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**1 Retirement and Socioeconomic Characteristics of Aged Veterans:
Differences by Education and Race/Ethnicity**

by Christopher R. Tamborini, Patrick J. Purcell, and Anya Olsen

This article's authors use data from the 1995 and 2015 Current Population Surveys to provide multi-layered descriptive statistics on the retirement and socioeconomic characteristics of veterans aged 55 or older. The authors explore indicators of family structure, work, income from Social Security and other sources, and economic security. They also investigate differences in educational attainment and race/ethnicity within and across veteran and nonveteran samples over the two-decade span. Further, they account for age and cohort effects by separately analyzing three age groups: 55–61, 62–69, and 70 or older. The authors find important within-group differences among aged veterans across education and racial/ethnic groups and over time, and discuss the implications of their findings.

17 Trends in Women's Wages, 1981–2015

by Patrick J. Purcell

The Social Security Administration maintains wage-and-salary earnings records for all American workers. From those administrative records, the agency extracts a 1-percent sample called the Continuous Work History Sample (CWHS) for research and statistical purposes. This article uses CWHS data to examine trends in women's real wage-and-salary earnings from 1981 through 2015. It first describes broad trends for all women aged 25–59. Then it describes the trends over that same span for women in each of seven 5-year age intervals (25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59), with detail by individual birth cohort. A series of charts shows how women's real wages changed over time both across age groups and across birth cohorts within an age group.

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**47 The Prevalence of Employer-Provided Benefits by Industry of Employment
and Implications for Social Security Disability Insurance Claiming Behavior**

by Özlen D. Luznar and Jackson Costa

Policymakers seek effective ways to restore or maintain the labor force participation of current and potential Social Security Disability Insurance (DI) beneficiaries. The availability of certain types of employer-provided benefits may affect whether workers with health impairments are able to maintain employment. In this research note, we use National Compensation Survey data to estimate the availability of employer-sponsored health insurance and paid leave by industry of employment.

RETIREMENT AND SOCIOECONOMIC CHARACTERISTICS OF AGED VETERANS: DIFFERENCES BY EDUCATION AND RACE/ETHNICITY

by Christopher R. Tamborini, Patrick J. Purcell, and Anya Olsen*

Few studies have focused on within-group differences in the well-being of veterans in later life. We use data from the 1995 and 2015 Current Population Surveys to examine the retirement and socioeconomic characteristics of veterans aged 55 or older. We explore indicators of family structure, work, income from Social Security and other sources, and economic security. We investigate differences in educational attainment and race/ethnicity within and across the veteran and nonveteran samples. To account for age and cohort effects, we separately analyze three age groups: 55–61, 62–69, and 70 or older. We find important within-group differences among aged veterans across education and racial/ethnic groups and over time. We discuss the implications of our findings as veterans in the all-volunteer force era approach retirement age.

Introduction

Veterans constitute sizable shares of the Social Security beneficiary population and the aged population as a whole. More than 9.2 million veterans received Social Security benefits in 2016, accounting for 18 percent of all adult beneficiaries (Social Security Administration 2017). Despite widespread concern among policymakers and the public about the economic well-being of aged veterans, empirical analysis of their socioeconomic outcomes remains limited. Moreover, prior studies of the socioeconomic characteristics of aged veterans have focused on comparisons between veterans and nonveterans (for example, Tamborini, Purcell, and Olsen 2016). Such studies, although useful, may overlook substantial within-group heterogeneity among veterans. In this study, we attempt to fill some of this gap by investigating trends in the retirement and socioeconomic characteristics of aged veterans. We examine differences both within subgroups of veterans and between veterans and nonveterans.

The well-being of veterans may differ along a number of lines, with education and race/ethnicity being

two prominent dimensions. Studies of financial and social outcomes of the general population show sharp differentials across educational-attainment groups (Hout 2012; Tamborini, Kim, and Sakamoto 2015; Kim, Tamborini, and Sakamoto 2015). With this pattern in mind, one might expect similarly substantial differences among aged veterans by educational attainment. Race and ethnicity are also recognized as important indicators of access to economic and social resources (Hirsch and Winters 2014; Western and Pettit 2005). Accordingly, the socioeconomic conditions of aged veterans are likely to vary by race/ethnicity. Additionally, because military service can provide individuals

Selected Abbreviations

AVF	all-volunteer force
CPS/ASEC	Current Population Survey Annual Social and Economic Supplement
DOD	Department of Defense
VA	Department of Veterans Affairs

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from disadvantaged backgrounds a bridge to opportunity by improving their human capital (Kleykamp 2013; Sampson and Laub 1996; Teachman 2004; Teachman and Tedrow 2007), one might expect to find differences in outcomes between veterans and nonveterans with similar educational and racial/ethnic backgrounds.

This article assesses the extent of educational and racial/ethnic differences both among aged veterans and between aged veterans and nonveterans over the last two decades. We define “aged” as 55 or older, and examine three subgroups (55–61, 62–69, and 70 or older) to enable preretirement- and retirement-age comparisons. We focus on a range of socioeconomic indicators that include labor force participation and earnings, Social Security and other income sources, and poverty. The analysis is based on national data collected in 1995 and 2015 by the Census Bureau in its Current Population Survey Annual Social and Economic Supplement (CPS/ASEC). That source provides two large samples of aged male veterans 20 years apart. Consistent with past research, we examine only men, given the relatively small sample of aged female veterans in the CPS/ASEC to date.

The results help identify heterogeneity in the experiences of aged male veterans and between veterans and nonveterans. The analysis also enables a comparison of two snapshots of the aged veteran population spanning 20 years, which may be useful for designing policies and programs that address the changing needs of Americans with military service histories (Congressional Budget Office 2014; Government Accountability Office 2012). It is important to understand how the sociodemographics of aged veterans who enlisted during the all-volunteer force (AVF) period may differ from those of their predecessors, who served during periods of conscription. Social Security policy changes also could have important effects on aged veterans.

Background

We begin with a brief review of some of the major mechanisms that shape veterans’ later-life circumstances. Conceptually, a useful starting point is to place veterans within a life-course context. A life-course perspective views a person’s socioeconomic status in later life as the accumulation of earlier-life experiences within particular structural, institutional, and sociocultural contexts (Couch and others 2013; Elder 1998). This frame helps tie veterans’ circumstances in later life to the cumulative effect of a series of prior experiences, including events and conditions before and during military service as well as in

civilian life (London and Wilmoth 2016; Wilmoth and London 2013).

A life-course approach also emphasizes individuals’ placement in cohorts with particular sociohistorical contexts (Tamborini, Couch, and Reznik 2015; Elder 1998). For veterans, one’s birth cohort is critically important because it is associated with a specific military service period. A substantial line of research finds that the period in which one served in the military (such as the World War II, Korean War, Vietnam War, and Gulf War eras) is associated with a range of outcomes because it underlies divergent variables such as whether service was primarily conscripted or voluntary,¹ the extent and nature of combat exposure, the duration of service, and age at entry (Teachman and Tedrow 2007; Teachman 2007b; Wilmoth and London 2013). Different military service periods also reflect different recruitment methods, selection processes, and employers’ attitudes toward veterans (MacLean and Kleykamp 2016). These factors, in turn, are likely to influence changes in veterans’ socioeconomic characteristics and outcomes. By stratifying our study samples by age in 1995 and 2015, we are able to compare the experiences of veterans across distinct military service periods including the World War II era, the Korean War era, the Vietnam War era, and the AVF era.

Researchers have identified a range of individual and institutional factors that may affect veterans’ socioeconomic circumstances in later life. Work history influences veterans’ well-being in several ways, including its association with lifetime earnings, pension savings, and Social Security benefit levels. The labor market consequences of military service have been featured prominently in the literature (Angrist and Krueger 1994; Kleykamp 2013; Sampson and Laub 1996; Teachman and Tedrow 2004). Evidence suggests that veterans of World War II and the Korean War earned more in postservice employment than nonveterans (MacLean and Elder 2007), although their higher earnings may have been driven in large part by the positive health and education characteristics that enhanced their likelihood of selection into service (Angrist and Krueger 1994; Teachman and Tedrow 2004). Other research shows that the postservice earnings of Vietnam War veterans were lower than those of nonveterans, especially for white veterans (Angrist 1990; Angrist, Chen, and Song 2011). The labor market outcomes of AVF-era veterans appear mixed (Kleykamp 2013; Tamborini, Purcell and Olsen 2016; Teachman and Tedrow 2007).

Another factor of aged veterans' well-being is their health. Substantial research demonstrates that veterans are at greater risk of poor health than are nonveterans (Bedard and Deschênes 2006; Black and others 2004; Heflin, Wilmoth, and London 2012; Teachman 2011; Wilmoth, London, and Heflin 2015), especially among those who experienced combat (Dobkin and Shabani 2009; MacLean and Elder 2007). Wilmoth, London, and Parker (2010) found greater health declines after retirement among veterans than among nonveterans. Wilmoth and London (2011) found higher risks of impairment and substance abuse among some cohorts of veterans (for example, Vietnam-era servicemembers) than for nonveterans. In another study, active-duty members of the AVF self-reported worse overall health than reserve-duty servicemembers and nonveterans who passed the military's physical entrance exam (Teachman 2011). Work-limiting health conditions among male veterans nearing retirement age have become more prevalent in recent years, as the AVF servicemembers have aged (Tamborini, Purcell, and Olsen 2016).

Aged veterans' well-being is also linked to the U.S. retirement system and a variety of veterans benefit programs (Street and Hoffman 2013; Tamborini, Purcell, and Olsen 2016; Wilmoth and London 2011). A key source of retirement income for veterans and nonveterans alike is Social Security (Olsen and O'Leary 2011). In the 2015 CPS/ASEC, veterans and their families composed 31 percent of the adult Social Security beneficiary population. Social Security coverage was first extended to active-duty military servicemembers in 1957. Those who served during the period 1957–2001 receive special credits (up to \$1,200 a year) that augment the earnings used to calculate their Social Security benefits. Veterans whose active-duty service concluded on or before December 31, 1956 may receive special monthly service credits (Social Security Administration 2018). In addition, veterans may be eligible for Social Security Disability Insurance benefits if they are unable to work because of a medical condition that is expected to last at least 1 year or result in death.

Aged veterans also may receive a variety of military service-based benefits (Congressional Budget Office 2014; Niebuhr and others 2011). A key resource for career veterans is dual entitlement to civilian and military pensions (Street and Hoffman 2013). The Department of Defense (DOD) provides retirement and health insurance benefits to military veterans who retired from active duty or served in the Armed Forces

Reserves or National Guard for a specified time. In general, individuals with 20 years of military service are eligible for retirement-plan coverage, depending on the timing of their military entrance, their base pay at retirement, their years of service, and other factors.² DOD also provides disability pensions to servicemembers who have a disability that meets a severity threshold (called a 30 percent rating) and who have been determined to be unfit for continued service.

In addition, the Department of Veterans Affairs (VA) provides a range of resources for persons who served on active duty but were not full military career veterans, including tuition and other education benefits, life insurance, and home loans. The agency's pension program provides means-tested cash benefits for low-income veterans aged 65 or older³ and its veterans' compensation program provides service-related disability benefits.⁴ In addition, many veterans are eligible for medical services provided at more than 150 VA Medical Centers and approximately 1,400 community-based outpatient clinics across the United States.

Finally, the importance of selection processes into the military bears noting when evaluating the well-being of older veterans. The characteristics of individuals with military experience are not distributed as randomly as are those of the general population. Individuals must pass rigorous physical and medical examinations as well as the Armed Services Vocational Aptitude Battery to enter the military, establishing selective health and human capital characteristics for this group. During voluntary-enlistment service periods, selection also involves an individual's judgment regarding the costs and benefits of joining the military. The differences in tendencies between individuals who enlist and those who do not may drive differences in later-life circumstances between veterans and nonveterans. Moreover, changes in selection processes across service periods are also likely to influence changes in veterans' socioeconomic outcomes over time.

Veterans' Later-Life Circumstances by Education and Race/Ethnicity

Although some socioeconomic characteristics may typify older veterans as a whole, there is likely to be substantial within-group variation. In this article, we focus on two key dimensions, education and race/ethnicity.

One would expect differences in well-being among older veterans by education because educational attainment is predictive of economic and social resources

over the life course, notably including lifetime earnings (Tamborini, Kim, and Sakamoto 2015). Serving in the military may itself have varying consequences on educational attainment. On one hand, military service may disrupt educational careers, given that the common age of service entry among men is 18 to 24. On the other hand, military service may enhance educational attainment and skills (Angrist 1993; Bound and Turner 2002; Stanley 2003), particularly among disadvantaged enlistees (Teachman 2007a). For example, the federal government has historically provided financial assistance for veterans' education-related expenses under legislation such as the Servicemen's Readjustment Act of 1944 (the "GI Bill") and the Post-9/11 Veterans Educational Assistance Act of 2008. Moreover, educational attainment is a potentially significant selection factor for military service because of higher enlistment rates among individuals with disadvantaged backgrounds (Teachman 2005, 2007a, 2007b).

Additionally, we expect differences in the socioeconomic outcomes experienced by aged veterans across racial and ethnic groups. Such differences may be driven, for example, by reduced employment and educational opportunities among minorities (Huffman and Cohen 2004) and differences in key indicators of those outcomes, such as earnings and wealth, by race and ethnicity (Killewald, Pfeffer, and Schachner 2017).

Differences also may emerge between veterans and nonveterans of similar characteristics. For instance, Angrist (1990) found that the civilian earnings of white Vietnam-era veterans after discharge were lower than those of white nonveterans in the same period. Greenberg and Rosenheck (2007) found that unemployment among white AVF veterans was higher than that of their nonveteran peers, but unemployment among black veterans was lower than that of their nonveteran peers.⁵ One reason why black (or Hispanic) veterans may exhibit improved economic outcomes relative to black (or Hispanic) nonveterans is that military service provides a bridge to those from disadvantaged backgrounds to build human capital and social networks over the life course (Kleykamp 2013; Sampson and Laub 1996; Teachman 2004; Teachman and Tedrow 2007).

In this analysis, we extend current research by drawing from nationally representative data to assess the degree to which the socioeconomic outcomes of older male veterans vary across educational and racial/ethnic groups in 1995 and 2015, and how conditions differ between veterans and nonveterans.

Data and Methods

We use data from the 1995 and 2015 CPS/ASEC. Administered by the Census Bureau, the CPS/ASEC (sometimes called the March Supplement) is a nationally representative survey of around 75,000 resident civilian noninstitutionalized households. The survey covers demographic and economic characteristics, including labor force status, income, poverty, and government program participation, among many other variables. CPS/ASEC respondents report demographic information as of the time of the survey interview and income and employment information for the preceding year.⁶ A key advantage of the CPS/ASEC is that it includes data for distinct and relatively large samples of male veterans collected at different points in time, permitting us to assess the well-being of aged veterans across education and race/ethnicity subgroups using surveys fielded two decades apart.

We restrict our analytic sample to male respondents aged 55 or older when they responded to the CPS/ASEC. We exclude women because of insufficient sample sizes among aged veterans.⁷ We split the analytic sample into veterans and nonveterans. Veteran status is indicated by self-reports of previous active-duty service in the armed forces. Respondents reporting otherwise are deemed to be nonveterans. To account for cohort and age effects, we stratify the sample by three age groups (55–61, 62–69, and 70 or older).

Measures

We categorize educational attainment by highest level completed: less than high school, high school graduate, some college, and college graduate. For race/ethnicity, we classify respondents into one of four subgroups: non-Hispanic white, non-Hispanic black, Hispanic (any race), and other. Non-Hispanic respondents self-identifying multiple race categories are included in the "other" category. Hereafter, the "non-Hispanic" qualifier is to be assumed when we refer to white and black individuals.

We explore three domains of aged veterans' socioeconomic circumstances. The first domain is demographic, including period of most recent active-duty military service,⁸ marital status, and living arrangements. The second domain involves labor market outcomes: employment, median individual earnings, and work-limiting disability, defined as a self-reported health problem or disability that prevents work or limits the kind or amount of work.⁹

The third domain is economic resources, which we explore in more detail than the first two domains. We investigate the prevalence among veterans of income from certain sources, namely military pensions, veterans' benefits, and employer-provided pensions. We also consider the prevalence and median amount of Social Security income. Further, we calculate household reliance on Social Security by summing the annual amount of Social Security income for all members of the family and dividing that amount by the sum of annual family income from all sources. Finally, we look at veterans' income security by comparing total family income with the federal official poverty threshold.

Our empirical approach is descriptive, given that our goal is to document the extent to which circumstances differ among aged veterans by education and race/ethnicity, as well as between veterans and nonveterans of the same education and racial/ethnic groups. We do not attempt to examine the net effects of education and race/ethnicity, nor do we attempt to elicit the causal role of military service. All estimates are weighted to allow for generalization of the U.S. adult civilian noninstitutionalized population. Dollar amounts are adjusted to 2014 levels using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

We note that CPS/ASEC estimates contain both sampling and nonsampling error.¹⁰ Although the CPS/ASEC provides fairly large sample sizes, researchers should nonetheless be cautious in drawing inferences about small differences between subgroups or over time. All comparisons we make below between 1995 and 2015 and across population subgroups within the same year are statistically different at the 90 percent level.¹¹

Furthermore, recent research has found that income from employment-related pensions and retirement accounts tends to be underreported in the CPS/ASEC (Anguelov, Iams, and Purcell 2012; Czajka and Denmead 2012; Gustman, Steinmeier, and Tabatabai 2014; Iams and Purcell 2013; Munnell and Chen 2014). Consequently, estimates of reliance on Social Security among retirees based on CPS/ASEC data may be overstated. Bee and Mitchell (2017) used matched survey and administrative data to estimate the extent to which retirement income is underreported in the CPS/ASEC.¹²

Results

Table 1 compares the sociodemographic characteristics of aged male veterans and nonveterans in three age groups for 1995 and 2015. In 1995, the majority of aged veterans had served in the Korean War or earlier (including World War II). By 2015, veterans aged 55–69 had served mainly during the Vietnam War and the AVF periods. This aging of the AVF-era veterans has important consequences for the changing socioeconomic circumstances and demographic composition of aged veterans, as we discuss below.

The proportions of aged veterans who did not have a high school diploma were relatively low in the years observed. This is due, in large part, to the selective requirements of military service. The proportions of aged veterans and nonveterans who were college graduates increased over the study period, but the rate of growth was slower for veterans. As a result, by 2015, the proportions of college graduates among nonveterans aged 55–61 (32 percent) and 62–69 (38 percent) exceeded those of veterans (24 percent and 26 percent, respectively).

Table 1 also shows an increase in racial and ethnic diversity among aged veterans over time. In 1995, about 90 percent of aged veterans were white, whereas by 2015, the proportion had declined to 72 percent of veterans aged 55–61 and 83 percent of those aged 62–69. Black veterans accounted for most of the corresponding trend; by 2015, black men's share of veterans aged 55–61 (18 percent) exceeded their share of the overall population and of nonveterans in that age group (9 percent). By contrast, they had accounted for only 6 percent of veterans and for 11 percent of nonveterans aged 55–61 in 1995. Likewise, the percentage of aged veterans who were Hispanic roughly doubled between 1995 and 2015, reflecting the increase in the Hispanic share of the general population.

In terms of marital status, older veterans and nonveterans had somewhat similar odds of being married in 2015. Notably, the share of married veterans aged 55–61 declined sharply over the 20-year span, from 81 percent in 1995 to 65 percent in 2015, reflecting downward trends in the shares of married persons in the population at large (Iams and Tamborini 2012). Aged veterans were also more likely to live alone in 2015 than in 1995.

Table 2 presents results for the labor market domain. The estimates suggest notable differences in employment outcomes by education and race/

ethnicity. Of veterans aged 55–61, college graduates reported the highest prior-year employment rate in 2015 (82 percent, compared with 63 percent for high school graduates). Of the race/ethnicity groups, black veterans reported the lowest employment rate in 2015, especially in the 55–61 age group (59 percent, compared with 71 percent to 75 percent for the other groups). Furthermore, median earnings among employed veterans aged 55–61 was lower among minorities (\$40,000 for black and Hispanic veterans and \$45,000 for other races) than for white veterans (\$51,000). The table also reveals temporal changes in these patterns. One salient change was the decline over time in prior-year employment for all veterans aged 55–61, from 80 percent in 1995 to 69 percent in 2015.

Table 2 also shows that there are considerable labor market differences between veterans and nonveterans, especially among the two younger age groups, many

or some of whom have not yet retired. Overall, aged veterans reported lower prior-year employment rates than nonveterans in 2015 (for example, 78 percent of nonveterans aged 55–61 were employed, compared with 69 percent of veterans). These between-group differences were larger at lower education levels. Most notably, among men aged 55–61 without a high school diploma, 62 percent of nonveterans were employed in 2014, compared with 48 percent of veterans. Among individuals who worked, prior-year median earnings of college-graduate and white veterans aged 55–61 in 2015 (\$70,000 and \$51,000, respectively) were slightly lower than those of their nonveteran peers (\$77,000 and \$55,000, respectively). Interestingly, the gaps in median earnings by education (college graduate versus high school graduate) and race/ethnicity (white versus black or Hispanic) were smaller for veterans than for nonveterans in the preretirement (55–61) age group in 2015.

Table 1.
Percentage distributions of male veterans and nonveterans aged 55 or older, by selected demographic characteristics: By age group, 1995 and 2015

Characteristic	Veterans			Nonveterans		
	55–61	62–69	70 or older	55–61	62–69	70 or older
1995						
Number						
Weighted ^a (in thousands)	3,398	4,761	5,093	3,595	2,513	3,514
Unweighted	1,944	2,705	2,919	2,093	1,462	2,085
Most recent military service						
1991–2014 (recent AVF)	...	...	...	...	...	...
1976–1990 (early AVF)	...	...	...	...	...	...
1965–1975 (Vietnam War)	16.1	4.6	1.2	...	...	...
1956–1964	50.8	8.2	2.9	...	...	...
1950–1955 (Korean War)	33.1	50.7	3.1	...	...	...
Before 1950 (includes World War II)	...	36.5	92.7	...	...	...
Education						
Less than high school	10.7	20.8	31.3	30.8	44.9	50.9
High school graduate	35.5	33.5	31.3	29.4	28.0	23.4
Some college	27.4	21.4	18.9	15.7	11.7	13.8
College graduate	26.4	24.3	18.6	24.1	15.4	11.9
Race/ethnicity						
White (non-Hispanic)	89.8	90.2	90.8	75.3	70.9	80.1
Black (non-Hispanic)	6.1	6.3	6.0	11.4	13.2	8.9
Hispanic (any race)	3.2	2.3	2.3	9.4	12.4	7.2
Other	0.9	1.2	0.8	3.9	3.4	3.8
Marital status						
Married	81.1	81.5	77.4	78.9	77.4	69.6
Not married	18.9	18.5	22.6	21.1	22.6	30.4
Living arrangement						
Live with others	87.5	86.9	82.5	89.7	86.0	79.1
Live alone	12.5	13.1	17.5	10.3	14.0	20.9

(Continued)

Table 1.
Percentage distributions of male veterans and nonveterans aged 55 or older, by selected demographic characteristics: By age group, 1995 and 2015—Continued

Characteristic	Veterans			Nonveterans		
	55–61	62–69	70 or older	55–61	62–69	70 or older
2015						
Number						
Weighted ^a (in thousands)	2,083	4,164	6,309	12,122	8,471	6,739
Unweighted	1,242	2,319	3,283	6,805	4,697	3,616
Most recent military service						
1991–2014 (recent AVF)	18.5	4.4	1.1	...	...	...
1976–1990 (early AVF)	58.8	11.0	5.2	...	...	...
1965–1975 (Vietnam War)	22.7	84.0	28.8	...	...	...
1956–1964	...	0.6	32.2	...	...	...
1950–1955 (Korean War)	...	...	19.0	...	...	...
Before 1950 (includes World War II)	...	...	13.7	...	...	...
Education						
Less than high school	5.5	4.3	9.8	12.1	12.9	23.9
High school graduate	34.3	33.5	34.2	31.9	26.1	30.5
Some college	36.2	36.0	24.9	24.5	22.9	16.7
College graduate	24.1	26.2	31.2	31.5	38.1	28.9
Race/ethnicity						
White (non-Hispanic)	72.0	83.4	88.2	72.4	71.7	71.9
Black (non-Hispanic)	17.8	9.2	5.8	9.4	9.7	8.5
Hispanic (any race)	6.5	4.3	3.4	11.5	10.9	10.9
Other	3.7	3.2	2.6	6.7	7.8	8.7
Marital status						
Married	64.5	73.7	69.2	69.3	72.4	72.1
Not married	35.5	26.3	30.8	30.7	27.6	27.9
Living arrangement						
Live with others	80.5	81.8	76.7	84.2	81.8	81.0
Live alone	19.5	18.2	23.3	15.9	18.2	19.1

SOURCES: 1995 and 2015 CPS/ASEC, weighted by CPS sample weight.

