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LIST OF ACRONYMS

AARP	American Association of Retired Persons
ACA	Affordable Care Act
ADEA	Age Discrimination in Employment Act
ADA	Americans with Disabilities Act
ARRA	American Recovery and Reinvestment Act
AWI	Aging Worker Initiative
BLS	Bureau of Labor Statistics
CPS	Current Population Survey
CWHS	Continuous Work History Sample
DI	Disability insurance
EEOC	Equal Employment Opportunity Commission
EER	Entered employment rate
EPUF	Earnings Public-Use File
FRA	Full retirement age
HRS	Health and Retirement Study
IRA	Individual retirement account
JSA	Job search assistance
LEHD	Longitudinal Employer-Household Dynamics (Census Bureau)
LFPR	Labor force participation rate
LTU	Long-term unemployment
NLSY	National Longitudinal Survey of Youth
OASDI	Old-Age, Survivors, and Disability Insurance
OECD	Organization for Economic Cooperation and Development
OPM	Office of Personnel Management
QWI	LEHD Quarterly Wage Indicators
SIPP	Survey of Income and Program Participation
SMOE	Specific measure for older employees
SNAP	Supplemental Nutrition Assistance Program
SSA	Social Security Administration
SSDI	Social Security Disability Insurance
SSI	Supplemental Security Income
TAA	Trade Adjustment Assistance
UI	Unemployment insurance
USDOL	United States Department of Labor
WIA	Workforce Investment Act
WIOA	Workforce Investment Opportunity Act

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EXECUTIVE SUMMARY

Labor force participation and the characteristics of older American workers (aged 55 and over) have changed a great deal since the mid-1930s, reflecting changes in the broader labor force. No longer are men the sole supporters of their families, working in jobs that require physical labor and expecting to fully retire by age 65. During and after World War II, women surged into the labor force. Health and life expectancy have increased, especially for more educated workers.

More recently, older workers considering retirement are facing a tough economic climate in the wake of the Great Recession. Many have experienced reductions in compensation and job losses during this period. These changes coupled with declining home values, investment losses, and high debt have undermined retirement plans and expectations. As a result, older workers are increasingly postponing retirement, or returning to the labor force after initially retiring.

The literature review presented in this report examines supply- and demand-side factors that affect older workers' labor force participation and labor market outcomes more generally. Supply-side factors include individuals' socioeconomic and demographic characteristics, government assistance programs and Social Security benefits, and public workforce programs. Demand-side considerations comprise older workers' productivity and training, and employers' preferences and discrimination against older workers.

This report informs policymakers about the current state of research in this area, emphasizing research conducted from 2010 to 2015. It synthesizes the recent research and highlights the research gaps that remain. The focus is on workforce behaviors among older workers, the barriers they face in the workplace, and the policies and programs that may help them and improve their labor market outcomes. The research review presented here is intended to be useful to government agencies that support older workers in crafting effective policies directed toward these workers.

A. Findings

During the period 2010–2015, older workers' labor force participation received a great deal of research attention, spurred by the sharp increase in older workers' employment over the past two decades. In this literature review, we examined selected recent research on the characteristics of older workers and the factors that affect their labor supply, demand for older workers' labor, and workers' retirement decisions. Below we synthesize, by thematic area, the salient findings based on the review, in response to our original research questions.

A.1 Increasing Labor Force Participation Among Older Workers

According to Bureau of Labor Statistics (BLS) data, individuals aged 55 and over have increased their labor force participation in the past 20 years, and are projected to continue to do so over the next 10 years. Labor force participation among women aged 55 to 61 has increased even faster than among same-aged men, and this trend is projected to continue into the next decade.

Understanding the driving forces behind these trends is a complex question that has not been studied holistically in the literature. Overall, predictors of labor force participation among older individuals—discussed more fully in Chapter 5—are related to financial security in retirement. The literature identifies the following factors related to labor force participation among older workers:

- Rising educational attainment and better health status
- Lower overall wealth and savings levels
- Divorce, especially for women
- Lower availability of defined benefit pension plans
- Reforms that lower Social Security benefits (e.g., increases in the full retirement age)
- Lack of health insurance outside employer-sponsored coverage

Another suggested reason for the increased labor force participation of older workers is the changes in job composition and technology in recent years. Case studies from European countries find that older individuals are more likely to remain in the labor force after firms experience technical and organizational changes. The effects and interaction of these two forces on older workers' labor market attachment have yet to be rigorously studied, but shifts in the employment landscape provide important context for understanding older worker decision-making.

Other reasons for older workers leaving the labor force include:

- Lifestyle (sharing in retirement with a spouse, especially the retirement of husbands)
- Caregiving (by women for elderly relatives or grandchildren)
- Personal issues (health issues, working in physically demanding jobs)

A.2 Increasingly Complex Transitions to Retirement

Labor Force Transition Concepts

- ***Career jobs*** are full-time, full-year jobs held for a long period of time. They are sometimes defined as a worker's longest spell of employment with a single firm.
- ***Bridge jobs*** are usually part-time, part-year, or short-term jobs that workers engage in between a full-time career job and withdrawal from the labor force.
- ***Phased retirement*** is generally continued employment at a career job, with hours reduced from full-time work as a transition to retirement. Phased retirement represents a "bridge" to retirement while remaining with a career employer.
- ***Reentry jobs*** follow a period of full retirement. They are bridge jobs in the sense that they are a bridge to re-retirement.
- ***Retirement*** is a period following career employment during which there is no labor force participation. It can be permanent or temporary.

In addition to longer labor force participation, older workers now transition through their working lives in more complex ways. A number of studies show that retirement decisions are no longer a single, one-time event. Rather, retirement is a gradual transition out of the labor force:

- **Bridge employment is on the rise.** Between 1960 and 2010, the prevalence rate of 60 to 62-year-olds in bridge jobs rose from near zero at the beginning of the period to more than 15 percent during the period from 1990 to 2010. For 65 to 67-year-olds, the rate reached 20 percent in 2010.
- **Reentry jobs are more common.** For a great majority of retirees in recent years, return to work is planned and not a result of inadequate planning, insufficient wealth, or financial shocks.
- **Career transitions after age 50 have become increasingly common.** Many older workers have been successful in making those transitions, particularly when they can leverage skills and qualifications they already have to land new career jobs.
- **The likelihood of a worker becoming self-employed increases with age.** The findings from the research are not consistent, however, about whether transitioning to self-employment is increasing over time.
- **Employer-sponsored phased retirement has not received widespread implementation in the United States.** This may be due in part to the misalignment in federal and state laws and regulations. However, the federal government began implementing phased retirement for federal employees in 2014.

Since these complex transitions into retirement are recent events, the literature has yet to fully understand the driving forces behind them. Nonetheless, the evidence to date suggests the following:

- **Employer-provided defined benefit pension plans** increase the likelihood of moving to part-time work and to full retirement.
- **Employer-sponsored health insurance** increases the likelihood of remaining in full-time work and reduces the likelihood of full retirement.
- **Macroeconomic conditions** affect the timing of retirement, in particular, variations in the unemployment rate, inflation, and housing prices.

A.3 Greater Difficulty in Rebounding from Economic Shocks

Economic shocks and subsequent unemployment spells affect older workers more severely than younger workers. Older workers:

- Suffer more severe effects from displacement
- Have weaker job search skills
- Return to work more slowly

- Find it more difficult to return to prior wage levels
- Experience larger wage losses as union workers

In particular, labor market shocks have a noticeable effect on the timing of older workers' Social Security benefit claims:

- Shocks to the economy accelerate the claiming of benefits at the earliest age.
- Early Social Security claimers are more likely to experience a systematic decline in earnings in the years prior to reaching 62 years of age.
- Severe negative changes to the economy experienced between ages 58 and 62 increase the likelihood of claiming Social Security at ages 62–64.

Effects of the Great Recession on Older Workers

- Older workers, like younger ones, saw increases in their unemployment rates to levels not seen during any other recessionary period since World War II.
- The Great Recession increased the duration of unemployment more severely for older workers than for their younger counterparts. It also had a greater negative impact on the duration of unemployment of working older women than on men.
- Financial hardships increased for older workers during the Great Recession, due to declining housing prices, depleted personal savings, and ever-increasing consumer debt.
- The Great Recession had a much larger negative effect on 401(k) participants' behavior than did the prior two recessions (1990–1991 and 2001), with declines in retirement plan participation and contributions.
- However, older workers have seen their labor force participation increase since the onset of the Great Recession. This is in sharp contrast to prime-age workers, who experienced declines in labor force participation rates.

A.4 Issues in the Public Workforce System

The public workforce system in the United States has served, and continues to serve, as an important tool in mitigating the effects of temporary job loss. However, older workers do not make use of training offered by the public workforce system as much as other age groups. This underuse is particularly worrisome because older workers tend to have weaker job searching skills than their younger counterparts—at least in part because they tend not to have searched for work for in a long time and do not take advantage of online job search capabilities.

Studies have identified several issues related to serving older workers within the public workforce system:

- The public workforce system program underserves older workers in proportion to their representation in the labor force.
- Older workers who receive public workforce system-funded training were likely to receive credentials at a rate equal to or greater than younger workers.
- However, older workers who participated in the program and received services had some success at becoming employed, though to a lesser degree than younger workers.

A.5 Receipt of Social Security, Disability Insurance, and Health Insurance Increases the Likelihood of Retirement

Federal programs have an important influence on the labor supply of older workers. In particular, the Social Security program has adapted to accommodate the growing trend among workers who extend their working lives beyond the traditional age of retirement. The literature reviewed indicates that:

- Raising the full retirement age (FRA) has increased labor force participation among older workers.
- Reductions in Social Security benefits would induce older individuals to work more hours in retirement, even those who are well into their 70s and 80s.
- According to a study that simulates a policy counterfactual scenario, raising the early retirement age would reduce retirement rates more than raising the FRA.
- The same study suggests that increasing the FRA and early eligibility age without commensurate financial protections would push up to a million seniors into poverty.

Similarly, the literature has suggested that changes in the availability of Social Security Disability Insurance (DI) and health insurance coverage have also increased older workers' labor force participation. For example, Medicare eligibility increases the likelihood of prompt retirement at age 65 for workers not eligible for employer-sponsored insurance. In addition, an increasing percentage of older workers in the United States make use of the DI program in their transition to retirement.

A.6 Personal Finances, Health Conditions, and Socioeconomic Characteristics Determine Older Workers' Labor Market Outcomes

The labor market experiences of older workers are shaped by many individual factors that ultimately determine how older American workers make their work and retirement decisions. These include:

- **Personal Finances.** An individual's economic situation is an important factor for retirement decisions. The generation now facing retirement is less prepared to maintain its pre-retirement standard of living than were previous generations. This suggests that older individuals will have longer working lives.

- **Health Conditions.** As individuals age, health limitations and factors associated with health, such as private health insurance, become highly relevant to an individual's decision to work or retire. In particular, workers experiencing a medical work limitation after age 50 had significantly lower wages. Their poverty rates nearly doubled, and cash benefit programs only slightly offset their earnings loss.
- **Socioeconomic Characteristics.** Educational attainment, household composition, and family caregiving responsibilities are the key socioeconomic influences on the labor force participation of older workers. For example, educational advancement has played a major role in the workforce success of older Americans. Also, the retirement decisions of husbands and wives are influenced by the relative health insurance and retirement programs available to each.

A.7 Labor Demand Studies Indicate Little Difference in Productivity by Age

The majority of the demand-side literature on older workers has used datasets from countries in Europe. The following conclusions were drawn from these studies:

- Worker productivity is less associated with age than with education and skills. As a result, employers have greater demand for older workers who are more highly educated and have valuable skills.
- Multiple studies agree with the general conclusion that older workers' productivity is not lower than that of younger workers. Some work abilities decline with age, but these declining abilities may be offset by experience. For example, work teams that include older workers (aged 55 and over) seem to increase team productivity.
- Technology proficiency among older workers is not an area of research consensus. Although some studies observed that innovation is lower for firms with a higher share of older workers, other studies have found that (1) training older workers in the relevant technologies effectively reduced the observed decline in productivity with age, and (2) it is not the presence of older workers but the presence of untrained older workers that reduces firms' innovative capabilities.

However, generalizing the results from these studies to the U.S. context should be done with caution. For example, European countries have broader social protections overall for older individuals, and labor rights are more regulated in Europe than in the United States.

B. Recommendations for Supporting Evidence-Based Policy

The research team has provided a set of policy recommendations based on the literature review and the findings uncovered in this report. We also identified critical knowledge gaps that warrant attention from policymakers and researchers alike. These recommendations and other research gaps are discussed more fully in Chapter 7.

- **Examine the impact of recent national policies on older workers' employment and retirement decisions.** For example, the passage of the Affordable Care Act (ACA) provides

ripe opportunities for studies of the impact of providing health insurance to previously uninsured workers on workers' labor supply and employers' labor demand decisions. Also useful to investigate is the impact that paid family/worker leave would have on older workers, particularly the provision that allows paid time off to care for parents.

- **Conduct More Tailored Research on Demand-Side Issues**. As is further detailed in Chapter 6, there is a paucity of demand-side research that explains why employers and firms hire and retain older workers. For example, do older workers have the skills employers demand? What is the best mode of training delivery? This research gap is of particular concern because the American population is aging rapidly.
- **Address Data Shortcomings.** Data collection on older individuals is limited, making it difficult to analyze how programs affect older workers. Many studies make use of the Health and Retirement Study (HRS) as a data source. However, the two-year gap between waves creates long lags for longitudinal analyses. This issue hinders further analysis on labor force transitions for older workers, who do not exhibit linear transitions between working and retirement. Also, the HRS gathers yearly information, as opposed to quarterly or monthly information. This is particularly problematic for studying the effects of aggregate changes (for example, the Great Recession) on older workers' behaviors—how quickly they are affected and how they may respond to these events.
- **Increase Access to Captive Databases.** Further studies can be pursued once additional data are made available for use by the wider research community. For example, the United States has two useful longitudinal employer–employee linked datasets: the Census Longitudinal Employer Household Dynamics (LEHD) data and the Social Security Continuous Work History Sample. However, both datasets are "captive"—they can be used only by Census Bureau and Social Security Administration employees due to confidentiality and disclosure concerns.

1. OLDER WORKERS IN THE UNITED STATES: STATUS, TRENDS, AND MEASUREMENT

1.1 Introduction

The U.S. population is expected to age rapidly in the near future. In 2015, 15 percent of Americans were 65 or older; this proportion is expected to increase to 20 percent by 2030 (Colby and Ortman, 2014). As a result of the large and growing proportion of older Americans, policymakers must ensure that effective strategies and policies are in place to support the complex issues facing older Americans. To help identify factors that influence older workers' labor market participation and contribution to the economy, the U.S. Department of Labor (USDOL) contracted with IMPAQ International to conduct the study *Labor Market and DOL-Funded Employment Assistance for Older Workers.* This project has two parts: (1) a review of the recent literature, and (2) a rigorous statistical analysis, using the March Current Population Survey (CPS) data from 2006 to 2015.

The overall goal of the project is to summarize what is known—and highlight the research gaps that remain—about the workforce behaviors of older workers, the barriers they face in the workplace, and the policies and programs that can most effectively help them improve their working lives and labor market success. Throughout this report, older workers are defined as individuals aged 55 and over who participate in the labor market.[1]

This first report summarizes the findings from the literature review—focusing primarily on research conducted over the past five years, but including selected earlier studies that remain particularly salient. In Chapter 1, we present the key research questions guiding the study and summarize the current labor market situation of older workers compared to prime-age workers (defined as workers aged 30 to 45). This chapter also discusses the implication of these trends for the future. Chapter 2 examines older workers' transitions between different types of employment and from employment to retirement. Chapter 3 addresses labor supply issues—the impacts of unemployment on older workers and the effectiveness of public workforce programs in reducing the incidence and rate of unemployment among this group. Chapter 4 reviews social safety net programs and policies affecting labor market decisions, including Social Security, disability insurance, Medicaid, and Medicare, as well as federal tax policy. Chapter 5 analyzes personal and household characteristics affecting older workers' labor market decisions. Chapter 6 examines labor market dynamics that may influence employers' demand for older, rather than younger workers. Chapter 7 presents the conclusions and recommendations derived from the review. Appendix A describes the most important datasets used in research on older workers. Appendix B provides details about the publications reviewed in this report, including bibliographical information, the methodology used (e.g., descriptive or multivariate regression), type of data (e.g., longitudinal or cross-sectional), and year(s) for which data are provided for some selected papers.

[1] It should be noted that this definition varies across studies and the datasets available.

1.2 Research Questions

Exhibit 1.1 lists the research questions that are the focus of the study, grouped into supply-side and demand-side considerations.

Exhibit 1.1 Research Questions

Thematic Area	Question
Supply-Side Considerations	1. Why do older workers enter, exit, or reenter the workforce? Why do those who stay in the labor market do so? What drives job transitions between career jobs and transitions to bridge jobs prior to full retirement? 2. What are the most important factors affecting older workers' employment and self-employment prospects? 3. What are older workers' reentry wages, and how do they compare to pre-unemployment/pre-retirement wages? 4. What are the factors associated with the retirement and reentry decisions of older workers? How do these vary by gender, race, education, and veteran status? 5. What are the labor market effects of social transfers on unemployed older workers, including increases in Social Security Disability Insurance (SSDI), the Supplemental Nutrition Assistance Program (SNAP), Medicaid/Medicare, housing and other forms of federal, state, and local government assistance? 6. To what extent do older workers exiting the labor force rely on government programs, such as SSDI, SNAP, Medicaid/ Medicare, housing and other forms of federal, state, and local government assistance? 7. What are the factors affecting older workers' durations of unemployment and their exit from the workforce during and after the Great Recession?
Demand-Side Considerations	8. What are the most important factors in employers' preferences, if any, for older vs. prime-age workers? 9. What employer and industry practices are most "friendly" or "unfriendly" to older workers? 10. Which industries and occupations have a higher demand for older workers? 11. What are the perceptions of employers and co-workers about older workers? Are employers ready to hire older workers? Are co-workers willing to work with older workers?

This chapter provides context for the discussions that follow, by characterizing recent trends in the landscape facing America's older workers and likely developments over the next decade around two major themes: labor market participation and unemployment trends and labor force attachment.

1.3 Labor Market Trends for Older Workers

Labor Market Trends for Older Workers: *Key Takeaways*

- Older workers across all age groups are increasingly present in the workforce (1994–2014), and their presence is expected to increase over the next decade (2014–2024).
- Women aged 55 and over experienced substantial gains in workforce activity between 1994 and 2014.
- There is considerable variation in the presence of older workers across different industries. Older workers are concentrated in education and health services, wholesale and retail trade, and professional and business services.
- Older workers tend to concentrate in occupations such as professional and related occupations, and office and administrative support
- Workers aged 75 and over experienced a 5-hour increase in hours worked per week between 1995 and 2008.
- On average, in 2014, men aged 65 years and over earned 31 percent more, and their female counterparts 37 percent more, than they did in 2000.

This section offers a glimpse into the status of older workers in the labor market since the 1990s, using data primarily from the Bureau of Labor Statistics.[2] Between 1994 and 2014, several major trends stand out. First, more and more people aged 55 and over are either employed or actively seeking employment. Second, this change has occurred as the labor force share of younger workers is on the decline. Third, men and women alike are opting to stay in the workforce well beyond the traditional retirement age, working longer hours and earning more. Below, we discuss each of these major trends.

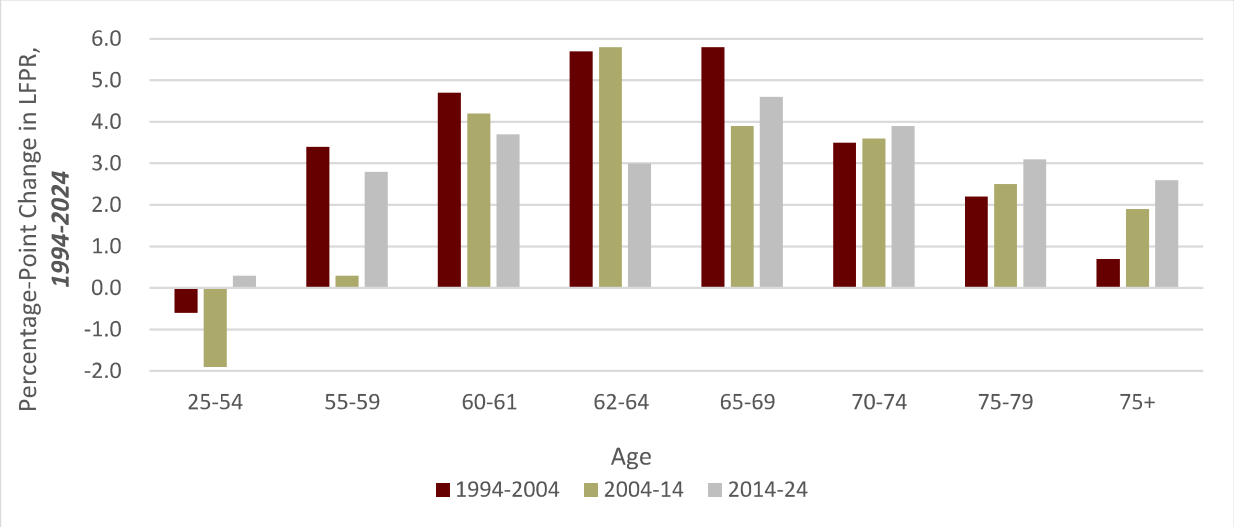
1.3.1 Growth in Labor Force Participation

Over the past 20 years, there has been a dramatic surge in the number of people aged 55 and over participating in the labor market. As Gendell (2008) notes, between 1975 and 2004, while real incomes were growing slowly, Social Security's financial problems drove increases in taxes, reductions in benefits, and a raise in the retirement age. In addition, international and domestic competition caused firms to contract or transform private pension plans—from defined benefits to defined contributions—and to eliminate health insurance benefits for retirees. All these changes serve as plausible contributors to the striking upward trend in labor force participation rates among older workers. More recently, older workers saw their labor force participation increase after the Great Recession (Burtless, 2016). This is in contrast to younger and prime-age workers, who had declines in both employment and labor force participation during the same period.

[2] For some exhibits in this chapter, we could retrieve information from the Bureau of Labor Statistics only for the years 2000 through 2014. In addition, age categories across some variables differ depending on data availability.

The dramatic surge in the number of older workers participating in the labor market is shown in Exhibit 1.2, which displays the percentage-point changes in the number of individuals employed or actively seeking employment in the United States, disaggregated by age. The exhibit also provides forecasts for 2014–2024. The trends are striking for at least three reasons. First, the labor force participation rate (LFPR) of workers aged 25 to 54 dropped between 1994 and 2014; this rate is expected to increase only slightly over the period 2014-2024. In dramatic contrast, the LFPR of all age groups 55 and older not only increased in the periods 1994–2004 and 2004–2014, but is expected to continue to increase substantially over the next 10 years. Second, looking at the 20-year period from 1994 to 2014, the LFPR for workers aged 55 to 59 increased much more slowly during the period 2004–2014 than in the previous decade, unlike the trend for workers aged 60 and older. Third, the LFPR of workers aged 70 and older has increased in each decade and is expected to increase in the next decade.

