean threshold.

DISCUSSION AND CONCLUSION

Mobility out of low-wage work is modeled for thirteen entry periods from 1968 to 2013 for entrants age twenty-five to fifty-four into low wages for all workers, young and prime-age workers, and by four large aggregate occupations. More than half of all workers entering a low-wage employment spell move above the two-thirds of the median low-wage threshold for full-time workers in four years. However, it takes seven years for half of these workers entering low wages below the median threshold to move above the higher two-thirds of the mean low-wage threshold.

Mobility out of low-wage work has declined for entrants into low wages since the late 1990s to the end of the study period in the early 2010s. Workers entering low-wage employment during the Great Recession (2007 to 2009) and the years afterward (2010 to 2013) experienced 3.7 and 4 percent lower probabilities of mobility. These effects are similar in size to the negative effect of being a woman relative to being a man and the positive effect of having a college degree relative to having a high school diploma. These Great Recession effects are the largest period effects by a factor of two since the late 1960s.

In the baseline analysis of mobility out of low wages, the effect of entry period on mobility is minimal. A larger portion of entrants into low-wage work in the 2000s are prime age, non-white, and men. These demographic changes explain little of the change in mobility rates over time. The negative effect on mobility out of low wages from the late 1990s onward is revealed when controlling for the work and unemployment history. This period effect is found in the Kaplan-Meier life table analysis based on time since first entering low wages and is not an artifact of the employment-spell design.

This indicates that the probabilities of mobility out of low-wage work are lower since the late 1990s even though low-wage workers have more labor market experience, less unemployment history, higher education, and are more likely to have fallen into low wages from better wages. Consistent with other research, I find that the returns to labor market experience for achieving mobility have decreased and that the negative effects of unemployment have increased when comparing the 2000 to 2014 period with prior years. My findings add to the growing evidence of increased insecurity among workers at the bottom since the 1990s (Hacker 2006; Sandoval, Rank, and Hirschl 2009; Western et al. 2016; Latner 2018).

The institutional account would explain the lower returns to education and experience for low-wage workers mobility as a consequence of worsening occupational and firm characteristics (Howell and Kalleberg 2019). I find some evidence for this argument in the attenuation of the entry period effects since the late 1990s after including occupational and firm characteristics. The lowest mobility out of low wages is among entrants into and movers to low-end service occupations and the share of low-wage workers in these occupations has grown, particularly since 2000.

The decline of the higher mobility out of low wages in education, health, and business services is evidence of a decline in firm internal labor markets due to the large institutions that dominate these industries. In addition, part-time work is now a stronger hindrance to mobility out of low-wage work. More attention should be paid to part-time work as a form of insecurity in the new economy. In the supplemental analysis from 1981 to 2014, I find a decline in the negative effect of firm changes over time, further evidence for a decline in internal labor markets and their subsequent use as a route to mobility. These findings indicate that institutional changes have contributed to reducing pathways to mobility for low-wage workers.

The perfect competition model claims that the education and skills of workers are not keeping up with the available jobs (Autor and Dorn 2013). The low-wage labor market since the 2000s is more skilled than in the past. College-educated workers have increased their

share in the low-wage labor market and are moving out of low-wage work more quickly. The more-educated group that remains is the growing share with some college education. This group has doubled in low-end service occupations since the 1968 to 1985 period. Additionally, the lower mobility rate for prime-age workers compared to young adults goes away in the 2001 to 2014 period. When combined with the increase in low-wage workers coming from better wages, the evidence is consistent with the account of the perfect competition model that a decline in middle-skill jobs pushes more semi-skilled workers into the low-wage labor market.

The stability in the size of the low-wage labor market across time in the United States using the median threshold is a caution to the over-interpretation of the occupational polarization literature. Low-end service occupations have increased as a share of the low-wage labor market, but have long been dominant. The new trend is an increase in the percentage of workers in low-end service occupations that are not in low wages. This analysis does not find an increase in mobility out of low-end service occupations over time, suggesting that these higher-paid forms are not accessible to workers in low wages in the same occupation. The size of the low-wage labor market has increased when using the higher two-thirds of the mean threshold reflecting the growing insecurity of the lower middle class. However, these workers are less likely to be in the low-end service occupations typically associated with low-wage work. Rather, it is workers higher up the occupation and skill ladder, like elementary school teachers, who are added to the low-wage labor market when using the mean threshold.

I find positive effects for time employed in low wages and increases in occupational experience on mobility out of low-wage work. This counteracts the narrative that only low-wage workers who are younger, have more education, or are temporarily in low wages between spells of working in higher pay move out. Some workers use low-wage work as a stepping stone (Knabe and Plum 2010; Cockx and Picchio 2012; Mouw and Kalleberg 2018). They are thus able to build occupational experience and move to another occupation requiring a similar set of tasks where their previous experience applies.

However, this is a slow process. In contrast, low-wage workers who are able to move occupations with little or no skill similarity to their previous low-wage occupation increase their probability of mobility similar to having some college education over a high school degree. Similarly, working in a union job and a government job have large positive effects on the probability of mobility, in line with research on the wage benefits of unions (Boushey 2005; Brady et al. 2013; VanHeuvelen 2018).

The consistent negative effects for women and nonwhites on mobility since 1968 reveals how little progress has been made for these groups in the low-wage labor market. The closing of the gender pay gap (Kronberg 2013) and the progress made on racial pay gaps (Ren 2019) have not resulted in a closing of mobility rates out of the low-wage labor market. Men and whites are moving up and out at higher rates even after accounting for education, experience, and various occupational and firm characteristics. Although the probability of mobility out of low-wage work has narrowed for women, the negative effect of being a woman is similar in size to the positive effect of having a college degree relative to a high school degree. I find that the penalty for being nonwhite on mobility out of low-wage work has worsened since the late 1960s. A plausible explanation is the disparate impact of criminal records among nonwhites as part of mass incarceration (Pager 2007).

Future research on mobility out of low-wage work over time should use more detailed occupations and industries contextualized in geographically bound labor markets. A finer grained analysis may provide a clearer story about changes in occupational and industry structure that are central to the institutional narrative and be able to identify the changes that began to occur in the 1990s. Selection should be taken seriously and use new methods to account for duration dependence and unemployment spells. Most studies of the wage mobility of low-wage workers use a threshold approach or follow the workers for only a short period after they secure higher wages. The intragenerational mobility literature would benefit from a deeper understanding of the wage growth of low-wage workers, particularly once they move to higher wages.

Table A1. Top Ten Detailed Occupations by Large Occupation

Occupations	Percent in Low Wages
Professional and technical	
Farmers, ranchers, and other agricultural managers	60.9
Elementary and middle school teachers	12.7
Preschool and kindergarten teachers	37.0
Other teachers and instructors	25.6
Sales representatives, wholesale and manufacturing	9.4
Real estate brokers and sales agents	22.7
Designers	26.3
Legislators	7.6
Accountants and auditors	6.7
Artists and related workers	33.0
Clerical and mid-tier service	
Managers, all other	14.2
Logisticians	2.5
Miscellaneous agricultural workers (such as conservation workers)	80.8
Bookkeeping, accounting, and auditing clerks	23.8
Teacher assistants	55.3
Office and administrative support workers, all other	22.5
Office clerks, general	35.1
Shipping, receiving, and traffic clerks	27.2
First-line supervisors of office and administrative support workers	10.8
Word processors and typists	26.5
Manual	
Production workers, all other	24.9
Sewing machine operators	66.5
Laborers and freight, stock, and material movers, hand	37.7
Miscellaneous assemblers and fabricators	28.2
Inspectors, testers, sorters, samplers, and weighers	27.9
Operating engineers and other construction equipment operators	25.0
Automotive service technicians and mechanics	25.3
Construction laborers	34.7
Packaging and filling machine operators and tenders	4.3
Motor vehicle operators	38.0
Low-end service	
Maids and housekeeping cleaners	69.1
Childcare workers	81.7
Retail salespersons	48.2
Nursing, psychiatric, and home health aides	63.3
Chefs and head cooks	68.6
Waiters and waitresses	64.5
Janitors and building cleaners	46.3
Cashiers	70.8
Driver, sales workers, and truck drivers	22.1
Hairdressers, hairstylists, and cosmetologists	57.6

Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median wage for full-time workers).

Table A2. Descriptive Characteristics of Entrants and Jobs in Three Periods

|	All Entrants			Professional-Technical		
	1968–1985	1986–2000	2001–2013	1968–1985	1986–2000	2001–2013
N	6,068	9,324	6,879	658	1,328	1,265
Female	66.4%	60.0%	55.4%	51.1%	55.7%	59.6%
Nonwhite	17.4	24.0	31.5	8.2	15.5	17.8
Prime age (thirty-five to fifty-four)	51.4	56.8	60.1	44.8	59.4	59.3
Marital status						
Never married	7.6%	17.4%	27.7%	12.4%	17.4%	26.6%
Married	67.0	47.5	43.0	71.9	53.5	50.6
Child(ren) in the household						
Yes	66.1%	57.2%	54.3%	59.7%	53.0%	52.9%
Under age six	27.4	25.4	25.7	27.8	24.0	25.2
Woman with a child under age six	25.0	26.0	27.3	29.7	25.7	25.5
Education						
Less than high school	26.4%	14.6%	12.2%	7.4%	4.3%	3.1%
High school diploma	44.1	42.2	35.2	25.9	21.1	14.0
Some college	17.9	26.2	31.2	24.9	30.8	28.9
Bachelor's or higher	11.6	17.0	21.4	41.8	43.7	54.1
Employment status before entry						
Unemployed	48.3%	45.8%	38.8%	37.6%	37.6%	35.6%
Working, better wages	41.8	45.8	50.3	51.7	56.0	55.5
Young entry	10.0	8.4	10.9	10.7	6.5	9.0
Years observed in low wages	0.8	1.1	1.0	0.4	0.8	0.7
Years observed in unemployment	0.8	1.3	0.9	0.4	0.9	0.7
Average starting wage (median=100)	53.2	50.5	49.7	55.5	52.0	52.0
Part-time hours	27.0%	23.4%	24.2%	18.6%	23.9%	27.1%
Woman and part-time hours	37.4%	33.7%	32.9%	30.8%	33.8%	36.0%
Average occupational experience	1.2	1.3	1.4	1.1	1.2	1.1
Industry						
Agriculture and mining	11.1%	12.8%	12.5%	22.8%	12.1%	10.8%
Manufacturing and utilities	21.9	18.3	16.6	7.2	8.9	8.9
Wholesale and retail trade	23.6	22.2	23.0	11.8	7.9	8.5
Finance, insurance, and business services	8.7	10.2	10.4	10.9	13.7	12.6
Personal services and entertainment	9.9	9.5	9.8	3.4	3.9	7.0
Health care and social assistance	9.0	9.0	10.2	10.0	14.0	9.5
Education and public administration	11.8	12.8	11.1	23.4	23.6	26.0
Other professional, scientific, and technical	4.1	5.2	6.4	10.6	16.0	16.7
Only from 1981 onward						
N	1,855	6,983	5,162	195	890	897
Union job	8.9%	9.8%	11.4%	5.0%	8.2%	13.4%
Government job	15.1%	15.7%	15.3%	17.2%	23.5%	25.8%
Average firm experience	3.6	3.6	4.1	3.1	3.5	3.9
Average firm count	1.5	3.3	4.4	1.5	3.4	4.5

Source: Author's calculations based on the PSID (2018).
Note: Using median threshold (two-thirds of the median wage for full-time workers).