NOTES: Rounded components of percentage distributions do not necessarily sum to 100.0.

... = not applicable.

Another indicator of the work domain is the prevalence of a work-limiting disability. As shown in Table 2, the prevalence of work-limiting disabilities among aged male veterans varies sharply by education and race/ethnicity. Among veterans aged 55–61 in 2015, a work-limiting condition was reported by 43 percent of those without a high school diploma, 28 percent of high school graduates, and 8 percent of college graduates; and by 29 percent of black veterans, versus 22 percent of white veterans.

In addition, we observe an increasing prevalence of work-limiting disability among all male veterans aged 55–61 between 1995 (15 percent) and 2015 (23 percent). Notably, this increase was concentrated among veterans without a college degree. For example, among

veterans aged 55–61 who did not finish high school, the work-limiting disability rate rose from 29 percent in 1995 to 43 percent in 2015. For those with some college, it increased from 15 percent to 26 percent. The growth in the prevalence of work-limiting disability between 1995 and 2015 was greater for veterans than for nonveterans of the same age. For instance, in 1995, the work-limiting disability rate among men aged 55–61 was 4 percentage points higher for nonveterans than for veterans, but in 2015, the prevalence was 8 percentage points higher for veterans. This pattern is consistent with administrative data showing that the number of veterans with a service-connected disability rose from 2.2 million in 1986 to 3.7 million in 2013, even as the total veteran population decreased (VA 2014b).

Table 2.
Employment rate, median earnings, and work-limiting disability prevalence among male veterans and nonveterans aged 55 or older, by age group: By education and race/ethnicity, 1995 and 2015

Characteristic	Prior-year employment rate (%)						Prior-year median earnings ^a (2014 \$)						Work-limiting disability rate (%)					
	Veterans			Nonveterans			Veterans			Nonveterans			Veterans			Nonveterans		
	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older
1995																		
All	80.1	42.2	16.8	77.7	42.1	11.8	51,100	27,900	13,300	47,900	25,200	12,800	14.7	22.2	27.7	18.9	26.2	31.3
Education																		
Less than high school	68.5	24.2	11.7	62.0	32.1	7.1	35,100	16,000	8,800	31,900	18,700	9,700	28.8	38.2	36.4	32.8	36.5	38.8
High school graduate	79.3	39.1	13.8	81.0	41.0	12.7	47,900	25,200	12,600	44,700	25,600	11,200	16.1	20.9	28.4	16.7	21.3	27.5
Some college	79.4	44.5	22.8	82.3	56.6	16.8	49,500	25,600	12,800	51,100	24,000	10,400	14.7	20.3	21.1	12.2	18.6	19.3
College graduate	86.7	60.0	24.4	90.6	61.6	24.3	73,500	51,100	25,600	81,500	55,900	20,100	7.3	12.1	18.5	8.1	10.9	21.1
Race/ethnicity																		
White (non-Hispanic)	80.6	42.7	17.0	80.3	44.8	12.1	51,900	27,900	13,300	51,800	26,800	11,200	14.2	21.4	27.5	16.8	23.7	31.7
Black (non-Hispanic)	74.3	38.5	16.6	65.8	29.3	9.2	49,500	28,700	22,400	31,900	17,700	12,800	20.3	31.6	28.5	29.2	39.7	43.6
Hispanic (any race)	76.3	32.9	8.4	70.4	38.1	10.6	42,200	24,000	8,000	31,900	19,200	19,200	20.4	26.2	35.8	23.5	27.9	22.7
Other	75.4	35.5	21.8	79.6	50.3	13.7	60,700	36,500	17,600	47,900	25,600	8,000	11.6	28.6	23.6	17.0	20.5	11.4
2015																		
All	69.1	43.6	16.5	78.0	53.7	22.1	50,000	41,000	30,000	50,000	45,000	30,000	23.3	18.6	13.5	14.9	16.3	13.5
Education																		
Less than high school	48.0	26.3	8.5	62.4	35.5	11.7	33,000	30,000	30,000	27,000	22,000	20,000	43.1	33.2	20.2	28.1	31.1	22.7
High school graduate	62.9	39.4	13.1	72.5	45.9	19.7	42,000	30,000	27,440	40,000	36,000	23,000	28.0	20.5	15.8	19.5	19.4	13.2
Some college	69.6	41.8	17.9	80.7	54.6	25.4	45,000	42,500	21,500	48,000	43,000	27,000	25.9	19.8	13.1	13.4	16.8	11.0
College graduate	82.0	54.2	21.8	87.4	64.4	31.1	70,000	60,000	40,000	77,000	62,000	50,000	8.4	12.1	9.2	6.3	9.1	7.8
Race/ethnicity																		
White (non-Hispanic)	71.0	44.9	16.8	79.8	56.4	24.4	51,000	42,000	30,000	55,000	50,000	30,000	21.7	17.5	...	14.2	15.2	...
Black (non-Hispanic)	59.0	34.0	11.1	64.0	41.6	16.1	40,000	33,000	39,000	40,000	34,000	18,000	29.4	28.8	...	26.7	27.5	...
Hispanic (any race)	72.7	47.1	14.5	78.1	48.4	15.8	40,000	40,000	33,000	32,000	31,000	30,000	25.8	15.7	...	12.2	16.2	...
Other	75.1	32.8	23.0	77.9	49.8	16.4	45,000	43,300	30,000	48,000	40,000	36,000	21.8	23.8	...	10.9	13.1	...

SOURCES: 1995 and 2015 CPS/ASEC, weighted by CPS sample weight.

NOTE: ... = not applicable.

a. Among employed persons only.

Table 3 examines prior-year income sources for men aged 55 or older, focusing on military pensions, veterans' benefits, and employer-provided pensions. Overall, a relatively small share of aged veterans reported income from a DOD military pension (in 2015, around 4 to 5 percent). This is because most individuals with military experience are not career servicemembers and thus do not serve long enough (typically, 20 years) to qualify for a DOD pension. A higher proportion of veterans reported receipt of VA-administered veterans' benefits, which are available to noncareer veterans. For example, almost 18 percent of veterans aged 62–69 in 2015 reported income from veterans' benefits, more than four times the proportion that reported military pension income.

Income-source patterns vary by education and race/ethnicity among veterans. In 2015, veterans aged 55–61 with some college or a college degree were more likely to report prior-year income from a military pension than less educated veterans. Veterans with lower levels of education were also less likely to report income from an employer-provided pension in 2015. This pattern is consistent with the notion that pensions are more likely to be offered at jobs requiring higher education (Tamborini, Purcell, and Iams 2013). Among racial/ethnic groups, black and Hispanic veterans were more likely to report income from military pensions than were white veterans in most age groups in both 1995 and 2015.

Table 4 reports Social Security income characteristics of aged veterans. In 2015, prior-year Social Security income was more prevalent among less educated veterans aged 55–69, and black veterans aged 55–61 were more likely to receive Social Security income than similarly aged white veterans. In the 55–61 age range, Disability Insurance benefits—paid to people who cannot work because they have a medical condition that is expected to last at least a year—likely are the predominant type of Social Security income. Among men of typical retirement-benefit claiming age (62–69), both the prevalence of Social Security beneficiary status and the median family-level Social Security income amounts were modestly higher among white veterans.

With respect to differences between veterans and nonveterans, the estimates show that a higher percentage of veterans lived in families receiving Social Security benefits than did nonveterans. For example, in 2015, almost 74 percent of veterans aged 62–69 reported Social Security income, compared with 56 percent of nonveterans. As expected,

the percentage of individuals in families with Social Security income increased with age for both veterans and nonveterans.

An important socioeconomic indicator is reliance on Social Security income. Table 4 shows that Social Security benefits constitute a substantial share of the family income of the typical veteran beneficiary, and the share increases with age. Among black men aged 62–69 in 2015, veterans had a median family-income reliance on Social Security of 34 percent, compared with 56 percent among nonveterans; at ages 70 or older, those figures were 56 percent for veterans and 77 percent for nonveterans. The pattern was similar in 1995.

Table 5 presents median prior-year family income and poverty (and near-poverty) rates of men aged 55 or older. Veterans' economic well-being is strongly related to their education level. Aged veterans with at least some college fared much better than those with less education. The poverty rate among all veterans aged 55–61 rose from 7 percent in 1995 to 11 percent in 2015. In addition, the gap in family income by education had widened among veterans, mirroring increasing income differentials by education in the population at large (Crystal, Shea, and Reyes 2017; Hout 2012).

The income and poverty characteristics of aged veterans also vary by race/ethnicity. In 2015, black veterans of all three age groups exhibited the lowest median family income of the racial/ethnic groups. The percentages of veterans in poverty and near poverty were generally higher for minority veterans than for white veterans. Between 1995 and 2015, poverty and near-poverty rates rose among both black and white veterans aged 55–61.

There are also interesting patterns between veterans and nonveterans. Among veterans aged 55–61 in 2015, those with a high school diploma had lower family income and higher poverty and near-poverty rates than similarly educated nonveterans. Yet across racial/ethnic groups, black and Hispanic veterans aged 55–61 in 2015 had slightly higher family income than their nonveteran peers. Further, black and Hispanic veterans had comparatively lower poverty rates than their nonveteran peers in all age groups. For example, 21 percent of black nonveterans aged 62–69 in 2015 were poor, compared with 13 percent of black veterans. By contrast, the poverty rate for white veterans aged 55–61 in 2015 was 10 percent, compared with 9 percent among white nonveterans of the same age.

Table 3.
Percentage of male veterans and nonveterans aged 55 or older receiving income in prior year from selected sources, by age group:
By education and race/ethnicity, 1995 and 2015

Characteristic	Military pension						Veterans' benefits						Employer-provided pension ^a						
	Veterans			Nonveterans			Veterans			Nonveterans			Veterans			Nonveterans			
	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	
1995																			
All	7.5	5.1	3.8	...	...	...	6.2	7.8	11.5	b	1.1	1.3	19.7	47.4	51.7	15.3	31.7	39.6
Education																			
Less than high school	b	1.8	1.1	...	...	...	5.9	8.6	12.9	b	b	1.4	12.9	42.4	44.2	12.7	23.4	31.7
High school graduate	6.2	5.0	3.5	...	...	...	5.5	7.3	10.9	1.0	1.2	1.6	20.7	47.1	55.2	16.2	38.3	43.9
Some college	10.6	6.8	4.8	...	...	...	7.8	9.2	12.4	b	2.2	1.5	21.1	49.4	49.3	13.4	38.3	47.8
College graduate	9.1	6.5	7.9	...	...	...	5.4	6.3	9.0	b	2.5	b	19.6	50.2	61.1	18.7	38.8	55.4
Race/ethnicity																			
White (non-Hispanic)	7.3	4.8	4.0	...	...	...	5.7	7.7	11.2	b	1.5	1.4	20.2	48.6	53.1	16.5	35.4	44.3
Black (non-Hispanic)	8.3	9.5	2.3	...	...	...	11.2	9.3	12.9	1.7	b	b	13.4	34.1	37.4	10.7	25.7	20.1
Hispanic (any race)	11.5	5.7	3.5	...	...	...	2.8	6.5	16.3	b	b	b	19.0	34.0	39.2	12.9	19.3	18.8
Other	c	c	c	...	...	...	c	c	c	c	c	c	10.5	52.7	44.8	11.9	22.5	24.6
2015																			
All	5.3	4.0	4.5	...	...	...	14.1	17.5	11.7	b	1.0	1.5	13.4	38.6	53.6	10.1	27.4	42.0
Education																			
Less than high school	3.0	2.6	b	...	...	...	4.3	29.0	9.0	b	b	1.1	3.8	13.5	38.1	4.8	14.4	23.6
High school graduate	2.3	1.9	3.6	...	...	...	10.9	15.8	10.1	1.0	b	1.9	8.9	37.8	53.0	10.6	26.2	41.9
Some college	6.7	3.6	5.9	...	...	...	15.0	19.0	15.6	b	1.3	1.6	16.2	39.4	52.2	11.2	27.5	46.5
College graduate	8.0	7.3	5.4	...	...	...	19.4	15.7	11.4	b	1.1	1.3	17.9	42.9	60.4	10.6	32.6	54.6
Race/ethnicity																			
White (non-Hispanic)	4.3	3.9	4.3	...	...	...	12.2	16.5	11.1	b	b	1.4	13.1	40.3	55.5	11.4	31.6	49.1
Black (non-Hispanic)	7.4	2.8	6.2	...	...	...	17.7	22.2	17.3	1.7	1.1	1.4	14.8	26.6	40.4	7.5	18.8	27.6
Hispanic (any race)	5.7	4.4	6.4	...	...	...	21.7	23.2	14.2	b	b	b	13.2	33.2	37.5	5.8	15.3	18.9
Other	13.1	7.7	3.7	...	...	...	20.3	21.8	16.7	b	2.3	3.3	13.3	38.0	41.6	6.1	16.6	26.0

SOURCES: 1995 and 2015 CPS/ASEC, weighted by CPS sample weight.

NOTE: ... = not applicable.

a. Includes pensions from private-sector employment and federal, state, and local government civilian employment.

b. Less than 1.0 percent.

c. Omitted because of inadequate sample size.

Table 4.
Selected prior-year Social Security income characteristics of male veterans and nonveterans aged 55 or older, by age group: By education and race/ethnicity, 1995 and 2015

Characteristic	Percentage with Social Security income						Social Security income ^a (2014 \$)						Social Security share of total income ^a (%)					
	Veterans			Nonveterans			Veterans			Nonveterans			Veterans			Nonveterans		
	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older	55-61	62-69	70 or older
1995																		
All	14.0	76.8	95.1	17.0	73.4	93.5	13,240	17,230	20,370	13,410	15,160	19,400	22.1	38.2	52.5	27.0	42.7	66.6
Education																		
Less than high school	22.5	88.5	96.4	25.6	77.2	93.1	14,490	17,130	18,380	11,900	13,670	17,100	42.5	50.6	65.4	39.5	51.3	76.0
High school graduate	14.7	79.2	94.5	17.4	77.7	94.9	12,000	16,580	20,240	12,340	16,120	20,370	25.6	40.2	53.4	24.7	39.1	63.2
Some college	14.1	76.7	95.9	12.5	65.2	92.5	13,220	17,440	20,760	13,410	17,610	21,810	17.3	35.4	47.2	24.3	38.6	56.7
College graduate	9.5	63.6	93.4	8.3	61.1	93.5	15,160	18,860	23,590	13,410	15,960	23,440	19.9	26.4	32.5	11.4	26.2	45.6
Race/ethnicity ^b																		
White (non-Hispanic)	13.7	77.6	95.4	14.4	75.6	95.5	13,910	17,440	20,740	13,030	16,120	20,100	22.4	38.1	52.2	25.6	41.5	66.5
Black (non-Hispanic)	16.2	68.7	92.8	32.4	77.2	91.7	8,630	13,560	16,760	10,960	12,290	14,590	12.7	40.8	54.9	39.5	47.2	72.5
Hispanic (any race)	17.5	73.1	92.3	20.6	65.0	90.6	10,750	15,810	16,310	10,370	12,690	14,690	18.3	39.4	56.0	27.0	51.0	70.2
2015																		
All	22.4	73.5	93.3	17.6	56.1	87.9	13,260	19,540	23,200	14,260	18,110	22,800	29.8	37.0	50.8	32.6	37.4	56.5
Education																		
Less than high school	28.0	82.0	94.2	24.2	60.9	84.9	12,100	14,400	20,520	11,420	15,000	18,000	31.3	51.1	72.1	55.3	57.1	82.0
High school graduate	27.1	78.1	94.6	22.3	61.6	90.9	14,140	20,400	21,720	14,700	18,050	22,860	49.3	42.9	58.5	35.7	44.7	64.3
Some college	22.0	70.9	93.5	18.4	55.0	86.6	14,930	19,200	23,100	14,510	18,500	24,700	27.1	37.4	51.5	28.8	40.4	51.5
College graduate	15.0	69.7	91.4	9.8	51.2	88.1	10,860	22,240	26,000	16,800	19,950	26,400	20.1	27.1	37.5	20.7	24.6	36.0
Race/ethnicity																		
White (non-Hispanic)	21.4	74.6	94.2	17.7	57.5	91.0	13,800	20,400	23,680	15,060	19,200	24,100	29.8	37.1	50.6	31.9	35.9	53.7
Black (non-Hispanic)	27.0	67.2	87.7	24.7	57.8	87.2	12,000	15,380	18,000	13,200	14,460	18,000	31.1	34.1	55.6	41.9	55.6	76.7
Hispanic (any race)	22.4	63.8	85.2	14.8	52.2	79.4	15,660	17,900	21,180	12,060	15,600	16,320	46.2	37.3	54.5	28.0	44.7	75.1
Other	19.6	74.9	84.2	11.5	46.1	73.7	12,550	18,670	22,300	12,460	16,430	19,450	20.2	40.0	48.2	19.7	31.4	53.9

SOURCES: 1995 and 2015 CPS/ASEC, weighted by CPS sample weight.

NOTE: Data are for combined Social Security income and combined total income, as applicable, of respondent and coresident family members.

a. Median value among Social Security beneficiaries.

b. "Other" category is omitted because of inadequate sample size.

Table 5.
Selected income and poverty characteristics of male veterans and nonveterans aged 55 or older, by age group: By education and race/ethnicity, 1995 and 2015

Characteristic	Median prior-year family income (2014 \$)						Percentage in poverty ^a						Percentage near poor ^b						
	Veterans			Nonveterans			Veterans			Nonveterans			Veterans			Nonveterans			
	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	55–61	62–69	70 or older	
1995																			
All	76,975	51,356	39,532	67,984	41,484	30,619	6.8	6.0	5.2	10.9	12.2	10.9	4.6	7.5	10.1	6.3	12.5	14.7	
Education																			
Less than high school	47,913	36,574	29,118	38,328	29,390	24,916	13.6	10.1	7.6	23.9	19.8	17.0	13.9	14.2	18.3	10.4	18.0	20.6	
High school graduate	63,885	46,493	38,705	65,951	48,164	34,460	7.2	7.3	4.9	7.4	6.1	4.4	4.9	7.5	8.6	6.3	10.0	11.2	
Some college	76,265	55,058	45,423	76,656	49,188	41,504	7.7	4.7	2.9	3.7	6.3	5.2	3.2	5.6	7.3	6.0	7.8	7.6	
College graduate	108,297	95,497	65,167	121,837	80,169	50,604	2.5	1.7	4.1	3.0	5.6	4.5	1.7	3.3	1.9	1.2	4.4	4.9	
Race/ethnicity ^c																			
White (non-Hispanic)	77,966	52,291	40,267	72,432	46,313	32,248	6.3	5.3	4.6	8.1	7.9	8.2	4.5	6.8	9.5	4.8	10.4	13.4	
Black (non-Hispanic)	75,477	37,887	32,561	43,119	30,321	24,226	10.7	14.4	12.3	18.4	27.3	26.7	3.4	13.9	16.8	10.6	13.9	21.5	
Hispanic (any race)	60,686	48,220	33,938	44,716	29,501	26,989	12.5	7.2	9.6	24.5	19.6	17.9	7.9	17.1	17.4	10.4	20.9	20.5	
2015																			
All	63,820	62,800	47,183	71,832	59,400	41,231	11.3	7.1	4.5	10.3	9.5	9.7	8.1	7.1	7.6	6.5	8.0	12.0	
Education																			
Less than high school	29,006	32,250	31,182	34,000	26,532	24,124	30.8	13.6	8.9	25.0	24.4	21.1	8.3	17.2	16.8	17.4	18.8	21.2	
High school graduate	49,000	52,396	39,482	58,000	48,571	37,815	13.1	10.1	5.8	11.5	11.8	6.3	10.0	8.3	9.8	7.7	9.6	13.3	
Some college	69,147	59,726	46,140	72,623	55,496	46,839	10.9	7.2	3.8	7.8	6.9	7.8	8.7	6.6	6.3	5.1	7.5	8.0	
College graduate	106,919	92,299	69,418	121,116	98,839	75,473	4.7	2.2	3.5	5.4	4.4	5.0	4.3	4.7	3.6	2.0	3.5	5.3	
Race/ethnicity																			
White (non-Hispanic)	66,225	64,806	47,834	79,000	67,992	46,538	10.3	6.2	4.3	8.6	6.6	6.7	7.3	6.9	7.0	4.9	6.7	9.7	
Black (non-Hispanic)	51,125	42,741	36,301	48,144	36,360	26,884	16.3	12.9	10.9	18.0	21.2	18.2	10.6	8.6	15.8	8.9	12.3	18.1	
Hispanic (any race)	60,050	59,036	39,636	47,000	40,000	26,688	12.2	13.1	9.5	13.9	17.5	19.1	9.8	6.6	12.9	12.8	11.9	22.1	
Other	70,734	50,506	49,103	72,983	57,974	34,108	3.5	6.3	5.7	11.7	10.3	14.4	8.8	9.4	5.0	8.2	8.8	12.7	

SOURCES: 1995 and 2015 CPS/ASEC, weighted by CPS sample weight.

NOTE: Data account for the combined income of respondent and coresident family members.

a. Family income is less than 100 percent of federal poverty threshold.

b. Family income is 100–149 percent of federal poverty threshold.

c. "Other" category is omitted because of inadequate sample size.

Conclusions

Policymakers have long been concerned about the well-being of veterans. In this article, we highlight within-group differences in selected indicators of well-being among aged veterans, most notably across educational and racial/ethnic subgroups. Taken together, the results offer a more mixed and nuanced picture of aged veterans than can be provided by analyzing aged veterans as a whole. With increasing female and minority enlistment in recent decades, the veteran population will become increasingly diverse as the AVF-era cohorts age. Thus, it becomes more important to account for the heterogeneity of the veteran population when addressing concerns about their economic well-being.