Exhibit 1.2 Changes in Civilian Labor Force Participation Rates 1994–2024, Actual and Projected, by Age

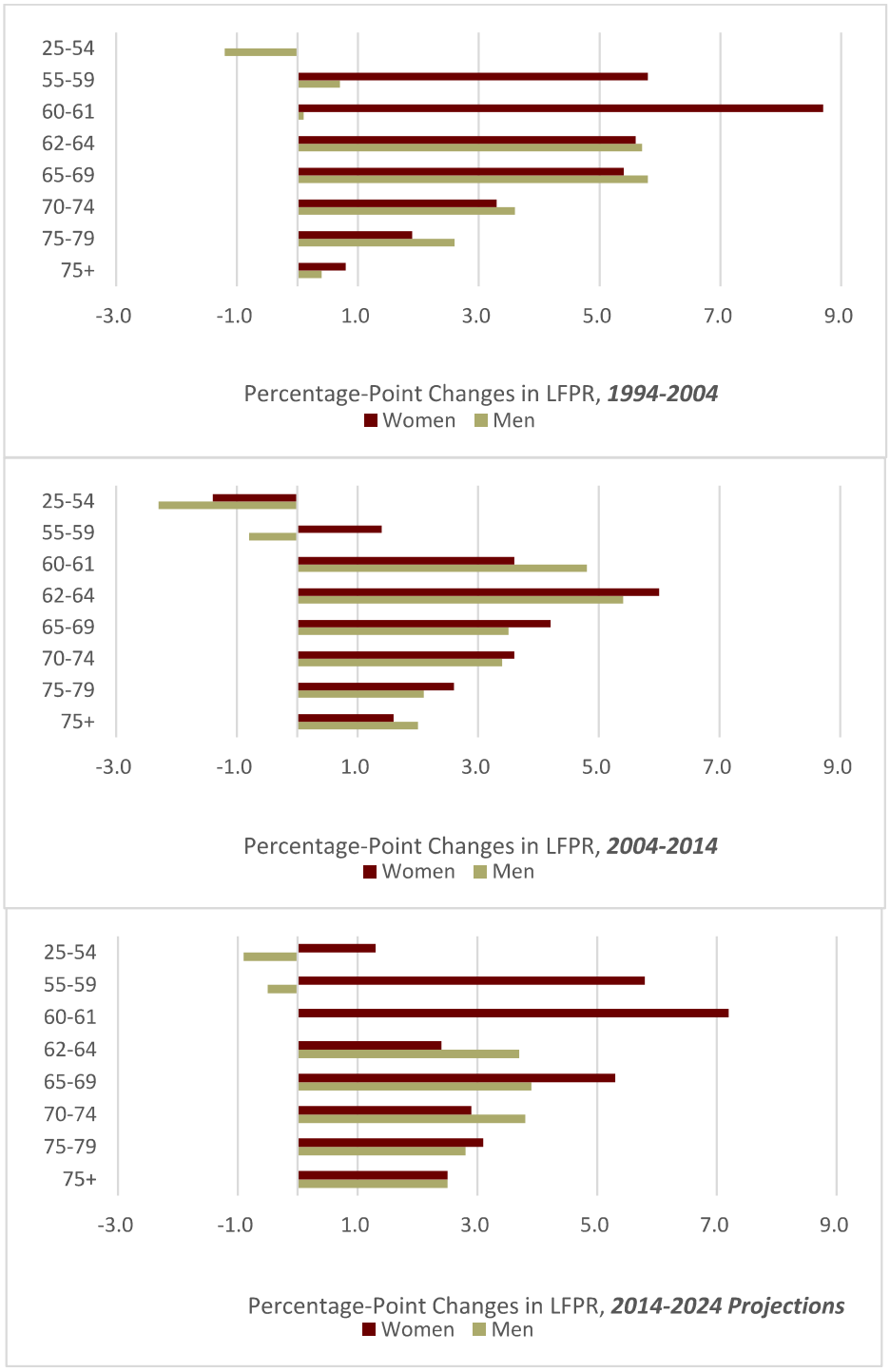


Source: U.S. Bureau of Labor Statistics. December 2015. "Civilian Labor Force Participation Rate by Age, Gender, Race, and Ethnicity." Retrieved from: http://www.bls.gov/emp/ep_table_303.htm

Exhibit 1.3 further disaggregates the LFPR by gender and age over the same 30-year period. What is remarkable is the staggering gain in workforce activity by women 55 years of age and older between 1994 and 2014, and the continued projected gain from 2014 through 2024. For many age groups, the advances for women far exceed those experienced by their male counterparts.[3] For instance, women aged 55–59 and 60–61 experienced an increase of 6 and 8 percentage points, respectively, in labor force activity between 1994 and 2004. Men in the same age groups saw less than a 1 percentage-point increase. Indeed, older women (across all age groups) are expected become a stronger presence in the labor market through 2024.

[3] Except for women aged 60-61 in the decade that included the Great Recession.

Exhibit 1.3 Changes in Civilian Labor Force Participation Rates by Age and Gender



Source: U.S. Bureau of Labor Statistics. (December 2015). "Civilian Labor Force Participation Rate by Age, Gender, Race, and Ethnicity." Retrieved from: http://www.bls.gov/emp/ep_table_303.htm.
Note: The percentage-point change for women aged 25 to 54 during the period 1994–2004 was zero.

1.3.2 Industrial and Occupational Distribution of Older Workers

Exhibit 1.4 shows the distribution of workers across industries by age group. It is clear that there is considerable variation in the presence of older workers across these industries. Within the older population (aged 55–64 and 65 and over), workers are concentrated in education and health services, wholesale and retail trade, and professional and business services. This contrasts with industries such as leisure and hospitality, where younger individuals are heavily represented.

Exhibit 1.4 Distribution of Employed Persons by Industry and Age Group, 2015

Industry	Age							
	16 to 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 & over	Median Age
Agriculture, forestry, fishing, and hunting	2%	1%	1%	1%	1%	2%	4%	46.9
Mining, quarrying, and oil and gas extraction	0%	0%	1%	1%	1%	1%	0%	41.5
Construction	3%	5%	7%	8%	7%	7%	5%	42.8
Manufacturing	4%	8%	10%	11%	12%	12%	7%	44.9
Wholesale and retail trade	25%	21%	14%	11%	12%	12%	14%	39.4
Transportation and utilities	2%	3%	4%	5%	6%	6%	5%	45.9
Information	1%	2%	2%	2%	2%	2%	2%	41.3
Financial activities	1%	4%	7%	7%	7%	7%	9%	44
Professional and business services	5%	9%	13%	13%	12%	11%	13%	42.6
Education and health services	11%	19%	23%	24%	23%	24%	23%	43.8
Leisure and hospitality	40%	20%	10%	7%	6%	5%	6%	31.3
Other services	4%	5%	4%	5%	5%	5%	7%	43
Public administration	1%	2%	4%	5%	6%	5%	4%	45.6
Total	100%	100%	100%	100%	100%	100%	100%	42.3

Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS).

Complementing the table above, Exhibit 1.5 shows the distribution of workers across occupations by age group. Larger shares of older individuals are in professional and related occupations, and office and administrative support. Noticeably, the age-group share within occupations is more uniform when compared to this distribution within industries.

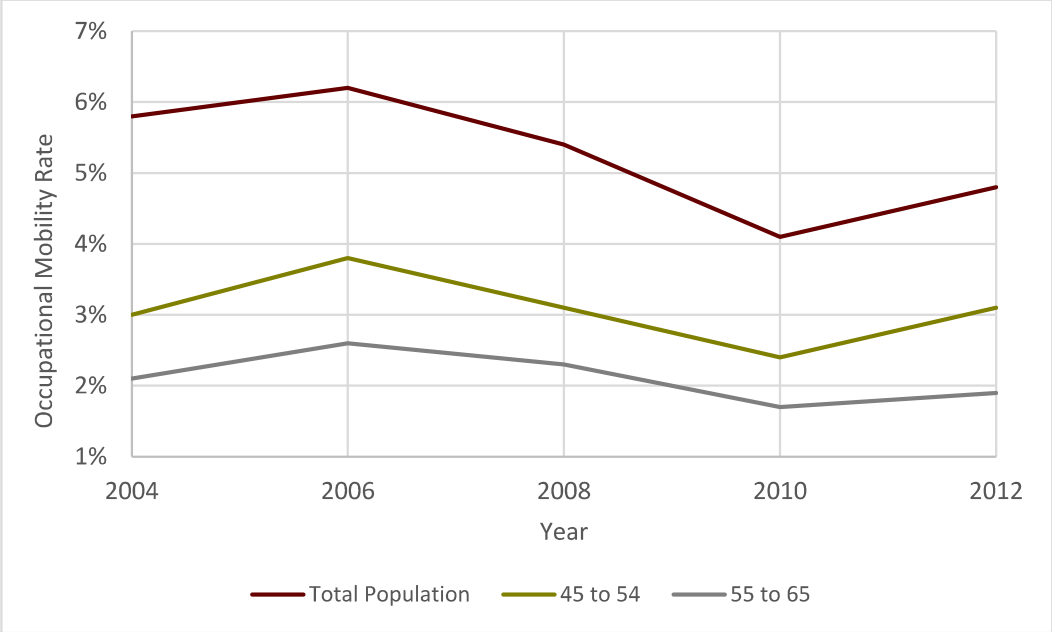
Exhibit 1.5 Distribution of Employed Persons by Occupation and Age Group, 2015

Occupation	Age							
	16 to 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 & over	Median Age
Management, business, and financial operations	16%	2%	7%	15%	18%	19%	19%	45.9
Professional and related occupations	23%	6%	15%	26%	26%	23%	23%	42.8
Computer and mathematical	3%	0%	2%	4%	4%	3%	2%	40.8
Architecture and engineering	2%	0%	1%	2%	2%	2%	2%	43.6
Life, physical, and social sciences	1%	0%	1%	1%	1%	1%	1%	42.1
Community and social service	2%	0%	1%	2%	2%	2%	2%	44.5
Legal	1%	0%	0%	1%	1%	1%	1%	45.8
Education, training, and library	6%	3%	5%	6%	7%	6%	6%	43.1
Arts, design, entertainment, sports, and media	2%	2%	2%	2%	2%	2%	2%	41.5
Health care practitioners and technical occupations	6%	1%	3%	7%	7%	6%	6%	42.9
Health care support	2%	2%	3%	3%	2%	2%	2%	38.9
Protective service	2%	2%	2%	2%	2%	2%	2%	41.1
Food preparation and serving-related occupations	5%	27%	14%	6%	4%	3%	3%	29.5
Buildings and grounds cleaning and maintenance	4%	4%	3%	3%	4%	4%	5%	44.4
Personal care and service	4%	6%	6%	3%	3%	3%	3%	39.9
Sales and related occupations	11%	24%	15%	10%	9%	9%	10%	40.2
Office and administrative support	12%	11%	15%	12%	11%	12%	13%	42.5
Farming, fishing, and forestry	1%	2%	1%	1%	1%	1%	1%	38.6
Construction and extraction	5%	3%	4%	6%	6%	5%	5%	41.5
Installation, maintenance, and repair	3%	2%	3%	3%	4%	4%	4%	42.8
Production	6%	3%	6%	6%	6%	6%	6%	42.9
Transportation and material moving	6%	7%	7%	5%	6%	6%	7%	43.3
Total	100%	100%	100%	100%	100%	100%	100%	42.3

Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS). Occupations are 2-digit SOC codes.

Did the Great Recession affect the ease with which workers could move among occupations, and did this differ by worker age group?[4] The answer is shown in the occupational mobility rates over the period 2004–2012 in Exhibit 1.6. Throughout this period, occupational mobility was highly correlated with worker age, dropping as the workforce aged. Within these overall trends, occupational mobility peaked for all ages in 2006, shortly before the onset of the Great Recession. It began to recover in 2010, although it had not reached the pre-recession level by 2012.

Exhibit 1.6 Occupational Mobility Rate for Older Workers and All Workers, 2004–2012



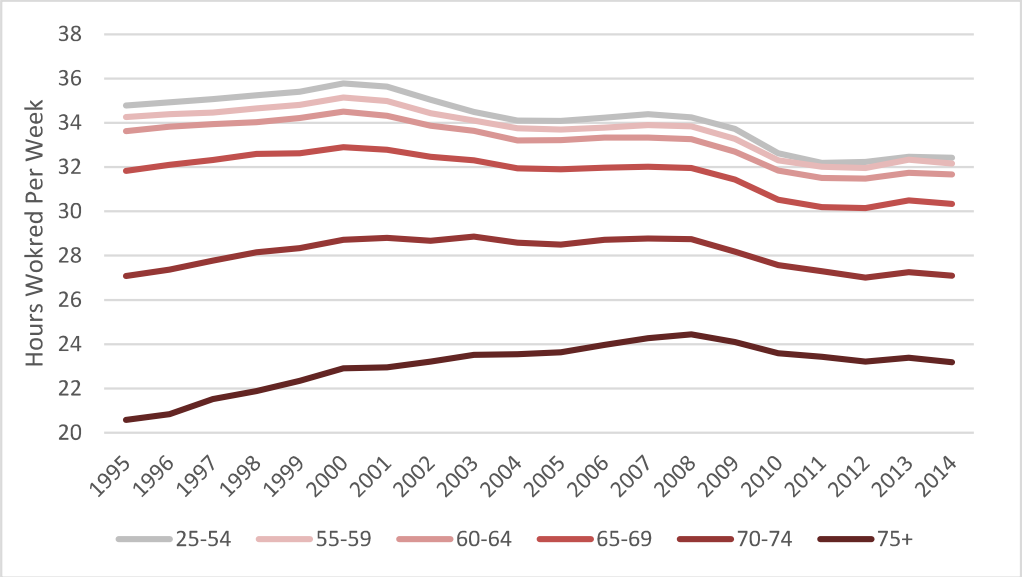
Source: Re-created from Kreisberg (2015). Occupations are defined at the 2-digit SOC codes.

1.3.3 Hours Worked per Week by Age

Exhibit 1.7 displays trends in average hours worked per week between 1995 and 2014 by age group. Hours worked per week for younger workers (aged 25–54) peaked around 2000–2001 and then declined substantially to below the 1995 levels. Similar patterns are seen for the age groups 55–59, 60–64, and 65–69. In contrast, hours worked per week rose for the two oldest groups, aged 70–74 and 75 and older, from 1995 until the lingering effects of the Great Recession led them to taper off somewhat. The hours worked per week were higher in 2014 than in 1995 for the oldest group, and about the same for those aged 70 to 74.

[4] It is important to note that occupational mobility can occur with or without job mobility (changing occupations with the same employer).

Exhibit 1.7 Average Hours Worked Per Week, 1995–2014



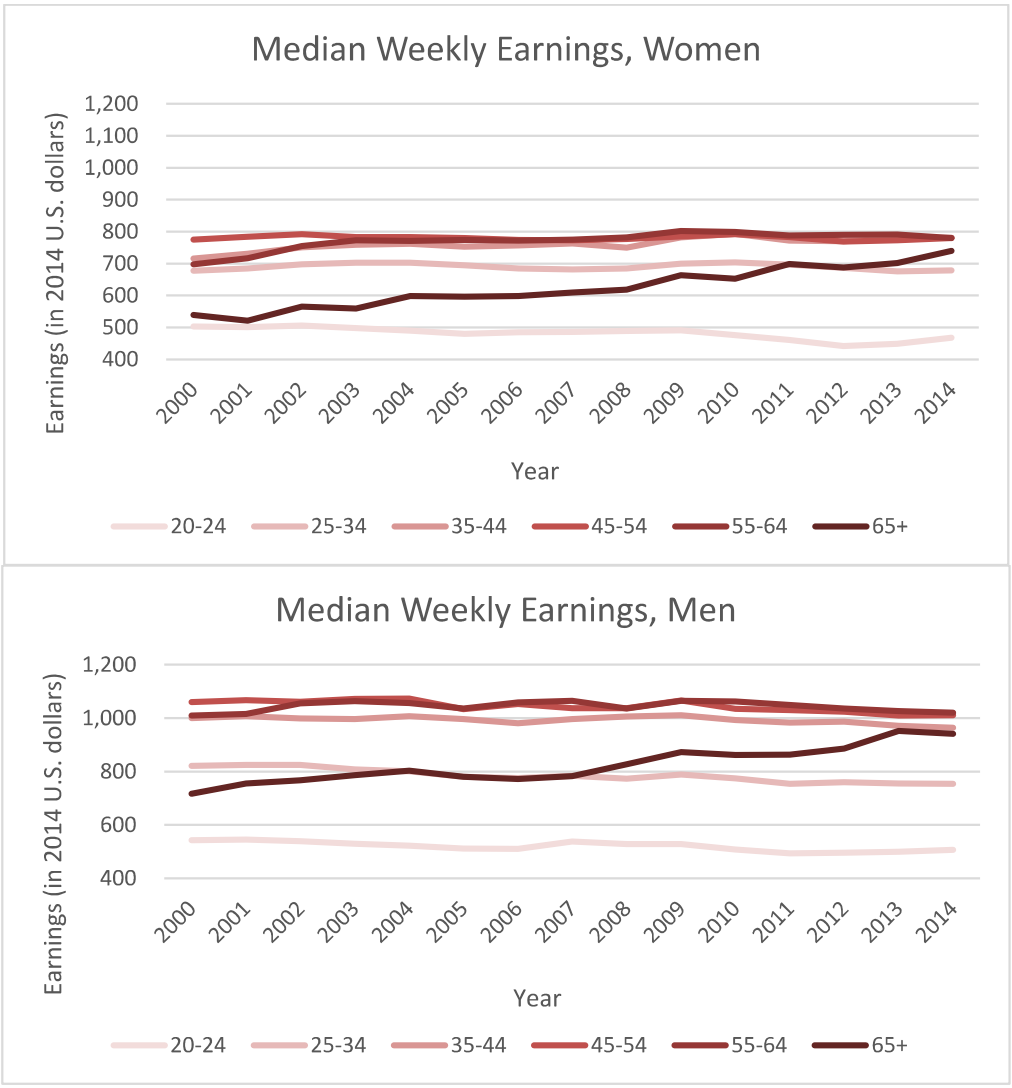
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Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. Retrieved November 2015.
Note: Yearly estimates for 2015 were available only through September 2015. In the interest of comparability, the 2015 estimates are not shown in this graph.

1.3.4 Median Weekly Earnings

As the presence of older workers in the labor market became more pronounced, so did their average weekly earnings. Exhibit 1.8 shows the median weekly earnings trends for 2000–2014 (CPI-adjusted for 2014 U.S. dollars), disaggregated by gender and age. Several facts stand out. For both men and women, weekly earnings for workers 65 years and older increased steadily over the period and stayed relatively constant for the 55–64 age group, while the earnings for younger workers were stagnant or falling. Also noteworthy is the gender gap in earnings between older men and women, with men 65 and older earning substantially more than their female counterparts. Although the earnings of both groups trended upward during the period, the gender gap has been decreasing over time.

Exhibit 1.8 Median Weekly Earnings (in 2014 U.S. dollars), 2000–2014



Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. Retrieved November 2015.
Note: In the BLS data, information is not given separately for people aged 70–74 and 75+ years. Also, it was not possible to combine the 20–54 age groups. Finally, earnings have been adjusted for inflation using the Consumer Price Index for 2014 U.S. dollars.

1.3.5 Income Sources of Older Workers

Older workers have the following major sources of potential income: earnings, retirement benefits, income from assets, income from work-related benefits (veterans' benefits, unemployment compensation, workers' compensation), and public cash and/or in-kind benefits (food, energy, housing). Exhibit 1.9 shows the percentage distribution of "units" aged 55 and older for each type of income, as well as the relative shares by category within income type, for 2014. It is important to note that these data come from the Social Security Administration, which

defines units as households in the specified age group plus individuals in that age group who are living as separate individuals within households. Note that units typically have income from several sources, so the percentages in the main categories (shown in bold) add up to well over 100 percent.

Exhibit 1.9 Income Sources of Aged Units, Percentage with Income from Specified Source, by Age

Source of Income	55–61	62–64	65 or Older	65–69	70–74	75–79	80 or Older
Earnings	**78.1**	**66.2**	**28.8**	**49.3**	**31.2**	**19.4**	**8.8**
Wages and Salaries	*74.1*	*62.2*	*25.9*	*45.5*	*27.3*	*16.9*	*7.5*
Self-Employment	*9.8*	*9.2*	*5.1*	*7.6*	*6.3*	*3.8*	*1.8*
Retirement Benefits	**22.6**	**49.7**	**87.4**	**79.5**	**89.9**	**91.8**	**91.5**
Social Security	*14.1*	*38.5*	*84.2*	*74.7*	*87.4*	*89.5*	*89.3*
Benefits Other than Social Security	*11.5*	*25.3*	*43.8*	*38.0*	*47.0*	*48.6*	*45.0*
Other Public Pensions	*5.3*	*11.9*	*15.8*	*14.9*	*17.0*	*16.1*	*15.6*
Private Pensions or Annuities	*8.2*	*19.0*	*37.4*	*31.0*	*40.8*	*42.7*	*38.4*
Income from Assets	**60.8**	**63.8**	**61.8**	**64.3**	**63.0**	**60.5**	**58.6**
Interest	*59.2*	*61.7*	*59.7*	*62.6*	*60.9*	*58.2*	*56.1*
Other Income from Assets	*22.1*	*25.3*	*25.5*	*26.3*	*25.9*	*25.0*	*24.3*
Veterans' Benefits	**2.0**	**2.9**	**5.0**	**6.1**	**5.0**	**3.8**	**4.6**
Unemployment Compensation	**3.6**	**3.0**	**0.8**	**1.6**	**0.9**	**0.5**	**0.2**
Workers' Compensation	**1.0**	**0.7**	**0.4**	**0.7**	**0.4**	**0.3**	**0.3**
Cash Public Assistance and Noncash Benefits	**16.6**	**16.0**	**14.6**	**14.1**	**14.9**	**14.9**	**14.7**
Cash Public Assistance	*7.0*	*6.9*	*4.4*	*4.7*	*4.2*	*4.4*	*4.2*
Supplemental Security Income	*6.4*	*6.5*	*4.1*	*4.4*	*3.9*	*4.2*	*3.9*
Noncash Benefits	*14.1*	*13.3*	*13.0*	*12.5*	*13.3*	*13.3*	*13.3*
Food	*11.5*	*10.9*	*8.8*	*8.8*	*9.0*	*8.9*	*8.3*
Energy	*3.6*	*3.6*	*3.8*	*3.4*	*3.4*	*5.0*	*4.0*
Housing	*3.8*	*3.9*	*4.7*	*4.3*	*4.6*	*5.3*	*4.9*
Personal Contributions	**2.0**	**1.3**	**0.9**	**0.7**	**0.6**	**0.9**	**1.2**

Source: Social Security Administration (2016), Table 2.A1: 34.

Notes: SSA collects data on "aged units" that are not comparable to Census Bureau definitions. SSA counts Census Bureau "aged households" plus some aged units living in non-aged households or living with other aged units in the same household. For 2014, the number of aged households was 87% of the number of aged units (SSA, 2016: 3). Noncash benefits include SNAP benefits, energy assistance, and housing assistance. A person or aged unit is indicated as having received a noncash benefit if any person in the household received such a benefit.

The expected decline in earnings as workers age is clear from the exhibit, with almost four-fifths (78.1 percent) still earning at ages 55–61, dropping to 66.2 percent for units aged 62–64, 49.3 percent for the 65–69 age group, and 8.8 percent at ages 80 and above.

For income other than from earnings, the majority of the age group 65 and older (87.4 percent) had some income from retirement benefits: 84.2 percent had Social Security benefits compared to only 37.4 percent with income from private pensions. This makes it difficult for older workers to retire with adequate income, because private pensions have been expected to supplement Social Security. Unemployment compensation was received by about 3 percent of individuals aged 55–61 and 62–64. The share of aged units receiving public assistance of some type was 14.6 percent for those aged 65 and over (slightly less than roughly 16 percent for those aged 55–61 and 62–64)—a share that stayed about the same through ages 80 and older.