Clerical–Mid-Tier			Manual			Low-End Service		
1968–1985	1986–2000	2001–2013	1968–1985	1986–2000	2001–2013	1968–1985	1986–2000	2001–2013
1,327	1,995	1,149	1,607	2,295	1,441	2,476	3,706	3,024
70.7%	69.0%	72.0%	50.9%	32.5%	23.4%	78.8%	71.4%	63.6%
11.7	20.7	30.7	21.6	29.2	38.0	22.9	27.1	35.4
52.0	61.2	61.5	49.3	52.0	64.3	55.0	55.3	57.4
6.1%	14.5%	23.2%	6.4%	19.3%	27.6%	7.6%	18.2%	30.3%
67.9	50.4	47.0	69.0	45.1	43.5	63.1	44.2	37.1
66.8%	55.5%	56.8%	67.7%	55.3%	53.3%	67.2%	61.4%	54.4%
24.1	22.2	24.7	30.8	25.7	25.2	27.7	28.0	26.6
19.6	20.8	26.1	27.0	24.3	18.6	26.6	30.0	30.6
15.3%	7.0%	7.7%	44.6%	24.9%	19.4%	31.3%	18.8%	15.1%
44.4	39.9	32.8	44.9	51.1	50.5	50.6	48.4	38.9
27.7	35.0	39.4	7.7	19.4	24.6	14.0	22.0	32.5
12.5	18.1	20.1	2.7	4.6	5.6	4.2	10.9	13.6
43.6%	40.0%	38.4%	44.3%	40.2%	35.6%	58.4%	56.6%	42.5%
46.9	52.7	51.7	45.2	52.2	55.8	31.8	32.8	43.9
9.5	7.2	9.9	10.6	7.6	8.6	9.8	10.6	13.6
0.6	0.8	0.8	0.7	0.8	1.0	1.1	1.5	1.2
0.7	1.0	0.8	0.7	1.1	0.9	1.1	1.9	1.1
56.1	53.5	52.5	54.9	51.2	50.3	49.1	47.4	47.0
24.0%	19.0%	26.4%	13.8%	10.2%	12.4%	40.7%	33.5%	28.3%
31.9%	26.1%	32.3%	20.6%	16.7%	15.1%	49.6%	43.0%	35.3%
1.2	1.2	1.5	1.1	1.2	1.5	1.4	1.4	1.4
13.7%	14.5%	11.5%	15.8%	27.7%	29.7%	1.6%	3.5%	4.3%
16.2	14.8	11.9	61.1	47.3	43.6	8.0	8.6	7.8
20.2	19.3	12.7	10.9	10.4	13.9	38.8	37.5	40.2
13.4	13.3	14.0	5.9	7.6	10.0	5.9	8.0	7.9
4.4	4.1	4.2	1.7	1.1	1.2	21.6	20.5	18.3
11.1	11.2	12.6	0.1	0.5	0.1	12.5	9.9	15.1
15.0	16.6	23.2	3.9	5.0	1.0	9.5	9.7	3.6
6.1	6.2	9.9	0.7	0.3	0.5	2.1	2.2	2.7
409	1,479	986	518	1,797	1,084	733	2,817	2,195
6.7%	10.8%	11.7%	16.9%	14.0%	13.4%	7.3%	7.5%	9.2%
20.5%	19.7%	25.8%	9.6%	12.0%	5.6%	13.6%	12.2%	9.8%
4.1	3.8	4.7	4.4	4.3	4.6	2.9	3.1	3.5
1.5	3.4	4.5	1.5	3.0	4.4	1.5	3.4	4.3

Figure A1. Cumulative Mobility Out of Low-Wage Work Across Employment Spells
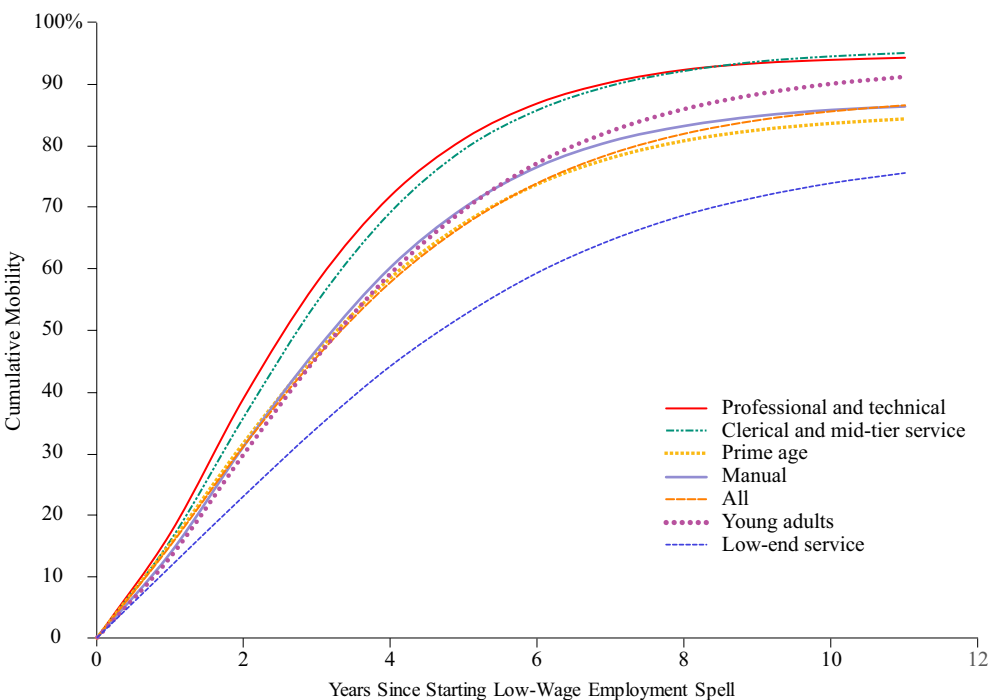
Source: Author's calculations based on the PSID (2018).
Note: Results from the full model (m4) using the median wage threshold (two-thirds of the median wage for full-time workers).

Figure A2. Significant Average Marginal Effects for Mobility for All Low-Wage Workers
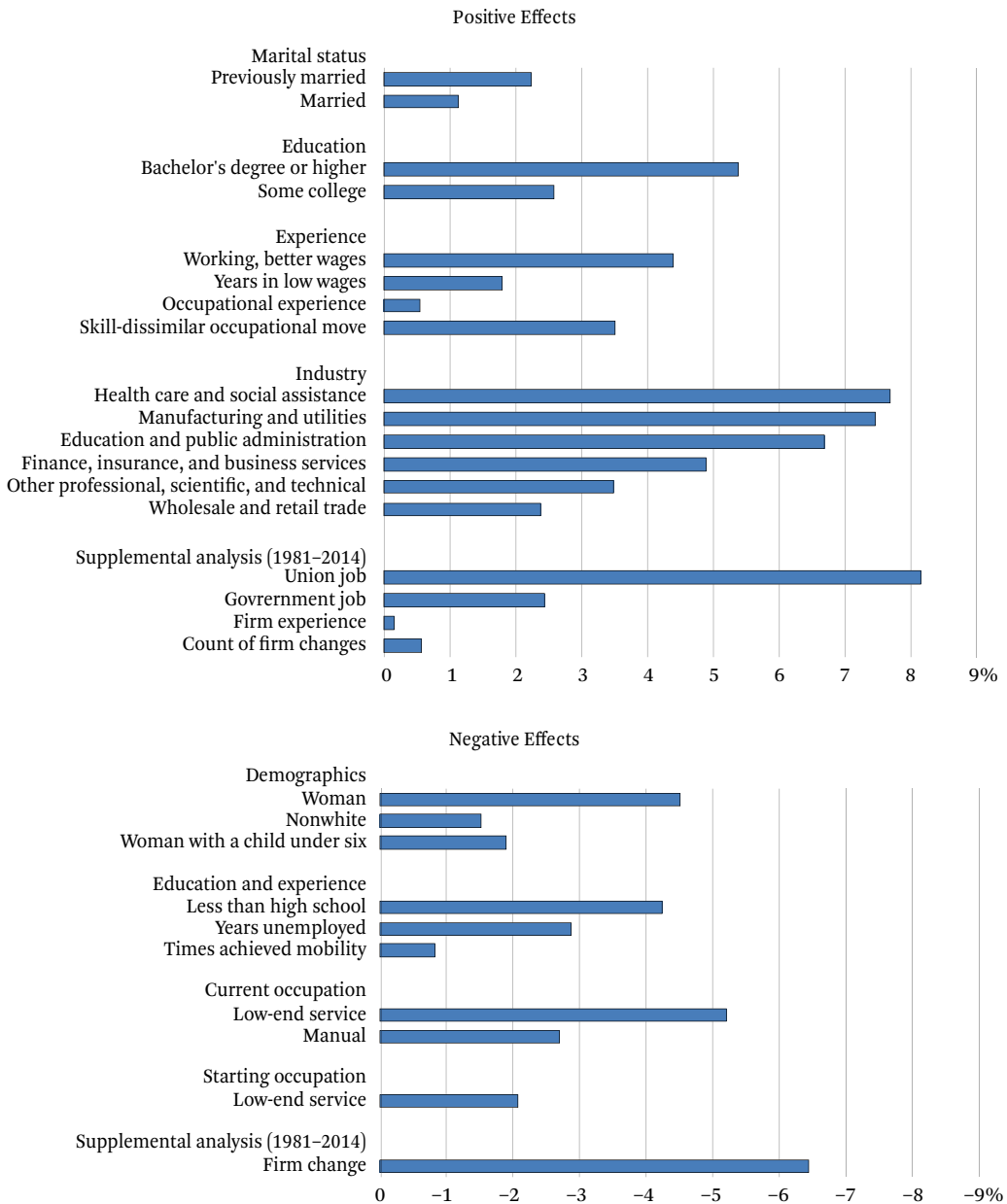
Source: Author's calculations based on the PSID (2018).
Note: Results from the full model (m4) using the median wage threshold (two-thirds of the median wage for full-time workers). Reference categories: woman (man), nonwhite (white), marital status (never married), child under six (without a child under six), education (high school diploma), worked in better wages (unemployed), starting and current occupation (professional and technical), firm change (same firm), industry (agriculture and mining).

REFERENCES

Acemoglu, Daron, and David Autor. 2011. "Skills, Tasks and Technologies: Implications for Employment and Earnings." In *Handbook of Labor Economics*, vol. 4B, edited by Orley Ashenfelter and David Card. Amsterdam: Elsevier.

Aertz, Bodo, and Nicole Gürtzgen. 2012. "What Explains the Decline in Wage Mobility in the German Low-Wage Sector?" *ZEW* discussion paper no. 12-041. Mannheim: Centre for European Economic Research.

Allison, Paul D. 1982. "Discrete-Time Methods for the Analysis of Event Histories." *Sociological Methodology* 13(1): 61–98.

Andersson, Fredrick, Harry J. Holzer, and Julia I. Lane. 2005. *Moving Up or Moving On: Who Advances in the Low-Wage Labor Market?* New York: Russell Sage Foundation.

Autor, David H., and David Dorn. 2013. "The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market." *American Economic Review* 103(5): 1553–97.

Bernhardt, Annette, Rosemary Batt, Susan Houseman, and Eileen Appelbaum. 2016. "Domestic Outsourcing in the U.S.: A Research Agenda to Access Trends and Effects on Job Quality." *IRLE* working paper no. 102-16. Berkeley, Calif.: Institute for Research on Labor & Employment.

Bernhardt, Annette, Martina Morris, Mark S. Handcock, and Marc A. Scott. 2001. *Divergent Paths: Economic Mobility in the New American Labor Market.* New York: Russell Sage Foundation.

Bolvig, Iben. 2005. "Within- and Between-Firm Mobility in the Low-Wage Labour Market." In *Job Quality and Employer Behaviour*, edited by Stephen Bazen, Claudio Lucifora, and Wiemer Salverda. New York: Basingstoke.

Boushey, Heather. 2005. "No Way Out: How Prime-Age Workers Get Trapped in Minimum Wage Jobs." *Working USA: The Journal of Labor and Society* 8(6): 659–70.

Brady, David, Regina Baker, and Ryan Finnigan. 2013. "When Unionization Disappears. State-Level Unionization and Working Poverty in the United States." *American Sociological Review* 78(5): 872–96.

Campbell, Colin. 2012. "Low-Wage Mobility During the Early Career." *Research in Social Stratification and Mobility* 30(2): 175–85.

Cappellari, Lorenzo. 2002. "Do the 'Working Poor' Stay Poor? An Analysis of Low Pay Transitions in Italy." *Oxford Bulletin of Economics and Statistics* 64(2): 87–110.

Cappelli, Peter. 1999. *The New Deal at Work: Managing the Market-Driven Workforce*. Boston, Mass.: Harvard Business School Press.

Card, David, and John E. DiNardo. 2002. "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles." *Journal of Labor Economics* 20(4): 733–83.

Carrington, William J., and Bruce C. Fallik. 2001. "Do Some Workers Have Minimum Wage Careers?" *Monthly Labor Review* 124(5): 17–27.

Cha, Youngjoo, and Kim A. Weeden. 2014. "Overwork and the Slow Congruence in the Gender Pay Gap." *American Sociological Review* 79(3): 467–84.

Cockx, Bart, and Matteo Picchio. 2012. "Are Short-Lived Jobs Stepping Stones to Long-Lasting Jobs?" *Oxford Bulletin of Economics and Statistics* 74(5): 646–75.