Our results reinforce previous findings that prior education is strongly associated with well-being in later life for veterans as well as for the population overall. It may not be surprising that veterans' employment, earnings, and work-limiting disability rates differ substantially across education levels. However, this pattern is increasingly relevant given the declining prevalence of postsecondary education among veterans in recent cohorts of near-retirees and the increasing importance of a college degree for positive lifetime outcomes. The results also shed light on important differences across racial/ethnic groups. On average, aged black and Hispanic veterans exhibit lower employment, higher work-limiting disability, and greater poverty rates than white veterans of the same age.

Our results also show notable differences between aged veterans and nonveterans. For example, aged black and Hispanic veterans appear to fare somewhat better than their nonveteran counterparts in terms of income and poverty. In comparison, aged white veterans tend not to fare quite as well as their nonveteran peers, particularly in the 2015 CPS/ASEC. This finding is consistent with the argument that military service may provide a bridge for individuals from disadvantaged communities into higher-paying jobs after they complete their military service. Nonetheless, one noteworthy outcome is an estimated rise in the poverty rate among all veterans aged 55–61, from 6 percent in 1995 to 11 percent in 2015. This pattern might be related to the military transition to an AVF in 1973 and the long-term sociodemographic changes that resulted.

In closing, we note some limitations of our study. Our descriptive analysis shows relevant socioeconomic differentials among aged veterans, and between veterans and nonveterans, and by education and race/

ethnicity; but it does not allow causal conclusions about the effect of military service across these different groups. Further, we have not tested hypotheses of why these differences emerge, nor have we elicited the net effects of the variables under study. The results presented herein may serve as a baseline for future work that accounts for complex interactions between variables. Additionally, the socioeconomic indicators we examined were not exhaustive. For example, we did not explore wealth or total pension resources. Moreover, using panel data would allow researchers to trace the sequence of lifetime events and outcomes for veterans as they transition into later life. Future research also would benefit from addressing why economic insecurity among veterans nearing retirement seems to have increased in recent years, particularly for those from the AVF service era. Including women in the sample of veterans would also be useful, and should become more practical as more recent cohorts with substantial female enlistment reach older ages.

Notes

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¹ The last draft occurred on December 7, 1972. Officially, all new enlistments in the U.S. armed forces were volunteers beginning July 1, 1973 (Dixon 2013).

² DOD offers three types of coverage: a Final Pay plan, a High-36 Month Average plan, and a Military Retirement Reform Act of 1986 plan (more commonly referred to as a REDUX plan). A reserve retirement pension is also available for members who completed 20 qualifying years by age 60 or, in some instances, a younger age.

³ To qualify before age 65 because of disability, individuals must be "totally and permanently disabled," among other factors.

⁴ Veterans' compensation includes disability compensation, dependency and indemnity compensation, and special monthly compensation. For those who qualify, monthly cash payments are provided in recognition of the effects of disabilities, diseases, or injuries incurred or aggravated during active-duty military service. Unlike the VA's veteran pension program, veterans' compensation is not means-tested and provides cash benefits that increase based on the veteran's service-related disability severity rating. For more information, see Congressional Budget Office (2014) and VA (2014a).

⁵ Other analyses of the effect of military service on socioeconomic outcomes by race/ethnicity have shown mixed results. For example, Teachman (2007a) found greater differentiation in educational attainment in the AVF era between black veterans and nonveterans than between white veterans and nonveterans.

⁶ Survey methodologies and sample techniques are documented at <https://www.census.gov/programs-surveys/cps/technical-documentation/methodology.html>.

⁷ In coming years, the number of aged female veterans will increase markedly, especially as veterans of the Gulf War service era age (Olsen and O’Leary 2011).

⁸ In the 2015 CPS/ASEC, veterans could report more than one period of service. In the 1995 CPS/ASEC, only a single period of service was recorded for each veteran.

⁹ The CPS/ASEC wording for work disability changed slightly over the observation period. In 1995, the question was “(Do you/Does anyone in this household) have a health problem or disability which prevents (you/they) from working or which limits the kind or amount of work (you/they) can do?” In 2015, it was “At any time in 2014 (did you/did anyone in the household) have a disability or health problem which prevented (you/they) from working, even for a short time, or which limited the work (you/they) could do?”

¹⁰ Sampling error occurs if the sample selected to be interviewed is not representative of the population. Nonsampling error occurs when respondents answer questions incorrectly or when errors are introduced during the process of editing the data and imputing answers in cases of item nonresponse.

¹¹ Because the CPS/ASEC is a “multistage stratified sample,” the general standard errors produced by statistical packages will be biased downward (Census Bureau 2006). For parameters used to calculate the standard errors associated with estimated percentages based on the 1995 CPS/ASEC, we used DeNavas and others (1996, Appendix D). For parameters used to calculate standard errors associated with estimated percentages based on the 2015 CPS/ASEC, we used Census Bureau (2014).

¹² Bee and Mitchell (2017, Table 2) includes median income estimates for households headed by individuals aged 65 or older by veteran status.

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TRENDS IN WOMEN'S WAGES, 1981–2015

by Patrick J. Purcell*

The Social Security Administration maintains wage and salary earnings records for all American workers. From those administrative records, the agency extracts a 1 percent sample called the Continuous Work History Sample (CWHS) for research and statistical purposes. This article uses CWHS data to examine trends in women's real wage and salary earnings from 1981 through 2015. It first describes broad trends for all women aged 25–59. Then it describes the trends over that same span for women in each of seven 5-year age intervals (25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59), with detail by individual birth cohort. A series of charts shows how women's real annual wages changed across age groups and birth cohorts within each age group.

Introduction

Every year, employers report their employees' wage and salary earnings to the Internal Revenue Service (IRS) and the Social Security Administration (SSA) on IRS Form W-2.¹ SSA stores those earnings records in its Master Earnings File (MEF), which it uses to administer the Old-Age, Survivors, and Disability Insurance (OASDI) programs.² For research and statistical purposes, SSA extracts data from the MEF and other administrative files each year to create the Continuous Work History Sample (CWHS). The CWHS contains earnings records for more than 3.7 million individuals, representing 1 percent of all Social Security numbers ever issued. For researchers, the large number of earnings records in the CWHS, its longitudinal structure, and its accuracy have advantages over household surveys, which consist of smaller samples, typically collect data for relatively short periods, and are subject to reporting and recording errors.

This article describes the trends in real annual wages and salaries recorded in the CWHS among women aged 25–59 from 1981 through 2015. It briefly describes the change in real annual wages and salaries for all women aged 25–59 during this period, then examines trends for individual birth cohorts in each of seven age groups: 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59. Using a series of charts, I show how

women's real annual wages changed across age groups and birth cohorts within each age group.

Data and Methods

The CWHS is an analytical master file created from 1 percent samples of the Master Beneficiary Record (MBR) and the MEF, both of which SSA uses to administer the OASDI programs. To maintain the CWHS's 1 percent sample size, each year, SSA adds the earnings records associated with a random selection of newly issued Social Security numbers. The records of deceased workers remain in the CWHS, allowing researchers to study the annual wages of entire birth cohorts over time. When needed, SSA updates the CWHS earnings records for adjustments and corrections to the MEF.

The CWHS includes data on Social Security taxable wages in covered employment since 1951.³ Covered employment refers to jobs for which employers submit payroll-tax deductions to the IRS and

Selected Abbreviations

CWHS	Continuous Work History Sample
IRS	Internal Revenue Service
MEF	Master Earnings File
SSA	Social Security Administration

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report annual wages to SSA to determine a worker's eligibility for Social Security benefits and the amount of those benefits. Taxable wages are earnings in covered employment equal to or less than an annually adjusted threshold amount called the taxable maximum.⁴ Since 1978, the CWHS has included records on annual wages in noncovered employment and earnings exceeding the annual maximum taxable amount.

This article describes results derived from the 2015 CWHS file, the most recent available when the analysis was conducted. Following the methods of Leonesio and Del Bene (2011), the earnings analyzed in this article consist of annual wages and salaries since 1981 in both covered and noncovered employment, including wages and salaries exceeding the annual taxable maximum. Earnings from self-employment are not included.⁵ The analysis includes only women's earnings. An earlier *Bulletin* article described trends in men's wage and salary earnings from 1981 through 2014 (Purcell 2018). This article focuses on ages 25 to 59 because those are the ages with the highest employment rates.⁶ For brevity, I refer to wages and salaries hereafter simply as "wages."

To focus on workers who had substantial wages, the analysis includes only individuals with annual wages equal to or greater than the amount needed to earn four quarters of coverage under Social Security.⁷ This amount ranged from \$1,240 in 1981 (\$2,835 in 2015 dollars) to \$4,880 in 2015. Annual wages have been indexed to 2015 values by the personal consumption expenditure (PCE) index of the National Income and Product Accounts.⁸

In addition to excluding individuals with annual wages lower than the amount needed to earn four quarters of coverage, this analysis excludes the top 0.1 percent of earners each year. This reduces the effect of extreme outliers at the high end of the annual wage distribution on the measured mean and variance of wages. The 1981 sample was bounded at the high end by women earning \$122,169, the amount of annual wages (in 2015 dollars) above which a woman would have been in the top 0.1 percent of female earners that year. The 2015 sample was bounded at the high end by women earning \$588,766, the amount of annual wages above which a woman would have been in the top 0.1 percent of female earners that year.

The 2015 CWHS file consists of 3,786,066 individual person-records.⁹ Of these records, 53.1 percent are for men and 46.9 percent are for women. For this analysis, the sample was restricted to women aged 25–59 in the year observed. Thus, for 1981, the sample includes

women born from 1922 through 1956. For 2015, the sample includes women born from 1956 through 1990. Overall, the sample consists of 15,892,104 person-year observations from 1981 through 2015, with an average of 454,060 unique individuals observed each year. The number of observations ranges from a low of 284,737 for 1981 to a high of 531,812 for 2015. There are an average of 12,973 records for each year observed for each single year of age.¹⁰ The fewest records observed in any year for a single year of age is 5,183, for women aged 59 in 1985 (born in 1926). The most records observed in any year for a single year of age is 17,366, for women aged 40 in 2000 (born in 1960).

In the next section, I summarize previous research based on the CWHS. I then describe broad trends in annual wages from 1981 through 2015 for women aged 25 through 59. A discussion of the main findings follows, in a section that describes the changes in median real annual wages from 1981 through 2015 for women in seven age groups: 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59. These age-earnings profiles show how women's real annual wages changed from 1981 through 2015, across age groups and birth cohorts within age groups.

Previous Research

Several analysts have used the CWHS to study the growth and variance of earnings over time. Kopczuk, Saez, and Song (2010) investigated trends in the variance of annual earnings from 1970 to 2004. They found that almost all of the increase in variance was "due to [an] increase in the variance of permanent earnings, as opposed to transitory earnings." They also observed that a "decrease in the gender earnings gap and the resulting substantial increase in upward mobility over a lifetime for women are the driving force behind the increase in long-term mobility among all workers."

Sabelhaus and Song (2010) found that between 1980 and the early 1990s, the variability of earnings growth rates across the working population declined significantly, and that the lower volatility continued through the early 2000s. They suggested that over that period, both permanent and transitory components of earnings shocks had become more moderate. They also noted that for both men and women, the annual variability of earnings growth rates declined significantly between ages 25 and 55.

Leonesio and Del Bene (2011) used the CWHS to study the distribution of men's and women's annual wages from 1981 through 2004. They observed that "among prime-aged men, real earnings have declined

or stagnated for low-wage earners, have increased modestly in the middle of the distribution, and have risen substantially for high earners.” They also found among men “an increase in long-run earnings inequality of roughly the same magnitude as the trend seen in annual earnings dispersion.” They observed relatively little increase in the dispersion of long-run earnings among women. They concluded that the trends they observed were “consistent with the view that more highly skilled and educated workers have been paid higher premiums for their labor over time, while the productivity and earnings of lower-skilled workers have not similarly benefited from improvements in technology.”

Guvenen, Kaplan, and Song (2014) used the CWHS to measure the progress that women have made toward achieving earnings parity with men. They found that although the share of women in the top 1 percent of earners increased by a factor of more than three from the early 1980s to 2012, women’s earnings constituted only 11 percent of the earnings of the top 1 percent of earners in 2012. Guvenen and others (2015) examined changes in men’s annual earnings and found that in any given year, most male workers experience very small changes in earnings, but a small percentage experience very large shocks. They found that positive shocks to high-income individuals are transitory, but negative shocks are persistent. For low-income individuals, however, large earnings shocks are more common but less persistent. The authors concluded that in general, high-income individuals experience earnings shocks that are persistent but that their income shows lower volatility than that of lower-earning workers. Song and others (2015) matched CWHS records to employer data to compare the dispersion of earnings within firms to earnings dispersion across firms. They found an increase in earnings inequality among workers of different firms between 1978 and 2012, while differences in earnings within firms remained almost unchanged.

Purcell (2018) summarized trends in men’s real annual wages from 1981 through 2014 using CWHS data. Over that period, the real median annual wages of men aged 25–59 rose 4.7 percent and their real mean annual wages rose 34.5 percent. The wage distribution became more unequal as wage growth for the top 10 percent of earners substantially outpaced the rate of growth for earners below the 90th percentile. Although real median annual wages rose 4.7 percent in that period, real annual wages at the 90th percentile rose 50.7 percent. Real wages declined 2.0 percent at the 25th percentile and rose 3.8 percent at

the 10th percentile. Much of the increase in men’s real median annual wages was attributable to an increase in the proportion of men in their peak earnings years. Other things being equal, the increase in the proportion of men who were in the age range of 40 to 54 would have caused the real median annual wages of all men aged 25–59 to rise even if median wages within each 5-year age interval from 25–29 through 55–59 had not risen between 1981 and 2014.

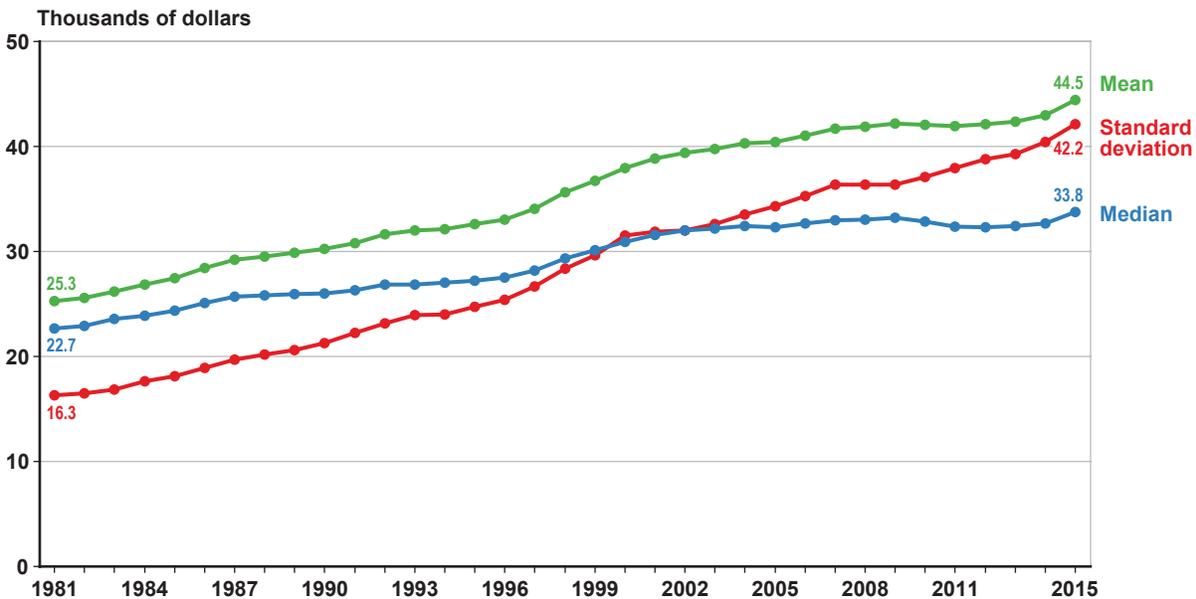
This study describes the change in women’s real annual wages from 1981 through 2015. It exploits the large CWHS sample and its longitudinal structure to compare the real annual wages of women in seven age intervals over a period spanning 34 years. Charts show real median wages in each year for each age group, allowing us to observe trends in women’s real median annual wages across age groups and birth cohorts within each age group. First, however, I summarize the broader trends in women’s real annual wages in the study period.

Women’s Annual Wages 1981–2015

Chart 1 shows the median and mean annual wages along with the standard deviation of annual wages for women aged 25–59 from 1981 through 2015. Women’s real wages during that period had a rising median and mean and increasing variance. Real median annual wages were \$22,693 in 1981 and \$33,788 in 2015, an increase of \$11,095 (48.9 percent) overall and an average annual increase of 1.2 percent. Median annual wages rose fairly consistently throughout the period, rising 14.6 percent from 1981 through 1990, 18.8 percent from 1990 through 2000, 6.3 percent from 2000 through 2010, and 2.8 percent from 2010 through 2015. The only span in which women’s real median annual wages fell for more than a single year was from 2010 through 2012. From a level of \$33,230 in 2009, real median annual wages fell each year until 2012, when they reached \$32,322, a decline of 2.7 percent over those 3 years. Real median annual wages then began a slow rebound, rising less than 0.8 percent in both 2013 and 2014 before rising 3.3 percent in 2015.

Women’s real mean annual wages rose from \$25,264 in 1981 to \$44,459 in 2015, an overall increase of \$19,195 (76.0 percent) and an average annual increase of 1.7 percent. Real mean annual wages increased at varying rates throughout the period, rising 19.8 percent from 1981 through 1990, 25.5 percent from 1990 through 2000, 10.8 percent from 2000 through 2010, and 5.6 percent from 2010 through 2015. The only years in which women’s real mean annual wages fell

Chart 1.
Mean, median, and standard deviation of real annual wages of women aged 25–59, 1981–2015
 (in 2015 dollars)



SOURCE: Author's calculations using CWS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-1.

were 2010 and 2011; they fell from \$42,195 in 2009 to \$41,954 in 2011, a decline of less than 0.6 percent. Women's real mean annual wages rose 2.5 percent between 2011 and 2014, then rose 3.4 percent in 2015.

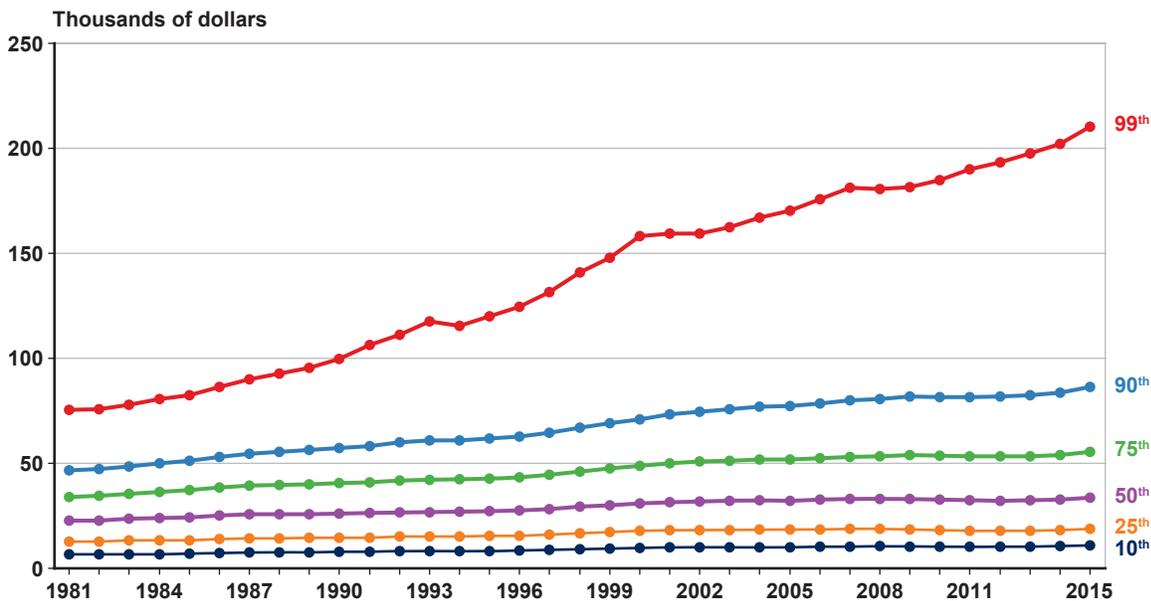
As women's real mean annual wages increased from 1981 to 2015, so did the standard deviation, a measure of how widely the values are distributed around the mean. In 1981, women's real mean annual wages were \$25,264 and the standard deviation was \$16,289. By 2015, the mean value of women's wages had risen 76.0 percent to \$44,459, yet the standard deviation had more than doubled—to \$42,162—indicating a substantial increase in the dispersion of annual wages around the mean. In both 1981 and 2015, the distribution of wages was skewed to the right: The highest values were much farther from the mean than the lowest values; recall that the latter are equivalent to the annual earnings needed to earn four quarters of coverage under Social Security.

Chart 2 shows the real annual wages of women aged 25–59 each year from 1981 through 2015 at the 10th, 25th, 50th, 75th, 90th, and 99th percentiles of the wage distribution. In 1981, a woman with annual wages at the 10th percentile earned \$6,608 in 2015

dollars. By 2015, real wages at the 10th percentile were \$10,932, or 65.4 percent higher than in 1981. Real annual wages at the 25th percentile were \$12,888 in 1981 and by 2015 they were \$18,932, 46.9 percent higher. As noted earlier, median real annual wages among women aged 25 to 59 rose from \$22,693 in 1981 to \$33,788 in 2015, an increase of 48.9 percent. From 1981 through 2015, women's real wages at the 10th percentile rose at an average annual rate of 1.5 percent, those at the 25th percentile rose at an average annual rate of 1.1 percent, and those at the median rose at an average annual rate of 1.2 percent.

Women's real annual wages rose more rapidly in the upper half of the earnings distribution than in the lower half. Real annual wages at the 75th percentile were \$34,114 in 1981 and rose 63.1 percent to \$55,626 in 2015. Real annual wages at the 90th percentile rose from \$46,646 in 1981 to \$86,502 in 2015, an increase of 85.4 percent. The most striking feature of Chart 2 is the steep increase in annual wages at the 99th percentile. From 1981 to 2015, women's real annual wages at the 99th percentile almost tripled, rising from \$75,565 to \$210,500—an increase of 178.6 percent. Women's real annual wages rose at average annual rates of

Chart 2.
Real annual wages of women aged 25–59, by selected percentile, 1981–2015 (in 2015 dollars)



SOURCE: Author's calculations using CWS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-2.