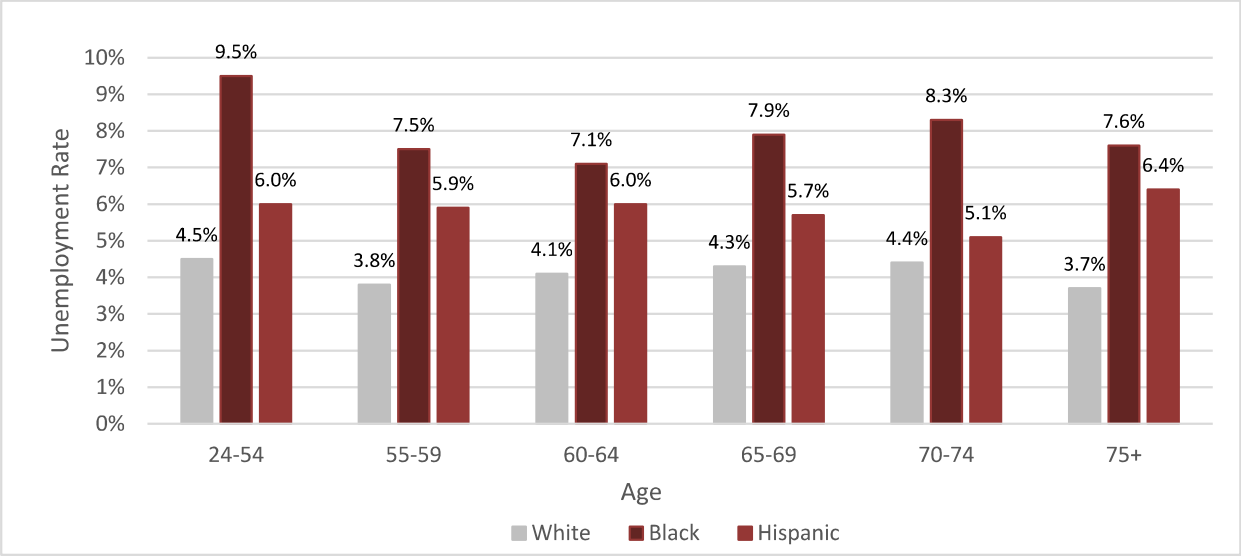
1.4 Unemployment Trends and Labor Force Withdrawal for Older Workers

In this section, we present information on older workers exiting the labor force and entering unemployment. We discuss unemployment rates, unemployment duration, and long-term unemployment.

1.4.1 Unemployment Rates by Age

Exhibit 1.12 shows the 2014 unemployment rates for workers in different age groups, by race/ethnicity. Whites had the lowest rates throughout the age distribution, followed by Hispanics. Blacks had the highest unemployment rates of all. What is noticeable within the race/ethnicity figures are the different trends among older workers by age. Among Blacks, unemployment increases as workers age (from 7.5 percent for the 55–59 age group to 8.3 percent for the 70–74 age group), except for the very oldest group (75 years and older). Among Hispanics, in sharp contrast, unemployment is relatively stable through ages 24–54 and 55–59 (roughly 6 percent), but falls through ages 70–74 (from 6 percent to 5.1 percent), before rising again for the oldest group (6.4 percent). White unemployment is not only lower at all age groups in Exhibit 1.12, but rates remain more stable throughout the age distribution.

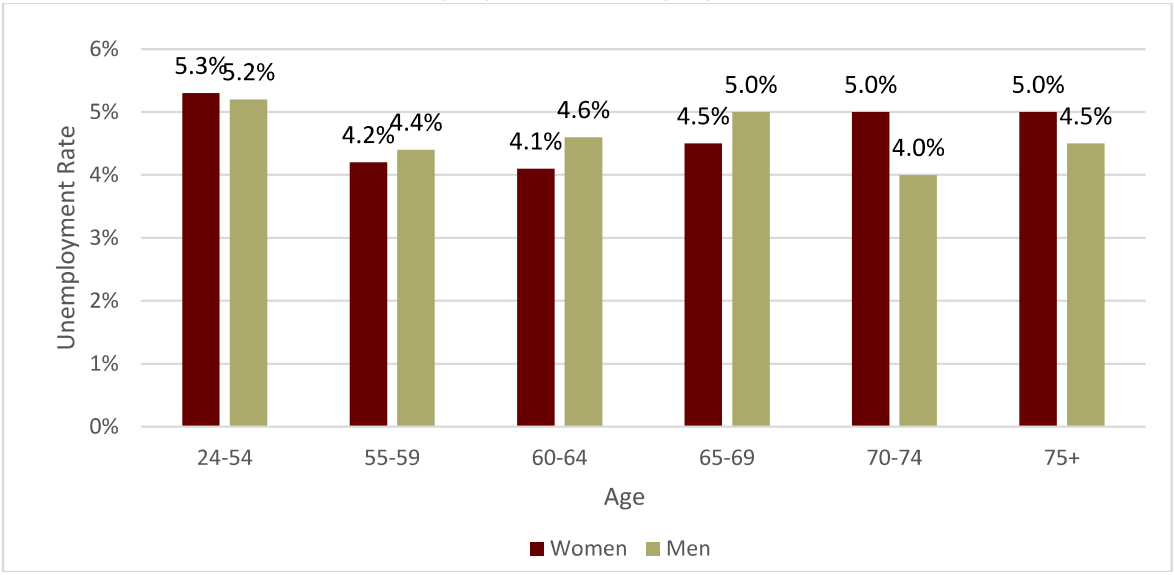
Exhibit 1.10. Unemployment Rates by Race/Ethnicity and Age, 2014



Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. Retrieved November 2015.

Exhibit 1.13 shows the gender differences in the 2014 unemployment rate by age. For those aged 24–54, the unemployment rates for men and women were virtually identical (at just over 5 percent). For ages 55–59, 60–64, and 65–69, women had slightly lower unemployment rates than men. But this trend was reversed for ages 70–74 and 75 and older. Women aged 70–74 had an unemployment rate 1 percentage point higher than men, and women aged 75 and older had an unemployment rate half a percentage point higher than men.

Exhibit 1.11 Unemployment Rate by Age and Gender, 2014



Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. Retrieved November 2015.

1.4.2 Duration of Unemployment by Age

Despite increased labor force activity, longer work hours, and higher earnings, older workers continue to experience longer periods of unemployment than younger workers. This is shown in Exhibit 1.14 for the period 1995–2015. Particularly striking are the differences in duration by age before, during, and after the Great Recession. Until 2007–2008, the trends by age were relatively similar for both genders with one major exception—the lowest rate for women aged 65 and older (about 5 weeks) was about half the rate of their male counterparts (around 10 weeks).

At the peak of the downturn, however, when unemployment increased for all age groups, for both men and women, unemployment duration rose conspicuously more sharply for older workers, and more so for most groups as age increased. Male workers aged 65 years and older were unemployed, on average, for more than 40 weeks in 2011. This is nearly double the average length of unemployment experienced by men aged 20 to 24 and 25 to 29. The differences in unemployment duration narrowed again in the years of economic recovery. The pattern was generally similar for women, although the maximum durations were less extreme, and the recovery for women aged 65 and older lagged that of other groups by about a year.

Exhibit 1.12 Duration of Unemployment, 1995–2015, by Age and Gender



Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey. Retrieved November 2015.
Note: Age groups are based on BLS data. For duration of unemployment, information is not given separately for age groups 70–74 and 75+. Also, it was not possible to combine the data for different groups in the 20–54 age ranges, given the limited availability of age-disaggregated data from BLS.

1.4.3 Long-Term Unemployment Rate for Older Workers by Gender

The Great Recession resulted not only in a sharp increase in unemployment, but also in historically high rates of long-term unemployment (LTU), defined by BLS as 27 or more weeks. The percentage of unemployed workers who experienced LTU rates increased sharply for all age groups between 2006-2007 and 2012-2013, from 17 percent to 39 percent. Monge-Naranjo and Sohail (2015) found, however, that the increase in LTU rates varied a great deal by age and gender. In particular, older women did much worse. LTU rates for older women had been lower

than those for men before the recession, but equaled or exceeded the male rate after the recession. Thus, the recession had a much stronger negative impact on women than on men with respect to LTU, and they had not recovered by 2012–13. Although Monge-Naranjo and Sohail (2015) do not pin down an explanation for this fact, Exhibit 1.15 indicates that part of the answer may be that the durations of unemployment for men aged 65 and over declined earlier than for women of the same age.

Exhibit 1.15 shows that in 2006-2007, the percentage of women in LTU was significantly less than the percentage of men both at ages 50–64 (23 percent vs. 28 percent) and at ages 65 and over (14 percent vs. 23 percent). Exhibit 1.16 indicates that by 2012-2013, the percentage of women aged 50 to 64 in LTU equaled the percentage of men, and the LTU rate for women 65 and older was 2 percentage points greater than for men (50 percent vs. 48 percent).

Exhibit 1.13 Share of Unemployed Workers in Long-Term Unemployment by Age and Gender, 2006–2007

Age (years)	Both	Men	Women	Male–female difference
16–19	9%	10%	8%	2%
20–29	15%	16%	13%	3%
30–39	18%	18%	18%	0%
40–49	21%	21%	21%	0%
50–64	26%	28%	23%	5%
>65	19%	23%	14%	9%
All ages	17%	18%	16%	2%

Exhibit 1.14 Share of Unemployed Workers in Long-Term Unemployment by Age and Gender, 2012–2013

Age (years)	Both	Men	Women	Male–female difference
16–19	19%	21%	17%	4%
20–29	34%	35%	31%	4%
30–39	42%	42%	42%	0%
40–49	45%	44%	45%	-1%
50–64	50%	50%	50%	0%
>65	49%	48%	50%	-1%
All ages	39%	40%	39%	1%

Source: Monge-Naranjo and Sohail (2015).

1.4.4 Out of the Labor Force: Reasons That Older Workers Withdraw

Older workers leave the labor force for many reasons, not just because they no longer wish to work. Other major reasons include ill health or the need to take care of other family members. Exhibit 1.17 compares the reasons for leaving the labor force (i.e., no longer working and not looking for work) given by people aged 55–64 and 65 and older in 2004 with the reasons given by people in the same age groups in 2014. The differences are not dramatic, but they call attention to the fact that, for the most part, smaller proportions of workers left the workforce in

2014 for the reasons listed in Exhibit 1.17 than they did 10 years earlier. The exhibit also indicates that a smaller proportion left because they chose to retire. Specifically, among individuals aged 55 to 64 who were out of the labor force in 2004, about 48 percent responded that they were retired, whereas 43 percent gave that in 2014. Higher proportions in 2014 gave illness or disability as the reason for leaving the workforce in 2014 than they did in 2004.

Exhibit 1.15 Reasons for Not Working and Not Looking for Work by Age, 2004 and 2014

Age	Percent Giving Reason	
	2004	2014
Total (both genders, ages 55 to 64)		
Ill or disabled	32.79%	39.94%
Retired	48.42%	43.55%
Home responsibilities	16.54%	12.93%
Going to school	0.45%	0.62%
Other reasons	1.80%	2.96%
Total (both genders, 65 and older)		
Ill or disabled	7.93%	9.00%
Retired	88.90%	88.47%
Home responsibilities	2.69%	1.95%
Going to school	0.10%	0.12%
Other reasons	0.38%	0.46%

Source: Hipple (2015) from the Annual Social and Economic Supplement to the Current Population Survey.
Note: The "other reasons" category includes inability to find work and other unspecified reasons.

1.5 Conclusions

This chapter reviewed the current involvement of older Americans in the U.S. workforce. Specifically, the chapter addressed the labor market participation of older workers, the trends in unemployment rates for these workers, and policies to address issues related to older workers. The main conclusions are as follows:

Labor Market Involvement. Overall, older workers represent, and will continue to represent, a sizable share of the U.S. workforce.

- Despite the existing gender wage gap, women have made substantial gains in workforce activity and are poised to increase their presence in the workforce over the next decade.
- Older workers (age groups 55-64 and 65 and over) make up a larger proportion of workers in the manufacturing, transportation, and public administration industries, when compared to younger workers (aged 20–24).

Unemployment Trends. Despite impressive gains, older workers who experience a layoff encounter greater workforce barriers and hardships than do younger workers.

- Regardless of age, Blacks experience higher unemployment rates than Hispanics, who in turn have higher rates than their White counterparts.
- The Great Recession increased the duration of unemployment more severely for older workers than for their younger counterparts. That recession also had a greater negative impact on the duration of unemployment of working women aged 65 and older than on men in the same age group.

The next chapters review the substantial literature on factors affecting the labor market participation of older workers in the United States. The objective of this discussion is to shed light on which policies may be best suited to facilitating older workers' attachment to, and success in, the labor market going forward.

2. OLDER WORKERS' LABOR FORCE TRANSITIONS

2.1 Introduction

Current cohorts of older Americans are working longer, and the retirement process for many is no longer a one-time, permanent event, but rather a gradual transition out of the labor force. This chapter discusses the literature on factors affecting older workers' labor force transitions, which fall into two broad categories:

1. Gradual transition into retirement, including reentering the workforce after temporary retirement.
2. Incidence of retirement among older workers who never had a career job and always had to struggle to find and keep employment.

Before presenting the results, we provide an introduction to some of the basic labor force transition concepts found in the literature:[5]

- ***Career jobs*** are full-time, full-year jobs held for a long period of time. They are sometimes defined as a worker's longest spell of employment with a single firm, but the definition varies depending on the data available for analysis.
- ***Bridge jobs*** are usually part-time, part-year, or short-term jobs that employees engage in between a full-time career job and withdrawal from the labor force. Bridge jobs include jobs with a new employer after a career job and before full retirement, but they also may follow a period of retirement.
- ***Phased retirement*** is generally continued employment at a career job, with hours reduced from full-time work as a transition to retirement. Phased retirement represents a "bridge" to retirement while remaining with a career employer.
- ***Reentry jobs*** are jobs that follow a period of full retirement. They are bridge jobs in the sense that they are a bridge to a subsequent retirement. Encore jobs are a form of reentry jobs that provide a community or societal service and that may be paid or unpaid.
- ***Retirement*** is a period following career employment during which there is no labor force participation. It can be permanent or temporary. Full retirement is difficult to measure without longitudinal data.

[5] Synthesis by the authors of definitions used in the sources reviewed in this chapter. These definitions are generic and do not have the empirical detail and variation found in many of the studies examined below. For example, Gorodnichenko et al. (2013b) call bridge jobs "partial retirement." This measure is used to capture part-time, part-year, or short-term jobs—developed empirically by using decades of annual Social Security wage data to analyze cohorts.

2.2 Exploring Labor Force Transitions

Exploring Labor Force Transitions: *Key Takeaways*

- Career transitions after age 50 have become increasingly common in recent years, and many older workers have had success in making those transitions, particularly when they can leverage skills and qualifications they already have to land new career jobs.
- Both demographic and job-related factors influence the decision to remain employed full-time, move to part-time jobs, or fully retire.
- Partial retirement/bridge employment is on the rise. Increasingly, it has been used as a way of mitigating the negative effects of an economic downturn and a decline in full-time employment opportunities.
- The prevalence rate of 60 to 62-year-olds in bridge jobs rose from near zero in 1960 to more than 15 percent during the period 1990 to 2010. For those aged 65 to 67, the rate reached 20 percent by the end of this 50-year period.
- Having an employer-provided defined benefit pension plan increases the likelihood of moving to part-time work and of full retirement; having employer-sponsored health insurance increases the likelihood of remaining full-time and reduces the likelihood of full retirement.
- The likelihood of a worker becoming self-employed increases with age; however, the findings from the research are not consistent about whether transitioning to self-employment is increasing over time.
- Employer-sponsored phased retirement has not received widespread implementation in the United States. This could be due in part to the misalignment in federal and state laws and regulations. However, the federal government began implementing it for federal employees in 2014. More research is needed to study the impact of this change.
- For a great majority of retirees in recent years, return to work is planned and not a result of inadequate planning, insufficient wealth, or financial shocks.
- The timing of retirement responds to variations in the unemployment rate, inflation, and housing prices.

Over the past two decades, permanent exits from the workforce directly from full-time employment have become less frequent (Cahill et al., 2011). Older workers are opting to extend their time in the labor market for several reasons, including to earn money, stay active, and serve their communities and society at large.

According to the Employee Benefit Research Institute's Retirement Confidence Survey (Helman, Copeland, and VanDerhei, 2015), 11 percent of workers surveyed in 1991 expected to retire after age 65, 50 percent expected to retire before age 65, and about 10 percent said they did not expect to retire at all. By 2015, 36 percent of workers reported that they expected to retire after age 65, but only 25 percent said they planned to retire before age 65, and 10 percent said they did not plan to retire at all. The study also found that about 67 percent of workers in 2015 said they plan to work for pay in retirement, up from about 61 percent in 2001.

2.2.1 Deferring Retirement

Fewer workers are shifting from a full-time career job to full-time retirement. Instead, it appears that growing numbers of older workers are choosing not to fully retire when they reach the traditional retirement age of 65.

In examining trends in the employment behavior of older workers, Cahill et al. (2013b) used Health and Retirement Study (HRS) data to compare the retirement patterns of "Early Baby Boomers" (the 2004 cohort, born 1948–1953), to two earlier HRS cohorts: War Babies (born 1942–1947) and the first HRS "Core" cohort (born before World War II). The authors found that the retirement patterns of the Early Boomers—who were approaching 60 to 65 years of age during the Great Recession—display more divergence from full retirement than those of earlier cohorts. Women were particularly likely to transition prior to exiting the labor force completely—with transitions from one cohort to the next increasing from 60 percent, to 70 percent, to 74 percent. For men, transitions increased from 65 percent for those born before World War II to 69 percent for the War Babies, but then decreased again to 65 percent for the Early Boomers.

What types of work choices do older workers make when they change jobs rather than retire completely? This section focuses on several different pathways: career-to-career jobs, career-to-bridge jobs, self-employment, and various ways to taper off from paid work on the way to full retirement.

Employment among older workers increased between the 1990s and 2010s—although the gains have gone primarily to better-educated older workers.

Increasing Prevalence of Career-to-Career Changes. Rutledge et al. (2015b) found that changing jobs after age 50 has become increasingly common over time. To assess the employment opportunities available to job changers, the study examined how the range of occupations narrows as individuals' age and whether this pattern differs by socioeconomic status. The study found that workers changing jobs in their early 50s find employment in similar occupations, which is similar to the experience of prime-age workers. However, as they enter their late 50s and 60s, their opportunities increasingly narrow, with results varying by educational attainment.

Although job opportunities narrow as workers age, the number of opportunities available to older workers at any given age increased significantly during the late 1990s to early 2010s, although most of the gains have gone to older workers who are better educated. The same study also found that (1) barriers to the hiring of older job seekers stem from employer policies that emphasize employee training, respect for seniority, and hiring from within the firm; (2) there is less likelihood of older workers being hired in jobs requiring strong cognitive skills; but (3) physical demands and adverse working conditions do not significantly deter hiring older workers.

Using data from the American Institute for Economic Research 2014 Survey, Kreisberg (2015) examined factors that influence people's decision to change careers after age 45 and their likelihood of success in old age. This online probability-based survey examined workers after age

45 who had tried to change careers in the preceding year. The author found that 82 percent were successful, favoring those who found jobs in which they could use the same skills as in their former careers. Their motivation to change jobs was the result of both "market" (economic) and "non-market" (quality of life) factors, 46 percent and 54 percent, respectively. About 20 percent of successful job changers participated in training or education before they made their job shift, and about half of this group reported that their incomes increased. The vast majority (90 percent) believed their job change was successful. Respondents reported that the most important factor in a successful career change was having transferable skills, although additional factors include making use of public workforce services, having social support systems, and having positive personal attitudes.

About 18 percent of older workers in the Kreisberg sample were unsuccessful in pursuing a career change. These workers cited non-market reasons as most important for seeking a change, such as "wanting a change" and/or needing something different. Some also had market reasons, such as needing more money. Kreisberg concluded that whether the decision is voluntary or involuntary, older workers can and do shift career paths. She argued that pursuing a new career is a viable option for workers later in their careers. The vast majority of attempted career changers in the study were successful, and most found that the change helped them achieve their financial and personal goals.

How demographic and job characteristics relate to the employment transitions of older workers was studied by Angrisani et al. (2013). The authors used the RAND version of the HRS and included all available cohorts (1993, 1998, 2004, and 2010) for wage and salaried workers over age 50 who were working full-time at the start of the study period. Transitions were divided into full-time employed (at least 35 hours a week and 36 weeks a year), part-time employed, out of the labor force/unemployed, and fully retired.

Salient *socioeconomic factors* included still being in full-time work at age 65, which increased the likelihood of remaining in full-time work; being highly educated, which increased the likelihood of moving to part-time work; and being in poor health, which increased the likelihood of moving to part-time work and to full retirement. Being married had a mixed effect: taken alone, it increased the likelihood of moving to part-time status, but being married to someone who was working increased the likelihood of remaining in full-time work. *Job-related factors* included being eligible for an employer-sponsored defined-benefit pension, which decreased the likelihood of remaining in full-time employment and increased the likelihood of full retirement; and having an employer-sponsored health plan, which increased the likelihood of remaining in full-time work and decreased the likelihood of retiring.

From Career to Bridge Jobs. Participation in bridge jobs has grown rapidly over the past 50 years. In a study by Gorodnichenko, Song, and Stolyarov (2013b), bridge jobs are defined as "partial retirement"—a measure used to capture part-time, part-year, or short-term jobs that employees engage in between a full-time career job and withdrawal from the labor force. The authors document that "partial retirement" has increased across all age and income groups over a 50-year time period (1960–2010). For those aged 60 to 62, partial retirement went from near zero

at the beginning of the period to more than 15 percent during the period 1990 to 2010. For those aged 65 to 67, the partial retirement rate reached more than 20 percent by the end of the 50-year period. Older workers may start a bridge job with a new employer after the career job and before full retirement, but the bridge job may also follow a period of retirement.

Growth of Self-Employment. As Hipple (2010) documented using CPS data for 2009, 7 percent of employed workers aged 16 and older are self-employed. This percentage increases steadily through the age distribution, starting at 1.6 percent for workers aged 16–19 and reaching 8.2 percent for ages 45–54, 10.0 percent for ages 55–64, and 18.1 percent for ages 65 and older (see Exhibit 2.1).

Exhibit 2.1 Self-Employment Rates by Age, 2009 Annual Averages

	Unincorporated[1] Self-Employed (Percent)			Incorporated Self-Employed (Percent)		
Age	Total	Men	Women	Total	Men	Women
Total, 16 years and older	7.0	8.3	5.6	3.9	5.4	2.3
16 to 19 years	1.6	2.2	1.0	0.1	0.1	0.0
20 to 24 years	2.1	2.6	1.6	.4	.6	.2
25 to 34 years	4.6	5.3	3.6	1.9	2.5	1.2
35 to 44 years	6.8	7.7	5.8	4.1	5.5	2.4
45 to 54 years	8.2	9.9	6.3	5.3	7.4	3.1
55 to 64 years	10.0	11.9	8.0	6.2	8.7	3.5
65 years and older	18.1	21.4	14.0	7.7	10.4	4.4

Source: Hipple (2010) from the Current Population Survey.
Note: Self-employment rates are calculated by dividing the number of self-employed workers in an age group by the total employment in the same worker age group.
[1] Unincorporated refers to people working for themselves but not in legally designated corporate entities.

Whether self-employment of older workers is increasing over time is not clear, however. Cahill, Giandrea, and Quinn (2013b), comparing HRS cohort data, reported higher self-employment rates for the baby boomer generation (aged 51–61 in 1992) than for previous cohorts. Heim (2014), however, using the 1994–2012 waves of the Annual Social and Economic Supplements to the CPS, found a conflicting trend: a decline in self-employment rates over time for baby boomers.

Why workers are more likely to be self-employed as they age is the focus of the paper by Cahill and Quinn (2014). Several findings are noteworthy. Older workers value work flexibility, they tend to have greater access to capital as they age, and their lifetime experience increases their chances of being successful in business. At the same time, they have reduced access to wage and salaried employment alternatives as they age.

The authors note that the key drivers of the transition to self-employment include age, health status, marital status, education, presence of dependent children, and spouse's health and employment status. The determinants of women entering self-employment were similar to those of men.

2.2.2 Transitions to Retirement

Early Full Retirement. Although many workers are deferring retirement in various ways, a subset of workers is taking early retirement. A few papers included in this review discussed some of the predictors of early retirement.