Connolly, Helen, Peter Gottschalk, and Katherine Newman. 2003. "Wage Trajectories of Workers in Poor Households." *Boston College Working Papers in Economics* no. 555. Revised July 25, 2005. Boston, Mass.: Boston College Department of Economics.

Dwyer, Rachel E., and Erik Olin Wright. 2019. "Low-Wage Job Growth, Polarization, and the Limits and Opportunities of the Service Economy." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(4): 56–76. DOI: 10.7758/RSF.2019.5.4.02.

England, Paula. 2010. "The Gender Revolution: Uneven and Stalled." *Gender & Society* 22(2): 149–66.

Farber, Henry S. 2010. "Job Loss and the Decline of Job Security in the United States." In *Labor in the New Economy*, edited by Katharine G. Abraham, James R. Spletzer, and Michael Harper. Chicago: University of Chicago Press.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2018. Integrated Public Use Microdata Series, Current Population Survey: Version 6.0 [data set]. Minneapolis, Minn.: IPUMS.

Frank, Robert. 1985. *Choosing the Right Pond: Human Behavior and the Quest for Status*. New York: Oxford University Press.

Freeman, Richard B., and James L. Medoff. 1984. *What Do Unions Do?* New York: Basic Books.

French, Eric, Bhashkar Mazumder, and Christopher

Taber. 2005. "The Changing Pattern of Wage Growth for Low Skilled Workers." Working paper no. 2005-24. Revised May 3, 2006. Chicago: Federal Reserve Bank.

Gangl, Markus. 2006. "Scar Effects of Unemployment: An Assessment of Institutional Complementarities." *American Sociological Review* 71(6): 986–1013.

Gash, Vanesa. 2008. "Bridge or Trap? Temporary Workers' Transitions to Unemployment and to the Standard Employment Contract." *European Sociological Review* 24(5): 651–68.

Gathmann, Christina, and Uta Schönberg. 2010. "How General Is Human Capital? A Task-Based Approach." *Journal of Labor Economics* 28(1): 1–49.

Gautié, Jérôme, and John Schmitt, eds. 2010. *Low-Wage Work in the Wealthy World*. New York: Russell Sage Foundation.

Goldin, Claudia, and Lawrence F. Katz. 2008. *The Race Between Education and Technology*. Cambridge, Mass.: Harvard University Press.

Goos, Maarten, Alan Manning, and Anna Salomons. 2009. "Job Polarization in Europe." *American Economic Review* 99(2): 58–63.

Grieger, Lloyd, Sheldon H. Danziger, and Robert F. Schoeni. 2009. "Accurately Measuring the Trend in Poverty in the United States Using the Panel Study of Income Dynamics." *Journal of Economic and Social Measurement* 34(2-3): 105–17.

Hacker, Jacob. 2006. *The Great Risk Shift*. New York: Oxford University Press.

Handwerker, Elizabeth W. 2018. "Increased Concentration of Occupations, Outsourcing, and Growing Wage Inequality in the United States." Paper presented at the NBER Summer Institute, Cambridge, Mass. (July 24, 2018).

Handwerker, Elizabeth W., and James R. Spletzer. 2015. "The Role of Establishments and the Concentration of Occupations in Wage Inequality." *IZA* discussion paper no. 9294. Bonn: Institute of Labor Economics.

Heathcote, Jonathan, Fabrizio Perri, and Giovanni L. Violante. 2010. "Unequal We Stand: An Empirical Analysis of Economic Inequality in the United States, 1967–2006." *Review of Economic Dynamics* 13(1): 15–51.

Heckman, James, and Burton Singer. 1984. "A Method for Minimizing the Impact of Distributional Assumptions in Econometric Models for Duration Data." *Econometrica* 52(2): 271–320.

Heinze, Anja, and Nicole Gürtzgen. 2010. "Escaping Low-Earnings in Germany: Do Employer Characteristics Make a Difference?" Beiträge zur Jahrestagung des Vereins für Socialpolitik 2010: Ökonomie der Familie—Session: Dynamics of the Labor Market: Empirical Studies, no. F11-V1. Frankfurt-am-Main: Verein für Socialpolitik.

Holmes, Craig, and Gerbrand Tholen. 2013. "Occupational Mobility and Career Paths in the 'Hourglass' Labour Market." Working paper no. 113. Oxford: University of Oxford.

Horowitz, Jonathan. 2018. "Relative Education and the Advantage of a College Degree." *American Sociological Review* 83(4): 771–801.

Howell, David R., and Arne L. Kalleberg. 2019. "Declining Job Quality in the United States: Explanations and Evidence." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(4): 1–53. DOI: 10.7758/RSF.2019.5.4.01.

Hunt, Jennifer, and Ryan Nunn. 2019. "Is Employment Polarization Informative About Wage Inequality and Is Employment Really Polarizing?" Paper presented at the 2019 ASSA Annual Meeting "Occupations and Job Polarization." Atlanta, Ga. (January 5, 2019).

Jarvis, Benjamin F., and Xi Song. 2017. "Rising Intragenerational Occupational Mobility in the United States, 1969 to 2011." *American Sociological Review* 82(3): 568–99.

Kalleberg, Arne L. 2000. "Nonstandard Employment Relations: Part-Time, Temporary, and Contract Work." *Annual Review of Sociology* 26: 341–65.

———. 2003. "Flexible Firms and Labor Market Segmentation: Effects of Workplace Restructuring on Jobs and Workers." *Work and Occupations* 30 (May): 154–75.

———. 2007. *The Mismatched Worker*. New York: W. W. Norton.

———. 2011. *Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s to 2000s*. New York: Russell Sage Foundation.

Kalleberg, Arne L., and Ivar Berg. 1987. *Work and Industry: Structures, Markets and Processes*. New York: Plenum.

Kalleberg, Arne L., and Ted Mouw. 2018. "Occupations, Organizations, and Intragenerational Career Mobility." *Annual Review of Sociology* 44: 283–303.

Kalleberg, Arne L., Barbara F. Reskin, and Ken Hudson. 2000. "Bad Jobs in America: Standard and

Nonstandard Employment Relations and Job Quality in the United States." *American Sociological Review* 65(2): 256–78.

Kalleberg, Arne L., Jeremy Reynolds, and Peter V. Marsden. 2003. "Externalizing Employment: Flexible Staffing Arrangements in U.S. Organizations." *Social Science Research* 32(4): 525–52.

Kambourov, Gueorgui, and Iourii Manovskii. 2009. "Occupational Specificity of Human Capital." *International Economic Review* 50(1): 63–115.

Knabe, Andreas, and Alexander Plum. 2010. "Low-Wage Jobs: Stepping Stone or Poverty Trap?" *SOEP Papers on Multidisciplinary Panel Data Research* no. 337. Berlin: Free University Berlin.

Kronberg, Anne-Kathrin. 2013. "Stay or Leave? Externalization of Job Mobility and the Effect on the U.S. Gender Earnings Gap, 1979–2009." *Social Forces* 91(4): 1117–46.

Lambert, Susan J., Julia R. Henly, and Jaeseung Kim. 2019. "Precarious Work Schedules as a Source of Economic Insecurity and Institutional Distrust." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5(4): 218–57. DOI: 10.7758/RSF.2019.5.4.08.

Latner, Jonathan P. 2018. "Income Volatility and Mobility: A Conceptual Exploration of Two Frameworks." *Research in Social Stratification and Mobility* 53 (February): 50–63.

Long, J. Scott, and Sarah A. Mustillo. 2018. "Using Predictions to Compare Groups in Regression Models for Binary Outcomes." *Sociological Methods & Research*. Published online October 21, 2018. DOI: 10.1177/0049124118799374.

Mason, Geoff, and Wiemer Salverda. 2010. "Low Pay, Working Conditions, and Living Standards." In *Low-Wage Work in the Wealthy World*, edited by Jérôme Gautié and John Schmitt. New York: Russell Sage Foundation.

Massey, Douglas S., and Deborah S. Hirst. 1998. "From Escalator to Hourglass: Changes in the U.S. Occupational Wage Structure 1949–1989." *Social Science Research* 27(1): 51–71.

Maume, David J., and George Wilson. 2015. "Determinants of Declining Wage Mobility in the New Economy." *Work and Occupations* 42(1): 35–72.

McKnight, Abigail, Kitty Stewart, Sam Mohun Himmelweit, and Marco Palillo. 2016. "Low Pay and in-Work Poverty: Preventative Measures and Preventative Approaches." Evidence Review prepared for Employment, Social Affairs and Inclu-

sion, European Commission. Brussels: European Commission.

Mills, Melinda. 2011. *Introducing Survival and Event History Analysis*. Menlo Park, Calif.: Sage Publications.

Mishel, Lawrence, Heidi Shierholz, and John Schmitt. 2013. "Don't Blame the Robots: Accessing the Job Polarization Explanation of Growing Wage Inequality." *EPI* working paper. Washington, D.C.: Economic Policy Institute. Accessed March 19, 2019. https://www.epi.org/publication/technology-inequality-dont-blame-the-robots/.

Mood, Carina. 2010. "Logistic Regression: Why We Can't Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review* 26(1): 67–82.

Mosthaf, Alexander, Claus Shnabel, and Jess Stephani. 2011. "Low-Wage Careers: Are There Dead-End Firms and Dead-End Jobs?" *Zeitschrift für ArbeitsmarktForschung* 43(3): 231–49.

Mouw, Ted, and Arne L. Kalleberg. 2010. "Occupations and the Structure of Wage Inequality in the United States, 1980s–2000." *American Sociological Review* 75(3): 402–31.

———. 2018. "Stepping Stone versus Dead End Jobs: Occupational Pathways out of Working Poverty in the United States, 1996–2012." Working paper. Chapel Hill: University of North Carolina.

Newman, Katharine. 2008. *Chutes and Ladders: Navigating the Low-Wage Labor Market*. Boston, Mass.: Harvard University Press.

Organization for Economic Cooperation and Development (OECD). 2018. *OECD Employment Outlook 2018*. Paris: OECD Publishing.

Pager, Devah. 2007. *Marked: Race, Crime, and Finding Work in an Era of Mass Incarceration*. Chicago: University of Chicago Press.

Panel Study of Income Dynamics (PSID), public use data set. 2018. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan.

Pavlopoulos, Dimitris, and Didier Fouarge. 2010. "Escaping Low-Pay: Do Male Labour Market Entrants Stand a Chance?" *International Journal of Manpower* 31(8): 908–27.

Pavlopoulos, Dimitris, Didier Fouarge, Ruud Muffels, and Jeroen K. Vermunt. 2014. "Who Benefits from a Job Change." *European Societies* 16(2): 299–319.

Pedulla, David S. 2013. "The Hidden Costs of Contingency: Employers' Use of Contingent Workers

and Standard Employee's Outcomes." *Social Forces* 92(2): 691–722.

Ren, Chunhui. 2019. "Fluctuating Courses and Constant Challenges: The Two Trajectories of Black-White Earnings Inequality, 1968–2015." *Social Science Research* 77(1): 30–44.

Salverda, Wiemer, and Ken Mayhew. 2009. "Capitalist Economies and Wage Inequality." *Oxford Review of Economic Policy* 25(1): 126–54.

Sanders, Carl. 2014. "Skill Uncertainty, Skill Accumulation, and Occupational Choice." Working paper. St. Louis: Washington University/Federal Reserve Bank of St. Louis. Accessed April 3, 2019. https://economics.wustl.edu/files /economics/imce/sandersjobmarketpaper 2010.pdf.

Sandoval, Daniel A., Mark R. Rank, and Thomas A. Hirschl. 2009. "The Increasing Risk of Poverty Across the American Life Course." *Demography* 46(4): 717–37.

Semyonov, Moshe, and Noah Lewin-Epstein. 2009. "The Declining Racial Earnings' Gap in United States: Multi-Level Analysis of Males' Earnings, 1960–2000." *Social Science Research* 38(2): 296–311.

Smith, Chelsea, Robert Crosnoe, and Shih-Yi Chao. 2016. "Family Background and Contemporary Changes in Young Adults' School-Work Transitions and Family Formation in the United States." *Research in Social Stratification and Mobility* 46(1): 3–10.

Sørensen, J. B. 1983. "Processes of Allocation to Open and Closed Positions in Social Structure." *Zeitschrift für Soziologie* 12(3): 203–24.

Stewart, Mark B., and Joanna K. Swaffield. 1999. "Low Pay Dynamics and Transition Probabilities." *Economica* 66(261): 23–42.

VanHeuvelen, Tom. 2018. "Moral Economies or Hidden Talents? A Longitudinal Analysis of Union Decline and Wage Inequality, 1973–2015." *Social Forces* 97(2): 495–530.