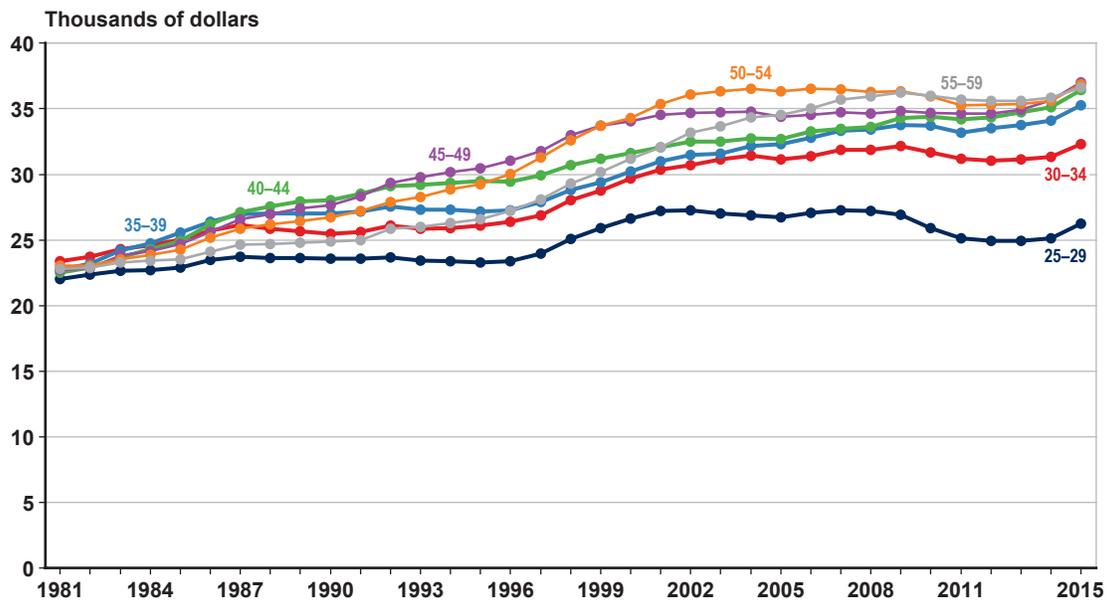
1.4 percent and 1.8 percent at the 75th and 90th percentiles, respectively; those at the 99th percentile rose at an average annual rate of 3.1 percent.

An individual's lifetime path of annual wages depends on a number of factors, including personal traits, education, occupation, industry, and economic conditions. For many workers, annual wages are relatively low when they are in their 20s, rise rapidly in their 30s as they develop skills and gain experience, and then increase more slowly as they enter their 40s. Annual wages typically peak between ages 45 and 55. By the time they reach their late 50s, many workers' annual wages begin to decline. Some workers choose to work fewer hours as they get older, while some move to lower-paying jobs, either voluntarily or involuntarily, depending on their circumstances (Sonnega, McFall, and Willis 2016). For example, some workers are unable to continue in their career occupation because of chronic illness or work-limiting disabilities. Nevertheless, throughout the period from 1981 through 2015, the median annual wages of women aged 55–59 were higher than those of women younger than 30; and since the mid-1990s, the median annual wages of women aged 55–59 have been higher than those of women younger than 40.

Chart 3 shows real median annual wages for 1981–2015 among women aged 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59. In 1981, women's median annual wages differed little by age. Women aged 25–29 had the lowest median annual wages at \$22,021, while at the high end, women aged 30–34 had median annual wages of \$23,385—a difference of \$1,364, or about 6 percent. Over time, real median wages rose for all seven age groups, but the rate of growth was faster for the older groups, expanding a gap in annual wages between women aged 35 or older and those younger than 35. By 2015, the real median annual wages of women aged 25–29 were \$26,243, an average annual increase from 1981 of 0.5 percent. The real median annual wages of women aged 30–34 were \$32,295 in 2015, having risen since 1981 at an average annual rate of 1.0 percent. By contrast, among all women aged 35 to 59, real median annual wages rose at an average annual rate of 1.4 percent. Because of these differing rates of growth, by 2015, the real median annual wages of women aged 45–49 (\$37,003) exceeded those of women aged 25–29 (\$26,243) by \$10,760, or 41.0 percent.

Changes in the age distribution of workers can affect the growth rate of annual wages. For example, if the proportion of female workers who were in

Chart 3.
Real median annual wages of women aged 25–59, by age group, 1981–2015 (in 2015 dollars)



SOURCE: Author’s calculations using CWS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-3.

their peak earnings years (ages 40–59) had risen, the median annual wages of all women aged 25–59 might have risen even if median annual wages within each age group remained flat. Chart 4 shows that from 1981 to 2015, the proportion of working women aged 25–59 who were 25 to 39 years old fell from 57.0 percent to 44.1 percent and the proportion who were 40 to 54 years old rose from 33.9 percent to 42.3 percent. As illustrated in Chart 3, real median annual wages rose in each of the seven 5-year age groups from 25–29 through 55–59. The increase in real median annual wages among all working women aged 25–59 was the result of both the increase in real annual wages within each age group and an increase in the proportion of working women in the age groups that experienced the greatest increases in real median earnings.¹¹

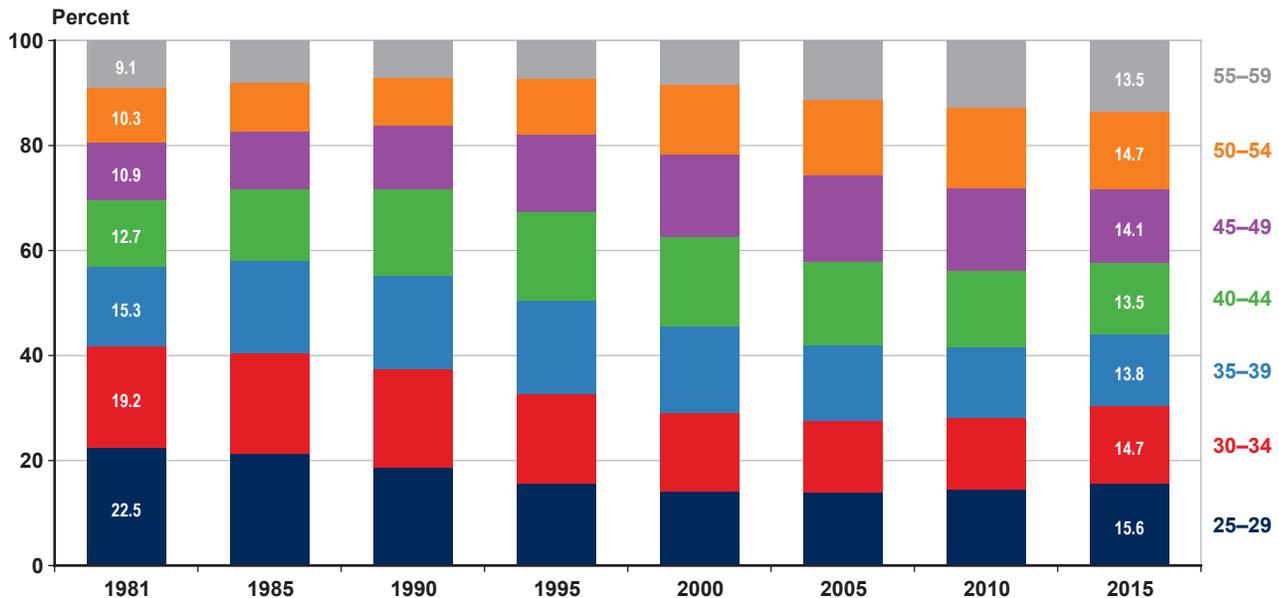
We can estimate the effect of the change in the age distribution of working women on their median annual wages by reweighting the records from the CWS so that the age distribution is constant each year, and then recalculating the annual median wage. Of course, if the distribution of workers by age had not changed over time, the static distribution of workers by age itself would likely have had some effect on annual wages. Nevertheless, estimating a “fixed population weight”

median wage gives us an idea how much of the increase in women’s real median annual wages during 1981–2015 was due to the growth in the proportion of workers who were in their prime earning years. All other things being equal, if the age distribution of women in 1981 had remained static through 2015, their estimated real median annual wages in 2015 would have been \$32,709, or 3.2 percent lower than the actual median of \$33,788. In other words, even if the proportion of women in their prime earning years had not increased during 1981–2015, the real median annual wages of all women aged 25–59 likely would have risen \$10,016 in that period, or 90.3 percent of the observed increase of \$11,095, all else being equal. The observed increase in women’s real median annual wages was therefore attributable more to the increase in real annual wages within each age group than to the increase in the proportion of women in the age groups in which annual wage and salary earnings usually peak.

Age-Earnings Profiles

The large number of records in the CWS and the file’s longitudinal structure allow the construction of age-earnings profiles that show the median annual wages of workers from many birth cohorts over long

Chart 4.
Percentage distribution of women aged 25–59 with wage and salary earnings, by age group, selected years 1981–2015



SOURCE: Author's calculations using CWS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

Rounded components of percentage distributions do not necessarily sum to 100.0.

For the tabulation of these values, see Appendix Table A-4.

periods. This section contains charts showing real median annual wages of women in seven age intervals over a 34-year period, allowing us to compare real annual wages across age groups and birth cohorts within age groups. The period 1981–2015 included four recessions and four expansions, and the charts illustrate the effects of the business cycle on the age-earnings profiles.¹² Specifically, the charts show women's real median annual wages from 1981 through 2015 for each of the following seven age intervals:

- 25–29, comprising the 1956–1986 birth cohorts;
- 30–34, comprising the 1951–1981 birth cohorts;
- 35–39, comprising the 1946–1976 birth cohorts;
- 40–44, comprising the 1941–1971 birth cohorts;
- 45–49, comprising the 1936–1966 birth cohorts;
- 50–54, comprising the 1931–1961 birth cohorts; and
- 55–59, comprising the 1926–1956 birth cohorts.

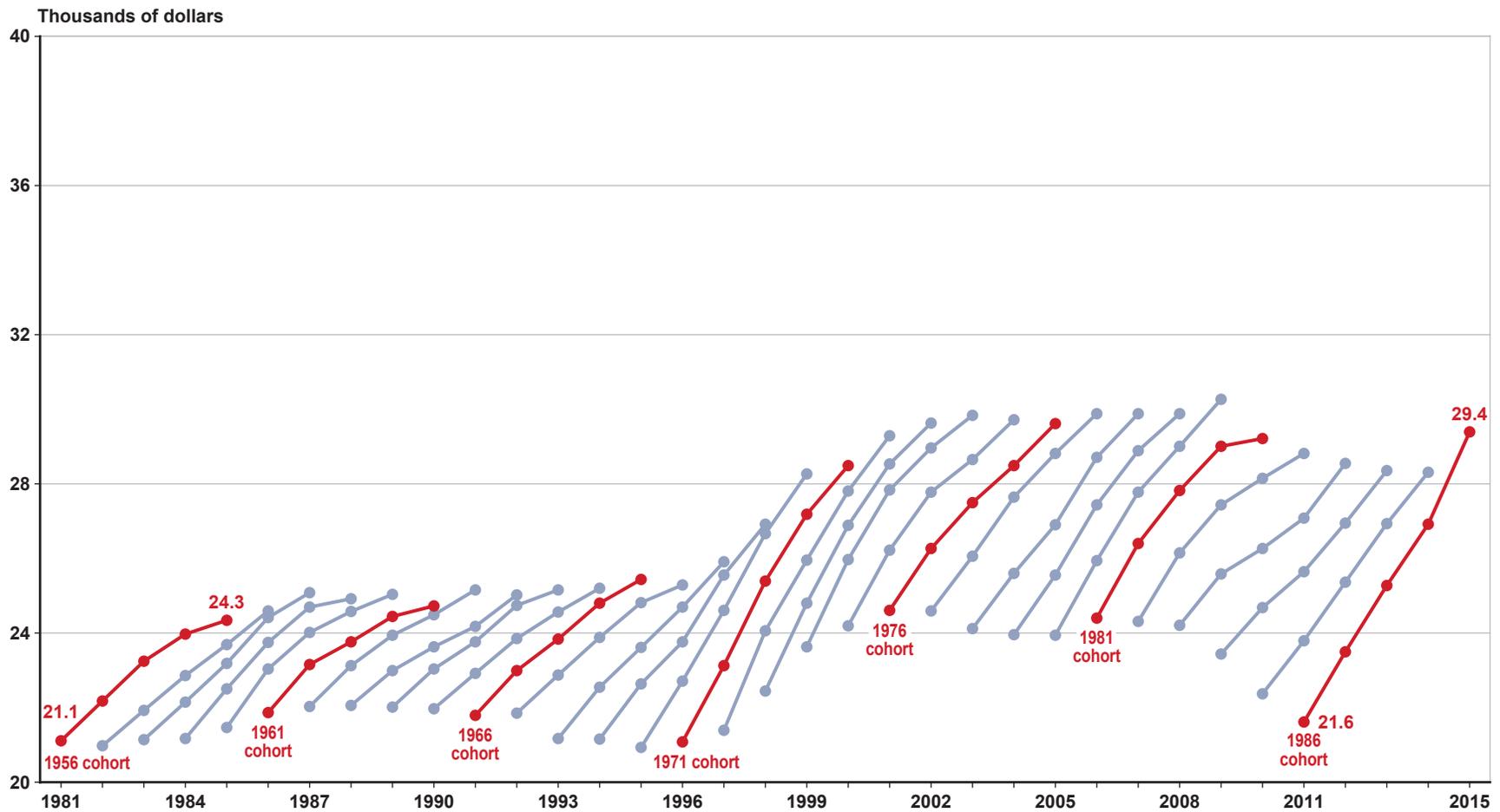
The oldest women in the sample, the members of the 1926 birth cohort, attained age 55 in 1981. Because they (as well as women born 1927–1930) were older than 59 for all but the first few years of the observation

period, I track their annual wages only in the 55–59 age interval. The youngest women in the sample were born in 1986; they attained age 25 in 2011. Because they (as well as women born 1982–1985) were younger than 25 in all but the final few years of the observation period, I track their annual wages only in the 25–29 age interval. Only women in the 1956 birth cohort can be tracked through each of the seven age intervals in the 1981–2015 span. Women born 1951–1955 and women born 1957–1961 are fully tracked in six of the seven charts below. In total, I track the annual wages in 1981–2015 of women representing 61 birth cohorts (1926 through 1986).¹³

Appendix A contains tables that correspond with Charts 5–11. The tables show the real median annual wages for each year and cohort covered in each chart.¹⁴

Chart 5 tracks the real median annual wages of women born 1956–1986 in the years when they were aged 25–29. For women in the 1956 birth cohort, real annual wages rose from \$21,117 at age 25 to \$24,335 at age 29, or by 15.2 percent. For women in the 1986 birth cohort, annual wages rose from \$21,620 at age 25 to \$29,398 at age 29, or by 36.0 percent. Thus, real

Chart 5.
Real median annual wages, 1981–2015: Women aged 25–29, by birth cohort (in 2015 dollars)



SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 25 to 29.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-5.

annual wages at age 25 were \$503 (2.4 percent) higher for women born in 1986 than those of women born in 1956, and at age 29 the real annual wages of women born in 1986 were \$5,063 (20.8 percent) higher than those of women born in 1956. On average, real median annual wages for all members of the 1956–1986 cohorts increased by 21.9 percent from age 25 to age 29.

Women in the 1961 birth cohort experienced the slowest annual wage growth from age 25 to 29. Their real median annual wages rose 13.0 percent from 1986 to 1990. Women in the 1972 birth cohort experienced the fastest annual wage growth from age 25 to 29. Their real median annual wages rose 36.9 percent from 1997 to 2001.

Chart 6 tracks the real median annual wages of women born 1951–1981 in the years when they were aged 30–34. For women in the 1951 birth cohort, real annual wages rose from \$23,537 at age 30 to \$25,680 at age 34, or by 9.1 percent. For women in the 1981 birth cohort, real annual wages rose from \$29,787 at age 30 to \$33,957 at age 34, or by 14.0 percent. At age 30, the real annual wages of women born in 1981 were 26.6 percent higher than the wages of women born in 1951. At age 34, the annual wages of women born in 1981 were 32.2 percent higher than the wages of women born in 1951. On average, across all cohorts, real median annual wages increased by 8.1 percent from age 30 to age 34.

Women in the 1957 birth cohort experienced the slowest annual wage growth from age 30 to 34. Their real median annual wages rose 2.2 percent from 1987 to 1991. Women in the 1966 birth cohort experienced the fastest annual wage growth from age 30 to 34. Their real median annual wages rose 16.1 percent from 1996 to 2000.

Chart 7 tracks the real median annual wages of women born 1946–1976 in the years when they were aged 35–39. For women in the 1946 birth cohort, real annual wages rose from \$23,042 at age 35 to \$25,811 at age 39, or by 12.0 percent. For women in the 1976 birth cohort, real annual wages rose from \$33,041 at age 35 to \$36,166 at age 39, or by 9.5 percent. The annual wages of women born in 1976 were 43.4 percent higher than those of women born in 1946 at age 35 and were 40.1 percent higher at age 39. On average, across all birth cohorts from 1946 through 1976, real median annual wages increased by 7.4 percent from age 35 to age 39.

Women in the 1974 birth cohort experienced the slowest annual wage growth from age 35 to 39. Their real median annual wages rose 1.9 percent from 2009

to 2013. Women in the 1961 birth cohort experienced the fastest annual wage growth from age 35 to 39. Their real median annual wages rose 13.8 percent from 1996 to 2000.

Chart 8 tracks the real median annual wages of women born 1941–1971 in the years when they were aged 40–44. For women in the 1941 birth cohort, real annual wages rose from \$22,515 at age 40 to \$24,544 at age 44, or by 9.0 percent. For women in the 1971 birth cohort, real annual wages rose from \$34,248 at age 40 to \$37,070 at age 44, or by 8.2 percent. The annual wages of women born in 1971 were 52.1 percent higher than the wages of women born in 1941 at age 40 and were 51.0 percent higher at age 44. On average, across all cohorts from 1941 through 1971, real median annual wages increased by 7.8 percent from age 40 to age 44.

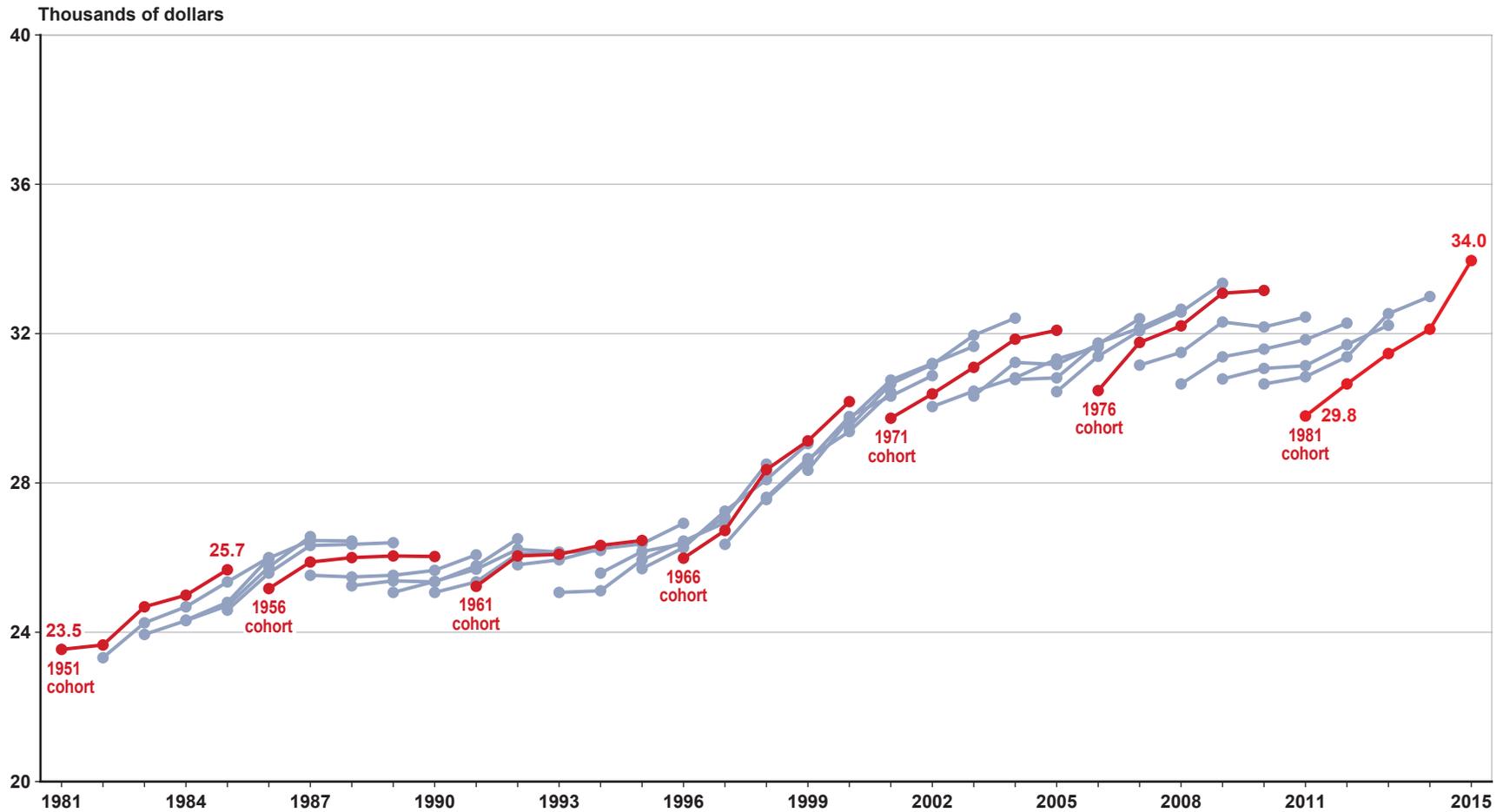
Women in the 1969 birth cohort experienced the slowest annual wage growth from age 40 to 44. Their real median annual wages rose 0.7 percent from 2009 to 2013. Women in the 1942 birth cohort experienced the fastest annual wage growth from age 40 to 44. Their real median annual wages rose 14.8 percent from 1982 to 1986.

Chart 9 tracks the real median annual wages of women born 1936–1966 in the years when they were aged 45–49. For women in the 1936 birth cohort, real annual wages rose from \$22,619 at age 45 to \$24,527 at age 49, or by 8.4 percent. For women in the 1966 birth cohort, real annual wages rose from \$34,429 at age 45 to \$36,952 at age 49, or by 7.3 percent. The annual wages of women born in 1966 were 52.2 percent higher than those of women born in 1936 at age 45 and were 50.7 percent higher at age 49. On average, across all cohorts from 1936 through 1966, real median annual wages increased by 6.5 percent from age 45 to age 49.

Women in the 1962 birth cohort experienced the slowest annual wage growth from age 45 to 49. Their real median annual wages rose 0.9 percent from 2007 to 2011. Women in the 1951 birth cohort experienced the fastest annual wage growth from age 45 to 49. Their real median annual wages rose 13.5 percent from 1996 to 2000.