Munnell, Sanzenbacher, and Webb (2015) examined why some older workers take full retirement early. Using data from the HRS, they explored the extent to which health, employment, family, and finances are associated with earlier-than-planned retirement. Because the importance of any "shock" that drives early retirement depends on its effect on those experiencing it and its prevalence in the population, the authors' analysis proceeded in two steps. First, they determined the strength of the relationship between the shocks and earlier-than-planned retirement, controlling for individual characteristics. Second, they incorporated the prevalence of the shock to determine how much early retirement would have been reduced if these shocks had not occurred. The authors found that, compared with other workers over age 50:

- Workers with poor initial health and those who experience worsening health before their planned retirement date are more likely to retire early.
- Workers with health insurance are slightly more likely to retire in response to health shocks.
- Workers who are laid off, whose spouse retires early, or whose parents move into their home are more likely to retire early.
- Job-to-job mobility makes workers more likely to reach their retirement plans.
- Health is the most important factor driving early retirement, followed by layoffs or business closings, and then family factors.

Workplace and firm-level characteristics also affect the employment and early retirement of older workers, according to Juhn and McCue (2012). The authors compared differences at age 55 between early retirees and older workers who continue to work, based on the characteristics of their employment (e.g., presence of pension benefits and health care coverage, industry, firm size, and firm location), and how these characteristics changed as workers approached age 63. The authors found that early retirees tend to be employed by larger employers and employers that offer higher wages and salaries. In addition, compared with workers who remain employed, early retirees are less likely to be working with younger co-workers.

Introducing Phased Retirement in the United States. Johnson (2011) defined phased retirement as a program "which allows older seasoned workers to move gradually from full-time employment to full retirement by reducing their hours and responsibilities." According to Johnson, phased retirement is more widespread in Europe than in the United States, in large part because it has not been fully harmonized with U.S. federal and state laws and regulations. Legal issues can make phased retirement difficult to implement in the private sector, according to the study. Obstacles include issues related to receipt of pensions under defined-benefit plans during a period of phased retirement, access to employer-provided health insurance, and provisions in

anti-discrimination legislation. An issue under the Age Discrimination in Employment Act (ADEA) of 1967 arises from employers' preference to restrict phased retirement to their more skilled, higher-wage older employees.

Sheaks, Pitt-Catsouphes, and Smyer (2010) examined U.S. employers' attitudes toward phased retirement. According to one of the three surveys conducted in this study, 26 percent of employers responded that most or all of their full-time employees had access to phased retirement. However, a second survey placed that percentage at only 10 percent. The third survey found that employers that had phased retirement plans varied by sector, being most prevalent in health care/social assistance, education, and manufacturing. There is no research yet on the take-up rate by workers who have phased retirement as a workplace option.

In 2007, the U.S. government introduced, and in 2014 implemented, phased retirement provisions for federal workers. The U.S. Office of Personnel Management (OPM, 2014) stated that "Phased Retirement is a human resources tool that allows full-time employees to work part-time schedules while beginning to draw retirement benefits. This new tool will allow federal managers to better provide unique mentoring opportunities for employees while increasing access to the decades of institutional knowledge and experience that retirees can provide."[6] The final regulations were posted on the Federal Register website on August 8, 2014. Federal agencies were able to submit phased retirement applications to OPM starting November 6, 2014. An important topic for future labor market research is to identify the proportion of eligible workers who choose this option and the major factors affecting those choices. Phased retirement is also used by some state and local governments.

[6] Definition retrieved from https://www.opm.gov/retirement-services/phased-retirement/

2.2.3 Reentering the Workforce

Approximately 15 percent of older Americans with career jobs returned to the labor force after initially exiting.

Estimates of the extent to which older workers leave the labor force entirely but then reenter it vary quite widely. Giandrea, Cahill, and Quinn (2010) looked at older workers with full-time career jobs after age 49 who left the labor force for a period and then reentered, as well as the factors that drive these reentry decisions. The authors found that approximately 15 percent of respondents returned to the labor force after initially exiting. Reentry was planned by some as a method to leave the labor force gradually, but in other cases it was unplanned—a backup plan in case retirement income proved inadequate. Reentry was more likely for workers who retired at a younger age, were in better health, and had a defined-contribution plan rather than a defined-benefit plan or had no private pension plan. About three-quarters of both male and female reentrants were less than 62 years old and were more likely to have a college degree than those who did not reenter. Women with dependent children at the time they exited employment were significantly more likely to reenter the labor force than women without children.

Using HRS data on expected and actual return to work after retirement, Maestas (2010) also analyzed the reentry of fully retired workers into the labor force, confirming the hypothesis that reentry was typically for positive reasons. However, in contrast to Giandrea et al. (2010), Maestas estimated that nearly 50 percent of retirees made the transition from retirement to partial or full reentry. The study provided two possible explanations for this transition: (1) retirees returned to work unexpectedly because they inadequately planned for sufficient retirement income or faced unexpected shocks; or (2) retirees had anticipated their return to work before retirement.

For the great majority of reentrants (82 percent), reentry was planned and was not due to inadequate planning for retirement, insufficient wealth, or financial shocks (Maestas, 2010). For the small percentage of retirees who did not expect to return to work, the study found that the return was related to "positive shocks" (e.g., reduced demand for leisure and desire to be productive or interact with people in a work environment).

Brown et al. (2010) analyzed the 2008 National Study of the Changing Workforce to focus on workers who take reentry jobs. These researchers found that the leading reasons for initially retiring include, in descending order of importance: health; employer push (fired, laid off, offered a buyout); personal pull (pursue other interests); financial pull (receipt of post-retirement benefits); and job issues (job demands, inflexible work schedule, and family reasons, such as elder care, grandchild care). The most important reasons for returning to work after a period of retirement were, also in descending order of importance: need money to retire more comfortably; find it boring not to work; find income from other resources insufficient; want to feel productive and useful; find work fun and enjoyable; work helps to find interactions with people; and want to stay physically/mentally active. Earnings from reentry jobs were generally lower than full-time career jobs: 68 percent earned less or much less than in their career job, while 32 percent earned more or about the same.

Individuals not otherwise considering reentering the labor force may wish to serve their community or society at large. Volunteer work that older workers engage in for no pay is outside the scope of this review, but workers also search for and find jobs that fulfill the desire to serve while receiving compensation. Such community service jobs are sometimes called "encore jobs"—jobs for retired older workers who work for nonprofit organizations or governments that have a positive impact on communities or society. Some older workers do not wish to settle simply for either a market-based bridge job or a community service job. These workers seek a combination of self-employment and community service. This combination has recently been named "consulteering" (Hannon, 2016).

2.3 Investigating Non-employment Among Older Workers

Although many older workers are successful in finding employment, others are not. This section reviews the recent literature on the incidence of older workers who leave the labor force and do not return. We also review the literature on those who have not had a career job, the factors that influence their relative lack of labor market success, and their subsequent experience.

2.3.1 Nonworking Older Individuals

Not all older workers remain in the labor force. It is important to know which individuals leave the labor force and do not return. Using HRS waves between 1992 and 2010, Butrica and Karamcheva (2012) found that nonworking adults aged 51 to 61 are a heterogeneous group. A large percentage of nonworking older individuals are poor, with low income and limited wealth. They are more likely than other older workers to apply and qualify for Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) benefits. Not surprisingly, they tend to have lower savings, Social Security benefits, and pensions than employed older workers.

By contrast, a sizable percentage of nonworking older workers in 2010 had low income but substantial wealth: 20 percent of single men, 15 percent of single women, 22 percent of married men, and 34 percent of married women without earnings had more assets than 60 percent of all older workers and nonworkers combined. This income-poor but asset-rich nonworking group is composed mostly of married adults. The authors found that nonworking married adults as a group were significantly better off than their unmarried counterparts. Many nonworking married adults have working spouses. Married adults without earnings are 20–30 percentage points less likely to be poor than single adults without earnings. Married adults without wage and salary earnings average twice the per-person nonwage income and over 10 times the per-person assets, compared with their single counterparts.

2.3.2 Older Workers Without Career Jobs

Not all workers establish strong, continuous labor force attachment. Some workers have shorter careers than others, and some workers experience no career jobs at all. Cahill, Giandrea, and Quinn (2012), using the HRS survey, focused on the incidence of older workers who never held a career job, the factors that help explain it, and what these workers did as a result. The authors

found that of the 12,600 workers in the 1992 HRS cohort who had worked after age 49 at the time of the first survey, approximately 12 percent did not have a career job and had worked only in short-time jobs. Compared to workers with career jobs, workers without career jobs had lower education levels, were more likely to be employed in blue-collar jobs, and thus were less likely to be eligible for work-related pension benefits. This is problematic because individuals who have not had a career job are precisely the ones who have higher needs during old age.

The authors also examined the numbers and types of job switches that non-career older workers made and the timing of their retirement decisions. In each survey year, non-career older workers were less likely to be working. They made as many job switches as workers with career jobs; however, their likelihood of having part-time jobs did not change with age. In contrast, for workers with career jobs, part-time employment became more prevalent with age, as documented earlier. About 60 percent of men and 70 percent of women without full-time career jobs had part-time jobs through 2012.

2.4 Conclusion

The labor force participation rate of older American workers has increased steadily over the past two decades. This chapter reviewed recent analyses of the nature of extended work lives, the motivations for older workers' choices, and what those choices portend for their future. The following conclusions are suggested by these studies.

Complexity of Transitions. Older workers who extend their working lives rather than going directly from working to full retirement engage in many different types of transitions. Better education, higher earnings, and being in a career job are all associated with older workers extending working life, changing from one career job to another, and changing from career to transition jobs. Chapters 3, 4, and 5 explore more fully these and other reasons for remaining in the labor force.

Career-to-Career Jobs. Better-educated workers who have had stable career employment are likely to take the career-to-career route, transferring to career jobs that make use of the skills they have used in the past. By extending their careers or gradually leaving their career jobs in phased retirement, most are not leaving the labor force.

Career-to-Bridge Jobs. Workers are moving into bridge jobs with no break in employment or after temporary full retirement. After temporary retirement, they are returning to jobs to earn money, keep active, or serve their communities/society (in encore jobs).

Reentry After Temporary Retirement. Perhaps due to differences in definition, estimates of reentry vary widely. Estimates of the proportion of workers who reenter the labor force after a retirement period vary from 15 percent to 50 percent. The research is consistent, however, in finding that most workers who choose this route do it for positive reasons, rather than because negative shocks have required them to earn extra income. Moreover, the majority are happy with the move they made.

Self-Employment. Workers are increasingly likely to turn to self-employment as they age. Findings are inconsistent, however, about whether the incidence of self-employment among older workers is increasing over time. Being self-employed at older ages tends to prolong labor force participation.

Employer-Sponsored Phased Retirement. Employer-sponsored phased withdrawal, when a gradual transition into retirement is an employee option, is much better known in Europe. Responses to U.S. employer surveys suggest that 15 to 25 percent of employers offer such an option, which seems to vary by industry. The U.S. government implemented such a system for federal employees in 2014. It will be important for future research to assess the success of this more workplace-structured alternative to moving straight from a career job to full retirement.

Aging Workers Without Stable Work Histories. Some proportion of older workers have had limited attachment to the labor force throughout their working lives—one estimate suggests that about 12 percent of workers aged 49 and over are in this situation. These tend to be relatively low-income workers, and their workforce interruptions continue and worsen as they age. Having an unstable work history, though, is by no means synonymous with financial hardship.

3. IMPACTS OF UNEMPLOYMENT AND PUBLIC WORKFORCE PROGRAMS

3.1 Introduction

In this chapter, we examine the literature about the factors that influence older workers' labor market trajectories and the choices they make—the supply side of the labor market for older workers. We focus on two major facets of that wide-ranging set of issues:

1. The effects of unemployment on older workers' workforce experience, including the earnings and wealth implications of separation from the workforce (Section 3.2).
2. The role of major parts of the public workforce system on older workers' economic well-being and labor force participation (Section 3.3).

3.2 Exploring the Effects of Unemployment

Exploring the Effects of Unemployment: *Key Takeaways*

- Older workers had noticeably lower rates of job loss than their younger counterparts in 1996, but that relationship had reversed by 2006.
- Financial hardships increased for older workers during the Great Recession, due to declining housing prices, depleted personal savings, and ever-increasing consumer debt, according to a 2010 AARP survey.
- The sudden loss of personal assets, including a precipitous drop in housing prices, increased the likelihood of working at age 62 during the Great Recession, except for those who had enough assets to retire.
- Labor market shocks have a noticeable effect on the timing of older workers' Social Security benefit claims:
  - Shocks to the economy accelerate claiming benefits at the earliest age.
  - Early Social Security claimers are more likely to experience a systematic decline in earnings in the years prior to reaching 62 years of age.
  - Severe, negative changes to the economy experienced between ages 58 and 62 increase the likelihood of claiming Social Security at ages 62 to 64.
- For workers below median wealth, retirement increases as workers near Social Security eligibility; high net worth encourages more rapid retirement.

The Great Recession (lasting officially from December 2007 to June 2009 in the United States) had two different effects on older workers. On the one hand, layoffs encouraged the postponement of retirement as older individuals experienced longer spells of unemployment than prime-age workers, with a simultaneous depletion of personal assets. On the other hand, such layoffs accelerated planned retirements—exits that would otherwise have happened later in life—for those with enough financial savings to afford it.

During and after the Great Recession, the unemployment rate for Americans aged 55 and older reached levels not seen during any other recessionary period since World War II (Rix, 2011).[7] The Rix study focused on the baby boomers (which the study defines as those aged 50 to 64 in 2007, on the brink of the recession). The study was restricted to survey respondents who had worked at some point between 2007 and 2010 (when the survey was conducted). The study found that nearly one-third of the survey respondents either were unemployed or were employed but had been involuntarily unemployed in the previous three years. Also, 13.4 percent had left the labor force during or shortly after the recession.

Many respondents reported having experienced substantial economic hardship during the study period. The most common reason given was declining housing prices, followed by depletion of personal savings, and missed credit card payments and increasing consumer debt. These lower levels of financial security and well-being helped fuel plans to delay and/or work in retirement. Indeed, nearly 4 in 10 of the overall sample believed that their standard of living in retirement would be worse than that of their parents or previous generations.

According to the survey findings, the most difficult barriers unemployed boomers faced during the job hunt included a bad economy, perceived age discrimination, difficulty landing job opportunities with guaranteed pay commensurate with their skill set, and overall declines in particular occupations and industries.

3.2.1 Displacement and Job Separation

The factors associated with labor market disruptions have been the focus of substantial recent literature. We first discuss the effects of unemployment on later labor market experience. We then focus on structural factors affecting the retirement decision.

Relationship Between Job Loss and Later Labor Force Attachment. According to Zhivan et al. (2012), prime-age workers in 1996 were more likely to be displaced than older workers. This trend, however, was reversed by 2006, before the onset of the Great Recession. Using the biennial BLS Displaced Worker Surveys, the authors found that declining tenure, a higher incidence of displacement in manufacturing, and higher labor force participation among older workers largely explain the reversal.

Heidkamp, Corre, and Van Horn (2010) conducted a similar comparison, focusing on the economic, social, and emotional impacts of recessionary unemployment on older workers compared with their younger counterparts. The study re-interviewed people in March 2010 who had been part of a nationally representative August 2009 survey of people who had lost jobs during the prior year. The authors confirmed that workers aged 55 and older were less successful in the labor market than younger workers. These workers were less likely to have found new jobs,

[7] The unemployment rate for Americans 55 years and older reached as high as 7.2% in 2009, more than 1 percentage point higher than the peak unemployment rate during World War II (6% in 1949): U.S. Bureau of Labor Statistics 1948–2016, http://beta.bls.gov/dataViewer/view/timeseries/LNS14024230

more likely still to be looking for work, and more likely to have been unemployed for longer than a year.

Chan and Stevens (2001) found that, for men aged 50 and older who had experienced an involuntary spell of unemployment, job losses resulted in large and lasting reductions in the probability of future employment. They also found that these effects grew as workers continued to age. Once reemployed, men aged 50+ had a much lower chance of remaining employed than men the same age who had not been displaced. The net outcome is a gap of at least 10 percentage points between the employment rates of older men who had lost jobs and those who had not, for at least seven years after a job loss.

Further confirmation comes from two other studies. Sass and Webb (2010) focused on workers aged 50 to 56 who left their jobs, either voluntarily or due to pressured or forced resignations. Irrespective of the reason, the likelihood of working part-time doubled by age 60, compared to those who worked during that period without quitting. This is interpreted as a tougher job market situation for this group. Furthermore, the negative effects of quits extended well beyond the period of unemployment between the last job and finding a new job. Marmora and Ritter (2013) analyzed the Survey of Income and Program Participation (SIPP) over the period 1996–2011, looking at how unemployment late in workers' careers affected the timing of their retirement. They documented that unemployed older workers permanently left the labor force at a significantly higher rate than employed older workers. In addition, they found that leaving the labor force becomes more likely once workers become eligible for Social Security benefits and less likely with eligibility for unemployment insurance benefits.

Structural Factors That Influence Retirement Decisions. Higher unemployment results in a greater probability of withdrawal from the labor force (retirement), especially as workers with limited education reach age 62, the Social Security early retirement age. Coile and Levine (2011) examined how labor market fluctuations around the time of retirement affect the labor force status and Social Security receipt of individuals aged 55 to 69 and the income of retirees in their 70s. The analysis covered men who left the labor force and had some Social Security income. The authors found a full 1 percentage point increase in retirement for workers aged 62–64 and 65–69. Similarly, higher unemployment rates increased the receipt of Social Security at age 62, mostly for the least-educated workers. The study also looked at the effect of higher unemployment on income for workers aged 70–79. This reduction in income was particularly associated with Social Security receipt, workers with less education, and adverse labor market conditions that occur at or after age 62.

Among workers whose jobless spells end in retirement, most retire within a year after job separation. Rutledge (2013) used 1990–2012 SIPP panels and found that, among individuals aged 55 to 70 with job separations that did not end with immediate retirement, approximately half found jobs. The availability of resources (including Social Security retirement benefits, high net worth, and defined-benefit pensions) appeared to encourage more rapid labor force exit and retirement, rather than supporting job seekers during a long search. The study concluded that retirement is only modestly more likely when the unemployment rate is high and that a longer

potential duration of unemployment insurance (UI) benefits has little effect on retirement timing. Poor health and work-limiting disabilities also are associated with more rapid labor force exit and retirement.

3.2.2 Earnings Implications

The impact of job loss on future earnings depends in part on the duration of the unemployment, according to O'Leary and Eberts (2008). This study compared the post-job-loss reemployment and earnings recovery of UI claimants aged 50 and older to prime-age UI claimants aged 30 to 49. They found that older workers, compared to younger workers:

Older workers have limited willingness to engage in long job searches regardless of labor market prospects, and those who can afford to retire do so fairly quickly.

- Return to employment at a lower rate in the quarters after first claiming UI benefits;
- Are less successful at returning to their former wage levels; but
- Remain in new jobs longer, measured both as the percentage of time a person holds a job and that person's job tenure with the main employer.

The authors found that compared with younger workers, older workers gained substantial benefits from returning to work quickly. Their earnings recovery was much greater and they were better able to maintain employment in the near term.[8]

The finding that older workers discouraged by job loss may opt to receive Social Security retirement benefits, which leads to lower earnings, is confirmed by Card, Maestas, and Purcell (2014). The authors used administrative earnings and benefit claims records from the SSA Continuous Work History Sample for cohorts born between 1934 and 1947, merged with statewide employment data. They measured the effects of labor market shocks on the Social Security benefit-claiming rates of workers in their late 50s and early 60s. Labor market shocks led to current and future increases in the percentage of insured workers who applied for Social Security benefits at the earliest possible claiming age. Moreover, once they began receiving benefits, early recipients continued to have low earnings in subsequent years. Early Social Security claimers also experienced a systematic decline in earnings in the years prior to reaching age 62. Labor market shocks experienced between ages 58 and 62 increased the probability of claiming Social Security at ages 62–64. Importantly, this study found that the size of the effect on claiming at age 62 is large enough to fully explain the increase in claims at age 62 that occurred during the early years of the Great Recession.

[8] However, an interesting question is whether these results hold for the period after the Great Recession. Future research is needed on this subject.

3.2.3 Wealth Effects

The impact of recent stock and labor market wealth losses on the planned retirement ages of older Americans was the focus of a paper by McFall (2011). The study found that the average wealth loss between July 2008 and May/June 2009 was associated with a delay in planned retirement age of about 2.5 months. Further, the study found that pessimism about future stock market returns amplified this impact.

Goda, Shovan, and Slavov (2011) came to a similar conclusion by examining changes in older workers' subjective probabilities regarding retirement between 2006 and 2008. The authors found that the steep drop in asset prices in 2008 increased the reported probability of working at age 62 during the Great Recession. Increasing unemployment partly weakened this effect, but housing market changes did not change the subjective probabilities of working.

Falling household wealth reduces the resources available to pay for retirement, discouraging older workers from leaving the workforce.

The work of Bosworth and Burtless (2010) further supports this conclusion. The authors investigated the business cycle effects on Social Security benefit acceptance and labor force exit. For instance, they found that a 4.9 percentage-point increase in the unemployment rate is associated with an increase in benefit claiming among those aged 62 by about 9 percent (or 3.4 percent of the population aged 62 and insured by Social Security). In addition, their results show that the increase in prime-age unemployment between 2007 and 2009 reduced the labor force participation rate of men aged 60 to 74 by between 0.8 and 1.7 percentage points.

The conclusions of this research are that a weaker economy causes employers to increase permanent job separations and reduce new hires, thus accelerating retirements that would otherwise have occurred later. On the other hand, falling household wealth reduces the resources available to pay for retirement, thus discouraging older workers from leaving the workforce. The latter effect, however, was found to be quantitatively small.

3.2.4 Local Labor Market Conditions, Business Cycle, and Older Workers' Labor Market Participation

Local labor market conditions have an important impact on workforce reentry and remaining in the workforce, according to several studies. Maestas, Mullen, and Powell (2013) used data from the Quarterly Census of Employment and Wages and the Health and Retirement Study for the years 1992–2008 and found that local labor demand conditions affect the labor force participation and retirement behavior of workers aged 55 to 74. For example, when local labor demand conditions improved, older workers were more likely to work, less likely to retire, and more likely to delay Social Security claims. This response differed by job characteristics. Older workers were particularly responsive to local shocks in the service industry; this industry may be attractive to older workers because the work is less physically demanding and has greater flexibility in work hours.

The Hairault, Langot, and Sopraseuth (2014) study of three age groups (16–24, 25–54, and 55–61) is consistent with this finding. The authors found that older workers' job flows were more responsive to business cycles than were those for prime-age workers, but that older workers' wages were more stable—a finding they attributed to the lifecycle effect. In other words, older workers' shorter work-life expectancy reduced their outside options, which made their wages less sensitive to the business cycle, but their ability to find work more sensitive.

3.3 Utilizing the Public Workforce System

Utilizing the Public Workforce System: *Key Takeaways*

- The public workforce system in the United States has served, and continues to serve, as an important tool in mitigating the effects of temporary job loss. However, research indicates that older workers need more, and better targeted, assistance than they currently receive.
- Optional program changes at the state level (which certain states have already implemented) can make the UI system more effective in serving the needs of older workers, particularly benefit and job search changes that incentivize looking for part-time or self-employment alternatives.
- More research is needed to untangle the complex interaction between participation in UI and in SNAP and other safety net programs. Some age groups are more likely to be joint participants than other groups, for reasons that are not well understood.
- Older workers tend to have weaker job-searching skills than their younger counterparts—at least in part because they tend not to have searched for work in a long time, and do not take advantage of online job search capabilities.
- The strong research consensus is that job search assistance is the most cost-effective measure to mitigate unemployment rates for all age groups.
- Older workers do not use training offered by the public workforce system as much as other age groups. Reluctance to participate, lack of access, and ability to pay help explain this underuse.
- The Alternative Trade Adjustment Assistance program (now called Reemployment Trade Adjustment Assistance) and the Senior Community Service Employment Program are tailored specifically to older workers. Both have been evaluated and were judged to have positive outcomes, along with some performance weaknesses.
- Self-employment assistance tends to be most successful for older, experienced, better-educated workers with substantial personal assets.

The studies on this topic are in agreement that the public workforce system in the United States has served, and continues to serve, as an important tool in mitigating the effects of temporary job loss. Wandner, Balducci, and O'Leary (2015) found that older workers who receive public

employment services require more assistance than they currently receive and that front-line staff need a greater understanding of how to serve this group.