Weil, David. 2014. *The Fissured Workplace*. Cambridge, Mass.: Harvard University Press.

Western, Bruce, Deirdre Bloome, Benjamin Sosnaud, and Laura Tach. 2012. "Economic Insecurity and Social Stratification." *Annual Review of Sociology* 38: 341–59.

———. 2016. "Trends in Income Insecurity Among U.S. Children, 1984–2010." *Demography* 53(2): 419–47.

Williams, Richard. 2012. "Using the Margins Command to Estimate and Interpret Adjusted Predictions and Marginal Effects." *Stata Journal* 12(2): 308–33.

Wilson, George, and Vincent J. Roscigno. 2016. "Public Sector Reform and Racial Occupational Mobility." *Work and Occupations* 41(3): 259–93.

Wren, Anne, ed. 2013. *The Political Economy of the Service Transition*. Oxford: Oxford University Press.

Yamaguchi, Shintaro. 2012. "Tasks and Heterogeneous Human Capital." *Journal of Labor Economics* 30(1): 1–53.

METHODOLOGICAL APPENDIX

The analytic sample for the primary analysis, using the low-wage threshold that is two-thirds of the median for full-time workers, consists of 9,022 persons with 15,978 employment spells in low-wage work, corresponding to 10,365 spells seeking higher wages, and 60,331 person-year observations between 1968 and 2014. The presented results utilize listwise deletion, as research has advised caution with standard multiple imputation approaches for event history models (Young and Johnson 2015). A total of 7,167 person-year observations and 825 people with missing data on independent variables were lost due to temporary sample attrition or nonresponse in the primary analysis.

In order to determine my approach for age-period-cohort effects, I follow Harding and Jencks (2003) and plot the percent of workers in low-wages in the analytic sample by age and period, and age and birth cohort. I observe age and period effects, but not a birth cohort effect. Consequently, I include variables for age and year at the start of the employment spell and exclude birth cohort.

I test the robustness of my results by testing a number of competing specifications. I find consistent results when switching to a bi-annual study design of consistent two years gaps between observations and use only heads and spouses with current jobs. An analysis restricted to bi-annual years from 1981-2015 using the hourly wages with reference to current job finds the same decline in mobility in the late 1990s. I test excluding low-wage workers working less than 15 hours a week, excluding workers in Survey of Economic Opportunity (SEO) sample (see Shin and Solon 2011; Brown 1996), and capping observations of hourly wage jumps of more than 30 percent that fall back to low-wages in the subsequent year. In all of these cases the main findings are the same.

In the main analysis I exclude non-sample heads and spouses with a sample weight of zero. Using the sample weights with the survey cluster and strata design elements leads to similar results. A discrete-time event history model without the person random effects produces a consistent finding of declining mobility for low-wage workers starting in the late 1990s.

Employment Spell Structure

To visualize the employment spell structure, I have created an example of the data structure in Table O1. Person A is only observed with one employment spell in low-wages and enters the sample from unemployed. They achieve mobility to better wages four years after entering (1995) without moving to unemployment (four months out of calendar year). Person A is consistently employed all year. The count of low-wage work experience increases by 1 every year. Person B has two employment spells in low-wage work separated by two years unemployed. The first employment spell count continues through the two years of unemployment and restarts when the worker re-enters employment. Person B has already been observed once in low-wage work, so the second employment spell count starts at time 1. Person B achieved mobility in the next year (year 2 of spell 2) and the employment spell ends. Person B only works 9 months out of the year in 1983 and 1984. Consequently, the count of low-wage work experience increases by .75 in 1984 and 1985 instead of by 1. In 1985 and 1986, Person B works for 3 months of the year. This is less than the 8 months needed to be counted as employed. As a result, they accrue a full year in the count of years unemployed since entering low-wage work. The quarter of a year they were employed in low-wages does accrue in the years of low-wage work experience.

Table O1. Example of Employment Spell Data Structure

Person ID	Year	Employed	In Low Wages	Achieved mobiliity	Employment Spell Count	Years in Employment Spell	Years in Low Wages	Years Unemployed
A	1991	0	.	.	.	.	.	.
A	1992	1	1	0	1	0	0	0
A	1993	1	1	0	1	1	1	0
A	1994	1	1	0	1	2	2	0
A	1995	1	0	1	1	3	3	0
A	1996	1	0	.	.	.	.	.
B	1981	0	.	.	.	.	.	.
B	1982	1	1	0	1	0	0	0
B	1983	1	1	0	1	1	0.75	0
B	1984	1	1	0	1	2	1.5	0
B	1985	0	1	0	1	3	1.75	1
B	1986	0	1	0	1	4	2	2
B	1987	1	1	0	2	1	3	2
B	1988	1	0	1	2	2	4	2
B	1989	1	0	.	.	.	.	.

Source: Author.

Matching Jobs to Annual Hourly Wages

The PSID collects information on the current or last job (if unemployed) of the head and spouse (wife in PSID parlance) at the time of the interview. Major changes to the occupational variables have occurred in 1979, 1988, and 2003. From 1979 onwards, questions for hourly wages, self-employment, government job, union job, and firm tenure are added for spouses. In 1988, the occupational variables expanded to include questions about the household head and spouses' previous job, or the job prior to their current or last job, defined by employer changes. Additional questions from 1988 to 2001 collected information of the starting position (occupation) at the current and previous firm, as well as work hours from concurrent jobs. Staring in 2003, the PSID collects information on up to four jobs, including a worker's current job.

The consistently available labor income category for both heads and spouses is total labor income from all sources for the year prior to the survey year. Staring with the 1999 survey, income variables are also collected for two years prior. Annual work hours are derived from the calendar variables that ask about employment in every month multiplied by average weekly hours from all reported jobs. Hourly wages are calculated from the annual labor income divided by annual work hours.

I match current, last, and previous job characteristics to the corresponding calendar year and corresponding annual hourly wages. Most of the matches come from matching a current job in survey year (e.g. 1985) to the annual wage information collected in the next survey (1986) about the prior year (1985). The main benefit of matching last and previous jobs comes after the switch to bi-annual survey in 1997. In removing duplicate job-year observations, I keep the job-year observations with the shortest time between survey year and observation year, followed by jobs reported as current jobs over previous jobs, and previous jobs over third or fourth jobs.

The Four Large, Aggregate Occupations

The analysis differentiates between four large, aggregate occupations: low-end service, manual, clerical & mid-tier service, and professional & technical, using characteristics from O*Net (onetonline.org). Highly skilled occupations with an O*Net job zone score of four or five indicating considerable and extensive preparation required are designated as professional & technical

occupations. For practical purposes, this means jobs that require a college degree or equivalent or more education and training. The remaining occupation are divided into service and manual occupations using the knowledge category "customer and personal service," the skill category "service orientation," the physical abilities of "dynamic strength" and "physical strength," and the work activity "controlling machines and processes." Finally, this group of service occupations is divided into low-end service from mid-tier service & clerical using measures of work context. Clerical workers score highly on spending time sitting and using email, while low-end service workers score more highly on spending time standing and dealing with external customers.

Occupational Experience

Workers employed in the same or similar occupation (occupational skill similarity greater than .95) accrue the number of weeks employed in that occupation during the calendar year as occupational experience. Workers who were unemployed all year acquire zero occupational experience. When workers change occupations, the amount of occupational experience that transfers is estimated to be proportional to the similarity between occupations. For example, a worker with 4 years of occupational experience who moves to an occupation with .5 skill similarity, transfers 2 years of occupational experience along with the move. The intention of this model is to combine the occupation-specific and task-specific human capital approaches (e.g. Yamaguchi 2012; Gathmann and Schönberg 2010). Workers accrue occupational experience by remaining in the same occupation. Since occupations are groups of tasks, the more similar the skills of the occupation, the greater the transference of skills.

Following Mouw and Kalleberg (2018), the measure of occupational skill similarity is derived from the Current Population Survey using workers who move between 3-digit occupations in consecutive months. They find that the measure of skill similarity derived from the actual behavior of workers (occupational moves) is a significantly better predictor of wage mobility than a measure of occupational skill similarity based derived from O*Net's skill profiles. Occupational skill similarity is calculated as the probability of moving from detailed occupation a to detailed occupation b, divided by the probability of moving from occupation a to occupation b plus the probability of moving to occupation b from all other occupations besides occupation a. Occupations with no observed mobility are set to zero skill similarity. The skill similarity measure ranges from 0 to 1 with .5 representing aver-age mobility between detailed occupations a and b.

References

Brown, Charles. 1996. "Notes on the 'SEO' or 'Census' Component of the PSID." PSID Technical Series paper no. 96–03. Ann Arbor: University of Michigan, Institute for Social Research.

Gathmann, Christina, and Uta Schönberg. 2010. "How General Is Human Capital? A Task-Based Approach." Journal of Labor Economics 28(1): 1–49.

Harding, David J., and Christopher Jencks. 2003. "Changing Attitudes Toward Premarital Sex: Cohort, Period, and Aging Effects." Public Opinion Quarterly 67(2): 211–26.

Mouw, Ted, and Arne L. Kalleberg. 2010. "Occupations and the Structure of Wage Inequality in the United States, 1980s–2000." American Sociological Review 75(3): 402–31.

Shin, Donggyun, and Gary Solon. 2011. "Trends in Men's Earnings Volatility: What Does the Panel Study of Income Dynamics Show?" Journal of Public Economics 95(7-8): 973–82.

Yamaguchi, Shintaro. 2012. "Tasks and Hetero geneous Human Capital." Journal of Labor Economics 30(1): 1–53.

Young, Rebekah and David R. Johnson. 2015. "Handling Missing Values in Longitudinal Panel Data with Multiple Imputation." Journal of Marriage and Family 77(1): 277-94.

ADDITONAL TABLES AND FIGURES

Table O2. Low-Wage Thresholds

	Two-Thirds of the Median		Two-Thirds of the Mean	
	All	Full-Time	All	Full-Time
1967	11.48	12.40	13.53	14.07
1968	11.96	12.91	13.86	14.47
1969	11.92	12.99	13.78	14.81
1970	11.87	13.12	13.84	14.85
1971	11.87	13.11	13.85	14.87
1972	12.20	13.33	14.45	15.49
1973	12.20	13.60	14.51	15.60
1974	11.85	13.03	14.04	15.04
1975	11.50	12.95	13.70	14.75
1976	11.50	12.99	13.65	14.72
1977	11.47	12.72	13.70	14.76
1978	11.54	12.83	13.69	14.77
1979	11.22	12.84	13.51	14.59
1980	10.82	12.17	12.95	14.06
1981	10.65	12.10	12.89	14.04
1982	10.51	11.93	12.81	14.01
1983	10.71	12.33	12.86	14.13
1984	10.71	12.27	13.00	14.27
1985	10.77	12.47	13.18	14.45
1986	11.20	12.60	13.42	14.70
1987	11.16	12.64	13.51	14.72
1988	11.04	12.66	13.40	14.61
1989	11.13	12.36	13.48	14.59
1990	11.06	12.37	13.31	14.42
1991	10.98	12.26	13.15	14.23
1992	10.94	12.37	13.21	14.38
1993	10.83	12.19	13.30	14.34
1994	10.93	12.43	13.53	14.56
1995	10.84	12.05	13.67	14.63
1996	10.85	12.20	13.76	14.74
1997	11.16	12.40	14.08	15.11
1998	11.61	12.68	14.72	15.69
1999	11.51	12.89	14.72	15.66
2000	11.88	13.37	15.37	16.48
2001	12.07	13.07	15.74	16.89
2002	12.24	13.37	15.81	16.92
2003	12.40	13.35	15.83	16.97
2004	12.17	13.39	15.59	16.70
2005	11.99	13.41	15.69	16.84
2006	12.14	13.28	15.94	17.03
2007	12.31	13.43	15.94	16.99
2008	12.15	13.47	15.72	16.92
2009	12.52	13.99	16.22	17.59
2010	12.30	14.06	15.78	17.08
2011	12.13	13.61	15.71	16.99
2012	12.01	13.35	15.68	16.97
2013	12.17	13.16	15.80	17.01
2014	12.07	13.10	15.81	16.93
2015	12.56	13.53	16.33	17.49

Source: Author's calculations based on the CPS (Flood et al. 2018).
Note: 2015 U.S. Dollars.