Chart 10 tracks the real median annual wages of women born 1931–1961 in the years when they were aged 50–54. For women in the 1931 birth cohort, real annual wages rose from \$22,976 at age 50 to \$24,314 at age 54, an increase of 5.8 percent. For women in the 1961 birth cohort, real annual wages rose from \$34,852 at age 50 to \$37,111 at age 54, or by 6.5 percent. The annual wages of women born in 1961

Chart 6.
Real median annual wages, 1981–2015: Women aged 30–34, by birth cohort (in 2015 dollars)



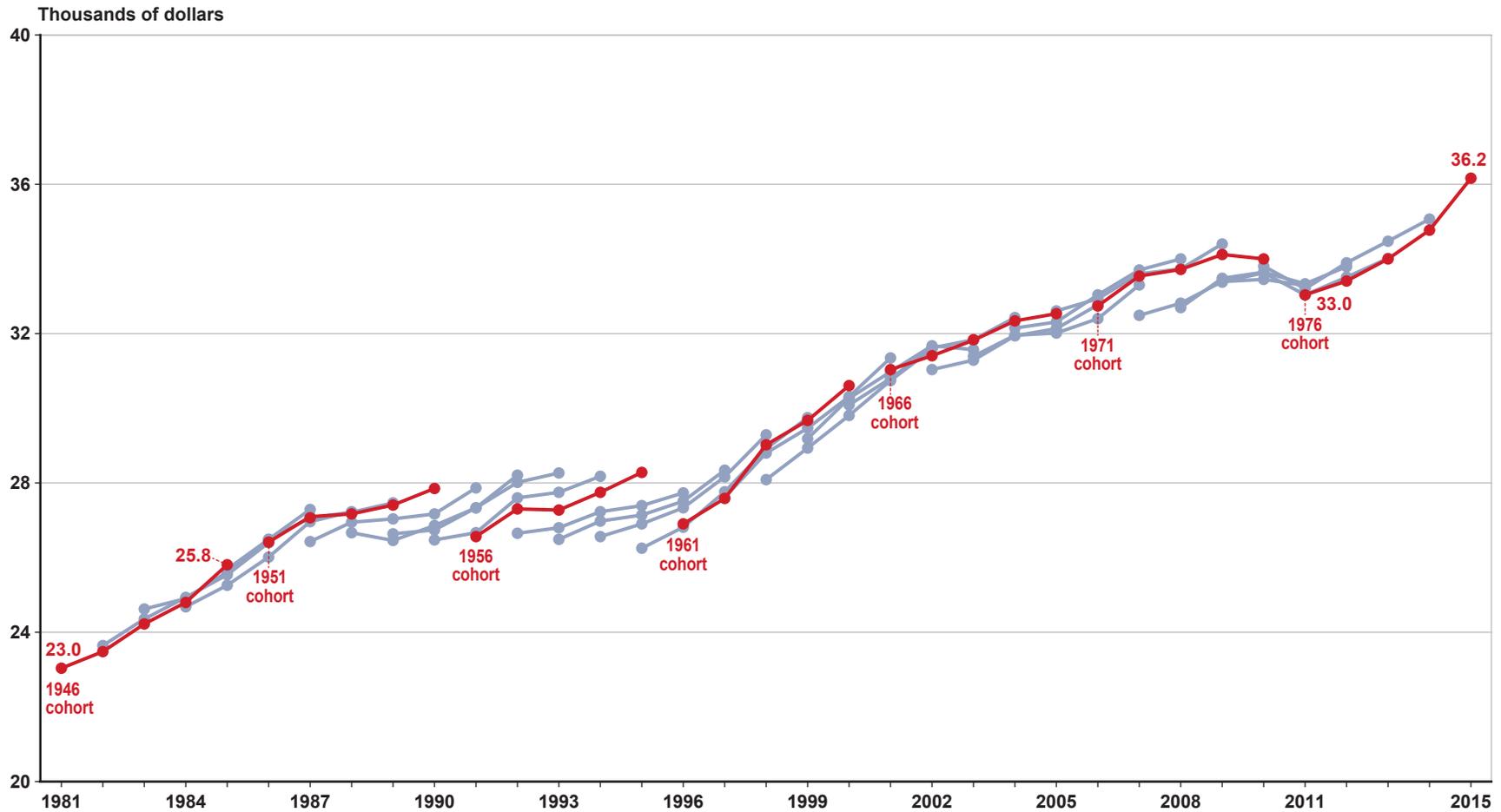
SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 30 to 34.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-6.

Chart 7.
Real median annual wages, 1981–2015: Women aged 35–39, by birth cohort (in 2015 dollars)



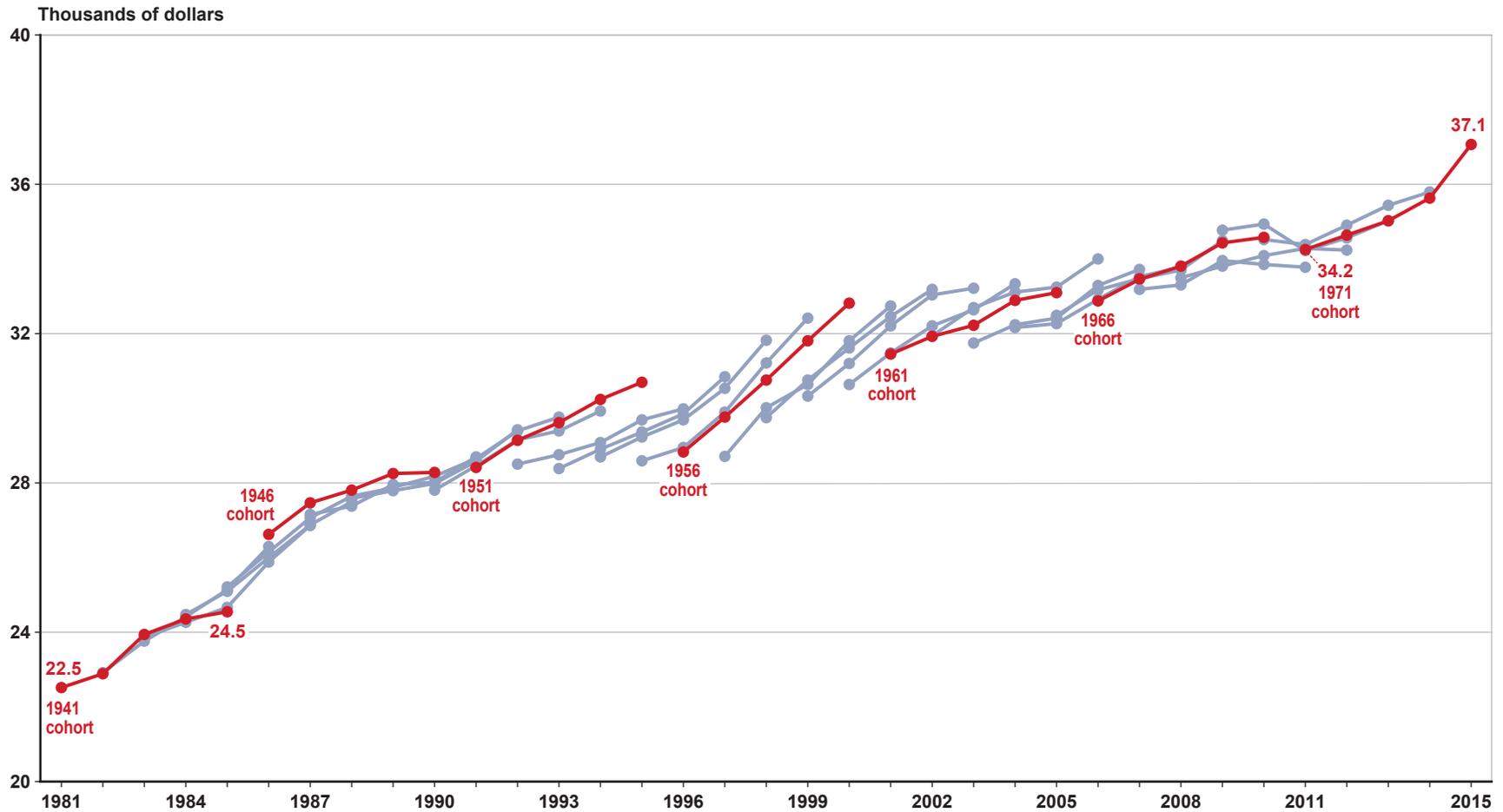
SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 35 to 39.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-7.

Chart 8.
Real median annual wages, 1981–2015: Women aged 40–44, by birth cohort (in 2015 dollars)



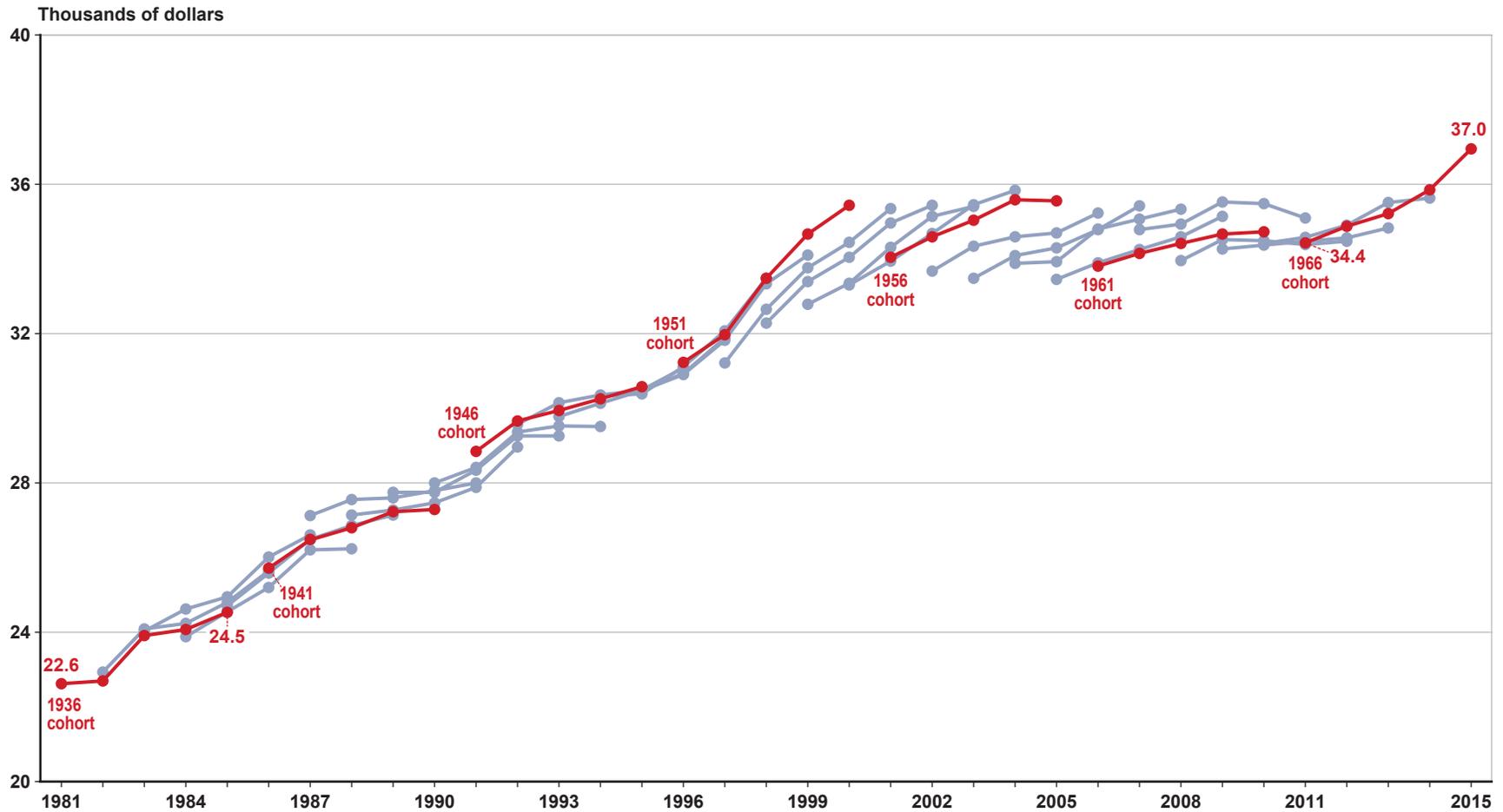
SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 40 to 44.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-8.

Chart 9.
Real median annual wages, 1981–2015: Women aged 45–49, by birth cohort (in 2015 dollars)



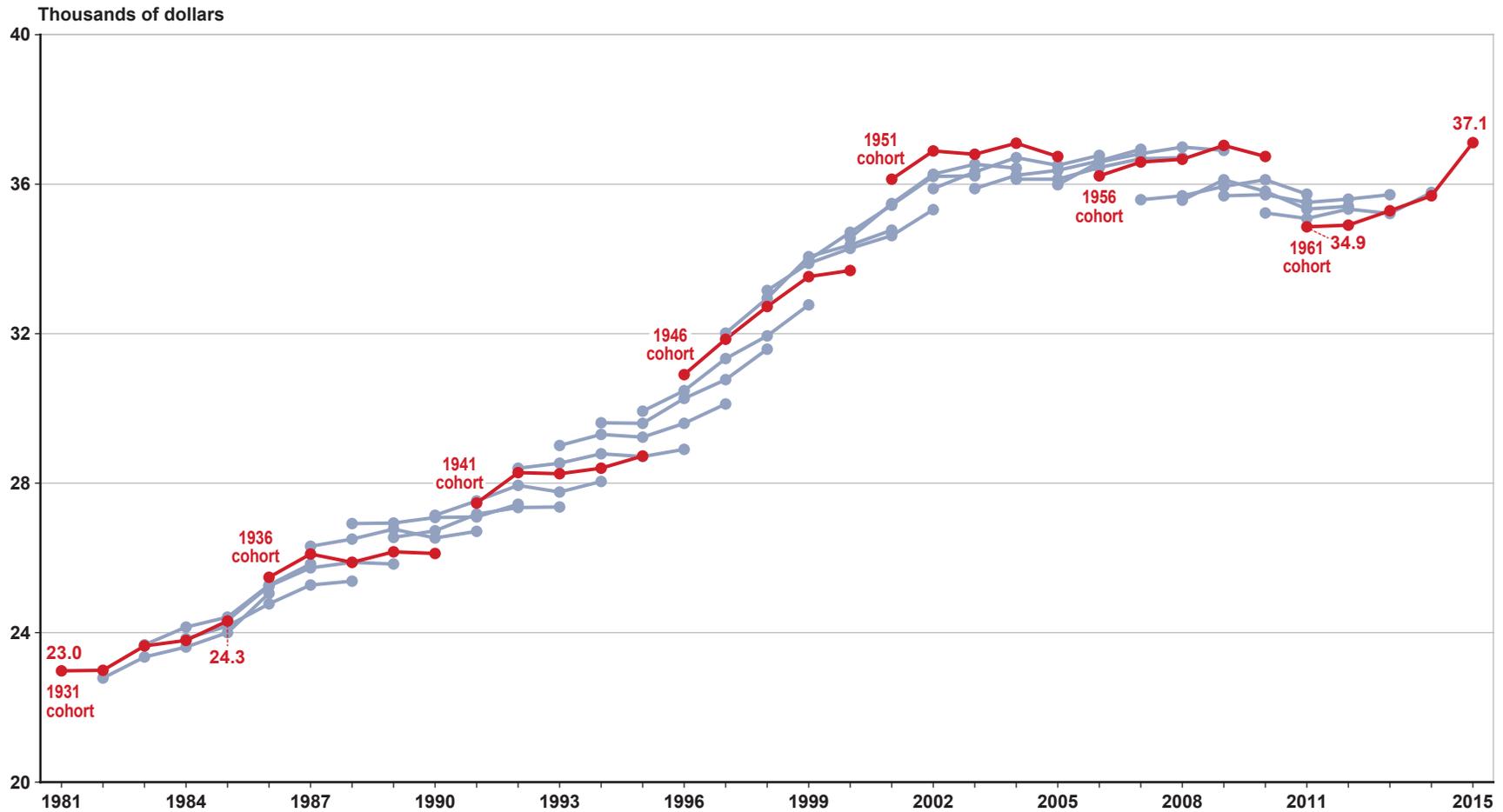
SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 45 to 49.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-9.

Chart 10.
Real median annual wages, 1981–2015: Women aged 50–54, by birth cohort (in 2015 dollars)



SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 50 to 54.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-10.

were 51.7 percent higher than the wages of women born in 1931 at age 50 and were 52.6 percent higher at age 54. In every birth cohort except one (1958), women experienced an increase in real median annual wages between ages 50 and 54. On average, across all cohorts from 1931 through 1961, real median annual wages rose by 3.9 percent from age 50 to age 54.

Women in the 1958 birth cohort experienced a decline in median annual wages from age 50 to 54. Their real median annual wages fell 0.4 percent from 2008 to 2012. Women in the 1932 birth cohort experienced the fastest annual wage growth from age 50 to 54. Their real median annual wages rose 9.9 percent from 1982 to 1986.

Chart 11 tracks the real median annual wages of women born 1926–1956 in the years when they were aged 55–59. For women in the 1926 birth cohort, real annual wages rose slightly, from \$23,179 at age 55 to \$23,338 at age 59, or by 0.7 percent. For women in the 1956 birth cohort, real annual wages rose from \$36,054 at age 55 to \$36,844 at age 59, or by 2.2 percent. The real annual wages of women born in 1956 were 55.5 percent higher than the wages of women born in 1926 at age 55 and were 57.9 percent higher at age 59. Women in the 1928 birth cohort experienced the fastest annual wage growth from age 55 to 59. Their real median annual wages rose by 3.6 percent from 1983 to 1987.

The members of more than half of the birth cohorts from 1926 through 1956 experienced declines in real median annual wages between the ages of 55 and 59, including women in eight of the fifteen cohorts from 1926 through 1940 and in twelve of the sixteen cohorts from 1941 through 1956. Women in the 1947 birth cohort experienced the steepest decline. Their real median annual wages fell 5.9 percent from 2002 to 2006. Declining median wages could have resulted from women working fewer hours as they neared retirement, or moving from higher-paying to lower-paying jobs, or a combination of both. On average, real median annual wages across all of the 1926–1956 birth cohorts fell by 2.1 percent from age 55 to age 59.

Discussion

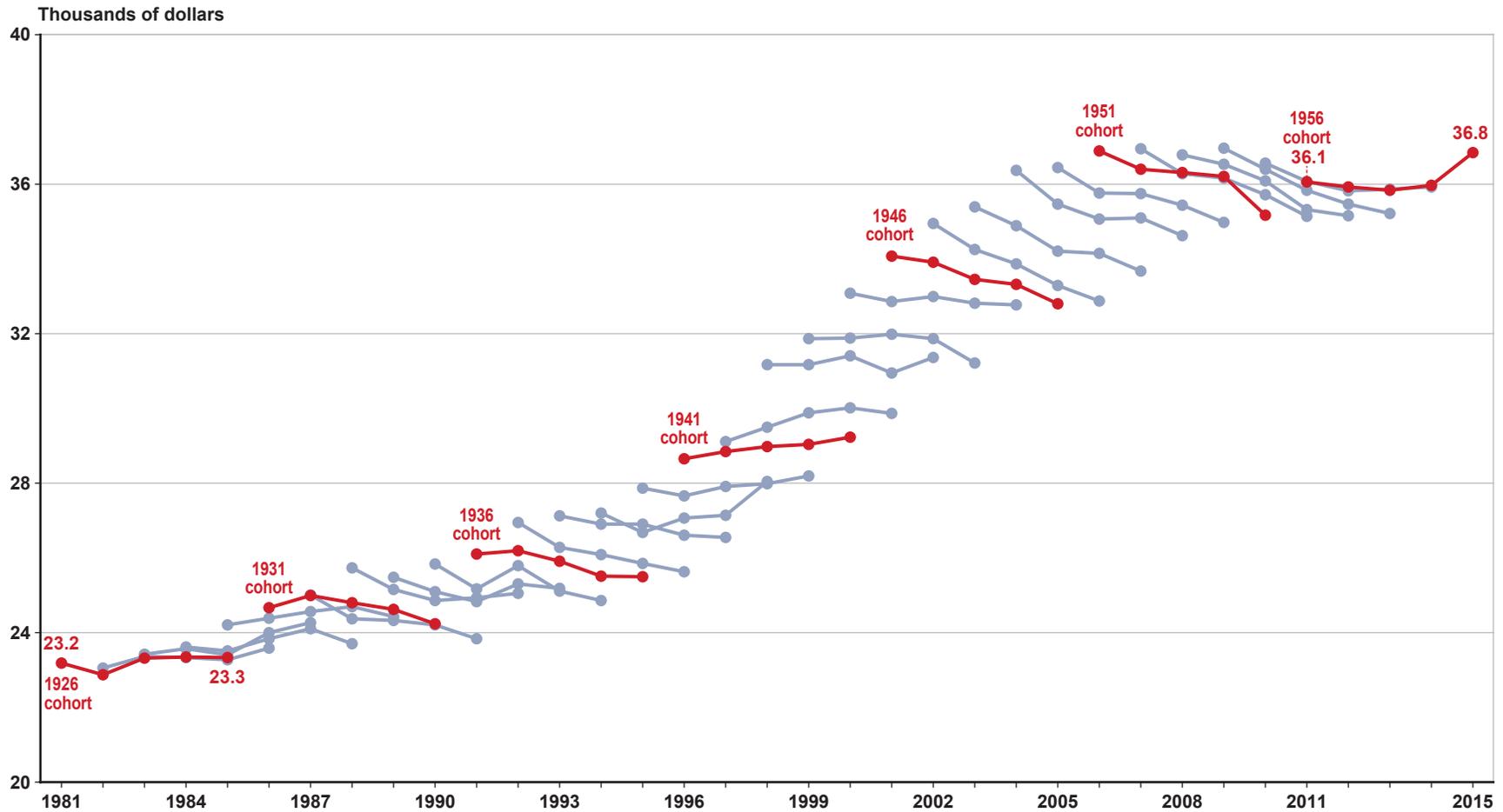
Several patterns emerge in Charts 5–11. First and foremost, the charts show substantial gains in women’s real annual wages from 1981 through 2015 in every age group except ages 25–29. In 2015, women’s real median annual wages at age 34 were 32.2 percent higher than the wages of women the same age in 1985, and their median annual wages at age 39 were

40.1 percent higher than the wages of women the same age in 1985. At ages 44, 49, 54, and 59, women’s real median annual wages in 2015 were more than 50 percent higher than the real median wages of women the same respective ages in 1985. Although the real median annual wages of women aged 25–29 also rose during this period, their gains were smaller than those of women aged 30 or older. In 2015, the real median annual wages of women aged 25 were only 2.4 percent higher than the wages of women the same age in 1981, and median annual wages at age 29 were 20.8 percent higher than those of women the same age in 1985.

A second pattern illustrated in the charts is the relationship between median annual wages and age. Median annual wages rise rapidly when workers are young, as they gain skills and experience. It is not age itself that influences wage growth, but rather the increase in a worker’s “human capital”—her skills and experience—that leads to the rise in earnings with age, especially in the first 10 to 20 years of a worker’s career. From 1981 through 2015, women’s real median annual wages at age 29 were, on average, 21.9 percent higher than their median wages at age 25. The rate of growth of annual wages slows in middle age. Women’s real median annual wages at age 49 were, on average, just 6.5 percent higher than their median wages at age 45. Finally, real median annual wages fall in the later years of workers’ careers. From age 55 to 59, women’s real median annual wages fell by an average of 2.1 percent, likely through a combination of reduced hours of work and movement to lower-paying jobs before retirement.

Finally, the relationship between real median annual wages and economic expansions and contractions is evident. Each of the four age groups from 35–39 through 50–54 experienced its lowest rate of growth in median annual wages during one of three overlapping periods: 2007–2011, 2008–2012, or 2009–2013. Each of those three periods coincided in part with the Great Recession of 2007–2009. The fastest rate of wage growth for four of the seven age intervals—25–29 through 35–39 and 45–49—occurred either from 1996 through 2000 or from 1997 through 2001. Economic growth was robust in that period. From 1995 through 2000, real median household income increased at an average annual rate of 2.1 percent (Federal Reserve Bank of St. Louis 2017). The rapid growth of women’s median annual wages from 1996 through 2001 and the relatively slow growth from 2007 through 2013 illustrate the strong effect of the business cycle on annual wage and salary earnings.

Chart 11.
Real median annual wages, 1981–2015: Women aged 55–59, by birth cohort (in 2015 dollars)



SOURCE: Author's calculations using CWS data.