We begin by reviewing the contributions of the major social and supportive services available to displaced workers and job seekers in the United States. The only programs specifically targeted to older workers among those discussed below are the Senior Community Service Employment Program and the Alternative Trade Adjustment Assistance program (now called Reemployment Trade Adjustment Assistance).

3.3.1 Unemployment Insurance

Many older workers do not transition directly to full retirement from a full-time career job. Rather, they frequently move to bridge jobs that can include part-time jobs and self-employment. Most workers in full-time career jobs who permanently lose their jobs are likely to be eligible to collect UI for a period. However, the nonmonetary condition for continued receipt of UI is generally searching for a full-time job in wage or salaried employment.

The complex labor force transitions of older workers who are permanently displaced from their former career jobs, and whether the UI system accommodates their unique issues, are the focus of the study by O'Leary and Wandner (2001). The authors found that the UI program can help facilitate future employment and labor force participation by older workers, but that a wide range of UI rules (on initial eligibility, continuing eligibility, wage replacement, and partial benefits) should be reevaluated in light of their potentially negative effects on older workers. Particular attention should be given, in their view, to program features that relate to self-employment, part-time employment, and seasonal work (including agricultural jobs).

Additional insight into these issues comes from a Congressional Research Service study of the UI provisions that affect older workers' full participation in the UI program (Whittaker, 2007). One contribution of this study is its identification of actions that state workforce agencies can take to encourage older UI beneficiaries to continue looking for work. These include:

- Permitting UI recipients to search only for part-time jobs;
- Treating mandatory retirement as "good cause" for leaving employment;
- Offsetting private pensions against UI benefits only if earnings in the base period used to establish UI eligibility increased pension income; and
- Disregarding the part of pensions attributable to the employee's contribution.

Each of these policies would encourage older workers to remain in the labor force—either by allowing them to search for transition jobs that they would not otherwise be able to seek while collecting UI, or by increasing their income during their period of UI receipt while they continue to look for work.

Recent reinforcement of this important point comes in an analysis of the 2009 American Recovery and Reinvestment Act of 2009 (ARRA) (Wandner, 2012). The ARRA provided funding of up to $7 billion in grants to states that enacted legislative provisions to increase UI access, one of which was to enable older beneficiaries to search for part-time work. Without such a provision, older workers who lost part-time transition jobs could receive UI only if they searched for full-time jobs, and those who had lost full-time jobs could not search for part-time bridge jobs and still receive UI.

Receiving UI support also entails the possibility of joint participation in other safety net programs, the largest of which is the Supplemental Nutrition Assistance Program (SNAP). This program saw a rise in participation among older workers hit the hardest by the Great Recession. Heflin and Mueser (2013) examined the complex relationship between SNAP, which served 47.7 million people in January 2013 (15.1 percent of all Americans), and the UI program, which more than doubled with the onset of the recession. They found that the number of families relying on both SNAP and UI increased sharply with the Great Recession. The groups most likely to be joint beneficiaries were older workers, men, African Americans, and those in households with children.

3.3.2 Job Search Assistance

Older workers have weaker job search skills than other workers, because they tend to not have searched for work for a long time.

Older UI claimants (compared to younger workers) who returned to work quickly had better earnings recovery and employment retention than if they delayed their return to work (O'Leary and Eberts, 2008). Numerous studies have demonstrated the utility and efficacy of job search assistance (JSA). Many of these studies have used random control trials and natural experiments, which ensure a high degree of statistical confidence in the results.[9] One factor that leads to the particular effectiveness of JSA for older workers is that these workers typically have not searched for work for a long time and are thus are less likely to be familiar with current job search techniques, including the use of online job search sites and social networking sites—as discussed by Abraham and Houseman (2008), Zhang (2011), and Heidkamp (2012).

A factor that may negatively influence the utility of JSA is the extension of unemployment benefits. Krueger and Mueller (2011) presented findings from a survey of 6,025 unemployed New Jersey workers who were interviewed every week, for up to 24 weeks, in the fall of 2009 and the winter of 2010. The authors found a sharp decrease in the amount of time devoted to job search over a spell of unemployment, but no compensating rise in job search or job finding around the time that extended UI benefits expired. The study found that 10 additional weeks of unemployment reduced job search by 16 minutes per day. As expected, both devoting more time

[9] Programs reviewed include the Nevada Claimant Employment Projects, Charleston Claimant Placement and Work Test Demonstration, Washington Alternative Work Search Experiment, Reemploy Minnesota Project, Maryland UI Work Search Demonstration, and the states of New Jersey, Florida, and Washington, DC.

to job search and having a lower reservation wage helped predict early exit from UI and receipt of at least one job offer, a finding that did not differ by the age of the worker.

Outside the U.S. context, research indicates that JSA is similarly cost-effective, for example, in the Martin and Grubb (2001) study of JSA in OECD industrial nations and the Auer, Efenioglu, and Leschke (2005) study of labor market interventions around the world conducted for the International Labor Organization. Within the German context, Boockmann and Brändle (2015) estimated the effects of job search assistance and intensified counseling on older workers participating in "Perspektive 50plus," a large-scale active labor market program (with 280,000 participants in 2010) for older unemployed workers. The program's purpose is to help older workers obtain unsubsidized employment. The authors found large positive program effects on obtaining unsubsidized employment, even for disadvantaged and hard-to-place older workers, although program participants were more likely than nonparticipants to remain on public welfare benefits for up to one year after beginning the program. The more recent findings of Wandner, Balducchi, and O'Leary (2015) are consistent with the results of the Boockmann and Brändle study. This study found that older workers' specific needs are different from those of younger workers and that program staff need to understand those needs to be maximally effective.

Within the Canadian context, Bernard (2012) compared the job search behavior of older unemployed workers with that of their younger counterparts, using data from 2006 to 2010 from the Canadian Employment Insurance Coverage Survey results. He found that unemployed workers aged 55 to 64 spent less time searching for work compared to younger unemployed workers and were more likely to search mainly by looking at job ads. Older workers in this study were as likely as younger workers to look for work outside their local labor market (unlike in the United States), and more likely to accept a wage decrease (similar to the United States). Finally, the study confirmed that older workers were more pessimistic about the likelihood of finding a job and, as might be expected, had more health issues than younger workers.

3.3.3 Job Training

Studies of job training programs have shown a mixed record of success for older workers. First, unemployed older workers receive little training from the public workforce system. The Secretary of Labor's Taskforce on Aging of the American Labor Force (USDOL, 2008) identified several reasons for this, including reluctance by older workers to participate and referral by American Job Center staff to the Senior Community Service Employment Program rather than to the Workforce Investment Act (WIA) program or the newer Workforce Investment Opportunity Act (WIOA) program.

Limited available funding also reduces the likelihood of participation in training. According to Wandner (2015), the majority of older training participants make use of the Dislocated Worker program, but funding for that program peaked in 2006 and has declined since then, except for temporary increases in funding in 2009 and 2010 from the ARRA supplemental funding noted above.

Another issue affecting job training for older workers is that the WIA system slightly, but systematically, underserves this group (Heidkamp 2012), particularly in training programs. Older workers who do participate in the program and receive services have some success at becoming employed, though less than younger workers. However, older workers are likely to receive a credential at a rate equal to and sometimes greater than that of younger workers (Wandner, 2015).

An AARP (2012) study found that 30 percent of unemployed baby boomers said they had participated in training. Of those, the majority of respondents said they did not find that the additional training helped them in their careers. The major reasons that unemployed respondents gave for not engaging in training were that they lacked access or could not afford it (33 percent).

In terms of the direct benefits older workers receive from participation in training, the evidence is mixed. Zhang (2011) studied the impact of WIA training for older workers after the Great Recession and recommended increasing job training for older workers, even though the study found that longer training, among other factors, lowered older workers' entered employment rate (EER). Zhang identified common factors that raise the EER for WIA adults and dislocated workers, including having a college degree or finishing full-time technical or vocational school education, receiving supportive services (except for need-related payments), and receiving on-the-job training.

Older workers who received WIA-funded training were likely to receive credentials at a rate equal to or greater than younger workers, and had some success at becoming employed.

Hollenbeck and Huang (2008) evaluated nine public workforce programs for the Commonwealth of Virginia (including the WIA Adult program and Trade Adjustment Assistance [TAA] programs) using a quasi-experimental approach to estimate program effects on employment and earnings. The authors found positive net impacts for employment and earnings for the WIA Adult program (but not for TAA) two and four quarters after exit. However, they also found that the results were less favorable as workers aged.

Park (2012) found that older Canadian workers (aged 55–64) were significantly less likely to participate in on-the-job training than those aged 25–54. Between July 2007 and June 2008, 32 percent of workers aged 55–64 had some training, compared to 45 percent of those aged 25–54. The age gap persisted even after adjusting for labor market factors and personal characteristics. In addition, older workers with lower personal income, with less than a post-secondary education, in temporary employment, and in sales or service jobs, as well as those working in the private sector and goods-producing industries, were significantly less likely to participate in training than others the same age. The training gap between older and younger workers narrowed over time, however, as the Canadian training rate for older workers more than doubled from 1991 to 2008. This was due primarily to increased educational attainment among older workers and changes in the types of jobs held by more recent cohorts.

3.3.4 Aging Worker Initiative

The Aging Worker Initiative (AWI), conducted between 2009 and 2012 by USDOL, had two purposes: it was intended to respond to the rising percentage of older workers in the labor force, and to be an incubator for ideas on how to best serve the special needs of older individuals within the public workforce system (Kogan et al., 2013). AWI provided grants of approximately $1 million each, awarded competitively in the summer of 2009, to 10 local organizations in the United States, to develop new strategies for serving workers aged 55 and older. The projects were required to involve employers, the workforce system, and educational providers as partners, and focus on high-growth jobs. Grantees were to develop models for talent development and employment services and build the capacity of the public workforce system to serve older workers. Grantees were required to use one or more of the following approaches: (1) develop model skills development and employment services; (2) encourage self-employment; (3) update or adapt skills to a new industry or related occupation; (4) build career awareness and outreach programs; (5) build training provider capacity; and (6) target subgroups.

According to the AWI evaluation report (Kogan et al., 2013), the findings were mixed at best. Participants were initially intimidated by attending training in a community college classroom with primarily younger students; in response, several grantees altered or adjusted the training to meet the needs and goals of these participants. About half of exited participants obtained unsubsidized employment, but participants who enrolled in training had a somewhat *lower* rate of employment compared to those who did not obtain training.

3.3.5 Self-Employment Assistance

Self-employment assistance is another public workforce system service that has been used by older workers in the past decade. Dennis (2012) found that the age group accounting for the sharpest growth in entrepreneurship is the cohort between the ages of 55 and 64. In 1996, 14.3 percent of all entrepreneurs were in this age group. By 2011, the percentage had grown to 20.9 percent. By contrast, the proportion of self-employed workers declined for those 44 years old and younger, and declined most sharply for those aged 20 to 34.

From a comparative perspective, self-employment assistance has proven to be a critical tool in extending the working lives of older individuals, according to the O'Leary and Eberts (2011) study of the effectiveness of public workforce programs in Canada, the United States, and other industrial nations. The authors reviewed a large number of programs that promote self-employment, including the Washington and Massachusetts Self-Employment Assistance demonstrations that were the basis for enactment of the U.S. Self-Employment Assistance (SEA) Program and the Growing America Through Entrepreneurship (GATE) program. Their conclusion is clear: "SEA tended to be most successful for its typical target population: older, experienced, more educated, and having high levels of personal assets."

3.4 Conclusions

This chapter reviewed the large body of literature on the unemployment experience of older workers, especially the consequences of the Great Recession for the labor force participation of an aging nation, and the effectiveness of the public workforce system in responding to the economic crisis. Though useful in their current state, according to the literature, substantial improvements could be made to federally funded workforce programs to resolve and preempt future challenges encountered by older workers dislocated from their jobs. Below we summarize the most important findings.

Older Worker Job Loss. Older workers, in general, suffer more severe effects from job loss—tending to return to work more slowly and to be less likely to return to their prior wage levels. But older workers who return to work quickly experience greater wage recovery and new job retention. On the other hand, older workers are less likely to return to work if they begin receiving early Social Security benefits.

Displacement Against the Backdrop of the Great Recession. The Great Recession had substantial effects on the labor force participation of older workers:

- Older workers had lower job loss rates than prime-age workers until 1996, but this trend had reversed by 2006.
- Financial hardships included declining housing prices, depleted personal savings, and ever-increasing consumer debt.
- The sudden loss of personal assets increased the likelihood of working at age 62 for many workers during the Great Recession, but hastened retirement for workers with substantial personal assets.

Unemployment Insurance. The UI program can facilitate future employment and labor force participation by older workers. However, it has been shown that a wide range of UI rules (on initial eligibility, continuing eligibility, wage replacement, and partial benefits) have negative effects on older workers. Particular attention should be given to program features that relate to self-employment, part-time employment, and seasonal work.

Job Training. Older workers have received little training from the WIA system compared to younger workers, for reasons that include the following:

- Older workers are more likely to be referred to other reemployment services.
- WIA and Employment Service staff are reluctant to refer older workers to training because of negative effects on WIA performance outcomes.
- Older workers also are less interested in participating in training than younger workers, for reasons including lack of access to training and funds to finance it.

Job Search Assistance/Reemployment Services. Job search assistance (JSA) is a low-cost service for unemployed workers of any age. When targeted to and designed for the special needs of older workers, JSA can be highly effective in helping even this vulnerable group return to work.

Self-Employment. Providing entrepreneurship training and support for older workers—particularly those who are highly educated and have substantial personal assets—can help them reenter or remain in the labor force.

4. SOCIAL SECURITY, HEALTH INSURANCE, AND DISABILITY INSURANCE

4.1 Introduction

This chapter reviews the literature on the influence of federal benefit programs on the labor supply of older workers. Specifically, the review assesses the impact of the following federal programs: (1) Social Security; (2) health insurance, including Medicare, Medicaid, and non-group insurance under the Affordable Care Act; and (3) disability insurance.

We focus on how these benefits influence older workers' decisions to continue working or retire (entirely or partially), and how changes to these programs may affect older workers' incentives to work.

4.2 Social Security Policy

Social Security Policy: *Key Takeaways*

- A wide range of research indicates that reductions in Social Security benefits would induce older individuals to work more hours in retirement, even those well into their 70s and 80s.
- Social Security provisions that have increased full retirement age (FRA) have increased labor force participation among older workers.
- According to a study that simulates policy counterfactual scenarios, raising the early retirement age would increase full-time employment more than raising the FRA.
- According to same study, increasing the FRA and early eligibility age without commensurate financial protections for those who could no longer work would push up to a million seniors into poverty.

Many of the studies reviewed in previous chapters assessed the Social Security program's influence on older workers' decisions as one important factor among a range of factors that influence older workers to remain in the labor force or leave it. Below, we focus directly on the incentives built into the structure of the Social Security program and how changes to the program have affected older workers' labor market decisions.

Social Security pension policy in the United States has adapted to accommodate the growing trend among workers who extend their working lives beyond the traditional age of retirement. For instance, the Senior Citizens' Freedom to Work Act of 2000 removed the retirement earnings test for workers at or above the full retirement age (FRA) and relaxed the earnings test—which offsets or reduces Social Security benefit payments above an earnings limit—for workers between the age of 62 and the FRA. This offset is later refunded in the form of higher monthly benefits. Thus, workers over the FRA may keep their full earnings without an offset, and those between the age of 62 and the FRA can keep a larger percentage of their earnings. More information on this may be found in Johnson (2011).

4.2.1 Social Security Policy

The last major reform of the Social Security system was in 1983, when the Social Security Amendments (P.L. 98-21) gradually increased the FRA for workers born after 1937, from 65 to 67. The implementation of this reform has generated considerable research into the incentive effects of raising the FRA. Behaghel and Blau (2010), for example, studied retirement behavior based on increases in the FRA from age 65 to age 66 in two-month increments per year of birth, for cohorts born from 1938 to 1943. The authors used the HRS initial cohort because these individuals reach their FRA by age 66, whereas the later HRS cohorts donot. The study found strong evidence that the spike in benefit claiming at age 65 moved in lockstep with the increase in the FRA—responsiveness that was stronger for people with higher cognitive skills.

To shed further light on this issue, Vere (2011) took advantage of the 1977 amendments to the Social Security Act, which led to a large, unanticipated reduction in Social Security benefits for those born after January 1, 1917. Despite the advanced age of the affected cohorts, the study found a significant, negative, and highly elastic relationship between Social Security income and hours of work. Specifically, a $1,000 reduction in non-labor income (in 2009 dollars)—roughly equivalent to the cut in Social Security income imposed by a 15-month increase in the FRA—increased older workers' participation in the labor force by 27 percent. The response was greater for beneficiaries who were single, spouses of beneficiaries, or less educated.

Labor supply can be more heavily influenced by reforms that raise the FRA rather than by reducing benefit levels.

4.2.2 Future Reform Alternatives

The findings in Vere (2011) suggest that any future legislated reductions in Social Security benefits would induce recipients to work more hours and delay full retirement, even well into their 70s and early 80s. Two reports in the literature take this suggestion further by looking at three potential future Social Security reforms. Gustman and Steinmeier (2012) used the HRS initial cohort plus two HRS supplements to examine three potential policy reforms: increasing the early entitlement age, increasing the FRA, and eliminating payroll taxes after the normal retirement age.

Raising the FRA is likely to significantly increase labor force participation of older workers with employer-provided health insurance.

The study found that raising the early retirement age to 64 would shift the spike in retirement from full-time work from age 62 to age 64. Increasing the FRA to 67—from age 65 for most of the sample—would increase full-time work and the number of hours worked. Eliminating the payroll tax for older workers after they reach the FRA would also increase full-time work.

Johnson (2011) estimated that although increasing the FRA and the early eligibility age would help balance Social Security's long-range budget and boost work incentives, doing so could push up to a million seniors into poverty unless stronger protections are included for people who

cannot work (such as a stronger disability safety net and an expanded Supplemental Security Income program).

4.3 Public Health Insurance

Public Health Insurance: *Key Takeaways*

- Medicare eligibility (which begins at age 65) is important in explaining why workers continue to retire at 65, even though entitlement for full Social Security benefits comes only at age 67.
- Medicare eligibility increases the likelihood of prompt retirement at 65 for workers not eligible for employer-sponsored insurance.
- Full enactment of the Affordable Care Act is too recent for definitive conclusions about the effects of its reforms. One estimate, based on ACA-like state-level reforms, predicted substantial reductions in the rate of exit from the labor force and postponement of full retirement. But another study, based on the first 18 months of the ACA's full implementation in 2014, found no effects on labor force participation or retirement timing.

In the United States, where most workers have historically obtained health insurance through their employers, availability of health insurance has always factored into labor force decisions. This section reviews the literature on the relationships between older workers' labor market decisions and the three major public health insurance programs—Medicare, Medicaid, and non-group insurance reform under the ACA.

Medicare is a major driver of retirement for workers at age 65, as shown by Coe and Rupp (2012). This study found that when Social Security's FRA increased to age 66 for recent retirees—even though the peak retirement age increased with it—a large percentage of workers continued to claim their Social Security benefits at age 65 (the eligibility age for Medicare coverage). Estimates indicate that workers without access to employer-sponsored retiree health insurance at work were 7.5 percentage points more likely to retire soon after their 65th birthday and 5.8 percentage points less likely to delay retirement until the FRA.

Workers without access to retiree health insurance at work are 7.5 percentage points more likely to retire soon after their 65th birthday and are 5.8 percentage points less likely to delay retirement until FRA than those with that insurance.

Other researchers confirm the central role Medicare eligibility plays in the retirement decision, including French and Jones (2011), who developed an HRS-based retirement model that includes health insurance, uncertain medical costs, and other factors. Their estimates suggest that approximately half of the value of employer-provided health insurance comes from its effect in

reducing health care risk. The authors conclude that raising the age of Medicare eligibility to 67 would have as large an effect as raising the Social Security FRA to 67.

Research to date on the likely effects of the ACA on older workers' labor supply decisions is mixed—perhaps not surprisingly, since full implementation occurred only in 2014. Major impacts were predicted by Coe and Goda (2015) in their analysis of the ACA, based on state-level reforms similar to the ACA. The authors merged the initial cohort of the HRS and the biennial follow-up surveys from 1996 to 2010 with state-level health insurance regulatory data for the non-group health insurance market. They estimated changes in retirement behavior in response to the set of reforms that were implemented in 2014 with ACA. These reforms include more regulation of the non-group market, subsidies for health insurance for low- to middle-class households, and Medicaid expansion. The authors found that the non-group health insurance reform substantially increased the hazards of leaving the labor force. Overall, for workers aged 63, the hazard of exiting the labor force almost doubles.

In sharp contrast, Levy, Buchmueller, and Nikpay (2015), who looked at the effect of the ACA on retirement among individuals aged 55–64 during the first 18 months of the law's full implementation, found no effect.[10] Specifically, the study found no increase in retirement in 2014 or 2015 compared to earlier years, no increase in retirement in 2014 and 2015 even in the Medicaid expansion states, and no change in the percentage of older workers working part-time. However, with more complete data, Even and Macpherson (2015) show a substantial effect of the ACA on the involuntary part-time employment of older workers.

Access to health insurance also plays a key role in whether retirees return to the workforce. Congdon-Hohman (2015b) studied this phenomenon using a subset of the HRS initial and "War Baby" cohorts. The study compared the role of health insurance provisions to the impact of financial "shocks" and found that availability of health insurance was as important as financial explanations for retirement reversals. The study also showed that the source of health insurance played a particularly important role for those who were retired but had previously said they were open to the idea of working. These results, and further research along similar lines, can be helpful in predicting the future impacts of the ACA as its reforms continue to mature.

4.4 Disability Status and Disability Insurance Use

The share of the population aged 25 to 64 receiving Social Security Disability Insurance (DI) has increased from 2.3 percent to 5.1 percent over the past two decades (paying out $140 billion in 2012). This continuing growth has compromised the ability of the DI Trust Fund to pay benefits, according to the Old-Age, Survivors, and Disability Insurance (OASDI) trustees, who warned in 2013 that "lawmakers need to act soon to avoid reduced payment to DI beneficiaries three years from now" (cited in Coile, 2015, p. 1).

[10] A possible explanation for the difference in findings is that Coe and Goda (2015) relied on longitudinal data from the HRS dataset, whereas Levy et al. (2015) used cross-sectional CPS data.

Below, we focus on three aspects of the impact of disability insurance on labor supply. Specifically, we review the literature on the relationship between labor supply and DI benefits, the dynamics of DI reforms, and other countries' experience with public disability insurance.

Disability Status and Disability Insurance Use: *Key Takeaways*

- The share of older U.S. workers receiving DI benefits has been rising and is predicted to keep rising.
- The probability of DI receipt is negatively related to education, even after adjusting for health. But the impact of health, rather than other factors, increases DI receipt among older beneficiaries.
- Longer processing times affect labor supply participation after DI benefit receipt. Long wait times—because DI applicants are barred from earning more than $1,000 while waiting—substantially increase the measured impact of benefit receipt on subsequent work.
- The "disability lock"—tying receipt of public health insurance coverage to receipt of DI cash benefits—has been relieved by reforms that continue health insurance eligibility after UI beneficiaries exit cash benefits for work-related reasons. Some disability lock still exists for SSI beneficiaries, which is mitigated with generous Medicaid eligibility and non-group insurance reforms.
- Experience in the United Kingdom suggests that tightening the eligibility restrictions on public disability insurance hastens the return to work by beneficiaries. There is also evidence that shows that DI financial incentives do affect labor force participation.
- Differing experiences among OECD countries indicate that the countries that are more successful in speeding beneficiaries' return to work have coordinated policies that integrate public disability insurance with public pensions and social welfare programs.

4.4.1 Disability Insurance and Labor Supply

There is a strong consensus that the DI program's financial incentives have labor market effects. Coile (2015) found, for example, that an increasing percentage of older workers in the United States make use of the DI program in their transition to retirement. About one in seven men and one in nine women aged 60 to 64 are enrolled in the DI program. The study found that the probability of DI receipt is strongly and negatively related to education, even after adjusting for health. Simulation estimates in the study indicate that increasing the stringency of the DI screening process would extend the expected working life of DI applicants.