Table O3: Unemployment Rate by Year and Entry Period

Entry Period	Year	Percent Unemployed
Period 1	1968	3.5
	1969	3.4
	1970	4.4
	1971	6
Period 2	1972	5.8
	1973	4.9
	1974	5.1
Period 3	1975	8.6
	1976	7.6
	1977	7.4
	1978	6.3
Period 4	1979	5.8
	1980	6.3
	1981	7.4
	1982	9
Period 5	1983	10.3
	1984	7.8
	1985	7.2
Period 6	1986	7.2
	1987	6.6
	1988	5.7
	1989	5
Period 7	1990	5.2
	1991	6.8
	1992	7.4
Period 8	1993	7
	1994	6.5
	1995	5.4
	1996	5.5
Period 9	1997	5.2
	1998	4.7
	1999	4.2
	2000	4
Period 10	2001	4.3
	2002	5.7
	2003	5.9
Period 11	2004	5.8
	2005	5.2
	2006	4.7
Period 12	2007	4.4
	2008	5.1
	2009	8.7
Period 13	2010	9.9
	2011	9
	2012	8.2
	2013	7.5

Source: Bureau of Labor Statistics, Series Id: LNS14000000

Figure O1: The Age Composition of the U.S.'s Low-Wage Labor Market, 1967-2015
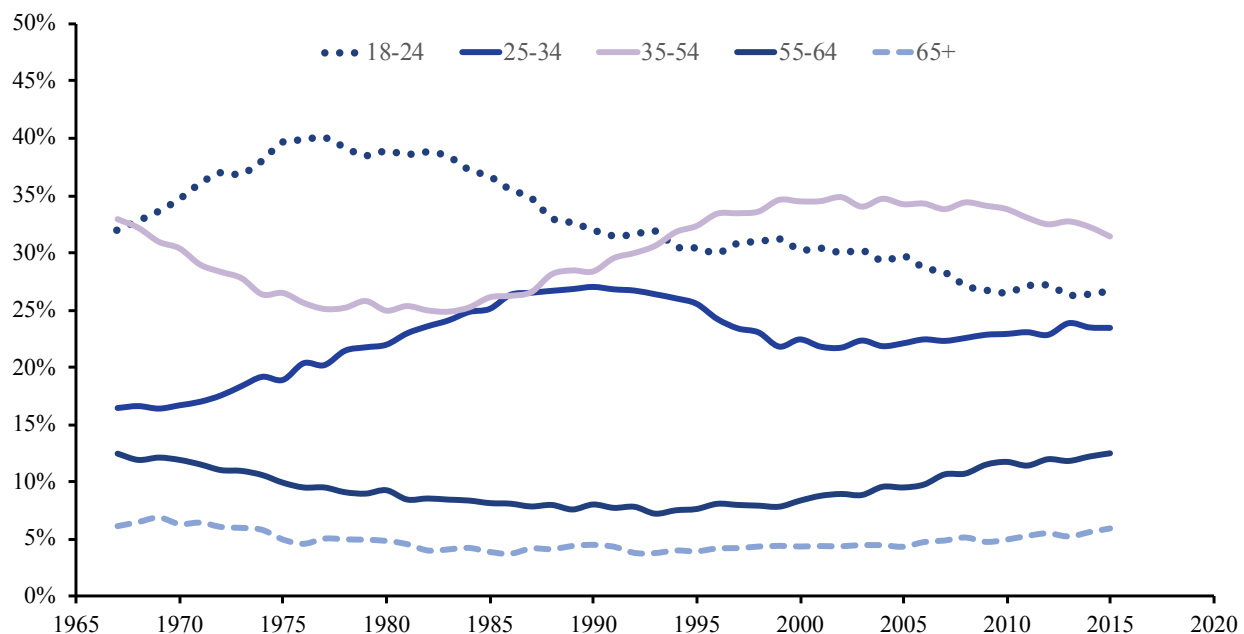
Source: Author's calculations based on the CPS (Flood et al. 2018).
Note: Using the two-thirds of the median hourly wage threshold for full-time workers.

Figure O2: The Occupational Composition of the U.S.'s Low-Wage Labor Market, 1967-2015
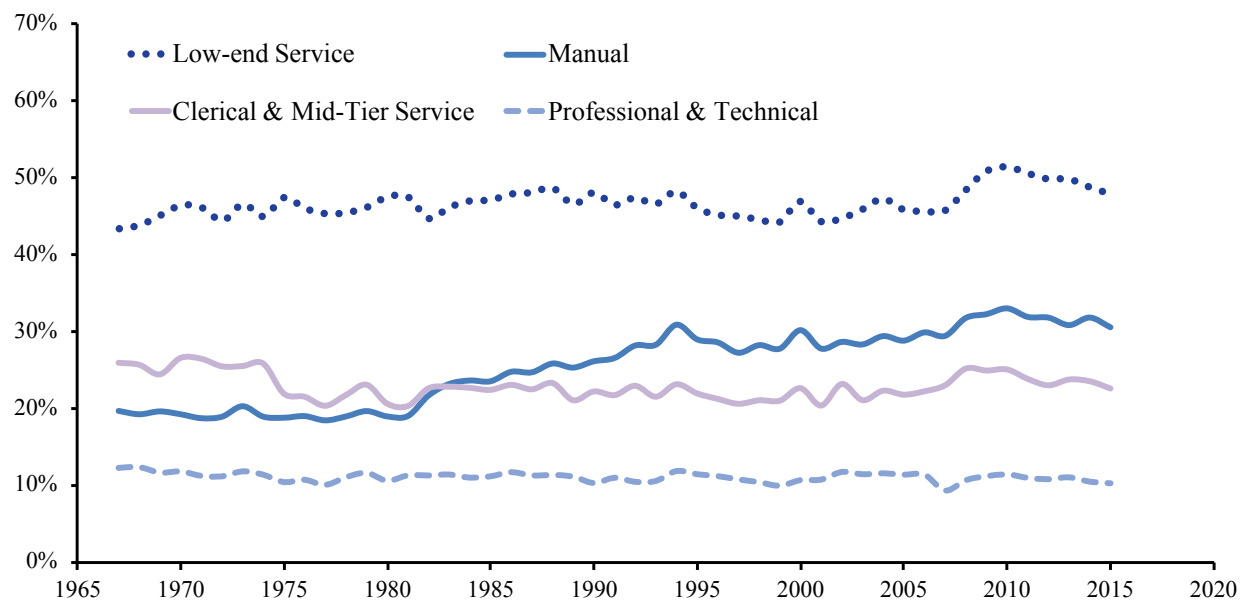
Source: Author's calculations based on the CPS (Flood et al. 2018).
Note: Using the two-thirds of the median hourly wage threshold for full-time workers.

Figure O3: The Proportion of Each Large Occupation in Low-Wages, 1967-2015

Source: Author's calculations based on the CPS (Flood et al. 2018).
Note: Using the two-thirds of the median hourly wage threshold for full-time workers.

Figures O4: Average Marginal Effects of Entry Period on Mobility, All Low-Wage Workers

Baseline (m0)
Demographics (m1)
Education (m2)
Occupation (m3)
Firm (m4)

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the median hourly wage threshold for full-time workers.

Figures O5: Average Marginal Effects of Entry Period on Mobility, Clerical & Mid-Tier Entrants

Legend:
- Baseline (m0)
- Demographics (m1)
- Education (m2)
- Occupation (m3)
- Firm (m4)

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the median hourly wage threshold for full-time workers.

Figures O6: Average Marginal Effects of Entry Period on Mobility, Prof. & Technical Entrants

Legend:
- Baseline (m0)
- Demographics (m1)
- Education (m2)
- Occupation (m3)
- Firm (m4)

Categories (top to bottom):
1968-1971
1972-1974
1975-1978
1979-1982
1983-1985
1986-1989
1990-1992
1993-1996
1997-2000
2001-2003
2004-2006
2007-2009
2010-2013

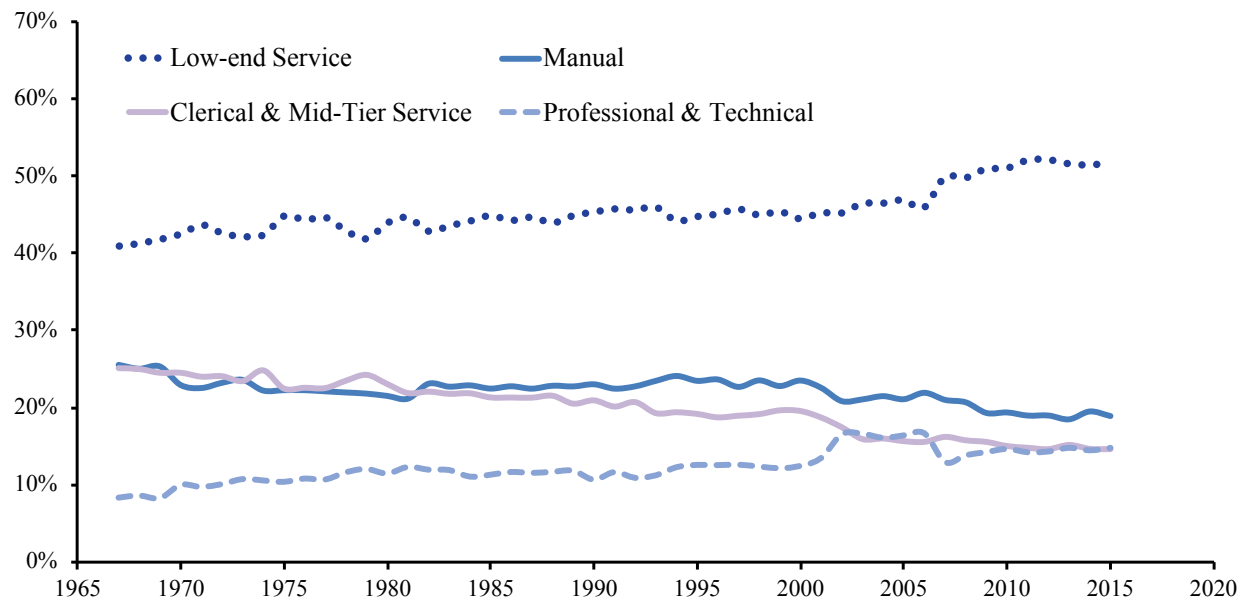X-axis: Percent (-10.0%, -7.5%, -5.0%, -2.5%, 0.0%, 2.5%, 5.0%, 7.5%)

Source: Author's calculations based on the PSID (2018).