NOTES: Each line represents a single birth cohort and each data point on a given line represents a year of age, ranging left-to-right from 55 to 59.

Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

For the tabulation of these values, see Appendix Table A-11.

Summary and Conclusion

This article has summarized trends in women's real annual wages from 1981 through 2015 using CWS data. Over that period, the wage distribution among women aged 25 to 59 became more unequal as wage growth for the top 10 percent of earners outpaced the rate of growth for earners near the middle of the distribution. Annual wages at the 99th percentile rose from \$75,565 in 1981 to \$210,500 in 2015, an increase of 178.6 percent. Annual wages at the 90th percentile rose from \$46,646 to \$86,502, an increase of 85.4 percent. By contrast, women's real median annual wages rose from \$22,693 in 1981 to \$33,788 in 2015, an increase of 48.9 percent. Mean real annual wages rose from \$25,264 to \$44,459 during that span, an increase of 76.0 percent. As the mean of women's wages increased, so did the standard deviation—from \$16,289 in 1981 to \$42,162 in 2015—indicating a wider dispersion of annual wages around the mean.

Although the proportion of women who were in their peak earnings years of ages 40–54 rose from 33.9 percent in 1981 to 42.3 percent in 2015, this contributed relatively little to the overall increase in real median annual wages among women aged 25–59. Real median annual wages rose in each of the seven 5-year age groups from 25–29 through 55–59. Reweighting the sample records from the CWS indicates that, with all other things being equal, if the age distribution of women in 2015 had been the same as in 1981, their estimated real median annual wages in 2015 would have been \$32,709, or just 3.2 percent lower than the actual median of \$33,788. In other words, even if the proportion of working women in their prime earning years had not risen, the real median annual wages of all women aged 25–59 in 2015 likely would have equaled about 97 percent of the observed median wage. The increase in women's real median annual wages was attributable more to the increase in real annual wages within each age group than to the increase in the proportion of women who were in their peak earning years.

In four of the seven 5-year age intervals, the lowest rate of growth in median annual wages occurred during one of three overlapping periods: 2007–2011, 2008–2012, or 2009–2013. Each of these three periods coincided in part with the Great Recession of 2007–2009. Likewise, the fastest rate of wage growth for four of the seven age intervals occurred either from 1996 through 2000 or from 1997 through 2001. The late 1990s featured a business cycle peak which began to give way to recession in 2001. The rapid growth of

real annual wages from 1996 through 2001 and their slow growth from 2007 through 2013 show the effect of business cycles on annual earnings.

This article complements a previous article (Purcell 2018) that examined men's annual wages from 1981 through 2014. To compare the trends for women with those for men over an identical period, I revised and updated the men's wage calculations presented in that article using data from the 2015 CWS. In general, women's annual wages rose more rapidly than men's wages. From 1981 through 2015, men's real median annual wages rose from \$43,087 to \$46,150, an increase of 7.1 percent, or 0.2 percent per year on average; and women's real median annual wages rose from \$22,693 to \$33,788, an increase of 48.9 percent, or about 1.2 percent per year on average. Women's real median annual wages, as a percentage of men's, rose from 52.7 percent in 1981 to 73.2 percent in 2015. Real mean annual wages rose by 38.1 percent for men, from \$47,779 to \$65,980, while the standard deviation rose from \$34,480 to \$83,467, an increase of 142.1 percent. For women, real mean annual wages rose by 76.0 percent, from \$25,264 to \$44,459, and the standard deviation rose from \$16,289 to \$42,162, an increase of 158.8 percent. Among both men and women, real annual wages at the 90th percentile rose more rapidly than median wages did. Men's 90th percentile annual wages rose from \$80,976 in 1981 to \$125,117 in 2015, an increase of 54.5 percent, or 1.3 percent per year on average. Women's 90th percentile annual wages rose from \$46,646 in 1981 to \$86,502 in 2015, an increase of 85.4 percent, or 1.8 percent per year on average.

One limitation of this study is that the CWS accounts for cash compensation only. Many workers receive additional compensation in the form of employer payments for health insurance and contributions to retirement accounts. During the period from 1981 to 2015, health insurance premiums rose more rapidly than wages, and the proportion of total compensation that was devoted to health insurance coverage therefore rose as well.¹⁵ Consequently, inequality in the distribution of total compensation rose less than inequality in the distribution of wage and salary earnings.

Another limitation of this study is that the CWS includes no information about the number of hours worked per year. Annual wage and salary earnings are the product of the hourly wage rate and the hours worked that year. Thus, changes over time in hours worked and hourly wage rates affect the distribution of annual wages. The public policy implications of

increasing wage inequality caused by changes in the distribution of hours worked could differ from those caused by changes in the distribution of the hourly wage.

Government officials at the federal, state, and local levels recognize the importance of identifying and pursuing economic policies that promote employment

and wage growth. To evaluate the effectiveness of economic policies, officials need detailed, accurate, and representative long-term data on workers' annual wages. The wage data recorded in the CWHS are ideal for this type of research and can contribute much to our knowledge of trends in the growth and distribution of annual wages.

Appendix A

Table A-1.
Mean, median, and standard deviation of real annual wages of women aged 25–59, 1981–2015 (in 2015 dollars) (see Chart 1)

Year	Mean	Median	Standard deviation
1981	25,264	22,693	16,289
1982	25,562	22,954	16,471
1983	26,221	23,589	16,880
1984	26,848	23,914	17,644
1985	27,461	24,354	18,165
1986	28,457	25,127	18,923
1987	29,210	25,705	19,720
1988	29,527	25,844	20,172
1989	29,872	25,954	20,612
1990	30,256	26,016	21,291
1991	30,821	26,309	22,233
1992	31,663	26,888	23,147
1993	32,009	26,877	23,977
1994	32,160	27,028	23,997
1995	32,591	27,203	24,728
1996	33,072	27,508	25,420
1997	34,096	28,189	26,705
1998	35,633	29,332	28,378
1999	36,753	30,114	29,677
2000	37,972	30,908	31,544
2001	38,853	31,594	31,865
2002	39,394	32,041	31,985
2003	39,756	32,203	32,597
2004	40,311	32,434	33,560
2005	40,441	32,317	34,297
2006	41,075	32,661	35,258
2007	41,720	32,971	36,404
2008	41,886	33,024	36,374
2009	42,195	33,230	36,373
2010	42,084	32,854	37,085
2011	41,954	32,389	37,964
2012	42,107	32,322	38,816
2013	42,408	32,453	39,279
2014	42,987	32,709	40,437
2015	44,459	33,788	42,162

SOURCE: Author's calculations using CWHS data.

NOTE: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

Table A-2.**Real annual wages of women aged 25–59, by selected percentile, 1981–2015 (in 2015 dollars)
(see Chart 2)**

Year	10th	25th	50th (median)	75th	90th	99th
1981	6,608	12,888	22,693	34,114	46,646	75,565
1982	6,624	12,918	22,954	34,667	47,320	75,902
1983	6,824	13,278	23,589	35,522	48,569	78,035
1984	6,864	13,329	23,914	36,390	50,044	80,603
1985	6,994	13,532	24,354	37,265	51,373	82,428
1986	7,340	13,965	25,127	38,589	53,249	86,387
1987	7,552	14,313	25,705	39,503	54,612	90,152
1988	7,602	14,385	25,844	39,823	55,433	92,767
1989	7,734	14,497	25,954	40,133	56,334	95,441
1990	7,837	14,583	26,016	40,548	57,327	99,741
1991	7,906	14,744	26,309	41,062	58,405	106,453
1992	8,120	15,145	26,888	42,030	60,097	111,316
1993	8,144	15,147	26,877	42,253	60,904	117,516
1994	8,335	15,280	27,028	42,467	61,001	115,403
1995	8,407	15,436	27,203	42,946	61,875	120,211
1996	8,438	15,612	27,508	43,434	62,811	124,514
1997	8,731	16,038	28,189	44,611	64,484	131,469
1998	9,164	16,785	29,332	46,276	67,166	140,957
1999	9,528	17,340	30,114	47,551	69,028	147,821
2000	9,817	17,841	30,908	48,724	71,129	158,110
2001	10,055	18,254	31,594	49,963	73,282	159,456
2002	10,134	18,400	32,041	50,887	74,739	159,392
2003	10,119	18,389	32,203	51,275	75,797	162,601
2004	10,149	18,438	32,434	51,856	77,117	166,904
2005	10,147	18,421	32,317	51,784	77,453	170,415
2006	10,314	18,640	32,661	52,441	78,610	175,700
2007	10,427	18,787	32,971	53,085	79,946	181,203
2008	10,544	18,770	33,024	53,435	80,639	180,695
2009	10,524	18,648	33,230	54,081	81,789	181,450
2010	10,420	18,325	32,854	53,756	81,604	184,913
2011	10,319	18,049	32,389	53,288	81,564	190,205
2012	10,294	18,005	32,322	53,263	81,917	193,390
2013	10,383	18,094	32,453	53,477	82,485	197,701
2014	10,556	18,266	32,709	53,997	83,595	202,212
2015	10,932	18,932	33,788	55,626	86,502	210,500

SOURCE: Author's calculations using CWS data.

NOTE: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

Table A-3.**Real median annual wages of women aged 25–59, by age group, 1981–2015 (in 2015 dollars) (see Chart 3)**

Year	25–29	30–34	35–39	40–44	45–49	50–54	55–59
1981	22,021	23,385	22,744	22,520	22,714	23,033	22,808
1982	22,347	23,703	23,198	22,880	22,841	23,033	22,898
1983	22,644	24,288	24,223	23,670	23,826	23,523	23,307
1984	22,720	24,607	24,763	24,323	24,158	23,873	23,425
1985	22,911	25,031	25,561	24,921	24,713	24,246	23,537
1986	23,467	25,697	26,375	26,183	25,629	25,185	24,118
1987	23,700	26,122	26,976	27,120	26,595	25,858	24,643
1988	23,624	25,855	27,040	27,571	26,963	26,200	24,676
1989	23,631	25,672	27,001	27,933	27,418	26,438	24,782
1990	23,556	25,473	27,006	28,060	27,658	26,727	24,866
1991	23,563	25,618	27,155	28,543	28,342	27,192	25,004
1992	23,663	26,105	27,556	29,109	29,369	27,904	25,876
1993	23,431	25,877	27,298	29,185	29,758	28,272	26,019
1994	23,397	25,882	27,315	29,345	30,151	28,866	26,271
1995	23,291	26,104	27,181	29,473	30,465	29,264	26,587
1996	23,380	26,406	27,263	29,438	31,055	30,011	27,194
1997	23,979	26,881	27,898	29,913	31,782	31,283	28,080
1998	25,089	28,020	28,817	30,695	32,984	32,570	29,310
1999	25,918	28,747	29,397	31,204	33,715	33,702	30,182
2000	26,636	29,702	30,210	31,608	34,053	34,308	31,190
2001	27,204	30,380	30,973	32,070	34,535	35,334	32,040
2002	27,273	30,712	31,464	32,484	34,682	36,087	33,189
2003	27,022	31,117	31,581	32,503	34,712	36,344	33,653
2004	26,864	31,431	32,147	32,758	34,771	36,513	34,330
2005	26,719	31,162	32,316	32,704	34,367	36,326	34,512
2006	27,060	31,363	32,780	33,253	34,517	36,538	35,039
2007	27,254	31,867	33,341	33,462	34,727	36,474	35,677
2008	27,236	31,886	33,416	33,608	34,629	36,280	35,961
2009	26,923	32,165	33,753	34,280	34,808	36,303	36,217
2010	25,896	31,682	33,695	34,389	34,662	35,920	36,002
2011	25,147	31,187	33,191	34,184	34,621	35,276	35,705
2012	24,915	31,031	33,493	34,334	34,639	35,300	35,620
2013	24,956	31,148	33,760	34,727	34,905	35,333	35,598
2014	25,130	31,320	34,099	35,122	35,663	35,622	35,858
2015	26,243	32,295	35,255	36,433	37,003	36,866	36,616

SOURCE: Author's calculations using CWS data.

NOTE: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

Table A-4.**Percentage distribution of women aged 25–59 with wage and salary earnings, by age group, 1981–2015
(see Chart 4)**

Year	25–29	30–34	35–39	40–44	45–49	50–54	55–59
1981	22.5	19.2	15.3	12.7	10.9	10.3	9.1
1982	22.0	19.0	16.0	13.1	10.8	10.1	8.9
1983	21.9	18.9	16.4	13.4	10.9	9.8	8.7
1984	21.5	19.1	17.0	13.6	10.8	9.5	8.4
1985	21.3	19.2	17.5	13.7	10.9	9.2	8.2
1986	20.9	19.2	17.8	14.2	11.1	9.0	7.9
1987	20.5	19.1	17.6	14.8	11.5	8.9	7.6
1988	20.0	19.1	17.6	15.2	11.8	9.0	7.4
1989	19.4	18.9	17.7	15.8	12.0	9.0	7.3
1990	18.7	18.8	17.8	16.4	12.1	9.1	7.1
1991	17.8	18.6	17.9	16.7	12.7	9.4	7.1
1992	16.9	18.3	17.9	16.6	13.4	9.8	7.0
1993	16.3	18.0	17.9	16.6	13.9	10.2	7.2
1994	15.8	17.6	17.8	16.7	14.5	10.4	7.2
1995	15.7	17.1	17.7	16.8	14.9	10.5	7.3
1996	15.6	16.5	17.6	16.9	15.1	10.9	7.4
1997	15.3	15.9	17.5	16.9	15.1	11.6	7.8
1998	15.1	15.4	17.2	17.0	15.2	12.0	8.1
1999	14.7	15.0	16.9	17.0	15.4	12.5	8.4
2000	14.2	14.9	16.4	17.1	15.7	13.2	8.5
2001	13.7	14.9	15.9	17.0	15.9	13.5	9.1
2002	13.7	14.6	15.3	16.9	16.1	13.7	9.8
2003	13.7	14.4	14.8	16.7	16.3	13.9	10.3
2004	13.8	14.0	14.4	16.4	16.3	14.2	10.8
2005	14.1	13.5	14.4	16.0	16.3	14.4	11.3
2006	14.3	13.2	14.4	15.5	16.3	14.7	11.6
2007	14.5	13.3	14.2	15.1	16.3	14.9	11.7
2008	14.6	13.4	14.1	14.7	16.1	15.1	12.0
2009	14.4	13.5	13.9	14.4	16.0	15.3	12.5
2010	14.5	13.8	13.5	14.4	15.7	15.4	12.8
2011	14.6	14.0	13.2	14.5	15.2	15.4	13.0
2012	14.7	14.3	13.3	14.3	14.8	15.4	13.2
2013	14.9	14.5	13.3	14.2	14.4	15.2	13.4
2014	15.3	14.5	13.5	13.9	14.2	15.1	13.5
2015	15.6	14.7	13.8	13.5	14.1	14.7	13.5

SOURCE: Author's calculations using CWS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

Rounded components of percentage distributions do not necessarily sum to 100.0.

Table A-5.

Real median annual wages, 1981–2015: Women aged 25–29, by birth cohort (in 2015 dollars) (see Chart 5)

Year	Cohort															
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
1981	21,117	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	22,181	20,984	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	23,250	21,933	21,145	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	23,965	22,857	22,152	21,164	...	...	...	...	...	...	...	...	...	...	...	...
1985	24,335	23,687	23,185	22,501	21,462	...	...	...	...	...	...	...	...	...	...	...
1986	...	24,598	24,414	23,741	23,039	21,873	...	...	...	...	...	...	...	...	...	...
1987	...	...	25,082	24,701	24,021	23,160	22,028	...	...	...	...	...	...	...	...	...
1988	...	...	...	24,913	24,571	23,763	23,119	22,058	...	...	...	...	...	...	...	...
1989	...	...	...	...	25,031	24,441	23,936	22,990	22,009	...	...	...	...	...	...	...
1990	...	...	...	...	...	24,721	24,483	23,625	23,032	21,970	...	...	...	...	...	...
1991	...	...	...	...	...	...	25,162	24,178	23,757	22,920	21,796	...	...	...	...	...
1992	...	...	...	...	...	...	...	25,016	24,747	23,856	22,998	21,848	...	...	...	...
1993	...	...	...	...	...	...	...	...	25,149	24,565	23,838	22,881	21,163	...	...	...
1994	...	...	...	...	...	...	...	...	...	25,198	24,796	23,883	22,543	21,156	...	...
1995	...	...	...	...	...	...	...	...	...	...	25,439	24,814	23,612	22,637	20,934	...
1996	...	...	...	...	...	...	...	...	...	...	...	25,283	24,692	23,769	22,715	21,075
1997	...	...	...	...	...	...	...	...	...	...	...	...	25,913	25,557	24,611	23,121
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	26,914	26,667	25,392
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28,271	27,186
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28,482

(Continued)

Year	Cohort															
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
1997	21,394	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	24,066	22,448	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	25,951	24,795	23,630	...	...	...	...	...	...	...	...	...	...	...	...
2000	27,809	26,888	25,971	24,199	...	...	...	...	...	...	...	...	...	...	...
2001	29,285	28,540	27,840	26,229	24,609	...	...	...	...	...	...	...	...	...	...
2002	...	29,633	28,967	27,772	26,271	24,596	...	...	...	...	...	...	...	...	...
2003	...	...	29,836	28,656	27,498	26,058	24,115	...	...	...	...	...	...	...	...
2004	...	...	...	29,713	28,492	27,640	25,605	23,957	...	...	...	...	...	...	...
2005	...	...	...	...	29,618	28,812	26,910	25,559	23,937	...	...	...	...	...	...
2006	...	...	...	...	...	29,874	28,716	27,441	25,934	24,397	...	...	...	...	...
2007	...	...	...	...	...	...	29,881	28,896	27,777	26,401	24,313	...	...	...	...
2008	...	...	...	...	...	...	...	29,885	29,014	27,826	26,148	24,208	...	...	...
2009	...	...	...	...	...	...	...	...	30,260	29,012	27,441	25,590	23,443	...	...
2010	...	...	...	...	...	...	...	...	...	29,210	28,146	26,271	24,680	22,373	...
2011	...	...	...	...	...	...	...	...	...	...	28,820	27,078	25,650	23,796	21,620
2012	...	...	...	...	...	...	...	...	...	...	...	28,552	26,943	25,360	23,489
2013	...	...	...	...	...	...	...	...	...	...	...	...	28,361	26,940	25,275
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	28,309	26,923
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29,398

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-6.

Real median annual wages, 1981–2015: Women aged 30–34, by birth cohort (in 2015 dollars) (see Chart 6)

Year	Cohort															
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
1981	23,537	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	23,664	23,319	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	24,678	24,247	23,943	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	24,994	24,677	24,313	24,327	...	...	...	...	...	...	...	...	...	...	...	...
1985	25,680	25,351	24,718	24,804	24,589	...	...	...	...	...	...	...	...	...	...	...
1986	...	25,998	25,745	25,979	25,592	25,168	...	...	...	...	...	...	...	...	...	...
1987	...	...	26,561	26,464	26,331	25,887	25,530	...	...	...	...	...	...	...	...	...
1988	...	...	...	26,437	26,356	25,993	25,476	25,245	...	...	...	...	...	...	...	...
1989	...	...	...	...	26,394	26,044	25,533	25,378	25,074	...	...	...	...	...	...	...
1990	...	...	...	...	...	26,026	25,661	25,353	25,366	25,062	...	...	...	...	...	...
1991	...	...	...	...	...	...	26,081	25,783	25,690	25,341	25,235	...	...	...	...	...
1992	...	...	...	...	...	...	...	26,506	26,216	26,102	26,038	25,811	...	...	...	...
1993	...	...	...	...	...	...	...	...	26,152	26,135	26,089	25,943	25,066	...	...	...
1994	...	...	...	...	...	...	...	...	...	26,197	26,319	26,241	25,111	25,580	...	...
1995	...	...	...	...	...	...	...	...	...	...	26,466	26,377	25,938	26,156	25,709	...
1996	...	...	...	...	...	...	...	...	...	...	...	26,916	26,438	26,375	26,261	25,981
1997	...	...	...	...	...	...	...	...	...	...	...	...	26,928	27,088	27,237	26,730
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	28,501	28,090	28,351
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29,054	29,126
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30,174

(Continued)

Year	Cohort														
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
1997	26,350	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	27,615	27,556	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	28,648	28,577	28,344	...	...	...	...	...	...	...	...	...	...	...	...
2000	29,381	29,777	29,704	29,510	...	...	...	...	...	...	...	...	...	...	...
2001	30,423	30,322	30,751	30,645	29,734	...	...	...	...	...	...	...	...	...	...
2002	...	30,877	31,198	31,168	30,379	30,046	...	...	...	...	...	...	...	...	...
2003	...	...	31,652	31,960	31,097	30,452	30,324	...	...	...	...	...	...	...	...
2004	...	...	...	32,410	31,854	30,811	31,236	30,767	...	...	...	...	...	...	...
2005	...	...	...	...	32,084	31,318	31,174	30,810	30,445	...	...	...	...	...	...
2006	...	...	...	...	...	31,645	31,713	31,747	31,393	30,477	...	...	...	...	...
2007	...	...	...	...	...	...	32,400	32,147	32,073	31,756	31,149	...	...	...	...
2008	...	...	...	...	...	...	...	32,659	32,571	32,210	31,502	30,646	...	...	...
2009	...	...	...	...	...	...	...	...	33,345	33,080	32,317	31,385	30,789	...	...
2010	...	...	...	...	...	...	...	...	...	33,161	32,173	31,587	31,072	30,649	...
2011	...	...	...	...	...	...	...	...	...	...	32,449	31,842	31,135	30,837	29,787
2012	...	...	...	...	...	...	...	...	...	...	...	32,282	31,701	31,385	30,658
2013	...	...	...	...	...	...	...	...	...	...	...	...	32,219	32,531	31,472
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	32,998	32,121
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	33,957

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-7.