Rutledge (2012) found that chronic health conditions influence the decision to apply for DI benefits versus continuing to work until Social Security retirement eligibility. This study investigated whether national and state unemployment rates are related to disability applications, taking into account the current or future receipt of Social Security retirement

benefits. The results indicate that individuals are no more likely to apply for DI when unemployment is high. Furthermore, the probability of DI application among individuals aged 55 to 61 is unrelated to macroeconomic conditions and unrelated to proximity to individuals' 62nd birthday.

Autor et al. (2015) investigated the effect of delays in DI administrative decisions on the future employment and earnings of DI beneficiaries. The study estimated the separate effect of applicants' time out of the labor force—since DI applicants are effectively barred from earning more than $1,000 per month—on their subsequent employment. To isolate the effect of application delays from labor market effects, the authors used decision-time variations induced by differences in processing speed among the disability examiners to whom applicants were randomly assigned. Longer processing times reduced the employment and earnings of DI applicants for years following application. Moreover, reductions in employment and earnings may increase participation in DI. Because applicants who were initially denied benefits averaged more than 15 additional months appealing their denials, the results of previous analyses, which did not control for the effect of administrative delays, yielded substantial underestimates.

4.4.2 The Dynamics of Disability Benefit Provisions and Employment Rates

The Social Security Disability Insurance program underwent substantial expansion in 1985, providing researchers with the opportunity to investigate the ramifications of this expansion on the labor force participation of older workers. When Bound, Lindner, and Waidmann (2014) investigated this topic for men, they initially found divergent results. On one hand, since 1985, employment rates for men with work limitations showed substantial declines in both absolute and relative terms, suggesting that the expansion of DI was a major contributor to employment decline. On the other hand, analyses using *denied* applicants suggested a more modest role for DI expansion. To reconcile these findings, the authors divided total employment changes into population and employment changes for three categories: DI beneficiaries, those whose applications were denied, and non-applicants.

During the early 1990s, DI growth fully explained the overall employment decline of men only under an extremely optimistic assumption about the employment potential of DI beneficiaries had there been no DI program. For the period 1994–2004, the authors concluded, similarly, that factors other than the DI program likely contributed to employment declines, although growth in the availability of DI benefits and generous benefit amounts also contributed to the drop in employment of men with work limitations (Bound et al., 2014).

A central policy concern is the so-called disability insurance job lock, or "DI lock"—that is, tying receipt of public health insurance coverage to receipt of DI cash benefits—which contributes to the low rate at which DI beneficiaries exit the program for work (Coe and Rupp, 2012). This concern led Congress in 2000 to institute continued health insurance eligibility after disability beneficiaries stop receiving cash benefits for work-related reasons. Coe and Rupp (2012) tested whether a DI lock actually existed, and whether state health insurance policies designed to help alleviate the problem actually encouraged beneficiaries (of both DI and SSI) to work.

The researchers used state variation in the access to and cost of health insurance caused by regulation of the non-group health insurance market, the existence of Medicaid buy-in programs, and Medicaid generosity, as well as detailed disability and health insurance program interactions. Although they found little evidence overall of persistent "DI lock," the results varied among demographic groups. There was evidence of SSI lock among beneficiaries with some Medicaid expenditures, and both non-group health insurance reform and generous Medicaid eligibility helped alleviate it. The authors found a remaining DI lock for individuals without access to supplemental health insurance outside Medicare.

4.4.3 Public Disability Insurance Experience in Other Countries

The experience with public disability insurance in the United Kingdom provides potential insights for American policymakers grappling with how best to resolve a confluence of issues that, when taken together, could potentially spell problems: an unsustainable rise in public disability insurance use, a simultaneous uptick in exits from the labor force, and increased life expectancy. Banks et al. (2011) analyzed the impact of two particularly salient British reforms on the inflow and outflow utilization of public disability insurance in light of these issues. The first reform, in 1995, instituted stringent eligibility requirements for participation and decreased generosity in benefits, which led to an overall drop in DI involvement among older workers. A subsequent DI reform (called Pathways-to-Work), which was implemented as a pilot in 2003–2005, introduced new financial incentives and voluntary schemes to encourage DI beneficiaries to return to work sooner. Evidence suggested that those moving onto disability benefits during the pilot program left the program faster than would have been expected under the regular disability insurance program. Both instances underscore the promising influence that policy reforms can have on attenuating a likely unsustainable depletion of public disability insurance funds by aging, working adults.

The rising expansion of DI programs and concomitant fears of its unsustainability have also loomed large in other industrialized nations. Burkhauser et al. (2014), who examined DI reform in a number of OECD countries, found that unsustainable growth in DI programs and recognition that older workers—even those with severe disabilities—could work, led to fundamental reform in the Netherlands, Sweden, and the United Kingdom. These reforms resulted in a substantial decline in DI recipiency rates and returned the programs to sustainable fiscal levels. The reforms had two components: (1) slowing program entry by keeping newly impaired workers in the labor force; and (2) making efforts to return recipients to work by conducting periodic reassessments and providing work incentives. The former reform was much more successful than the latter.

The authors drew the following lessons for the United States from the experience of the nations that were most successful in reforming their disability insurance programs:

- Disability is not an immutable state, but is shaped by the health and cultural, social, and economic environment of the impaired workers.
- Disability policy itself affects the behavior of impaired individuals, and these individuals respond to changing policy.

- Providing incentives to stay in the labor force is far more successful than incentives to return to work after receiving disability benefits.
- Disability insurance is a part of broader social policy and cannot be dealt with in isolation.

Full effectiveness requires coordination with unemployment insurance, Social Security, and social welfare programs more generally.

4.5 Estimating the Effects of Tax Policy/Payroll Taxes on Retirement Decisions

Recent literature also suggests that changes to tax policy can have a significant effect on retirement decisions. Alpert and Powell (2012) studied the impact of income and payroll taxes on labor supply decisions for workers aged 55 to 74, using the Health and Retirement Study. Their estimates suggest that implementation of an age-targeted tax reform that eliminates payroll taxes for older workers would decrease the percentage of both men and women dropping out of the labor force by almost 1 percentage point.

Similar findings emerged from another study conducted by Alpert and Powell (2014), who examined the role income taxes play on the labor supply decisions of older workers. Using Census data from 2000 and American Community Survey (ACS) data from 2001 to 2008, the authors studied the relationship between the implementation of different tax policies and the employment and earning decisions of older workers. First, for a 10 percent increase in the marginal after-tax rate, the authors estimated a rise in the labor earnings of women and men of 5 and 13 percent, respectively. Second, by simulating a policy environment in which the employee portion of the Social Security payroll tax was eliminated, the authors found an increase of 8.7 percentage points in the labor force participation by older women, and an increase of 9.2 percentage points in participation by men. Finally, the study concluded that a simulated expansion of earned income tax credits would encourage further involvement of women in the workforce by 9.2 percentage points, but the findings were negligible for men.

These promising effects extend beyond the United States, with evidence from Sweden further strengthening the notion that tax-related policies have an impact on the behavior of older workers. According to Laun (2012), the enactment of two Swedish tax credits—an earned income tax credit and a payroll tax rate reduction—for people 65 years of age and older resulted in a noticeable change in the labor supply and earnings of older workers. Using the Longitudinal Database on Education, Income and Employment (LOUISE), the Income and Tax Register, and the Register-Based Labor Market Statistics (RAMS) sources maintained by Statistics Sweden, Laun showed that the simultaneous implementation of the two aforementioned credits yielded a 1.5 percentage-point increase in the labor force participation of older workers after their 65th birthday, and a rise in earnings of 1.8 percentage points.

4.6 Conclusions

This chapter reviewed a growing literature on the effect of federal government policy related to Social Security pensions, public health insurance, and Social Security Disability Insurance, on older workers' decisions to work or retire. Each of these programs or policies may have a significant impact on the labor supply of older workers, and recent research has tried to understand and measure these effects. Major conclusions from this research are summarized below.

Social Security. The literature confirms the powerful influence that Social Security pension reforms can have on the economic behavior of older working Americans. However, that influence varies according to other determinants of labor force attachment for older workers:

- Individuals with higher education levels and employer-sponsored health insurance have a lower probability of retiring at age 65.
- Raising the early retirement age is estimated to increase full-time work among the elderly more than raising the full retirement age (FRA). The effect of the latter is still positive, but weaker.
- Taken together, structural changes to the Social Security pension program—including increases in the FRA, which is equivalent to a reduction in lifetime benefits—will help the Social Security Trust Fund. However, without commensurate financial protections for those who cannot work, these changes could push up to 1 million seniors into poverty, according to one estimate.

Public Health Insurance. The literature confirms the leading role that public health insurance has played in retirement decisions, especially in the past two decades.

- The Medicare eligibility age is an important reason why a large share of older workers continue to retire at age 65.
- About half the value of employer-sponsored health insurance comes from its effect in reducing health risk, according to one estimate.
- The impact of the Affordable Care Act (ACA), which was fully implemented only in 2014, is still unclear. One estimate, based on state-level reforms similar to the ACA, predicts substantial increases in labor force participation and later average retirement ages. However, an analysis of the first 18 months of ACA experience showed no impact.

Disability Insurance. The Social Security DI program has witnessed a dramatic expansion and uptake since its inception in 1956, a trend that is predicted to continue.

- An increasing percentage of older workers in the United States rely on the DI program as they transition into retirement.
- The literature is in strong agreement that DI financial incentives do reduce labor force participation, but that higher education levels reduce this effect.

- The older the worker, the more that health status (rather than other factors) helps explain the incidence of DI benefit receipt.
- Longer wait times due to claims processing delays have a significant effect on labor force participation, which leads many researchers to underestimate the impact of DI's work disincentive effect.
- Tightening the eligibility restrictions on public disability insurance in the United Kingdom has helped reduce benefit receipt. However, the differing experiences of OECD countries suggests that maximum effectiveness in postponing retirement comes from integrating retirement, disability, and social welfare policies in a comprehensive approach.

Tax Policy. Estimates of the effect of implementation of an age-targeted tax reform that eliminates payroll taxes for older workers would yield a 4 percent decrease in exit from the labor force for both men and women. Finally, evidence from Sweden further bolsters support for the powerful impact that age-specific tax credits can have on the increased involvement of older workers in the labor force.

5. WORKERS' FINANCIAL, HEALTH, AND DEMOGRAPHIC CHARACTERISTICS

5.1 Introduction

The labor market experiences of older workers are shaped by many personal factors that ultimately determine these individuals' decisions about work and retirement. This chapter begins by exploring the role of household finances. We then turn to health status, and conclude with a discussion of major demographic characteristics.

5.2 Personal Finances

In this section, we review the literature on the relationship between older workers' labor force participation, retirement decisions, and personal financial situation. This situation could include private pension availability, relative earning levels, household debt, and major household spending responsibilities.

Personal Finances: *Key Takeaways*

- The Great Recession had a much larger negative effect on 401(k) participants' behavior than did the prior two recessions (1990–1991 and 2001), with declines in retirement plan participation and contributions concentrated among younger and lower-income families.
- The generation now facing retirement is less prepared to maintain its pre-retirement standard of living than were previous generations. But analysts do not agree on the reasons. Some attribute the decline to the economic shocks of the Great Recession. But at least one study points to the influence of reduced availability of employer-sponsored retirement plans for all worker groups, irrespective of demographic or economic status.
- Over the past two decades, increasing proportions of older workers' incomes have become tied to earnings. Lifetime employment and earnings affect workers' net returns on their Social Security contributions, and low earners retire later, on average, than high earners.
- Indebtedness among older workers has been increasing, but there is evidence that workers incorporate wealth shocks (predominantly housing shocks) into their work/retirement/reentry decisions.
- Parents paying for a child's college education are more likely to be working and less likely to collect Social Security benefits or describe themselves as retired.

5.2.1 Private Pensions

In this section, we focus on older workers' participation in and contributions to personal retirement savings accounts, transitions from defined-benefit to defined-contribution retirement plans, and early withdrawals from retirement accounts.

A consensus exists in the literature that participation in and contributions made to 401(k) savings plans increased in the years before the Great Recession and dropped precipitously in its wake. Butrica and Smith (2012), who examined how the business cycle booms and busts of the 1990s and 2000s affected 401(k) plan participants, found that the Great Recession had a much larger negative effect on 401(k) participants' behavior than had the prior recessions (July 1990–March 1991 and March–November 2001). The authors found that participation declined slightly, but that contribution amounts and rates declined drastically, with concurrent increases in borrowing from 401(k) accounts (after controlling for earnings, job changes, and other household factors).

Munnell (2014) focused on the trend in workers' retirement wealth as measured by their 401(k) plans and individual retirement accounts (IRAs) from 1988 to 2013. She found that the share of eligible workers *not* participating in plans declined from 43 percent to 21 percent from 1988 to 2004, but then remained static from 2004 to 2013. Not surprisingly, contributions varied by earnings: the share of workers making maximum contributions in 2013 was 0 percent for workers with earnings less than $50,000; 2 percent for those earning between $50,000 and $75,000; 6 percent for those earning between $75,000 and $100,000; and 36 percent for those earning over $100,000. The typical household approaching retirement had $111,000 in 401(k)/IRA assets in 2013. The factors contributing to low balances included less than full plan participation, low contributions, high fees, and early withdrawals. [11]

Based on this downward trend in retirement contributions, Munnell, Rutledge, and Webb (2014) studied the effects on the generation now facing retirement, specifically, whether this generation will have adequate resources to maintain their previous standard of living—termed "retirement preparedness." The authors show that retirement preparedness has been declining over time, and households in the future will be less prepared for retirement than those in the past.

Their analysis attributed this decline to the fact that, although the ratio of wealth to income by age has remained constant over time, many exogenous factors have made this measure less useful. Among these factors are the decline in the Social Security replacement rate (the percentage of pre-retirement income that Social Security benefits replace), the shift from defined-benefit to defined-contribution pensions, rapidly growing health care costs, and low interest rates. As a result of failing to meet target replacement rates, the authors estimated that about half of households in the future will not be able to maintain their standard of living in retirement.

[11] The findings presented by Butrica and Smith (2012) and Munnell (2014) are based on a sample of all workers, as opposed to only older workers.

Ghilarducci, Saad-Lessler, and Bahn (2015) question whether the more difficult economic circumstances of older workers are a direct cause of the current lack of retirement preparedness. These authors looked at the issue from the employer side—that is, the availability of employer-sponsored retirement plans. According to this study, the fact that only 44 percent of workers in 2011 participated in a retirement plan at work is at least partly attributable to a decline in the availability of (as distinct from participation in) employer-sponsored retirement plans. The authors also note that the share of workers covered by private pensions declined for all worker groups, regardless of demographic or economic status. Interestingly, being in a union was somewhat protective—union workers experienced a 6 percent drop in coverage, compared to 14 percent for non-union workers.

The lack of retirement readiness is not caused by the Great Recession, but by two trends: (1) not enough people have access to a retirement plan at work and, when they do, (2) the amounts saved often are not enough to ensure adequate retirement living standards.

If this trend continues, how will retirement trajectories change? Rutledge et al. (2015a) addressed this question using 30-year projections for the 1955–1987 birth cohorts, on the assumption that the jobs workers in those cohorts would take in the future would have no employer-sponsored retirement benefits of any kind. Estimates from this analysis indicated that the average retirement age would increase over the next three decades by about one year, from 61.8 to 62.8 years of age.

Yet another take on the issue of retirement readiness suggests that early withdrawals from retirement accounts enable individuals to smooth consumption over time when experiencing economic shocks.[12] Argento, Bryant, and Sabelhaus (2013) showed that early withdrawals increased during the Great Recession. These were strongly related to marital as well as other income shocks and were more likely for low-income taxpayers.

5.2.2 Relative Earnings Levels

Parallel to the dramatic increase in the labor force participation of older workers over the past two decades, the literature documents an increase in the proportion of workers' incomes tied to employment earnings. For those aged 65 to 69, for example, Leonesio et al. (2012) estimate that earnings as a share of total income increased from 28 percent in 1980 to 42 percent in 2009. For this age group, Social Security benefits and earnings were roughly equal shares of their total money income (about 30 percent) in the late 1980s and early 1990s.

5.2.3 Financial Obligations

Large financial obligations (for example, owning a home with a mortgage, other outstanding debt, and major spending on children's education) can affect the work/retirement choices of

[12] It is important to note, however, that early withdrawals mean lower assets later in life, when individuals also run the risk of shocks.

older workers. Using data from the HRS and the National Financial Capability Study (NFCS), Lusardi and Mitchell (2013) demonstrated that the debt burden of older workers has been increasing. They found that the percentage of people aged 56 to 61 with net debt rose from 64 percent in 1992 to 71 percent in 2008, mostly due to the purchase of more expensive homes with smaller down payments.

Begley and Chan (2015) found evidence that older workers incorporated financial shocks (both positive and negative) into their work and retirement decision as well as the timing of Social Security benefit claims. Interestingly, the findings differed by gender. Women tended to react to negative housing shocks by delaying retirement, with no such effect for men. Both women and men reacted to negative shocks by delaying Social Security benefit receipt.

The general link between the timing of Social Security benefit receipt and household indebtedness was confirmed by Butrica and Karamcheva (2013), who found that households of Social Security eligibility age (62 to 69) with debt were 8 percentage points more likely to work and 2 percentage points less likely to receive Social Security benefits than those without debt. The amount and types of debt also influenced older adults' behavior in this regard, with outstanding mortgages being particularly influential.

The upward trend in indebtedness has important implications for the retirement of older workers who respond to their indebtedness by delaying their retirement and Social Security receipt.

How does the burden of financing children's college education affect the labor supply decisions of their parents? Handwerker (2011) addressed this question by tracking the labor supply of parents in the first three cohorts of the HRS, following the biennial waves from 1992 to 2006, both before and after they sent their children to college. She found that mothers and fathers currently financing a child's education were more likely to be working, less likely to be collecting Social Security benefits, and less likely to report that they were retired. She found little evidence, though, that paying for a child's education had any impact on the parents' work intensity.

5.3 Health Limitations

As individuals age, health limitations and factors associated with health, such as private health insurance, become highly relevant to an individual's decision to work or retire. In this section, we consider the role of private health insurance as well as that of physical health in older workers' labor market decisions.

Health Limitations: *Key Takeaways*

- Workers incurring a medical work limitation after age 50 sustained significantly lower wages. Their poverty rates nearly doubled, and cash benefit programs only slightly offset their earnings loss.
- Older workers with disabilities were hit particularly hard by the Great Recession.
- Subjective life expectancy affects the timing of retirement. Increases in workers' own assessment of their life expectancy are associated with actual postponement of retirement.
- The connection between job characteristics and personality traits suggests that workers may select into specific job types that ultimately shape their work and retirement paths.

5.3.1 Private Health Insurance

Because older workers tend to have greater health care needs, access to health insurance is an important factor in the decision to work. In particular, older workers without employer-provided health insurance are likely to seek new employers that provide health insurance. It should be noted that the studies in this section were conducted before the enactment of the Affordable Care Act, which may affect their generalizability.

Rogowski and Karoly (2000) studied the role of health insurance in the retirement decisions of older workers who were 51 to 61 years of age in 1992, using the HRS data from the 1992 and 1996 waves. They found that access to post-retirement health insurance had a large effect on retirement decisions. Among older male workers, those with health insurance in retirement were 68 percent more likely to retire than workers who would lose their insurance when they retired. For older workers who would not have access to health insurance in retirement, the importance of health insurance was demonstrated by the fact that they were "job locked" in their current jobs compared to workers who would retain health insurance in retirement. Workers who had either public or private health insurance in retirement were 44 percent more likely to retire than those who did not. The authors found that even workers who do not have health insurance may be job locked in the sense that they need to continue working to have sufficient income to protect them from the risk of future health costs. On the other hand, older workers without health insurance coverage may leave their jobs because a new employer does offer health insurance ("job push").

Using more recent data, Robinson and Clark (2010) found a somewhat smaller effect of retirement health insurance on the probability of retirement. Using the 1992–2006 waves of the HRS and the Rand HRS files, they found that access to retirement health insurance increased the probability that older workers will leave their career jobs for retirement by 21.2 percent, compared to similar workers without access to retirement health insurance.

5.3.2 Physical Health Factors

Physical health barriers that limit working abilities, and physically demanding jobs, affect the likelihood of remaining in the workforce as workers age. As life expectancy increases, understanding the barriers to and facilitators of extending the working lives of older individuals with less than robust health becomes ever more important.

Workers incurring a medical work limitation after age 50, according to Schimmel and Stapleton (2012), sustained significantly lower earnings during the period of disability onset. The study, which was based on the HRS initial cohort for the period 1994–2004, found that poverty rates nearly doubled, with income from unemployment insurance, workers' compensation, and retirement and disability benefits offsetting only a small amount of the earnings decline.

Older workers with disabilities had an especially difficult time finding a job after the Great Recession, according to Altindag, Schmidt, and Sevak (2014). This study focused on the fortunes of workers with disabilities who were employed in 2004. The authors attributed the difficulty in finding a job to the effect of longer unemployment spells for older workers, combined with the greater difficulty laid-off workers with disabilities had in finding new employment. Poor and declining health, according to Munnell et al. (2015), is one of the most important factors driving early retirement.

Physically demanding jobs, not surprisingly, increase the likelihood of early retirement, as documented by Modrek and Cullen (2012), whose analysis controlled for wage differentials, injury history, and underlying health. These authors also found that the likelihood of early retirement is reduced for workers who transition to a less physically demanding job.

Subjective life expectancy also influences the planned retirement ages and expectations of working at older ages. Khan, Rutledge, and Wu (2014) measured longevity expectation with the HRS data, which asks respondents their subjective probability of living to ages 75 and 85. Using the 1992–2010 waves and a sample of labor force participants aged 50 to 61, the authors found a large and statistically significant relationship between workers' subjective assessment of life expectancy and their retirement expectations.

Angrisani et al. (2013) examined the connection between job characteristics and personality traits on retirement. The authors document the extent to which the work environment itself and job characteristics interact with economic variables to influence labor force transitions to retirement and part-time employment. They determined that individual retirement decisions depended on work-related factors (for example, compensation and financial incentives) and job characteristics (for example, autonomy, skill variety, task significance, and difficulty). They also found that stress and physical demands, peer pressure, and relations with co-workers help determine the psychological commitment to work at older ages.

5.4 Socioeconomic Characteristics

Educational attainment, household composition, and family caregiving responsibilities are the key socioeconomic influences on the labor force participation of older workers discussed in this section. Few studies were found that examined racial differences with a focus on older worker labor market outcomes.

Socioeconomic Characteristics: *Key Takeaways*

- Educational advancement has played a major role in the workforce success of older Americans. But this advantage has almost disappeared for the baby boomers.
- Higher education levels lead to greater subsequent labor market success for older workers who change jobs.
- For both men and women with less than a high school degree, the median disability insurance participation rate is more than six times higher than for those with a college degree or graduate-level education.
- The retirement decisions of husbands and wives are influenced by the relative health insurance and retirement programs available to each. But husbands' retirement decisions are more sensitive to wives' retirement than vice versa.
- The majority of family caregivers are women, but 40 percent of men have caregiving responsibilities. Women caregivers, whether caring for their own parents or grandchildren, reduce their labor market work and hasten the decision to retire—although some evidence indicates that caregiving for grandchildren has no more effect than caring for parents or doing volunteer work.

5.4.1 Gender Differences

Cahill, Giandrea, and Quinn (2013a) found that gender differences help explain how older workers exit the labor force. The study explored four potentially relevant determinants of gender differences in retirement patterns: (1) the presence of dependent children; (2) a parent in need of caregiving assistance; (3) occupational status in a career job; and (4) self-employment status. The authors found that, among career men and women, child and parental caregiving were not significant drivers of the retirement transitions of the Early Boomers, all else being equal. Gender differences that might exist with respect to these characteristics therefore are unlikely to lead to persistent gender differences in retirement patterns.[13] By contrast, self-employment continues to be a statistically significant determinant of bridge job transitions and phased retirement, although men are much more likely than women to be self-employed later in life. Self-employment, thus, may lead to future gender differences in transitioning to retirement, although the impact is likely to be small, given that the large majority of older workers are in wage and

[13] This finding regarding Early Boomers differs from that for the Pre-War Baby cohort in the findings of Skira (2012) reported below.

salary employment.