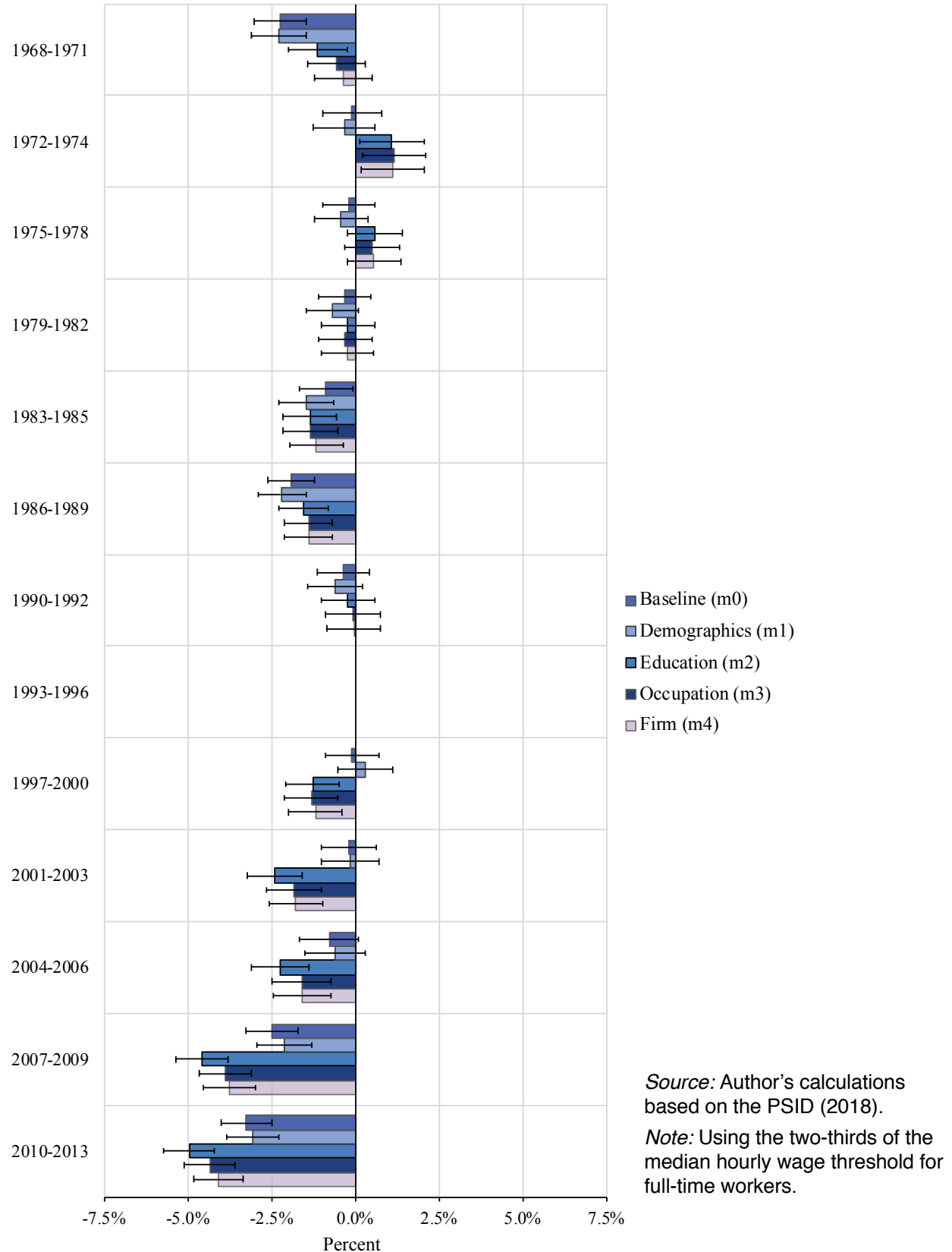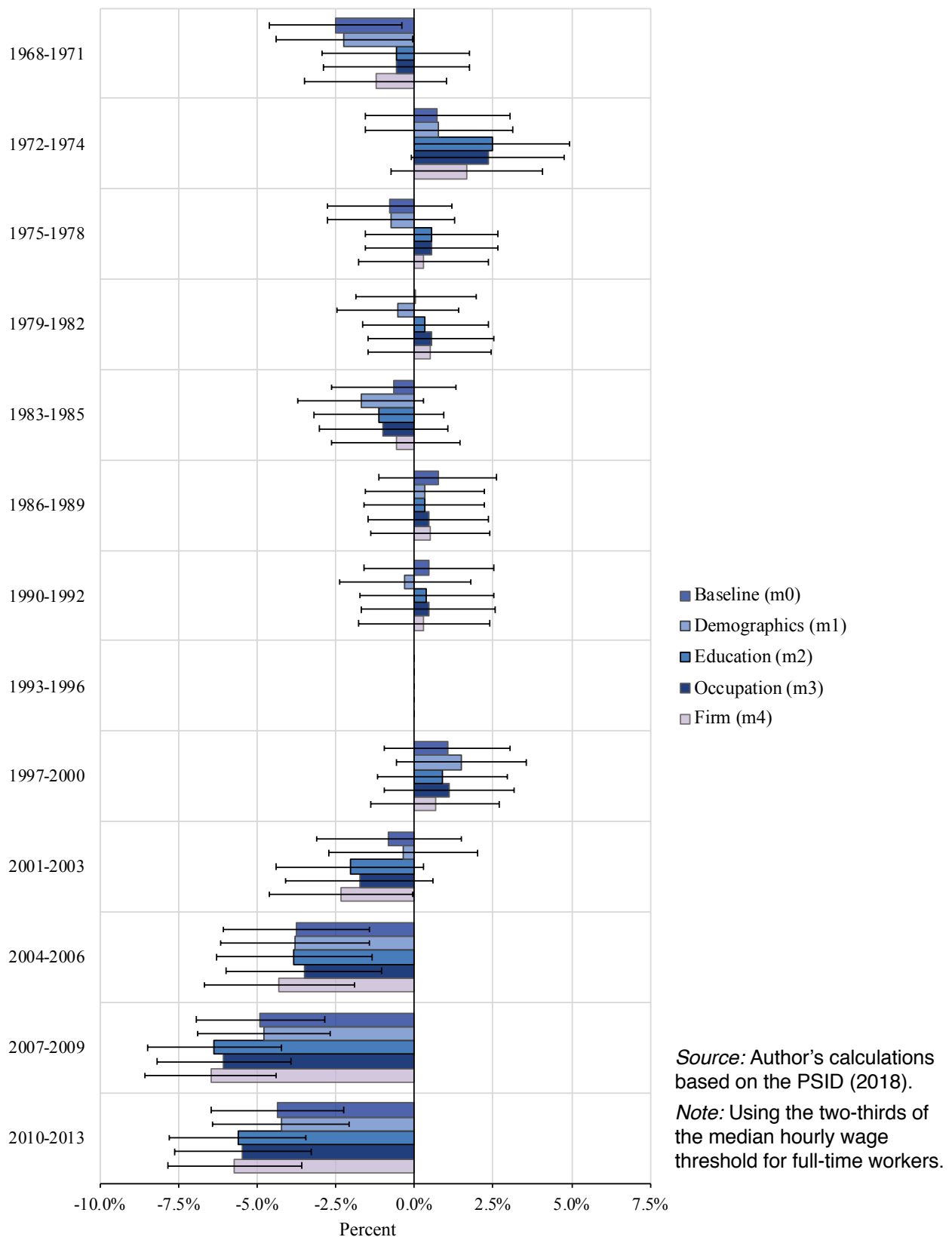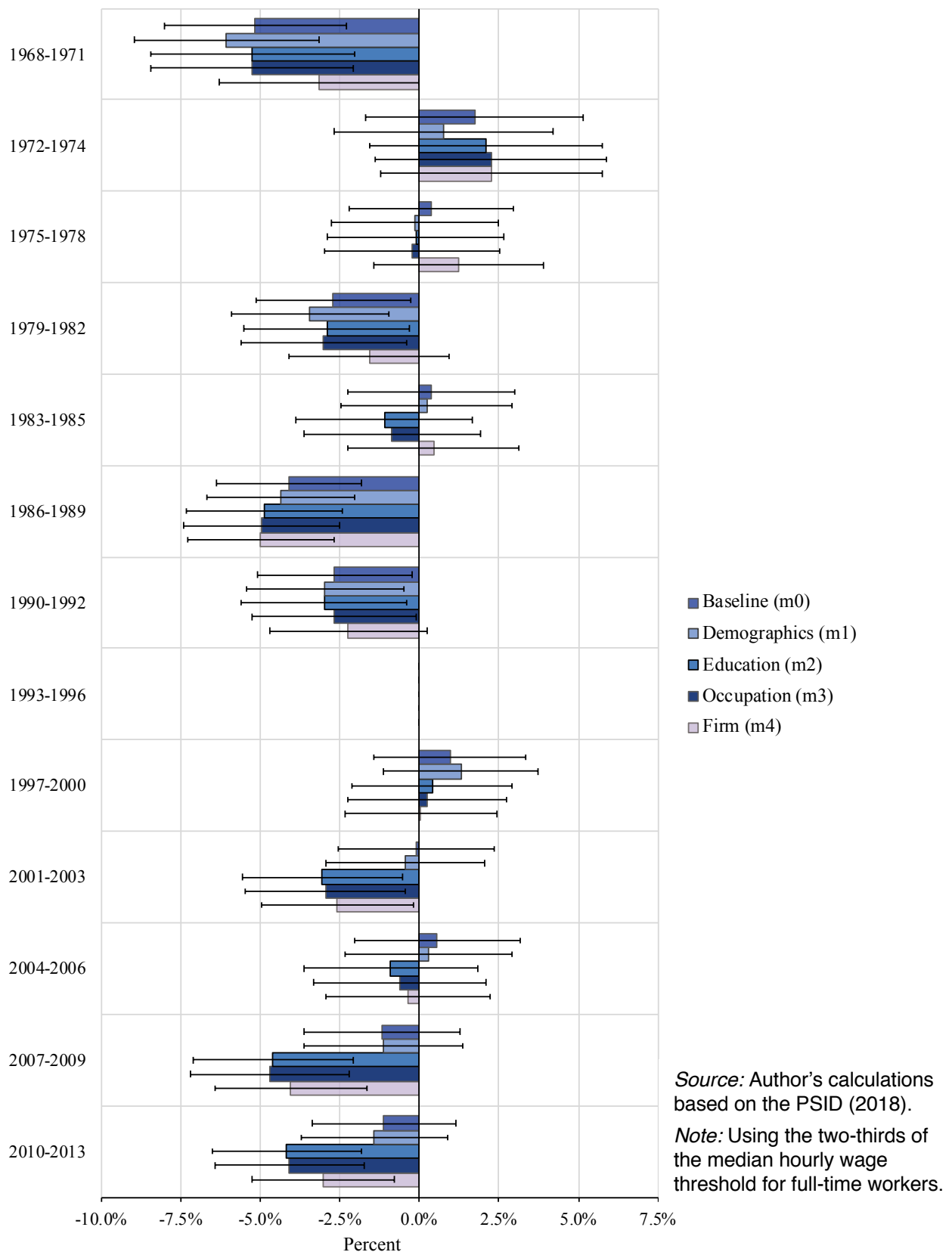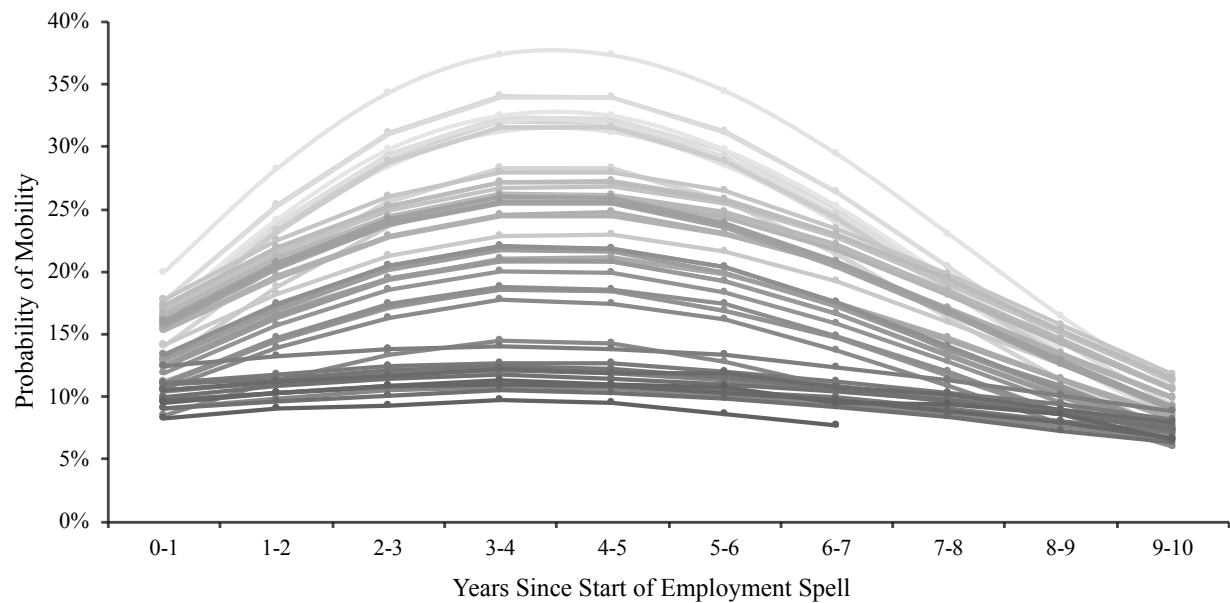*Note:* Using the two-thirds of the median hourly wage threshold for full-time workers.