Real median annual wages, 1981–2015: Women aged 35–39, by birth cohort (in 2015 dollars) (see Chart 7)

Year	Cohort															
	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
1981	23,042	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	23,484	23,644	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	24,217	24,356	24,623	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	24,795	24,935	24,901	24,678	...	...	...	...	...	...	...	...	...	...	...	...
1985	25,811	25,539	25,614	25,263	25,689	...	...	...	...	...	...	...	...	...	...	...
1986	...	26,393	26,491	26,014	26,490	26,420	...	...	...	...	...	...	...	...	...	...
1987	...	...	27,289	26,959	27,062	27,096	26,431	...	...	...	...	...	...	...	...	...
1988	...	...	...	27,230	27,216	27,170	26,953	26,670	...	...	...	...	...	...	...	...
1989	...	...	...	...	27,470	27,406	27,041	26,460	26,635	...	...	...	...	...	...	...
1990	...	...	...	...	...	27,858	27,170	26,852	26,746	26,470	...	...	...	...	...	...
1991	...	...	...	...	...	...	27,862	27,326	27,338	26,668	26,567	...	...	...	...	...
1992	...	...	...	...	...	...	...	28,212	28,021	27,598	27,308	26,653	...	...	...	...
1993	...	...	...	...	...	...	...	...	28,261	27,755	27,273	26,795	26,482	...	...	...
1994	...	...	...	...	...	...	...	...	...	28,183	27,755	27,225	26,975	26,556	...	...
1995	...	...	...	...	...	...	...	...	...	...	28,278	27,393	27,146	26,908	26,257	...
1996	...	...	...	...	...	...	...	...	...	...	...	27,730	27,513	27,336	26,820	26,901
1997	...	...	...	...	...	...	...	...	...	...	...	...	28,347	28,158	27,766	27,591
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	29,294	28,924	29,022
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29,753	29,675
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30,603

(Continued)

Year	Cohort															
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	
1997	27,609	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	28,802	28,089	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	29,460	28,939	29,182	...	...	...	...	...	...	...	...	...	...	...	...
2000	30,305	29,809	30,269	30,085	...	...	...	...	...	...	...	...	...	...	...
2001	31,347	30,740	30,980	30,800	31,043	...	...	...	...	...	...	...	...	...	...
2002	...	31,586	31,676	31,618	31,411	31,031	...	...	...	...	...	...	...	...	...
2003	...	...	31,566	31,843	31,818	31,284	31,397	...	...	...	...	...	...	...	...
2004	...	...	...	32,436	32,339	31,942	31,957	32,147	...	...	...	...	...	...	...
2005	...	...	...	...	32,536	32,130	32,018	32,305	32,601	...	...	...	...	...	...
2006	...	...	...	...	...	32,770	32,404	33,036	32,933	32,740	...	...	...	...	...
2007	...	...	...	...	...	...	33,300	33,700	33,600	33,544	32,488	...	...	...	...
2008	...	...	...	...	...	...	...	34,005	33,734	33,713	32,813	32,696	...	...	...
2009	...	...	...	...	...	...	...	...	34,407	34,117	33,387	33,477	33,384	...	...
2010	...	...	...	...	...	...	...	...	...	33,995	33,456	33,650	33,632	33,805	...
2011	...	...	...	...	...	...	...	...	...	...	33,283	33,328	33,041	33,195	33,041
2012	...	...	...	...	...	...	...	...	...	...	...	33,791	33,507	33,897	33,410
2013	...	...	...	...	...	...	...	...	...	...	...	...	34,022	34,468	33,999
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	35,066	34,777
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36,166

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-8.

Real median annual wages, 1981–2015: Women aged 40–44, by birth cohort (in 2015 dollars) (see Chart 8)

Year	Cohort															
	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
1981	22,515	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	22,885	22,912	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	23,936	23,762	23,868	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	24,355	24,415	24,271	24,476	...	...	...	...	...	...	...	...	...	...	...	...
1985	24,544	25,140	24,663	25,093	25,222	...	...	...	...	...	...	...	...	...	...	...
1986	...	26,298	25,878	26,004	26,142	26,620	...	...	...	...	...	...	...	...	...	...
1987	...	...	26,865	26,873	27,069	27,469	27,151	...	...	...	...	...	...	...	...	...
1988	...	...	...	27,492	27,648	27,812	27,384	27,579	...	...	...	...	...	...	...	...
1989	...	...	...	...	27,873	28,258	27,959	27,787	27,882	...	...	...	...	...	...	...
1990	...	...	...	...	...	28,285	28,022	27,982	28,176	27,800	...	...	...	...	...	...
1991	...	...	...	...	...	...	28,689	28,574	28,650	28,458	28,411	...	...	...	...	...
1992	...	...	...	...	...	...	...	29,420	29,396	29,152	29,141	28,506	...	...	...	...
1993	...	...	...	...	...	...	...	...	29,765	29,388	29,610	28,762	28,385	...	...	...
1994	...	...	...	...	...	...	...	...	...	29,928	30,231	29,079	28,898	28,694	...	...
1995	...	...	...	...	...	...	...	...	...	...	30,697	29,694	29,368	29,232	28,589	...
1996	...	...	...	...	...	...	...	...	...	...	...	29,986	29,848	29,692	28,955	28,823
1997	...	...	...	...	...	...	...	...	...	...	...	...	30,851	30,533	29,890	29,766
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	31,826	31,213	30,753
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32,412	31,812
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32,814

(Continued)

Year	Cohort														
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
1997	28,705	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	30,016	29,749	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	30,636	30,759	30,328	...	...	...	...	...	...	...	...	...	...	...	...
2000	31,811	31,617	31,196	30,631	...	...	...	...	...	...	...	...	...	...	...
2001	32,742	32,465	32,213	31,475	31,446	...	...	...	...	...	...	...	...	...	...
2002	...	33,184	33,039	32,210	31,927	31,934	...	...	...	...	...	...	...	...	...
2003	...	...	33,213	32,644	32,218	32,695	31,744	...	...	...	...	...	...	...	...
2004	...	...	...	33,326	32,895	33,110	32,236	32,159	...	...	...	...	...	...	...
2005	...	...	...	...	33,093	33,251	32,417	32,265	32,485	...	...	...	...	...	...
2006	...	...	...	...	...	33,996	33,284	32,917	33,168	32,880	...	...	...	...	...
2007	...	...	...	...	...	...	33,715	33,525	33,469	33,446	33,181	...	...	...	...
2008	...	...	...	...	...	...	...	33,780	33,704	33,805	33,298	33,491	...	...	...
2009	...	...	...	...	...	...	...	...	34,488	34,426	33,949	33,810	34,769	...	...
2010	...	...	...	...	...	...	...	...	...	34,571	33,857	34,083	34,930	34,522	...
2011	...	...	...	...	...	...	...	...	...	...	33,784	34,282	34,218	34,379	34,248
2012	...	...	...	...	...	...	...	...	...	...	...	34,236	34,558	34,898	34,641
2013	...	...	...	...	...	...	...	...	...	...	...	...	35,021	35,441	35,024
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	35,792	35,635
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37,070

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-9.

Real median annual wages, 1981–2015: Women aged 45–49, by birth cohort (in 2015 dollars) (see Chart 9)

Year	Cohort															
	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
1981	22,619	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	22,690	22,932	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	23,911	24,084	24,033	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	24,075	24,230	24,629	23,887	...	...	...	...	...	...	...	...	...	...	...	...
1985	24,527	24,798	24,955	24,548	24,711	...	...	...	...	...	...	...	...	...	...	...
1986	...	25,650	26,018	25,203	25,585	25,716	...	...	...	...	...	...	...	...	...	...
1987	...	...	26,605	26,205	26,495	26,475	27,127	...	...	...	...	...	...	...	...	...
1988	...	...	...	26,244	26,856	26,801	27,557	27,144	...	...	...	...	...	...	...	...
1989	...	...	...	...	27,145	27,231	27,594	27,267	27,754	...	...	...	...	...	...	...
1990	...	...	...	...	...	27,282	27,789	27,464	27,746	28,005	...	...	...	...	...	...
1991	...	...	...	...	...	...	28,003	27,874	28,344	28,422	28,844	...	...	...	...	...
1992	...	...	...	...	...	...	...	28,956	29,265	29,356	29,665	29,569	...	...	...	...
1993	...	...	...	...	...	...	...	...	29,264	29,529	29,934	30,141	29,785	...	...	...
1994	...	...	...	...	...	...	...	...	...	29,506	30,258	30,354	30,135	30,329	...	...
1995	...	...	...	...	...	...	...	...	...	...	30,579	30,487	30,474	30,383	30,470	...
1996	...	...	...	...	...	...	...	...	...	...	...	31,077	30,938	31,118	30,899	31,236
1997	...	...	...	...	...	...	...	...	...	...	...	...	31,887	32,073	31,819	31,976
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	33,474	33,334	33,485
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34,107	34,662
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35,443

(Continued)

Year	Cohort															
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	
1997	31,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	32,653	32,287	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	33,767	33,389	32,790	...	...	...	...	...	...	...	...	...	...	...	...
2000	34,451	34,040	33,351	33,305	...	...	...	...	...	...	...	...	...	...	...
2001	35,349	34,970	34,316	33,947	34,042	...	...	...	...	...	...	...	...	...	...
2002	...	35,443	35,143	34,682	34,596	33,669	...	...	...	...	...	...	...	...	...
2003	...	...	35,409	35,446	35,035	34,338	33,476	...	...	...	...	...	...	...	...
2004	...	...	...	35,838	35,586	34,588	34,095	33,886	...	...	...	...	...	...	...
2005	...	...	...	...	35,550	34,690	34,291	33,921	33,454	...	...	...	...	...	...
2006	...	...	...	...	...	35,232	34,788	34,800	33,890	33,803	...	...	...	...	...
2007	...	...	...	...	...	...	35,425	35,072	34,247	34,146	34,787	...	...	...	...
2008	...	...	...	...	...	...	...	35,340	34,597	34,419	34,934	33,954	...	...	...
2009	...	...	...	...	...	...	...	...	35,134	34,671	35,533	34,519	34,270	...	...
2010	...	...	...	...	...	...	...	...	...	34,721	35,477	34,483	34,367	34,413	...
2011	...	...	...	...	...	...	...	...	...	...	35,102	34,378	34,481	34,584	34,429
2012	...	...	...	...	...	...	...	...	...	...	...	34,471	34,568	34,902	34,872
2013	...	...	...	...	...	...	...	...	...	...	...	...	34,825	35,507	35,215
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	35,626	35,849
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36,952

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-10.

**Real median annual wages, 1981–2015: Women aged 50–54, by birth cohort (in 2015 dollars)
(see Chart 10)**

Year	Cohort															
	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
1981	22,976	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	22,990	22,788	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	23,645	23,355	23,680	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	23,797	23,614	24,151	23,834	...	...	...	...	...	...	...	...	...	...	...	...
1985	24,314	24,007	24,408	24,181	24,322	...	...	...	...	...	...	...	...	...	...	...
1986	...	25,048	25,273	24,775	25,245	25,476	...	...	...	...	...	...	...	...	...	...
1987	...	...	25,837	25,270	25,728	26,111	26,313	...	...	...	...	...	...	...	...	...
1988	...	...	...	25,383	25,886	25,887	26,510	26,921	...	...	...	...	...	...	...	...
1989	...	...	...	...	25,837	26,165	26,767	26,927	26,553	...	...	...	...	...	...	...
1990	...	...	...	...	...	26,123	26,538	27,084	26,731	27,136	...	...	...	...	...	...
1991	...	...	...	...	...	...	26,708	27,099	27,176	27,529	27,464	...	...	...	...	...
1992	...	...	...	...	...	...	...	27,440	27,349	27,941	28,284	28,393	...	...	...	...
1993	...	...	...	...	...	...	...	...	27,370	27,756	28,246	28,535	29,008	...	...	...
1994	...	...	...	...	...	...	...	...	...	28,040	28,402	28,778	29,311	29,618	...	...
1995	...	...	...	...	...	...	...	...	...	...	28,729	28,711	29,233	29,601	29,929	...
1996	...	...	...	...	...	...	...	...	...	...	...	28,910	29,603	30,262	30,471	30,900
1997	...	...	...	...	...	...	...	...	...	...	...	...	30,121	30,763	31,330	31,853
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	31,587	31,945	32,728
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32,775	33,523
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	33,684

(Continued)

Year	Cohort															
	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	
1997	32,022	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	32,955	33,152	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	34,058	33,875	33,973	...	...	...	...	...	...	...	...	...	...	...	...
2000	34,377	34,285	34,708	34,570	...	...	...	...	...	...	...	...	...	...	...
2001	34,767	34,627	35,438	35,487	36,134	...	...	...	...	...	...	...	...	...	...
2002	...	35,318	36,207	36,267	36,893	35,888	...	...	...	...	...	...	...	...	...
2003	...	...	36,220	36,539	36,804	36,323	35,881	...	...	...	...	...	...	...	...
2004	...	...	...	36,431	37,092	36,716	36,232	36,138	...	...	...	...	...	...	...
2005	...	...	...	...	36,744	36,498	36,370	36,139	35,986	...	...	...	...	...	...
2006	...	...	...	...	...	36,763	36,626	36,450	36,591	36,219	...	...	...	...	...
2007	...	...	...	...	...	...	36,934	36,679	36,815	36,590	35,590	...	...	...	...
2008	...	...	...	...	...	...	...	36,705	36,998	36,661	35,687	35,567	...	...	...
2009	...	...	...	...	...	...	...	...	36,909	37,043	35,947	36,112	35,682	...	...
2010	...	...	...	...	...	...	...	...	...	36,735	36,116	35,800	35,717	35,235	...
2011	...	...	...	...	...	...	...	...	...	...	35,740	35,335	35,509	35,080	34,852
2012	...	...	...	...	...	...	...	...	...	...	...	35,413	35,599	35,332	34,909
2013	...	...	...	...	...	...	...	...	...	...	...	...	35,714	35,208	35,287
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	35,773	35,686
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37,111

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Table A-11.

**Real median annual wages, 1981–2015: Women aged 55–59, by birth cohort (in 2015 dollars)
(see Chart 11)**

Year	Cohort															
	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
1981	23,179	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1982	22,874	23,046	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1983	23,319	23,365	23,424	...	...	...	...	...	...	...	...	...	...	...	...	...
1984	23,348	23,340	23,573	23,608	...	...	...	...	...	...	...	...	...	...	...	...
1985	23,338	23,276	23,400	23,516	24,202	...	...	...	...	...	...	...	...	...	...	...
1986	...	23,585	23,996	23,831	24,380	24,661	...	...	...	...	...	...	...	...	...	...
1987	...	...	24,270	24,110	24,570	24,990	25,014	...	...	...	...	...	...	...	...	...
1988	...	...	...	23,697	24,693	24,797	24,375	25,730	...	...	...	...	...	...	...	...
1989	...	...	...	...	24,436	24,624	24,323	25,154	25,479	...	...	...	...	...	...	...
1990	...	...	...	...	...	24,241	24,212	24,861	25,098	25,841	...	...	...	...	...	...
1991	...	...	...	...	...	...	23,842	24,930	24,826	25,173	26,110	...	...	...	...	...
1992	...	...	...	...	...	...	...	25,048	25,297	25,786	26,199	26,947	...	...	...	...
1993	...	...	...	...	...	...	...	...	25,183	25,117	25,914	26,274	27,127	...	...	...
1994	...	...	...	...	...	...	...	...	...	24,855	25,508	26,088	26,903	27,197	...	...
1995	...	...	...	...	...	...	...	...	...	...	25,493	25,859	26,898	26,687	27,872	...
1996	...	...	...	...	...	...	...	...	...	...	...	25,637	26,602	27,072	27,657	28,656
1997	...	...	...	...	...	...	...	...	...	...	...	...	26,549	27,135	27,916	28,841
1998	...	...	...	...	...	...	...	...	...	...	...	...	...	28,046	27,981	28,983
1999	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28,197	29,033
2000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29,230

(Continued)

Year	Cohort														
	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
1997	29,104	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1998	29,491	31,167	...	...	...	...	...	...	...	...	...	...	...	...	...
1999	29,888	31,164	31,872	...	...	...	...	...	...	...	...	...	...	...	...
2000	30,016	31,402	31,886	33,075	...	...	...	...	...	...	...	...	...	...	...
2001	29,866	30,950	31,991	32,856	34,071	...	...	...	...	...	...	...	...	...	...
2002	...	31,365	31,869	32,998	33,917	34,945	...	...	...	...	...	...	...	...	...
2003	...	...	31,219	32,821	33,457	34,252	35,392	...	...	...	...	...	...	...	...
2004	...	...	...	32,775	33,311	33,869	34,883	36,369	...	...	...	...	...	...	...
2005	...	...	...	...	32,807	33,283	34,204	35,472	36,437	...	...	...	...	...	...
2006	...	...	...	...	...	32,871	34,148	35,060	35,766	36,891	...	...	...	...	...
2007	...	...	...	...	...	...	33,668	35,096	35,755	36,401	36,944	...	...	...	...
2008	...	...	...	...	...	...	...	34,620	35,441	36,317	36,285	36,787	...	...	...
2009	...	...	...	...	...	...	...	...	34,971	36,200	36,167	36,526	36,964	...	...
2010	...	...	...	...	...	...	...	...	...	35,176	35,714	36,089	36,404	36,569	...
2011	...	...	...	...	...	...	...	...	...	...	35,145	35,325	35,835	36,076	36,054
2012	...	...	...	...	...	...	...	...	...	...	...	35,157	35,470	35,823	35,930
2013	...	...	...	...	...	...	...	...	...	...	...	...	35,213	35,861	35,832
2014	...	...	...	...	...	...	...	...	...	...	...	...	...	35,931	35,971
2015	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36,844

SOURCE: Author's calculations using CWHS data.

NOTES: Sample omits women with wage and salary earnings lower than the level needed to qualify for four quarters of Social Security coverage or higher than the level that represents the top 0.1 percent of earners in the given year.

... = not applicable.

Notes

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¹ Employers submit taxes withheld from employee wages to the IRS and report employee wages to SSA on Form W-2. SSA and IRS share the W-2 data to administer Social Security benefits and the federal income tax, respectively.

² The SSA Office of the Chief Actuary publishes summary statistics on the distribution of net compensation from the MEF for tax years 1989 through 2016 at <https://www.ssa.gov/cgi-bin/netcomp.cgi?year=2016>. For a detailed description of the MEF, see Olsen and Hudson (2009).

³ The CWHS comprises two component files called the active file and the inactive file. The active file contains the earnings records for workers with earnings from any employment (including self-employment), regardless of whether those earnings were covered under Social Security. The inactive file contains records only for workers who have never had covered earnings posted to the MEF. Prior to 1978, the CWHS tracked only covered earnings.

⁴ In 2018, wages in covered employment of up to \$128,400 are taxable. The taxable maximum amount is adjusted annually based on the percentage increase in the national average wage index. For more information, see <https://www.ssa.gov/oact/cola/AWI.html>.

⁵ Leonasio and Del Bene point to data quality problems in the CWHS for 1978–1980 earnings amounts as the main reason for examining earnings only for 1981 and later. (Any errors in the CWHS, a research file, do not affect benefit computations, which are based on the MEF.) They also cite limitations in self-employment (SE) earnings data in the CWHS, noting that “recordkeeping rules for Medicare-taxable earnings imply that the CWHS data for SE earnings are substantially censored in varying degrees prior to 1994, posing considerable problems for researchers.”

⁶ The Bureau of Labor Statistics publishes labor force participation rates in Employment and Earnings Online (<https://www.bls.gov/opub/ee/home.htm>).

⁷ A worker is fully insured for Social Security retirement benefits after he or she has earned 40 quarters of coverage. A worker earns a quarter of coverage when earnings exceed the quarterly amount defined in statute for that year. A worker can earn four quarters of coverage in a single calendar quarter if his or her earnings equal or exceed four times the amount needed to earn a single quarter of coverage. Quarters of coverage sometimes are called “Social Security credits.”

⁸ Although the Consumer Price Index (CPI) is more familiar to the public, it tends to overstate long-term price increases because it measures the price of a fixed basket of

goods. As a result, the CPI fails to capture the full effect of substitution on consumer expenditures. In the PCE index, recent expenditures are weighted more heavily than earlier ones, which is one reason why the PCE index captures the effects of substitution more effectively than the CPI does. For more information, see Velde (2015).

⁹ This refers to the 2015 CWHS active file, as described in note 3.

¹⁰ Throughout this article, age refers to age at year-end.

¹¹ Real earnings rise over time largely because improvements in workers' knowledge, skills, and abilities combine with advances in technology and improved methods of production and distribution to raise labor productivity.

¹² The four recessions, as defined by the National Bureau of Economic Research, were July 1981–November 1982 (16 months), July 1990–March 1991 (8 months), March 2001–November 2001 (8 months), and December 2007–June 2009 (18 months). Expansions occurred December 1982–July 1990 (92 months), March 1991–March 2001 (120 months), November 2001–December 2007 (73 months), and beginning in June 2009. The 1981–2015 observation period began with the final 6 months of a prior contraction and ended with the first 79 months of an expansion that extended beyond year-end 2015.

¹³ I track the 1956 birth cohort seven times; the 1951–1955 and the 1957–1961 birth cohorts six times each; the 1946–1950 and 1962–1966 cohorts five times each; the 1941–1945 and 1967–1971 cohorts four times each; the 1936–1940 and 1972–1976 cohorts three times each; the 1931–1935 and 1977–1981 cohorts twice each; and the 1926–1930 and 1982–1986 cohorts once each. This yields 217 earnings intervals ($[1 \times 7] + [10 \times 6] + [10 \times 5] + [10 \times 4] + [10 \times 3] + [10 \times 2] + [10 \times 1]$) observed for women aged 25 through 59 over the period from 1981 through 2015.

¹⁴ For an alternative data file that combines the values from Chart 5 (Table A-5) through Chart 11 (Table A-11) into a single table, see <https://www.ssa.gov/policy/docs/ssb/v79n1/v79n1p17-alt-table.xlsx>.

¹⁵ For more information on broader measures of compensation, see Pierce (2010).

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THE PREVALENCE OF EMPLOYER-PROVIDED BENEFITS BY INDUSTRY OF EMPLOYMENT AND IMPLICATIONS FOR SOCIAL SECURITY DISABILITY INSURANCE CLAIMING BEHAVIOR

by Özlen D. Luznar and Jackson Costa*

Policymakers seek effective ways to restore or maintain the labor force participation of current and potential Social Security Disability Insurance (DI) beneficiaries. The availability of certain types of employer-provided benefits may affect whether workers with health impairments are able to maintain employment. In this research note, we use National Compensation Survey data to estimate the availability of employer-sponsored health insurance and paid leave by industry. We find that most types of employer-provided benefits were offered to greater shares of state and local government workers than to private-sector workers. However, private short- and long-term disability insurance offerings were more prevalent in the private sector.

Introduction

The two largest federal income assistance programs for individuals with disabilities are Social Security Disability Insurance (DI) and Supplemental Security Income (SSI), both administered by the Social Security Administration (SSA). The Social Security Act defines disability as “the inability to engage in substantial gainful activity (SGA) by reason of any medically determinable physical or mental impairment which can be expected to result in death, or which has lasted or can be expected to last for a continuous period of not less than 12 months.” Although both programs use that definition, their eligibility requirements differ. DI provides cash benefits to workers who leave the labor force because of a mental or physical disability.¹ These individuals have a work history and an earnings record, they have paid Federal Insurance Contributions Act (FICA) taxes, and they are unable to earn at the SGA level because of their disabling condition(s). DI benefits replace some of the earnings lost because of disability. SSI, on the other hand, provides means-tested payments to working-age individuals with low income and few resources who

are not able to work because of disability. Some SSI recipients also qualify for a modest DI benefit.

Applications for DI disabled-worker benefits increased from about 1.3 million in 2000 to a peak of 2.8 million in 2010. About 2.2 million workers applied for DI benefits in 2016 (SSA 2018, Table 60). Various factors may have contributed to the fluctuating trends in DI applications and enrollment over the years, such as changes in the prevalence of employee access to employer-sponsored health insurance (Livermore, Wittenburg, and Neumark 2014). Employers may voluntarily offer health insurance and paid leave to provide their employees with security against unforeseen events that might arise during their productive years. Such benefits offer economic stability for workers and their

Selected Abbreviations

BLS	Bureau of Labor Statistics
DI	Disability Insurance
LTD	long-term disability
NAICS	North American Industry Classification System

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Selected Abbreviations—Continued

NCS	National Compensation Survey
SSA	Social Security Administration
STD	short-term disability

families, which in turn helps to insulate the wider U.S. economy against potential shocks. Employer-provided benefits can be seen as a partnership among businesses, individual workers, and the government, in that employer costs for many such benefits are partially offset by tax advantages. In addition to providing employee benefits voluntarily, employers are obligated to contribute to government-administered programs via taxes. Social Security coverage (for disabled and retired workers and their dependents), unemployment insurance, workers' compensation, and family and medical leave² are, for most jobs, mandatorily provided (Employee Benefit Research Institute 2011, Chapter 1). One would expect to observe little or no variation in the coverage of most workers under these mandatory programs. However, the voluntary provision of employee benefits, such as employer-sponsored health insurance, paid leave, and short- and long-term disability insurance, might vary widely.