5.4.2 Education and Literacy

Educational advancement over the generations has played a large role in the workforce behavior of America's aging nation. Burtless (2013) found a strong correlation between the increase in labor force participation from 1986 to 2010 and increased educational attainment for older workers. This correlation was particularly strong for men. When baby boomer men reached ages 60 to 74, however, younger male workers had nearly lost their educational advantage over older male workers.

Educational advancement figures largely in older workers' DI claim rates as well, according to the Venti and Wise (2014) examination of the relationship between education and early retirement for the period 1990–2010. For both men and women with less than a high school degree, the median DI participation rate was over six times that of individuals with a college degree or more. Similarly, men and women with less than a high school education were over 25 percentage points more likely to claim Social Security benefits early.

Although job opportunities narrow as workers age, the number of opportunities available to older workers at any given age has improved significantly between the late 1990s and early 2010s—though the gains have gone primarily to better-educated older workers.

Education level also affects older workers' success after changing jobs. Rutledge, Gillis, and Webb (2015b) addressed this issue for workers in their early 50s. Although job opportunities at all ages increased over the period from the early 1990s through the early 2010s, for older workers this increase was concentrated among the better educated.

5.4.3 Spousal Influence

Marriage has major implications for retirement decisions. In particular, these decisions have been shown to be sensitive to the availability of health insurance and retirement programs for husbands and wives. For example, Congdon-Hohman (2015a) found that the wife's health insurance options affected the husband's likelihood of retiring, independent of the husband's own health insurance options. In households in which the wife was the only one at risk of losing affordable health insurance if the husband retired, the husband was 5 percentage points less likely to retire than if neither spouse was at risk of losing health insurance. These findings point to the likely labor force effects on older workers of potential changes to the Medicare eligibility age,

In households in which the wife is the only one at risk of losing affordable health insurance if the husband retires, the husband is 5 percentage points less likely to retire than if neither spouse is at risk of losing health insurance.

implementation of the Affordable Care Act, and other health insurance policy changes.
How older couple households, compared with younger couple households, use adjustments in wives' labor supply to mitigate the effects of negative shocks to the husbands' employment status was the focus of Li and Prowse (2014). The authors documented a substantial "added worker effect" for younger households, whereby wives would enter the labor force in response to husbands' loss of employment. The wives of older men with negative employment shocks, in contrast, were more likely to be unemployed as well.

Divorce has also been found to shape later workforce behavior, particularly for women. Couch et al. (2013) examined the long-term effects of divorce on women's work decisions, earnings, and retirement outcomes, including their entitlement to Social Security retirement benefits and their propensity to claim benefits based on a spouse's earning records or their own. Tracking a cohort of women in their first marriages in the early and mid-1970s, the authors found that divorces (1) led to substantial, sustained increases in earnings over their working lives, particularly for women who never remarried; (2) increased women's own Social Security benefits, controlling for factors including age, education, and number of children; and (3) increased the likelihood of deferring receipt of Social Security benefits.

5.4.4 Caregiving Responsibilities

It has been well documented that women provide most of the unpaid caregiving for both grandchildren and parents, although AARP's (2015) portrait of unpaid family caregivers aged 18 and over found that 40 percent were men. A little more than half (53 percent) of family caregivers were aged 50 and over. Sixty percent of caregivers reported being employed at some point in the year, 56 percent of whom worked full time. Those who were employed on average worked for 35 hours per week. An estimated 43.5 million adults in the United States said they had provided unpaid care to an adult or child in the previous 12 months, of whom 34.2 million provided care to an adult aged 50 or older.

Although many older working women with unpaid caring responsibilities continue to work, Skira (2012) estimated that older women caring for their own mothers (fathers were not included in the study) tended to reduce their paid employment. Using the HRS initial cohort, the sample consisted of female respondents aged 42–70 in 1992 who had a mother alive in 1992, and followed them through the 1994–2008 waves. The study found that (1) elder care decreased future earnings capacity due to a reduction in labor market work while caregiving; and (2) caregiving was more central to the decrease in labor force participation than the health of the elderly parent, human capital accumulation, and job offer availability. In addition, women who begin providing elder care are likely to continue to do so, especially if the parent is in poor health.

Similarly, women nearing retirement who care for new grandchildren are more likely to enter retirement sooner, according to Lumsdaine and Vermeer (2015). The authors found little evidence of substitution between caring for grandchildren and providing care for elderly parents.

Gender differences in labor force behavior are apparently driven less by caregiving than by self-employment status, according to Cahill et al. (2013a). Self-employment continued to be a statistically significant determinant of older worker job transitions and phased retirement for both genders. Because men are much more likely than women to be self-employed later in life, however, self-employment may lead to future gender differences in transitioning to retirement.

5.5 Conclusion

This chapter is the last of three on the supply side of the labor market for older workers. The discussion in this chapter reviewed the literature on three major factors associated with workers' labor force decisions and trajectories: (1) personal finances, (2) health limitations, and (3) demographic characteristics. We conclude the chapter by summarizing the findings.

Personal Finances

- The Great Recession had a much larger effect than the two prior recessions (1990–1991 and 2001) on workers' participation and retirement contribution amounts, particularly among younger and lower income families.
- Analysts observe declines in recent cohorts' "preparedness" for retirement, meaning the ability to sustain pre-retirement standards of living. Some researchers attribute this to the effect of the Great Recession, but others ascribe it to the major reductions in employer-sponsored retirement plans, which began well before the Great Recession.
- An increasing proportion of older workers' incomes is made up of earnings, and net indebtedness among older workers has been increasing. However, there is evidence that workers incorporate both wealth shocks and lifetime employment and earnings into their retirement planning.

Health Limitations

- Workers incurring a medical work limitation after age 50 have lower wages and a substantially higher risk of falling into poverty, which cash benefits (such as DI and unemployment compensation) do little to alleviate. Disabled workers' chances of being reemployed after losing a job have also been disproportionately hurt by the Great Recession.
- Subjective life expectancy affects the timing of retirement, but increases in perceived life expectancy lead workers to postpone their planned retirement.

Socioeconomic Characteristics

- The major beneficial effect of educational advancement on workforce success that has been present for so many generations has almost disappeared for the baby boomer generation.
- Married couples make their retirement decisions jointly, but husbands' decisions are more sensitive to wives' retirement than vice versa.

- Sixty percent of family caregivers are women, and research shows that caregiving reduces their labor force participation and hastens their retirement. However, family characteristics may drive these labor force decisions more than financial considerations.
- Gender differences among baby boomers are diverging from those of previous cohorts. They seem to be driven more by self-employment opportunities than was the case for previous cohorts. Men are much more likely to be self-employed than women.
- Divorce increases previously married women's earnings and lifetime Social Security income.

6. EMPLOYER DEMAND FOR OLDER WORKERS

6.1 Introduction

Previous chapters have focused on the supply side of the labor market—the factors that determine the employment, job choices, quantities of work, and length of working careers of older workers. This chapter turns to the demand side—the factors that determine the industries, job types, and wages per hour that constitute the work employers offer.

A special 2013 issue of *Labour Economics* highlighted, from a policy standpoint, the urgency of investigating the demand side of the labor market, emphasizing that the working population is aging, which increases concerns about the impact on labor productivity. In the introduction to the special issue, Bloom and Sousa-Poza (2013) conclude that, taken as a whole, the articles included in the issue dispel some of the concerns about older workers' productivity and highlight behavioral changes, business practice adaptations, and public policy reforms that can offset the economic effects of an aging population. That conclusion is consistent with the basic consensus of the research reviewed in this chapter. In this chapter, we review some of the current literature on labor demand issues for older workers.

The literature on the demand side of the labor market is scarcer than that on the supply side. Until recently, the major labor market concerns centered on reducing unemployment by making Americans more employable (i.e., supply-side issues). Most of the funding supported research on (1) policies to improve the educational system, and (2) developing training and retraining programs to help workers obtain the skills to become more employable and better able to meet the needs of the changing U.S. economy.

The lack of adequate data has contributed to the shortage of research on the demand side of the labor market. Almost all the data available for research on the U.S. labor market are about *workers*—and researchers are typically limited to the use of existing datasets. Most of the detailed data on *firms and employer behavior* are closely held by government agencies, for confidentiality reasons. For example, it is currently impossible for most researchers to conduct a study of employer-provided training in the United States that would be based on data that merge information from a workplace survey with firm-specific Social Security Administration and Internal Revenue Service information. This is because U.S. law includes strict privacy limits on the data these two federal agencies collect—in sharp contrast to employer data available in much of Europe. For this reason, the most informative research surveyed in this chapter used data from northern European countries that are most similar to the United States in their labor markets and population age distributions.

Our discussion considers three broad issues: older worker productivity, specific employer measures for hiring and retaining older workers, and age discrimination in employment.

6.2 Productivity of Older Workers

Productivity of Older Workers: *Key Takeaways*

- There is no strong evidence that older workers as a group are less productive than younger workers. Some work abilities decline with age, but age is less of a factor than skill, education, and on-the-job experience.
- European studies indicate that employer perceptions of older workers' productivity are mixed. Employers do not perceive a drop in productivity as workers age, but do perceive a growing gap in the cost of labor vs. productivity as older workers' wages rise.
- Two studies developed indices of relative productivity of older workers by type of work, which might potentially be helpful in advising older workers about transition job opportunities.

Before we begin our review of specific research studies, we note the measurement problems inherent in the concept of labor productivity. The theoretical definition is straightforward: the number of "units" of work done by a worker per hour (or other time period). This is relatively simple for industries that manufacture specific products; it is much more difficult in industries in which what is produced cannot be specified in discrete units. Most of the studies included in the earlier demand-side discussion had to develop other ways to measure worker productivity—typically by hourly wage (on the assumption that the wage is a good measure of what is actually done to earn it) or skill level (on the assumption that workers' productive efficiency is commensurate with their documented skills). Both measures, although indirect, help provide insight into the factors driving employers' demand for the labor of older workers.

6.2.1 Productivity of Older vs. Younger Workers

A literature review by de Hek and van Vuuren (2011) addressed the following question: "Are older workers overpaid?" Essentially, this question asks whether older workers' wage rates overestimate their productivity. The authors first used human capital theory to explain why firms might retain older workers once they have been hired, but would be less likely to hire new workers who were older. The empirical literature to date has not settled this question. The lack of consensus is in large part owing to the fact that currently available data do not cover enough years to deal with lifecycle issues. Research published since 2011, however, is in general agreement that there is no strong evidence that older workers as a group are less productive than their younger counterparts.

A more recent approach (Burtless, 2013) looked at the pay premium earned by older workers—defined as the extra proportion of the hourly wage paid to older workers compared to younger workers doing the same job, based on data from 1985 to 2010. Compared to workers aged 25 to 59, Burtless found that the pay premium for older workers in 2010 was 10 percent (for women)

and 20 percent (for men). The pay premium also increased consistently over the preceding 25-year period, which led to the conclusion that employers do indeed regard older workers as more productive than younger workers. The study also documented that the educational attainment of workers currently in their 60s and 70s is higher when compared to the earlier generation of older Americans, thus justifying the pay premium they enjoy.

Burtless's general conclusion is supported by a study that used data from a German Mercedes-Benz truck assembly plant**.** Börsch-Supan and Weiss (2013) focused on the relationship between workers' ages and their productivity in work teams, as measured by the number and severity of errors in the production process. They found that average productivity increased steadily from age 25 to age 60. They concluded that, even in a work environment requiring substantial physical strength, any decline in strength by older workers is offset by characteristics that increase with age but are difficult to measure directly, such as experience and ability to work well in a team.

Gorodnichenko et al. (2013a) questioned this type of evidence and concluded that the implicit assumption that productivity improvement over time on the job is the same for all workers, regardless of age, is too simplistic. Their evidence indicated that the productivity of younger workers rises more rapidly than that of older workers. In a different take on the subject, a study by Roger and Wasmer (2009) differentiated the workforce by skill level (low-skilled, high-skilled) and by age (young, middle-aged, old). This study used French employer–employee linked data for the years 2003–2004 for the manufacturing, services, and trade sectors. The authors found wide variation in the productivity of older workers in the manufacturing and trade sectors by skill level and industrial sector. Wage rates varied considerably less than productivity. The authors concluded that older workers will find it hardest to remain employed in sectors in which the productivity/wage ratio is highest for young or middle-aged workers.

Expanding on the productivity debate, Belbase, Sanzenbacher, and Gillis (2015) explored occupational factors associated with early retirement. The authors created a "Susceptibility Index" to identify occupations that require the types of cognitive and physical abilities that are known to begin to decline relatively early in life. According to this study, the more usual distinction between blue-collar and white-collar occupations is too crude to be informative. The authors showed that blue-collar jobs vary according to the index, and that workers in some blue-collar occupations (for example, food servers) work into their 60s, whereas others (for example, roofers) retire much earlier. They identified similar differences within the category of white-collar jobs. White-collar managers in the top quintile of work ability retired five years later than those in the bottom quintile, on average.

6.2.2 Employers' Perceptions of Older Workers' Productivity

How employers perceive the productivity of older workers—whether accurate or not—is bound to affect their hiring decisions. To investigate this point, Munnell, Sass, and Soto (2006) conducted a survey of 400 private sector employers about their attitudes towards older workers. Employers were asked to evaluate the relative productivity and cost of white-collar workers aged 55 and older. They were also asked whether older employees or job candidates were more or less attractive than their younger counterparts. Even though older workers were seen as more costly, employers responded by saying that they are more productive than younger workers.

Employer demand for older workers is more related to employers' perception of older workers' productivity than to an objective measure of their productivity relative to younger workers.

In the European context, Conen, Van Dalen, and Henkens (2012) found that employers had mixed views on older workers. The authors studied employers' perceptions on the following questions:

- Whether labor costs exceeding productivity ("labor force–productivity gap") were associated with the aging of the workforce.
- Whether increasing wages (accounting for tenure and employment protection) affected any perceived gap.
- Whether the labor force–productivity gap affected employers' recruitment and retention behavior toward older workers.

The authors analyzed surveys administered to employers in seven European countries: Denmark, France, Germany, Italy, the Netherlands, Poland, and Sweden. Most employers in each country studied did not expect aging to affect the productivity level in their firms. With respect to whether labor costs would rise with worker protection, however, there was wide variation among countries, with a range of 16 percent to 75 percent of employers, by country, expecting an increase in labor costs. Taking labor costs and productivity together, about half the employers associated the aging of the workforce with a growing gap between labor costs and productivity for two reasons: (1) increasing wages with tenure, and (2) employment protection rules, which are much stronger in Western Europe than in the United States. The authors concluded that employers, on average, did perceive a labor force–productivity gap and that this perception negatively affected both the recruitment and retention of older workers.

6.3 Measures to Help Older Workers Remain in the Labor Force

Measures to Help Older Employees Remain in the Labor Force:
Key Takeaways

- Specific measures to help older employees (SMOEs) stay on the job are much more widely used in Europe than in the United States.
- A number of recent studies show that employer-provided training for older workers can delay their retirement.
- A case study of a machine tool company finds high productivity in having older workers teach younger workers the "tricks of the trade."
- Technology proficiency among older workers is not an area of research consensus. Although some studies observed that innovations are lower for firms with a higher share of older workers, other studies have found (1) that training older workers in the relevant technology effectively reduced the observed decline in productivity with age, and (2) that it is not the presence of older workers but the presence of untrained older workers that reduces firms' innovation capabilities.
- The research consensus is strong, based on U.S. data, that introducing workplace flexibility postpones older worker retirement, as well as higher job satisfaction, although one analysis finds that such positive effects are restricted to voluntary decisions, in sharp contrast to involuntary late-life work changes.

If employers want to hire, retain**,** and help older workers become more productive, what can they do? In Europe, the term for such employer action is "specific measures for older employees" (SMOEs). Many European employers make special efforts to retain older workers by providing them with training and creating more flexible work schedules. In this section, we review the provision of occupational and IT training as well as flexible work schedules for older workers.

Employers who want to hire or retain older workers may find that offering older workers occupational or IT training can both make them more productive and increase their job satisfaction, resulting in greater retention.

Using a linked employer–employee panel dataset for 1997–2005, Gobel and Zwick (2010) examined the impact of implementing SMOEs in Germany, where a majority of firms already use SMOEs of some type. The authors found that changes in work requirements and provision of specific equipment in workplaces are associated with significantly higher productivity of older workers. Use of mixed-age working groups was also associated with higher productivity, irrespective of age. Providing flexible working schedule options and training to older workers were not so strongly associated (but see Sections 6.3.1 and 6.3.2 for contrary evidence).

6.3.1 Training and Improved Technological Proficiency

A number of recent studies have shown that employer-provided training for older workers can help keep workers on the job longer. Using Dutch data for 1994–2001, Picchio and Van Ours (2011) analyzed the effect of firm-provided training on employability across three age categories: 26–35, 36–49, and 50–64. They found that such training significantly increased future employment prospects and job retention rates for workers of all ages and also reduced the future probability of workers being out of the labor force.

Using different Dutch data, Montizaan, de Grip, and Fouarge (2015) investigated whether employers can induce employees to postpone retirement by offering access to training courses that help maintain job proficiency. The authors found that training policies, as reported by employers, were significantly positively related to employees' expected retirement age, irrespective of actual participation in training. This response was driven, according to the authors, by employees' perceptions of employers' generosity in offering the training opportunity. The authors concluded that access to training may be useful in complementing existing pension reforms in the many industrialized countries whose objective is to increase labor force participation among older workers.

Behaghel, Caroli, and Roger (2014) tested the hypothesis that older workers are less adaptable to new learning. They approached this issue by analyzing the role of training in mitigating the negative impact of technical and organizational changes on the employment prospects of older French workers. They found that training had a positive impact on the employability of older workers, but only a limited effect on moderating the age-related learning limitations associated with new technologies and innovative work practices.

On a related note, but with somewhat different results, Bertschek and Meyer (2010) examined how German firms make use of new information technologies to enable process innovations. Their results confirmed that firms with a higher IT intensity were more likely to introduce new or improved processes. They also found that the presence of older workers in a firm reduced the probability of process innovation based on IT. In contrast to the Behaghel et al. (2014) results for French workers, the authors found that it was not the presence of older workers per se that reduced the firms' innovation capabilities, but rather the presence of older workers who had not been trained in the appropriate IT skills.

6.3.2 Flexible Work Schedules

Although some U.S. employers have concerns about potential lawsuits alleging employment discrimination in regard to providing flexible schedules differentially to older workers (Johnson, 2011), several studies have found that flexible hours have a positive effect on retirement decisions. For example, a study by Blau and Shvydko (2011) matched U.S. workers in the 1990–2001 Survey of Income and Program Participation panels to their employers in the Longitudinal Employer-Household Dynamics data. The study found that older workers in firms with greater

flexibility on hours had fewer job separations. This finding suggests that labor market flexibility can encourage older workers to delay full retirement.

A random assignment experiment by Cahill, James, and Pitt-Catsouphes (2015b) confirmed the retirement-reducing effect of workplace flexibility. The study was conducted at "ModernMedical," a regional health care provider with more than 9,000 employees. Employees assigned to the treatment group participated in a training effort designed to identify and implement changes, including hours worked, work scheduling, and place(s) of work. After one year, relative to the control group, treatment group members indicated that they were more likely to remain working at ModernMedical until they retired, as opposed to changing employers before retiring. To test the generalizability of the ModernMedical results to the United States as a whole, the authors compared their findings to those for a nationally representative HRS sample of older workers. They concluded that ModernMedical employees were less likely to expect to transition to other bridge jobs compared to either the HRS nationally representative group of older workers or to an HRS subgroup of professional workers who looked more like ModernMedical employees than did the complete national sample.

There has been little recent analysis on the subject of employers making flexible work schedules available for older workers in the United States, whereas there has been much more in Europe.

To test the hypothesis that individuals working in voluntary, part-time positions are happier, experience less stress and anger, and have higher job satisfaction than other employees, Nikolova and Graham (2014) used international Gallup poll data to examine the relationships between (1) well-being and job satisfaction, and (2) employment status and retirement. The study indicated that older workers in voluntary part-time or full-time arrangements expressed higher well-being ratings than retirees. The authors found no similar sense of greater well-being, however, for *involuntary* late-life work and self-employment compared to retirement.

A series of cross-industry corporate case studies formed the basis of a Sloan Center on Aging and Work study (2013), which found that workplace flexibility initiatives, when properly matched to employee needs, increased older workers' labor force participation. The report also found that the most common flexible work strategies used by the firms surveyed were offering part-time positions (42 percent) to workers past retirement age, hiring retirees as consultants or temporary workers (40 percent), and offering older workers flexible work arrangements (36 percent).

6.4 Employer Discrimination against Older Workers

Do Employers Discriminate Against Older Workers? *Key Takeaways*

- Several field experiments document at least some discrimination against older workers. One study found the evidence of discrimination stronger for older women, but less clear for older men. Another found that discrimination is restricted to older workers characterized as inactive or employed outside their field.
- Research examining differences between federal anti-discrimination legislation and a range of state-specific laws finds mixed effects.
  - Comparing pre-ADEA laws with state-specific laws on the books at that time suggests that stronger anti–age discrimination laws are protective of covered older workers at the expense of younger (uncovered) workers.
  - During the Great Recession, however, stronger laws were associated with worse labor market outcomes for the "protected" group—perhaps because employers felt they had more latitude to discriminate during an overall economic crisis.
  - No age discrimination was associated with older workers' disability protections or with potential employer manipulation of pension provisions. Discrimination protections do not appear to contribute to older workers' ability to mitigate physical challenges at work.
  - Employers generally do not try to lay off employees as they near retirement to reduce pension costs.

The extent of age discrimination in the workplace has been studied quite extensively, using random assignment field experiments and more indirect statistical approaches. We begin with the field experiment research.

6.4.1 Employment Discrimination Field Experiments

Riach and Rich (2002) reviewed employer discrimination experiments around the world. Such experiments have been conducted since the mid-1960s. Most of these experimental studies have dealt with race and gender discrimination. The studies have found discrimination based on race and gender in labor, housing, and product markets. However, the authors found only one experiment addressing age discrimination.

This human capital complication was addressed in a large-scale and highly publicized study by Neumark, Burn, and Button (2015a) —a résumé correspondence study responding to online job opening postings, which adjusted "older" workers' résumés to show work experience comparable to that of "middle-aged" workers. Based on evidence from more than 40,000 job applications, the investigators found that (1) discrimination against workers near retirement age (64–66) was greater than for middle-aged workers (49–51); (2) age discrimination was no greater

for older workers seeking bridge jobs (defined as having lower responsibilities and being less demanding) than for middle-aged workers; (3) little indication that adjusting older workers' résumés to show work experience comparable to middle-aged workers increased evidence of age discrimination; (4) weak evidence that stronger state discrimination laws resulted in less discrimination (see further discussion below); and (5) strong evidence of discrimination against women—but less clear results for men—with even stronger evidence of discrimination against women relative to men in the single occupation (sales) for which the experiences of men and women could be compared.

In addition to the typical approach of randomly assigning candidates within pairs of fictitious résumés sent in response to real vacancies, Baert et al. (2015), in a Belgian field experiment, randomly assigned fictitious activities undertaken by actual older candidates. They found that age discrimination varied greatly according to older candidates' career patterns. Older age negatively affected callbacks only when older candidates were characterized as inactive or had been employed outside their field.

Older age negatively affected callbacks only when older candidates were inactive or had been employed in a job outside their field

6.4.2 Anti-Discrimination Legislation

A set of non-experimental studies made use of differences in state laws to test for discrimination against older workers. Adams (2004) examined state variation in laws prohibiting age discrimination in employment, hiring, and retirement in the period 1964–1967, before the Age Discrimination in Employment Act of 1967 (ADEA). Adams found that state legislation did not affect the probability of being hired, but that there was a significant decline in the retirement of older workers in the covered age ranges. He concluded that anti-age discrimination legislation might result in a displacement effect, so that the employment of covered older workers was protected at the expense of younger (non-covered) workers.