Table O4: Average Marginal Effects of Covariates on Mobility, All Low-Wage Workers

|	All		Young Adults		Prime Age		Low-End Service		Manual		Clerical & Mid-Tier		Prof. & Tech.	
Person-Year Observations	60,331		28,021		32,310		28,800		13,891		10,689		6,951	
Demographic														
Woman	-0.045	***	-0.055	***	-0.032	***	-0.048	***	-0.065	***	-0.004		-0.041	**
Prime Age at Employment Spell Start	0.001						0.005		-0.006		-0.005		0.002	
Nonwhite	-0.015	***	-0.008		-0.023	***	-0.010	*	-0.026	***	-0.017		-0.021	
Marital Status														
Never Married	ref.		ref.		ref.		ref.		ref.		ref.		ref.	
Married	0.011	*	0.016	*	0.015		0.011		0.024	*	-0.007		0.002	
Previously Married	0.022	***	0.024	**	0.023	**	0.013	*	0.020		0.034	*	0.007	
Child(ren) in the Household														
Yes	0.005		-0.012		0.015	**	0.010	*	0.013		-0.002		0.005	
Under age six	-0.006		0.001		-0.002		-0.002		-0.013		-0.014		-0.010	
Woman w/ a child under age six	-0.019	***	-0.012		-0.008		-0.012	*	-0.025	**	-0.021		-0.033	*
Education														
Less Than High School	-0.042	***	-0.055	***	-0.040	***	-0.028	***	-0.041	***	-0.135	***	-0.036	
High School	ref.		ref.		ref.		ref.		ref.		ref.		ref.	
Some College	0.026	***	0.033	***	0.019	**	0.017	**	0.026	*	0.014		0.055	***
BA +	0.054	***	0.064	***	0.031	***	0.042	***	-0.005		0.021		0.091	***
Employment Staus Before Entry														
Unemployed	ref.		ref.		ref.		ref.		ref.		ref.		ref.	
Working, Better Wages	0.044	***	0.020	**	0.058	***	0.052	***	0.042	***	0.035	**	0.024	
Young Entry	-0.009		-0.032	***			0.004		0.001		-0.038	*	-0.039	*
Experience and Work Hours														
Times Achieved Mobility	-0.008	***	-0.017	**	-0.004		0.003		-0.009		-0.016	**	-0.017	*
Years Unemployed (Across Spells)	-0.029	***	-0.066	***	-0.020	***	-0.020	***	-0.036	***	-0.041	***	-0.032	***
Years in Low Wages (Across Spells)	0.018	***	0.046	***	0.010	***	0.013	***	0.014	***	0.030	***	0.020	***
Occupational Experience (Across Spells)	0.005	***	0.008	***	0.004	***	0.004	***	0.008	***	0.005	*	0.005	
Skill-Dissimilar Occupatonal Move	0.035	***	0.026	***	0.042	***	0.008		0.060	***	0.036	*	0.051	**
Part-Time Hours (<35 Hrs)	0.001		0.005		0.003		0.003		0.018		-0.013		-0.014	
Woman and Part-Time Hours	-0.005		-0.003		-0.003		0.001		0.029	*	-0.016		-0.041	**
Occupation at Employment Spell Start														
Professional & Tehnical	ref.		ref.		ref.									
Clerical & Mid-Tier Service	0.003		0.000		0.009									
Manual	-0.004		-0.004		0.002									
Low-End Service	-0.021	**	-0.033	**	-0.010									
Current Occupation														
Professional & Tehnical	ref.		ref.		ref.									
Clerical & Mid-Tier Service	-0.005		0.005		-0.013		-0.007		0.029		-0.030		-0.011	
Manual	-0.027	**	-0.014		-0.036	**	-0.056	***	0.009		-0.036		-0.026	
Low-End Service	-0.052	***	-0.056	***	-0.047	***	-0.066	***	-0.044		-0.083	***	-0.045	*
Industry														
Agriculture & Mining	ref.		ref.		ref.		ref.		ref.		ref.		ref.	
Manufacturing & Utilities	0.075	***	0.079	***	0.075	***	0.069	***	0.038	***	0.105	***	0.173	***
Wholesale & Retail Trade	0.024	***	0.039	***	0.020	*	0.035	**	-0.004		0.012		0.092	***
Finance, Insurance, & Business Services	0.049	***	0.066	***	0.044	***	0.054	***	-0.024		0.076	***	0.124	***
Personal Services & Entertainment	-0.001		0.014		-0.008		0.013		-0.026		0.008		0.025	
Health Care & Social Assistance	0.077	***	0.090	***	0.070	***	0.059	***	0.047		0.090	***	0.204	***
Education & Public Admin.	0.067	***	0.072	***	0.069	***	0.066	***	0.051	**	0.061	**	0.130	***
Other Prof., Scientific, & Techical	0.035	***	0.039	**	0.040	**	0.029		-0.050		0.055	*	0.103	***
1981-2014 Supplemental Analysis														
Person-Year Observations	32,188		15,986		16,202		15,058		7,600		5,829		3,701	
Union Job	0.082	***	0.074	***	0.072	***	0.066	***	0.077	***	0.082	***	0.061	**
Government Job	0.024	**	0.028	*	0.020		0.020	*	0.015		0.022		0.027	
Firm Experience	0.001	**	0.002		0.001	*	0.002	*	0.001		0.003	*	0.000	
Count of Firm Changes (Across Spells)	0.006	***	0.016	***	0.002		0.002		0.007	**	0.009	**	0.006	
Firm Change	-0.064	***	-0.072	***	-0.059	***	-0.055	***	-0.084	***	-0.067	***	-0.048	**

Source: Author's calculations based on PSID (2018). *Note:* *** p<0.001, ** p<0.01, * p<0.05; Low-wage threshold is two-thirds of the median for full-time workers

Figure O7: Mobility Rate Across Employment Spell by Entry Period and Occupation, Mean Threshold

Source: Author's calculations based on the PSID (2018).
Note: Using the two-thirds of the mean hourly wage threshold for all workers.
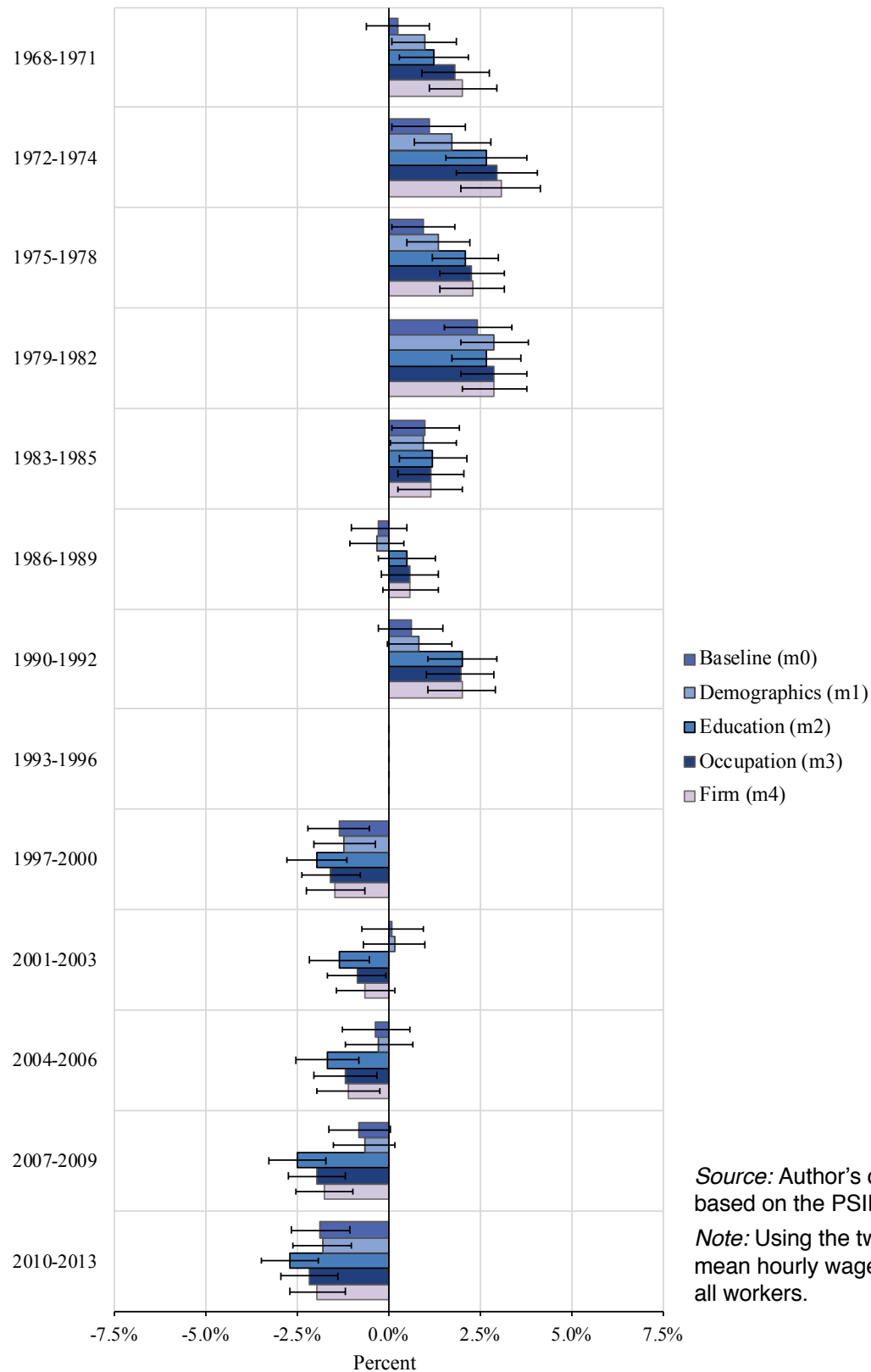
Figure O8: Mobility Rate Across Employment Spell by Entry Period and Occupation, Entrants Starting Below the Median Threshold to Above the Mean Threshold
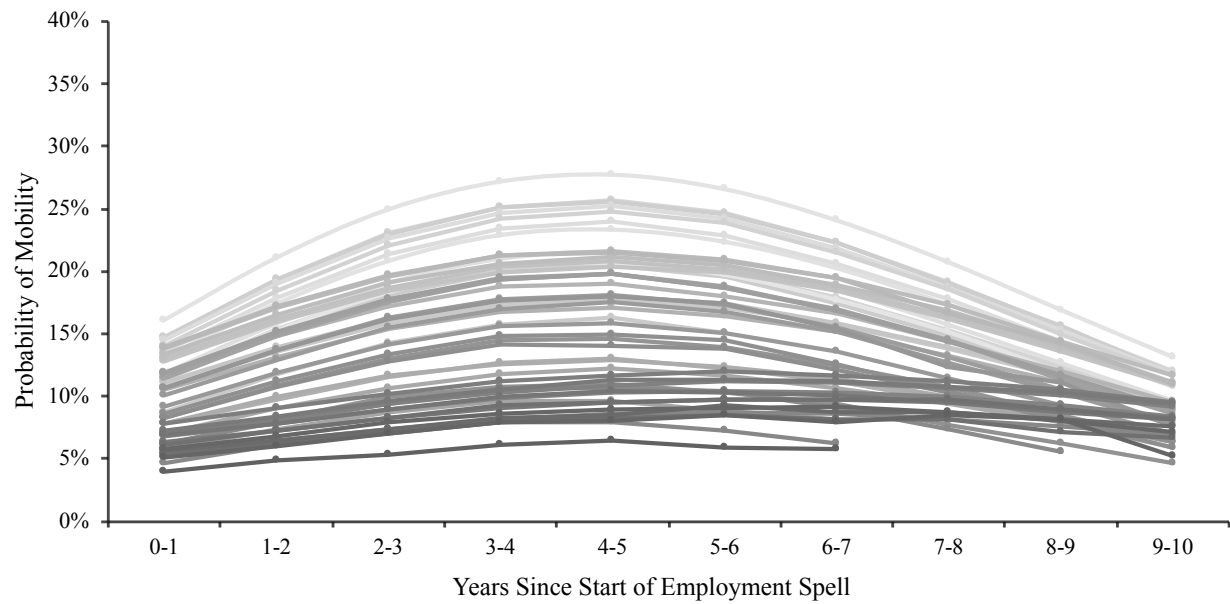
Source: Author's calculations based on the PSID (2018).
Note: Using the two-thirds of the median hourly wage threshold for full-time workers to select the sample and two-thirds of the mean hourly wage threshold for all workers for mobility.
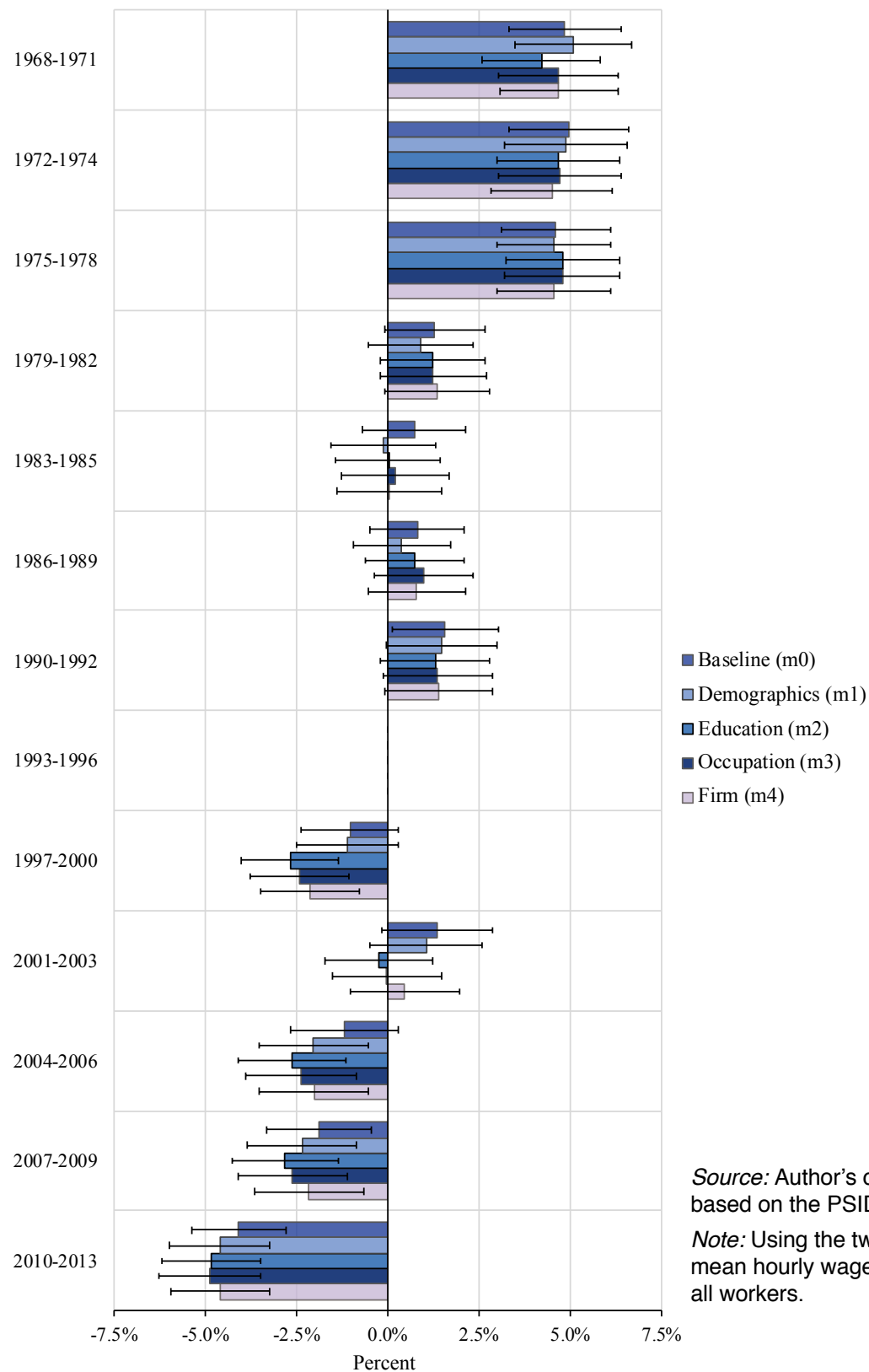
Figures O9: Average Marginal Effects of Entry Period on Mobility, Low-End Service Entrants, Mean Threshold