Analyzing the potential interactions between elective employer-provided benefits and application for DI benefits can provide useful insights to employers, workers, and policymakers. In this research note, we examine the extent to which employers in different industries offered selected types of health insurance and paid leave to employees and compare those patterns with the industry distribution of DI beneficiaries' last employment. Such statistics could be used to test the assumption that employees who have access to employer-sponsored health insurance and paid leave would use those benefits to delay or forestall a workforce exit because of a disability. Depending on the nature and severity of the disability, access to timely care also could dissuade some workers from filing disability claims (Dement and others 2015; Schimmel Hyde and Livermore 2016).

Background

Several studies have explored the relationship between the health condition of U.S. workers, the availability of health insurance, and DI application volume (Livermore, Stapleton, and O'Toole 2011; Du Bois and Donceel 2008). Salkever and others (2000) study DI beneficiaries who have a mental disorder and examine

the severity of their diagnoses, their sociodemographic characteristics, their access to health care, and their long-term disability (LTD) benefit claiming behavior. The authors observe that LTD claimants may consider several factors in deciding whether to return to work, including the generosity of the LTD benefits, the severity of the disabling condition, and the availability of supplemental compensation. They further observe that workers who leave their jobs because of a severe mental health problem may need ongoing treatment from their providers and adequate supports from employers after they return to work. The authors conclude that greater access to specialized mental health treatment and generous health insurance coverage could reduce the number of disability claims and thereby allow some workers to remain employed or return to work after claiming LTD benefits. Nonetheless, for some workers with severe mental health conditions, DI application may be inevitable.

Schimmel Hyde and Livermore (2016) assess the effect of the Affordable Care Act (ACA) of 2010 on timely access to health care among employed individuals with work-limiting disabilities. The authors find that many disabled workers work part-time or intermittently, which makes them ineligible for employer-sponsored health insurance and other benefits. Although the ACA expanded access to health insurance, the authors find that disabled workers have greater difficulty obtaining timely health care than individuals without work-limiting conditions. The authors note that disabled workers' timely access to health care may need to be reexamined now that the ACA is fully implemented.

O'Leary, Walker, and Roessel (2015) present a table that reports the distribution of DI disabled-worker beneficiaries in 2013 by industry of last employment. The authors identify industries using North American Industry Classification System (NAICS) designations.³ We reprint that table here as Table 1, which shows that most of the beneficiaries in 2013 had previously worked in the services, retail trade, or manufacturing industries. The least common industries of previous employment among 2013 DI beneficiaries were wholesale trade, mining, and public administration.⁴ It is worth noting that the availability, variety, and generosity of health insurance and paid leave benefits vary across industries. Knowledge of these variations in employer-provided benefits may help researchers to better understand the composition of the DI beneficiary population and may improve efforts to help workers with impairments.

Table 1.**DI disabled-worker beneficiaries in 2013: Percentage distribution by industry of last employment, with detail by sex and summary comparisons to total employment in 2002 and 2012**

Industry	Disabled workers (2013)			Total employment	
	Men	Women	Total	2002	2012
Agriculture, forestry, and fishing	3.7	1.2	2.5	1.7	1.5
Mining	1.1	0.1	0.6	0.4	0.6
Construction	7.8	0.7	4.4	5.0	4.1
Manufacturing	15.3	9.2	12.4	11.4	8.7
Transportation, communications, electric, gas, and sanitation	6.9	3.3	5.1	3.6	3.6
Wholesale trade	3.5	1.9	2.7	4.2	4.2
Retail trade	16.2	19.4	17.8	11.3	10.9
Finance, insurance, and real estate	6.2	8.1	7.1	5.9	5.7
Services	38.6	55.6	46.8	40.3	44.6
Hotels, rooming houses, camps, and other lodging places	1.2	2.3	1.7	a	a
Personal services	0.7	1.6	1.1	a	a
Business services	12.9	11.3	12.1	a	a
Automotive and miscellaneous repair services and parking	3.2	1.3	2.3	a	a
Amusement, recreation, parks, and museums	3.5	3.5	3.5	a	a
Health services	4.2	16.3	10.1	a	a
Legal services	0.2	0.8	0.5	a	a
Educational services	1.9	3.6	2.7	a	a
Social services	2.7	5.8	4.2	a	a
Membership organizations	1.2	1.6	1.4	a	a
Engineering, accounting, research, management, and related services	3.8	4.3	4.1	a	a
Miscellaneous services	3.0	3.4	3.2	a	a
Public administration	0.6	0.6	0.6	16.1	16.1

SOURCE: Reprinted from O'Leary, Walker, and Roessel (2015, Table 3); based on SSA 2013 Disability Analysis File, SSA 2012 Continuous Work History Sample, and Bureau of Labor Statistics (2013).

NOTES: "Industry of last employment" reflects the most recent job (within 10 years) prior to the date of current eligibility for disabled-worker benefits. If a beneficiary worked more than one job in the most recent year, the highest-paying of those jobs determines the industry.

Calculations include adjustments to account for slight interagency differences in industry category definitions as well as to intra-agency revisions to those definitions over time.

Rounded components of percentage distributions do not necessarily sum to 100.0.

a. Inconsistencies in the service-industry subcategory definitions used by SSA and the Bureau of Labor Statistics (and between those used by the Bureau of Labor Statistics in 2002 and in 2012) prevent useful cross-column comparisons.

We extend the findings of O'Leary, Walker, and Roessel (2015) by presenting estimates of the prevalence of employer-sponsored health insurance and paid leave benefits by NAICS industry sector. In 2016, more than 2.2 million workers applied for DI benefits claiming a qualifying medical condition preventing them from working, and nearly 500,000 applicants were awarded benefits (SSA 2018, Table 60). To what extent might access to employer-sponsored health insurance and paid leave affect DI application rates? Some researchers and advocates suggest that increased availability of health insurance and paid leave increases the likelihood that employees receive adequate preventive and routine care, keeping them healthier for the duration of their working years.

Workers with such access would presumably be better able to remain productive, maintain a higher standard of living, and avoid applying for DI or public welfare programs (Stapleton and others 2006). If workers are healthier, the DI award rate might decrease as well. Additionally, workers who have access to paid (or unpaid) leave are better positioned to keep their jobs through a prolonged absence caused by a medical condition.

We examine four types of health insurance: medical, prescription drug, dental, and vision coverage. We likewise examine four categories of paid leave: sick; personal; "other," comprising paid time off for funerals, military service, or jury duty; and "any," which

includes all types in the preceding three categories as well as paid holidays and vacations. We also present data on access to private short-term disability (STD) and LTD insurance plans.

Data and Methodology

Under the authority of an interagency agreement between SSA and the Bureau of Labor Statistics (BLS), we use data collected by BLS in the 2013 National Compensation Survey (NCS). The NCS is a voluntary establishment-based survey that produces nationally representative estimates of employer-provided benefit availability, provisions, and costs. NCS respondents include private-sector employers from each NAICS industry sector except the agriculture, forestry, and fishing sector. The NCS also includes public-sector employers at the state and local level but excludes the federal government (Pierce 1999).^{5,6}

Our variables of interest are industry of employment, identified by 2-digit NAICS code; whether the employer is a private-sector establishment, a state government, or a local government; and the availability of four types of health insurance, four categories of paid leave, and private STD and LTD insurance for employees. Although the NCS excludes

the agriculture, forestry, and fishing sector, the scope of our industry coverage is otherwise consistent with that of O’Leary, Walker, and Roessel (2015), which accounts for most but not all U.S. employment. Note that our industry-level results do not correspond directly with those in O’Leary, Walker, and Roessel (2015). Those authors used administrative records from SSA as their primary data sources while we use the NCS. In addition, the level of detail in the industry designations differ in some instances between their study and ours.

Our data set covers 28,065 establishments in local government, state government, and the private sector. To make our estimates nationally representative, we use BLS sample weights in our statistical analysis. To eliminate the possibility of identifying individual survey respondents from the estimates, BLS suppressed data in some instances prior to our analysis.

Results

Table 2 presents the distribution of the employees of the respondent establishments in our sample by employer type, with detail for full- and part-time workers. Most of the employees reported by the sample establishments worked in the private

Table 2.
Employment in NCS respondent establishments: Full- and part-time workers, by employer type, 2013

Employer type	NAICS code	All workers		Full time	Part time	Percentage full time
		Number	Percentage distribution			
Total	...	28,065	100.0	24,195	3,870	86.2
Local government	...	946	3.4	922	24	97.5
State government	...	2,185	7.8	1,916	269	87.7
Private sector	...	24,934	88.8	21,357	3,577	85.7
Industry						
Mining	21	262	0.9	259	3	98.9
Construction	23	2,022	7.2	1,921	101	95.0
Manufacturing	31–33	6,725	24.0	6,623	102	98.5
Wholesale trade	42	1,619	5.8	1,526	93	94.3
Retail trade	44–45	5,390	19.2	2,921	2,469	54.2
Transportation, communications, and utilities	48–49	1,515	5.4	1,240	275	81.8
Finance, insurance, and real estate	52	6,831	24.3	6,516	315	95.4
Services	81	821	2.9	572	249	69.7
Public administration	92	2,880	10.3	2,617	263	90.9

SOURCE: Authors' calculations based on the 2013 NCS.

NOTES: The NCS does not cover the agriculture, forestry, and fishing sector (NAICS code 11) or the federal government.

Employment in public administration (NAICS code 92) does not equal the sum of employment in local and state government. The NCS may code certain government employees according to job tasks or responsibilities that are typically associated with a particular private-sector industry.

... = not applicable.

sector (88.8 percent). State governments employed 7.8 percent of the sample and local governments employed the remaining 3.4 percent. Full-time workers dominated nearly every subgroup in the sample. Almost 98 percent of local government employees worked full time in 2013. Among state government and private-sector employees, about 88 percent and 86 percent, respectively, worked full time. More than two-thirds of employees in the sample worked in one of three industries: finance, insurance, and real estate (24.3 percent); manufacturing (24.0 percent); and retail trade (19.2 percent).

Table 3 shows the proportions of workers who had access in 2013 to various types of employer-provided benefits in state and local government and the private sector. For each type of health insurance, the proportions were highest for state government workers and were lowest for private-sector workers. For example, 97.3 percent of state government workers had access to medical insurance, whereas only 83.2 percent of local government workers and 76.9 percent of private industry workers had such access. Prescription drug coverage was nearly as prevalent as medical coverage for all three employer types. Dental insurance was available to 63.5 percent of state government workers, 61.7 percent of local government workers, and 50.7 percent of private-sector workers. Among the types of health insurance, vision benefits were the least prevalent (47.3 percent or lower).

The patterns of access to paid leave were similar to those for health insurance, with the proportions highest for state government workers and lowest for

private-sector workers. About 98 percent of state government workers had access to sick or other paid leave in 2013, a proportion no lower than that for access to *any* type of paid leave. The proportions of private-sector workers with access to sick leave, other leave, and any leave were 84.4 percent, 74.9 percent, and 90.3 percent, respectively. Access to private STD and LTD insurance was much lower than access to almost all the other benefit types. Among state government workers, only 29.3 percent had access to STD insurance and 30.8 percent had access to LTD insurance. The respective access rates for local government workers were comparable, at 24.8 percent and 31.3 percent. Private-sector workers had the highest access rates, at 45.3 percent and 34.2 percent, respectively.

O’Leary, Walker, and Roessel (2015) reported that 46.8 percent of 2013 DI disabled-worker beneficiaries had last worked in the services industry, which accounted for 44.6 percent of total employment in 2012. However, only 0.6 percent of DI beneficiaries had worked in public administration, in stark contrast with that industry’s 16.1 percent share of total employment in 2012. Variations in the industry-of-employment distributions of current workers and of disabled-worker beneficiaries—and the causes of those variations—are of research interest. Different levels of access to health insurance, paid leave, and private disability insurance for employees across industries may be one of the factors. As a preliminary exploration, we present the proportions of workers with access to employer-sponsored health and leave benefits, by industry sector and selected subsector,⁷ in Tables 4 and 5.

Table 3.
Percentage of workers with access to selected benefits, by employer type, 2013

Benefit type	State government	Local government	Private sector
Health insurance			
Medical	97.3	83.2	76.9
Prescription drugs	93.9	81.2	75.4
Dental	63.5	61.7	50.7
Vision	47.3	44.6	25.2
Paid leave			
Any (holiday, vacation, sick, personal, or other leave)	98.1	91.9	90.3
Sick	97.9	88.3	84.4
Personal	66.2	47.5	37.2
Other (leave for funerals, military service, or jury duty)	98.0	89.7	74.9
STD insurance	29.3	24.8	45.3
LTD insurance	30.8	31.3	34.2

SOURCE: Authors' calculations based on 2013 NCS.

Table 4 covers access to health insurance in 2013. Regardless of industry, access to medical insurance was the most prevalent, followed in descending order by access to prescription drug, dental, and vision coverage.

The industry sectors in which employers were most likely to offer medical coverage were mining; manufacturing; and finance, insurance, and real estate. Medical coverage was available to about 92 percent of employees in each of those NAICS sectors.⁸ Workers in the services and retail trade industry sectors were the least likely to have access to medical coverage, at 49.5 percent and 60.7 percent, respectively.⁹ Access to prescription drug coverage ranged from 91.6 percent for workers in the finance, insurance, and real estate sector to 48.3 percent in the services sector.¹⁰ The

availability of dental insurance ranged from a high of 75.4 percent for workers in the finance, insurance, and real estate industry to a low of 27.9 percent for workers in the services industry. The industry sector with the highest proportion of workers who had access to vision coverage (45.0 percent) was public administration.¹¹ The retail trade industry sector offered vision coverage to 14.6 percent of its workers, the lowest sector-level access rate.¹²

Table 5 covers paid leave and private disability insurance. By definition, access to any leave equals or exceeds access to the specific types of leave. Access to any paid leave ranged from 98.5 percent of workers in the manufacturing sector to 79.1 percent for services sector workers.¹³ In all industries, sick leave was available to greater shares of workers than was

Table 4.
Percentage of workers with access to health insurance, by coverage type and selected NAICS industry sector and subsector, 2013

Industry sector and subsector	NAICS code	Medical	Prescription drugs	Dental	Vision
Mining	21	91.5	89.7	62.5	24.3
Construction	23	70.8	68.7	39.4	25.3
Manufacturing	31–33	92.3	90.5	63.6	35.6
Food, beverage, and tobacco products; textiles; apparel; and leather and allied products	31	87.5	83.8	60.2	34.3
Wood, paper, and printing and related support; petroleum and coal; chemicals, plastics, and rubber products; and nonmetallic mineral products	32	90.6	88.8	59.7	26.5
Primary metals; fabricated metals; machinery; computer and electronic products; electrical equipment; appliances and components; transportation equipment; furniture; and miscellaneous	33	94.5	93.3	66.3	39.5
Wholesale trade	42	86.6	84.6	51.1	28.0
Retail trade	44–45	60.7	59.0	37.3	14.6
Motor vehicles and parts; furniture and home furnishings; electronics and appliances; building materials and garden equipment and supplies; food and beverages; health and personal care items; gasoline; and clothing	44	56.5	54.9	32.7	17.1
Sporting goods; general merchandise; and miscellaneous and nonstore retail	45	68.3	66.6	45.9	9.9
Transportation, communications, and utilities	48–49	84.0	83.2	58.1	31.9
Air; rail; water; truck; transit and other ground passenger service; pipelines; scenic and sightseeing tours; and support activities	48	77.6	77.0	51.4	21.5
Postal service; couriers and messengers; and warehousing and storage	49	98.1	97.3	73.1	55.1
Finance, insurance, and real estate	52	92.5	91.6	75.4	29.2
Services	81	49.5	48.3	27.9	16.9
Public administration	92	88.3	86.0	62.2	45.0

SOURCE: Authors' calculations based on 2013 NCS.

NOTES: The NCS does not cover the agriculture, forestry, and fishing sector (NAICS code 11) or the federal government.

For consistency with O'Leary, Walker, and Roessel (2015, Table 3), certain NAICS industry sectors are omitted.

Table 5.**Percentage of workers with access to paid leave and private disability insurance, by type and selected NAICS industry sector and subsector, 2013**

Industry sector and subsector	NAICS code	Paid leave				STD insurance	LTD insurance
		Any ^a	Sick	Personal	Other ^b		
Mining	21	96.0	95.5	21.1	83.6	60.3	60.2
Construction	23	86.7	72.9	18.6	51.3	29.2	18.4
Manufacturing	31–33	98.5	96.6	38.1	87.8	63.2	44.5
Food, beverage, and tobacco products; textiles; apparel; and leather and allied products	31	95.9	92.9	27.3	77.9	56.5	31.4
Wood, paper, and printing and related support; petroleum and coal; chemicals, plastics, and rubber products; and nonmetallic mineral products	32	(X)	97.0	35.4	87.4	62.1	46.6
Primary metals; fabricated metals; machinery; computer and electronic products; electrical equipment; appliances and components; transportation equipment; furniture; and miscellaneous	33	(X)	97.6	42.6	91.1	65.9	47.9
Wholesale trade	42	95.7	92.4	38.9	81.5	50.4	44.2
Retail trade	44–45	80.8	71.2	30.7	64.4	26.1	14.6
Motor vehicles and parts; furniture and home furnishings; electronics and appliances; building materials and garden equipment and supplies; food and beverages; health and personal care items; gasoline; and clothing	44	83.3	72.9	26.5	62.9	29.5	17.1
Sporting goods; general merchandise; and miscellaneous and nonstore retail	45	76.0	68.2	38.5	67.3	19.9	10.1
Transportation, communications, and utilities	48–49	94.4	89.4	47.8	82.5	47.1	36.1
Air; rail; water; truck; transit and other ground passenger service; pipelines; scenic and sightseeing tours; and support activities	48	93.0	86.3	35.0	77.1	37.0	32.5
Postal service; couriers and messengers; and warehousing and storage	49	97.7	96.4	76.3	94.7	69.8	44.0
Finance, insurance, and real estate	52	(X)	97.7	67.2	95.1	72.4	74.5
Services	81	79.1	72.6	30.2	57.3	27.4	17.3
Public administration	92	93.7	91.4	53.7	93.1	26.0	30.2

SOURCE: Authors' calculations based on 2013 NCS.

NOTES: The NCS does not cover the agriculture, forestry, and fishing sector (NAICS code 11) or the federal government.

For consistency with O'Leary, Walker, and Roessel (2015, Table 3), certain NAICS industry sectors are omitted.

(X) = suppressed by BLS to prevent possible disclosure of information about specific respondents.

a. Holiday, vacation, sick, personal, or other leave.

b. Leave for funerals, military service, or jury duty.

personal leave. More than 90 percent of employees in the following industries had access to sick leave: finance, insurance, and real estate (97.7 percent); manufacturing (96.6 percent), including each of the three NAICS subsectors of the manufacturing sector; mining (95.5 percent); wholesale trade (92.4 percent); and public administration (91.4 percent).¹⁴ Workers in the finance, insurance, and real estate industry sector had the most access to personal leave (67.2 percent)¹⁵ and those in the construction sector had the least (18.6 percent).

Access to STD and LTD benefits may delay or lower the likelihood of a worker's application for DI benefits. For many workers, DI might be the only potential source of income if a disability requires an extended absence from work. However, if a worker has enrolled in employer-sponsored disability insurance, he or she may choose not to apply for DI. In 2013, employees in the finance, insurance, and real estate industry sector had the highest rate of access to both STD and LTD insurance (72.4 percent and 74.5 percent, respectively). Employees in the construction, services, and retail trade industry sectors had among the lowest rates of access to STD and LTD insurance.

Conclusion

Our analysis of the 2013 NCS provides descriptive statistics on the availability of employer-sponsored health insurance and paid leave benefits by NAICS industry sector. We find that greater proportions of state and local government employees had access to medical, dental, and vision benefits than private-sector workers, yet the latter had greater access to LTD and STD insurance. Access to certain types of benefits varied widely across industries. Among benefit types, vision coverage, STD insurance, and LTD insurance were the least commonly offered. We believe this finding is important because workers might have to rely on STD or LTD benefits to retain employment while addressing a temporary health-related work limitation. If such benefits are not widely available, workers may be more likely to apply for DI benefits. This may account for higher-than-average DI application rates among workers in certain industries. The potential relationship between the availability of STD and LTD insurance and DI application is worth further exploration.

This note provides preliminary steps toward understanding the potential relationship between workers' access to health and leave benefits and their likelihood of DI application. Between O'Leary, Walker,

and Roessel (2015) and this study, the statistics reveal differences by industry in both the access to employer-provided benefits and the prevalence of DI beneficiary status. Whether those two differences are coincidental or related is a subject for future studies.

Notes

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¹ Under certain circumstances, family members of workers may also be eligible for DI benefits.

² The Family and Medical Leave Act (FMLA) of 1993 requires employers to offer leave to qualifying employees, but such leave can be unpaid. The law permits an employee to elect, or the employer to require the employee, to use accrued paid leave (such as vacation or sick leave) for some or all of the FMLA-covered period.

³ The NAICS is the standard system used by the federal statistical agencies of the United States, Canada, and Mexico. For a full description, see Census Bureau (2018).

⁴ Not all public-sector employees are covered under Social Security. For example, federal employees hired before 1984 are covered under the Civil Service Retirement System and not Social Security (unless they opted to convert to the Federal Employee Retirement System) and thus may not be eligible for DI. This may partially explain the low proportion of DI beneficiaries who had worked in public administration.

⁵ The NCS omits the federal government because the Office of Personnel Management (OPM, the federal "employer" agency) uses BLS data to determine federal compensation costs (including benefits). Thus, a BLS survey of OPM's costs would essentially collect BLS' own data.

⁶ For more information on the NCS, see <https://www.bls.gov/ncs/home.htm>.

⁷ "Industry sector and subsector" is NAICS nomenclature; this use of "sector" should not be confused with the broader "public sector" and "private sector" contexts.

⁸ More than 98 percent of workers in the transportation, communications, and utilities industry subsector of NAICS code 49 had access to medical coverage, as did 94.5 percent of workers in the manufacturing industry subsector of NAICS code 33.

⁹ Almost 57 percent of workers in the retail trade industry subsector of NAICS code 44 had access to medical coverage.

¹⁰ More than 97 percent of workers in the transportation, communications, and utilities industry subsector of NAICS code 49 had access to prescription drug coverage, as did

93.3 percent of workers in the manufacturing industry subsector of NAICS code 33.

¹¹ About 55 percent of workers in the transportation, communications, and utilities industry subsector of NAICS code 49 had access to vision coverage.

¹² Only 9.9 percent of workers in the retail trade industry subsector of NAICS code 45 had access to vision coverage.

¹³ Paid leave of any kind was available to only 76.0 percent of workers in the retail trade industry subsector of NAICS code 45.

¹⁴ Sick leave also was offered to 96.4 percent of workers in the transportation, communications, and utilities industry subsector of NAICS code 49.

¹⁵ About 76 percent of workers in the transportation, communications, and utilities industry subsector of NAICS code 49 had access to paid personal leave.

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