■ Baseline (m0)
□ Demographics (m1)
■ Education (m2)
■ Occupation (m3)
□ Firm (m4)

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the mean hourly wage threshold for all workers.

Figures O10: Average Marginal Effects of Entry Period on Mobility, Manual Entrants, Mean Threshold

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the mean hourly wage threshold for all workers.
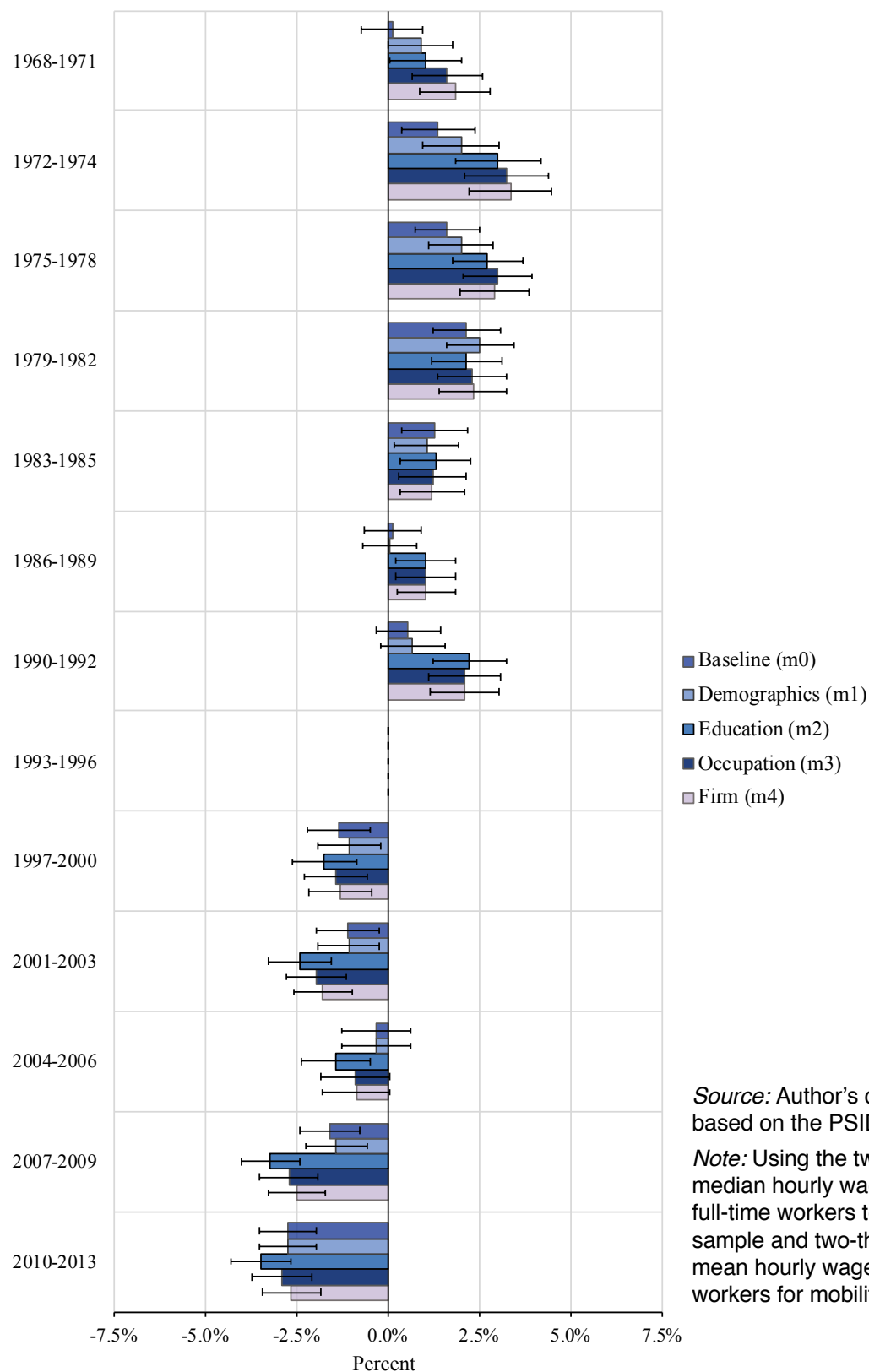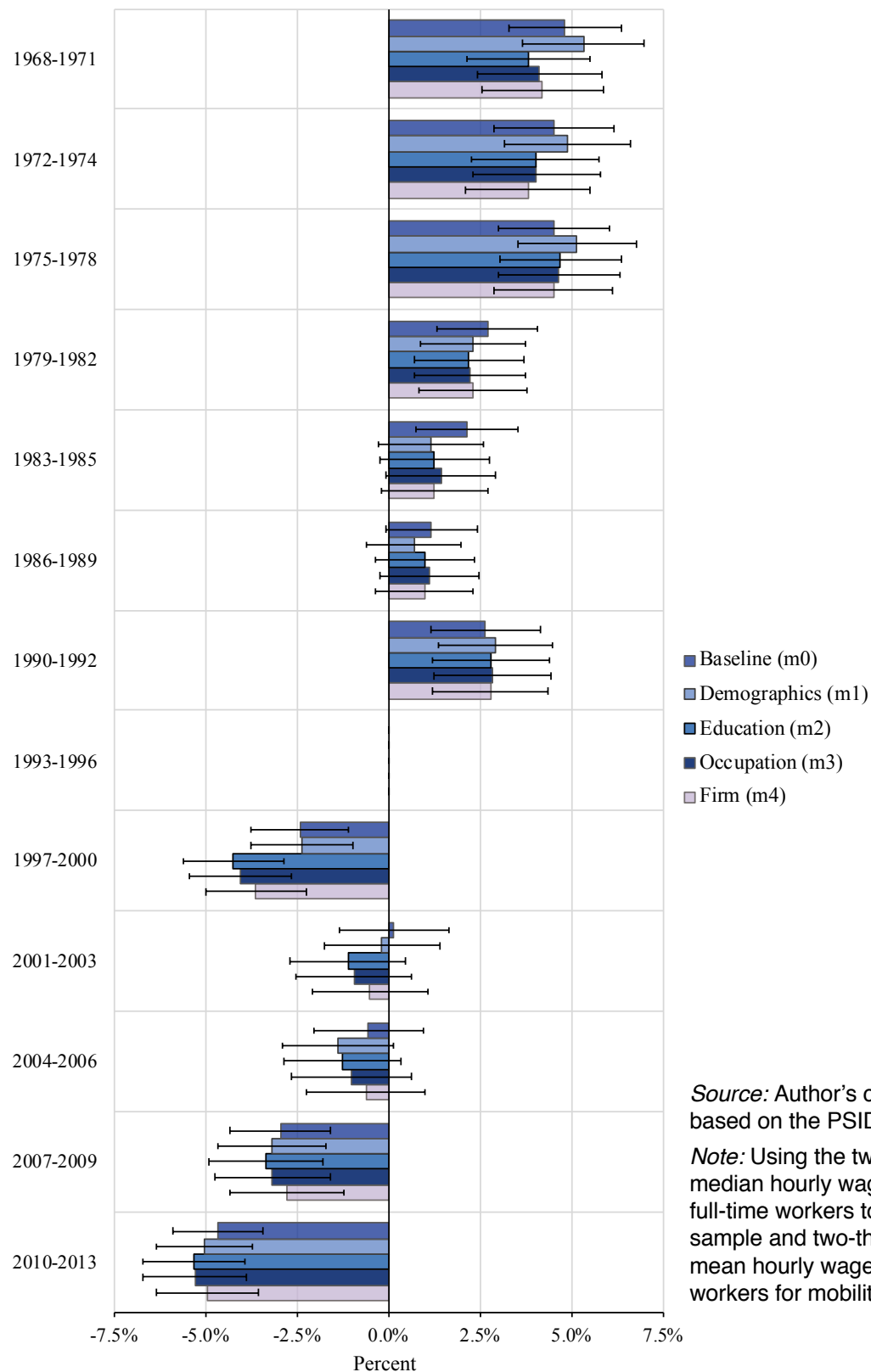
Figures O11: Average Marginal Effects of Entry Period on Mobility, Low-End Service Entrants, Entrants Starting Below the Median Threshold to Above the Mean Threshold

Legend:
- Baseline (m0)
- Demographics (m1)
- Education (m2)
- Occupation (m3)
- Firm (m4)

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the median hourly wage threshold for full-time workers to select the sample and two-thirds of the mean hourly wage threshold for all workers for mobility.

X-axis: Percent (-7.5%, -5.0%, -2.5%, 0.0%, 2.5%, 5.0%, 7.5%)

Y-axis categories: 1968-1971, 1972-1974, 1975-1978, 1979-1982, 1983-1985, 1986-1989, 1990-1992, 1993-1996, 1997-2000, 2001-2003, 2004-2006, 2007-2009, 2010-2013

Figures O12: Average Marginal Effects of Entry Period on Mobility, Manual Entrants, Entrants Starting Below the Median Threshold to Above the Mean Threshold

Legend:
- Baseline (m0)
- Demographics (m1)
- Education (m2)
- Occupation (m3)
- Firm (m4)

X-axis: Percent (-7.5%, -5.0%, -2.5%, 0.0%, 2.5%, 5.0%, 7.5%)

Y-axis categories: 1968-1971, 1972-1974, 1975-1978, 1979-1982, 1983-1985, 1986-1989, 1990-1992, 1993-1996, 1997-2000, 2001-2003, 2004-2006, 2007-2009, 2010-2013

Source: Author's calculations based on the PSID (2018).

Note: Using the two-thirds of the median hourly wage threshold for full-time workers to select the sample and two-thirds of the mean hourly wage threshold for all workers for mobility.