A number of recent studies have examined the impact of state differences in anti–age discrimination laws: Neumark and Button (2013), Neumark and Song (2013), and Neumark, Song, and Button (2014). All three analyses compared older workers to younger workers before, during, and after the Great Recession. The studies examined the impact of variations in the strength of state laws, as measured by (1) minimum firm size covered and (2) presence (or absence) of stronger state remedies than federal remedies under the ADEA (e.g., compensatory vs. punitive damages). Neumark and Button (2013) found no evidence that stronger discrimination laws helped older men relative to younger men and may have hurt them. The results for women were mixed. Although stronger discrimination protections were associated with relatively smaller increases in unemployment durations during the Great Recession, they were also associated with a statistically significant drop in their hiring rate relative to younger women. The latter finding may shed further light on the Monge-Naranjo and Sohail (2015) conclusion, noted in Chapter 2, that older women's long-term unemployment rate spiked only in the wake of the Great Recession, unlike the other gender–age groups studied.

Neumark and Song (2013) strengthened these basic conclusions with additional evidence that older workers in states with stronger age discrimination protections generally experienced worse labor market outcomes relative to young workers, both during and after the Great Recession. They concluded that increased age discrimination might underlie the dramatic increases in unemployment durations for older workers during and after the Great Recession—plausibly because the obvious increases in overall unemployment may have encouraged employers to hide discriminatory labor force actions under cover of the severe economic conditions.

Neumark and Song (2013) also examined the relationship between the strength of state anti-discrimination laws and the employment and retirement responses of older workers to the increase in the full retirement age (FRA) from 65 to 67. They found that stronger state age protections increased the employment and hiring of older workers "caught" by increases in the full retirement age. Where state laws extended to firms smaller than those covered by the ADEA, older workers retired later than in other states. In addition, in states that applied harsher penalties than those of the ADEA, employment remained higher for older workers.

Narrowing in on a more specific subpopulation of older workers, Neumark et al. (2014) explored the effects of disability discrimination laws on the hiring of older workers. Some researchers have speculated that the prohibitions against disability discrimination might have reduced the hiring of older workers by raising their potential costs: (1) the costs of terminating disabled workers or accommodating to their work needs, or (2) the costs of older non-disabled workers on the assumption that they are more likely to become disabled. The authors found little to no evidence of either effect.

6.4.3. Pension-Related Discrimination

Another form of discrimination is the possibility that firms may try to reduce pension liabilities by discharging workers prior to retirement. Cornwell, Dorsey, and Mehrzad (1991) examined whether firms take advantage of defined-benefit pension programs that backload pension payments by paying amounts based on the highest last years of earnings. They found that employers were less likely to discharge older pension-covered workers, and, if anything, seemed more reluctant to dismiss pension-covered workers. The authors concluded that these findings are consistent with an assumption that firms are honest, or at least that enforcement of federal pension legislation—the Employees' Retirement Income Security Act (ERISA)—serves as an effective brake on cheating.

6.5 Conclusions

Employer demand for older workers is an understudied topic of the U.S. labor market. Most of the research reviewed here consists of studies from Europe, where the confidentiality of firm-level data is less protected. Exceptions include studies of flextime and age-related employment discrimination, both of which are addressed by several studies using U.S. data.

Our review of the literature on the demand for older workers covered the following issues:

1. Productivity of older workers, both as measured and as perceived by employers
2. Employer-provided measures to help older workers become more productive and postpone full retirement
3. Age-related employment discrimination

We summarize our findings below.

Productivity of Older Workers. Measuring productivity is more straightforward when the relevant work product can be measured objectively in "units produced per hour," as in manufacturing. For other sectors, researchers resort to more indirect measures, such as hourly wage or skill level. Whichever way productivity is measured, the research consensus is that older workers' productivity overall is at least equal to that of younger workers. Within that overall consensus, more nuanced findings suggest the following:

- Specific abilities for certain types of jobs decline relatively early in the age span. In general, however, age matters less in the productivity of older workers than skill, education, and on-the-job experience.
- Indices have been developed to classify job types into those that favor older workers vs. those that do not, which may be useful in advising older workers in their choice of transition or second career jobs.
- Age appears to be less of a factor in the employment of older workers than skill and education. Skilled older workers in some industries are highly productive, possibly more than younger workers.

Employer-Provided Measures to Help Older Workers to Be Productive. Special measures for older workers appear to be much more widely used in Europe than in the United States, with the possible exception of flextime. Major findings include the following:

- Employer-offered training increases the productivity and job satisfaction of older workers—even, according to one study, for workers who do not actually take up the training offered.
- With respect to older workers and technology, studies have focused on different facets of the issue.
    - Training older workers in the relevant technology may reduce any decline in productivity.
    - An aging workforce may not lower a firm's technological capacity as long as older workers have the requisite training for the work. Older workers' productivity may include their ability to teach younger workers the "tricks of the trade."

- Workplace flexibility increases the retention of older workers, their happiness on the job, and the age at which they retire—although, according to an international Gallup poll, the positive effect (at least on retirement age) depends on the flexibility (regarding hours) being voluntary rather than forced.

Employer Discrimination. The literature on employer discrimination uses two methodologies: experimental field tests and comparisons of differences in anti–age discrimination laws.

- Experimental field tests generally find some age-related work place discrimination, with one study finding stronger discrimination evidence for older women than for older men.
- U.S. studies that compared federal and state-specific anti–age discrimination legislation (which varies in strength by state) suggest that the effectiveness of such legislation may depend not only on the relative strength of the relevant legislation, but also on overall economic conditions.
    - A study of state-specific legal differences during the Great Recession found, in contrast, that stronger laws were associated with worse labor market outcomes for the "protected" group, possibly because employers believe that they can discriminate under cover of bad overall economic conditions.
    - The review uncovered no evidence of age-related discrimination connected with either disabled worker protective legislation.
    - No evidence of employer manipulation of workplace pension plans was found.

7. CONCLUSIONS

During the period 2010–2015, the labor force participation of older workers received a great deal of research attention, spurred by the sharp increase in their employment over the past two decades. In this literature review, we examined selected recent research on the characteristics of older workers and the factors that affect their labor supply, the demand for their labor, and their retirement decisions.

This chapter concludes the report with a synthesis of the salient findings, by thematic area, based on our review, in response to the research questions. We then identify knowledge gaps, areas for future research, and recommendations for supporting evidence-based policy.

7.1 Findings

The labor force participation of older workers has changed a great deal since the mid-1930s, when the Social Security Act was enacted. No longer are men the sole support of their families, working in jobs that require physical labor, and expected to fully retire by age 65. Women surged into the labor force during and after World War II. More workers are highly skilled and educated. Health and life expectancy have improved, especially for more educated workers. Just as the labor force participation of older workers has changed, so, too, have the factors that influence that participation.

7.1.1 Increasing Labor Force Participation Among Older Workers

According to Bureau of Labor Statistics (BLS) data, individuals aged 55 and over have increased their labor force participation in the past 20 years and are projected to continue to do so over the next 10 years. Labor force participation among women aged 55 to 61 has increased even faster than among same-aged men, and this trend is projected to continue into the next decade.

Understanding the driving forces behind these trends is a complex question that has not been studied holistically in the literature. Overall, predictors of labor force participation among older individuals are related to financial security in retirement. Another reason advanced in the literature for the increased labor force participation of older workers is the changes in job composition and technology in recent years. Different case studies from European countries find that older individuals are more likely to remain in the labor force after firms experience technical and organizational changes. The effects and interactions of these two forces on older workers' labor market attachment has yet to be rigorously studied, but shifts in the employment landscape provide an important context for understanding older worker decision-making.

Other factors identified in the literature for older workers leaving the labor force include:

- Lifestyle (sharing in retirement with a spouse, especially the retirement of husbands)
- Caregiving (by women for elderly relatives or grandchildren)
- Personal issues (health issues, working in physically demanding jobs)

7.1.2 Increasingly Complex Transitions to Retirement

In addition to longer labor force participation, older workers now transition through their work lives in more complex ways. Different studies using data from the Health and Retirement Study (HRS) show that retirement decisions are no longer a single, one-time event. Rather, retirement is a gradual transition out of the labor force. When older individuals leave their full-time career jobs, they may take part-time or part-year transition jobs. Growing numbers of older workers (predominantly men) turn to self-employment, especially after age 65. Many older workers continue working at a career job, but with hours reduced progressively until full retirement. However, data from the HRS show that, after retirement, reentry into the workforce has become a more frequent pattern in the last decade.

7.1.3 Greater Difficulty in Rebounding from Economic Shocks

Economic shocks and subsequent unemployment spells have affected older workers more severely than younger workers. Older workers:

- Suffer more severe effects from displacement
- Have weaker job search skills
- Return to work more slowly
- Find it more difficult to return to prior wage levels
- Experience larger wage losses as union workers

In particular, labor market shocks have a noticeable effect on the timing of older workers' Social Security benefit claims:

- Shocks to the economy accelerate the claiming of benefits at the earliest age.
- Early Social Security claimers are more likely to experience a systematic decline in earnings in the years prior to reaching 62 years of age.
- Severe negative changes to the economy experienced between ages 58 and 62 increase the likelihood of claiming Social Security at ages 62–64.

Once older workers find new jobs, however, they tend to remain in them for a longer period. Older workers who return to work quickly tend to experience greater wage recovery and job retention, but they are less likely to return to work if they begin receiving Social Security.

7.1.4 Issues in the Public Workforce System

Studies have identified several issues with serving older workers in the public workforce system:

- The WIA/WIOA program underserves older workers compared to their representation in the labor force.

- Older workers who received WIA-funded training were likely to receive credentials at a rate equal to or greater than younger workers
- However, older workers who participated in the program and received services had some success at becoming employed, though to a lesser degree than younger workers.

Research indicates that the public workforce system in the United States is an important tool in mitigating the effects of temporary job loss, but older workers need more targeted assistance than they are currently receiving.

7.1.5 Receipt of Social Security, Disability Insurance, and Health Insurance Increases the Likelihood of Retirement

Federal programs have an important influence on the labor supply of older workers. In particular, the Social Security program has adapted to accommodate the growing trend among workers who extend their working lives beyond the traditional age of retirement. The literature reviewed indicates that:

- Raising the full retirement age (FRA) has increased labor force participation among older workers.
- Reductions in Social Security benefits would induce older individuals to work more hours in retirement, even those workers who are well into their 70s and 80s.
- According to a study that simulated a policy counterfactual scenario, raising the early retirement age would reduce retirement rates more than raising the FRA.
- The same study suggests that increasing the FRA and the early eligibility age without commensurate financial protections would push up to a million seniors into poverty.

Similarly, the research has concluded that changes in the availability of Social Security Disability Insurance and health insurance coverage also have increased older workers' labor force participation. For example, Medicare eligibility increases the likelihood of prompt retirement at age 65 for workers not eligible for employer-sponsored health insurance. In addition, an increasing percentage of older workers in the United States make use of the DI program in their transition to retirement.

7.1.6 Personal Finances, Health Conditions, and Socioeconomic Characteristics Determine Older Workers' Labor Market Outcomes

The labor market experiences of older workers are shaped by many individual factors that ultimately determine how these workers make their work and retirement decisions. These factors include:

- **Personal Finances.** An individual's economic situation is an important factor in making retirement decisions. The generation now facing retirement is less prepared to maintain

its pre-retirement standard of living than were previous generations. This suggests that older individuals will have longer working lives.

- **Health Conditions.** As individuals age, health limitations and factors associated with health, such as private health insurance, become highly relevant to an individual's decision to work or retire. In particular, workers incurring a medical work limitation after age 50 had significantly lower wages. Their poverty rates nearly doubled, and cash benefit programs only slightly offset their earnings loss.
- **Socioeconomic Characteristics.** Educational attainment, household composition, and family caregiving responsibilities are the key socioeconomic influences on the labor force participation of older workers. For example, educational advancement has played a major role in the workforce success of older Americans. Also, the retirement decisions of husbands and wives are influenced by the relative health insurance and retirement programs available to each.

7.1.7 Labor Demand Studies Indicate Little Difference in Productivity by Age

Most of the demand-side literature on older workers has used datasets from countries in Europe. The following conclusions were drawn in these studies:

- Worker productivity is less associated with age than with education and skills. As a result, employers have greater demand for older workers who are better educated and have valuable skills.
- Some work abilities decline with age, but these declines may be offset by experience. For example, work teams that include older workers (aged 55 and over) seem to increase team productivity.

However, generalizing the results from these studies to the U.S. context should be done with caution. For example, European countries have broader social protections overall for older individuals, and labor rights are more regulated than in the United States.

7.2 Gaps in the Literature

7.2.1 Recovery of Older Workers after the Great Recession

Recovery from the Great Recession was very slow for older workers. Because significant recovery began only in 2013, little is known about the extent of the recovery in the last few years. For example, one study found that, as of 2013, the recessionary increase in long-term unemployment rates varied a great deal by age and gender. In particular, older women did much worse than men during and after the Great Recession. Older women's long-term unemployment rates had been lower than men's before the recession, but equaled or exceeded those rates in its wake. Thus, the recession had a much stronger negative impact on women than men, and women had not fully recovered by 2012–2013. This phenomenon has yet to be explained, and thus remains an area that needs further research.

More recently, older workers, like younger ones, experience increases in their unemployment rates during the Great Recession. However, older workers have seen their labor force participation increase since the onset of the Great Recession. This is in sharp contrast to prime-age workers who experienced declines in labor force participation rates. Further research should aim at understanding the driving forces and the contrasting labor force developments among older and prime-age workers.

7.2.2 Labor Force Transitions of Baby Boomers

Baby boomers today are aged 52 to 70, and many have not yet reached retirement age or have retired only recently. Because they are such a large cohort and appear open to extending their labor force participation as they age, policy adjustments may have significant effects if directed appropriately. Little is known about the boomers' recent labor force behavior, in part because of how recently they have been reaching FRA, and in part because of weaknesses in the longitudinal data currently available. Analyses could lead to more timely and relevant information if the data (for example, HRS) used for analysis were collected more frequently.

7.2.3 Labor Demand for Older Workers in the United States

Older worker demand-side issues have typically received little attention in the U.S. context. A key issue is that, in the United States, almost all the data available for research purposes are about workers—and researchers tend to make use of existing datasets. Gaining access to data on U.S. firms is difficult. Most data on firms and firm behavior are held by government agencies, and held closely for confidentiality reasons. For example, it is difficult to imagine a U.S. study of employer-provided training making use of a data set merging a worker survey, Social Security Administration (SSA), and Internal Revenue Service data, given the restrictions on access to the data of these two federal agencies. Yet European researchers have been able to do this. As a result, most of the research on the demand side discussed in this review is from northern Europe, with a selection of articles dealing with nations that are most like the United States.

7.2.4 Research on Age Discrimination in the U.S. Workplace

Some research has been conducted on age discrimination in hiring. A recent rigorous experimental study found evidence of discrimination against older women in the hiring process but not older men. A few studies have also been conducted on the relationship between stronger anti-discrimination laws in states and the labor market outcomes of older workers. Further studies on this topic are warranted to confirm these findings.

Another area for future research is the prevalence of workplace discrimination, its accompanying determinants/factors, and its effect on outcomes such as promotions and raises. This would be central for creating effective mechanisms for better enforcement of the ADEA and combating age discrimination. To fill in this gap, a starting point would be the study of the relationship between the labor market outcomes of older workers and age discrimination at the firm level.

However, this will only be feasible if researchers can link EEOC claims with administrative data sets such as unemployment insurance or Social Security wage records.

7.3 Recommendations for Supporting Evidence-Based Policy

The research team has identified the following policy recommendations, given the findings uncovered in this report and the critical knowledge gaps that warrant attention from policymakers and researchers alike.

- ***Examine the impact of recent national policies on older workers' employment and retirement decisions*.** For example, the implementation of the ACA provides ripe opportunities for studies of the impact of providing health insurance to previously uninsured workers on workers' labor supply and employers' labor demand decisions. In addition, it would also be useful to investigate the impact that paid family/worker leave would have on older workers, particularly the provision that allows paid time-off to care for parents.
- ***Conduct more tailored research on demand-side issues*.** There is a paucity of demand-side research that explains why employers hire and retain older workers. This lack of research is of particular concern because the American population is expected to age rapidly. USDOL should consider investing resources in rigorous studies that will shed light on the determinants surrounding their hiring and retention. One of the main constraints is the lack of available employer–employee data. Collaborative efforts among different governmental agencies and other external institutions would be crucial to tackle this issue.
- ***Address data shortcomings*.** Data collection on older individuals is limited, making it difficult to analyze how programs affect older workers. Many studies make use of the HRS as a data source. However, the two-year gap between waves creates long lags for longitudinal analyses. This issue hinders further analysis on labor force transitions for older workers, who do not exhibit linear transitions between working and retirement. Moreover, the HRS gathers yearly information, as opposed to quarterly or monthly data. This is particularly problematic for studying the effects of aggregate changes (for example, the Great Recession) on older workers' behaviors—how quickly they are affected and how they may respond to these events. Addressing these data shortcomings would capture a more nuanced picture of the workforce behaviors of older workers.
- ***Increase access to captive databases*.** Further studies can be pursued once additional data are made available for use by the wider research community. For example, the United States has two useful longitudinal employer–employee linked datasets: the Census Longitudinal Employer Household Dynamics (LEHD) and the Social Security Continuous Work History Sample. However, both datasets are "captive": they can be used only by Census Bureau and Social Security Administration employees due to confidentiality and disclosure concerns. No legislation or interpretive regulations are in place to allow widespread access by researchers to currently restricted datasets. One

option to address this issue would be an increase in funding for research that targets specific use of these datasets.

- ***Research could take place in government agencies, allowing for collaborative efforts or partnerships*** between individual researchers and Census Bureau, SSA, and BLS researchers. Outside researchers could work with federal researchers, who would then conduct much of the data analysis and share the results with outside colleagues. This is already a practice in some of the work mentioned here. For example, Joanne Song of the SSA worked with David Neumark, Yuriy Gorodnichenko, Dmitriy Stolyarov and others on older worker issues. Another example is Michael Giandrea of BLS, who has worked with Kevin Cahill, Joseph Quinn, and others. Such collaborations may serve as a fruitful way to deepen our understanding of older workers' issues through the use of additional data.

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APPENDIX A. MAJOR DATASETS USED FOR OLDER WORKER RESEARCH

This appendix discusses some of the more commonly used datasets in the literature on older workers. Studies of older workers and their labor force participation rates tend to use a small number of datasets. The most frequently used dataset is the Health and Retirement Study. Others include the March Supplement of the Current Population Survey, the Continuous Work History Sample (CWHS) of the Social Security Administration (SSA), Survey of Income and Program Participation (SIPP), the Longitudinal Employer-Household Dynamics (LEHD), and the LEHD Quarterly Wage Indicators. Some of these datasets are discussed below to provide more detailed information about how the datasets are used and to point out some of their strengths and weaknesses. Increasing access to restricted datasets, especially those with firm-level data, would help researchers fill some of the gaps in older worker labor force literature.

A.1 Health and Retirement Study (HRS)

The Health and Retirement Study (HRS) is a longitudinal survey sponsored by the National Institute of Aging, with data collected by the University of Michigan Institute for Social Research. In 1992, the HRS began collecting a wide variety of information on a biennial basis from a national representative sample of the U.S. population over age 50 (and their spouses). Exhibit B-1 displays the number of cohorts and corresponding follow-up surveys conducted for the HRS as of 2014. The first HRS survey for each cohort asks respondents about their employment over the past two years, resulting in employment information starting at age 49. The "core cohort," selected for participation in the survey in 1992, consisted of individuals born between 1931 and 1941 and their spouses (regardless of age); additional cohorts were added in 1993, 1998, 2004, and 2010. Early HRS cohorts can be used for longitudinal analyses; more recent cohorts have limited usefulness for that purpose. For example, the 1992 cohort has had 11 follow-up surveys and, as a result, has been used extensively by researchers. By contrast, the 2004 cohort consists of "Early Boomers," representing individuals born between 1948 and 1954, with only 5 follow-ups. The most recent 2010 cohort of "Mid-Boomers," representing individuals born between 1954 and 1959, has been followed up only twice (Cahill et al., 2015b). "Late Boomers" will enter the HRS for the first time with the 2016 cohort.

Exhibit A-1. Health and Retirement Study Cohorts and Number of Follow-Up Surveys as of 2014

Cohort Year	Cohort Name	Dates of Birth	Number of Follow-Ups
1992	Pre-War Babies ("Core" HRS)	1931-41	11
1998	War Babies	1942-47	8
2004	Early Boomers	1948-53	5
2010	Mid-Boomers	1954-59	2

Source: Cahill et al., 2015b.

The number of HRS follow-up surveys determines what kind of analyses can be done. Much of the labor force transition analysis employing the HRS uses the very old Pre-War Baby cohort

because of its many follow-up surveys. By contrast, somewhat less can be learned about the Early Boomers, and little can be learned about the Mid-Boomers using the HRS, because they have been the subjects of fewer follow-up surveys. Nothing has yet been learned about the Late Boomers from the HRS because they will first be added to the study in 2016.

Other datasets offer the possibility of answering questions about labor force transitions covering years much earlier than the HRS. For example, the Social Security Administration's Continuous Work History Sample (CWHS) collects data annually and is available back to 1957. With these data, we can study annual transitions. Using unemployment insurance (UI) quarterly wage data in combination with the Longitudinal Employer-Household Dynamics (LEHD) or other sources can permit researchers to detect transitions even sooner.

Despite being the most used dataset for studies on older workers, large lags exist in the availability of job transition data because HRS surveys are conducted only every two years. As a result, information on the transitional behavior of baby boomers will be slow to develop unless other data sources with shorter lags and more observations are made available. To have more timely data for the longitudinal analysis of more recent older worker cohorts, researchers need to supplement data sources to include datasets with shorter lags, such as SSA, LEHD, or other data sets using UI wage records.

A.2 Current Population Survey, Annual Social and Economic Supplement (March CPS)

The March supplement of the Current Population Survey is the largest nationally representative U.S. survey of detailed workforce and employment characteristics. The March CPS captures annual estimates for around 75,000 households and 200,000 individuals, providing substantial sample size for researchers to conduct detailed analyses on finely defined subgroups. However, as a cross-sectional survey,[14] several pertinent research questions on older workers that are reliant on time series or panel data cannot be fully answered with the March CPS. One example of this is the labor force transitions of older workers into retirement. To answer this, one must have access to a dataset with multiple observations of the same individual over several years. This has been measured in many papers using the HRS, but not with the CPS due to these limitations.

A.3 Continuous Work History Sample (CWHS) of the Social Security Administration (SSA)

Maintained by the SSA, this dataset includes comprehensive administrative data on the complete records of lifetime earnings for 1 percent of the U.S. population, stretching back to the early 1950s. The long period of time covered, national representativeness, time series format, and

[14] Some researchers have constructed longitudinal data from consecutive months of the CPS, though individuals are only tracked for at most 16 months. One example of a methodology to do this can be found Madrian and Lefgren (2000).

large sample size are all characteristics valuable to researchers. In addition, the administrative nature of the data circumvents the self-reporting biases often present in survey collections of earnings data. However, this dataset is not publicly available and research access to it is extremely limited. Only two papers in our literature review used this data source, and this was possible only because the co-authors were SSA employees. Public use files of this dataset have been issued on a periodic basis by SSA. However, these releases have not been regular, and the latest release (2006) is dated at this point. Regular releases of public use files of this dataset could help researchers learn more about the topics covered in this report.

A.4 Survey of Income and Program Participation (SIPP)

SIPP is a panel survey that gathers information on labor force, program participation, and income questions designed to measure the economic situation of people in the United States. Panels last between 2.5 and 4 years, and often include topical models on particular areas of interest such as personal history, child care, wealth, program eligibility, child support, utilization and cost of health care, disability, school enrollment, taxes, and annual income. In addition to the somewhat short length of panels, smaller sample sizes (compared to the CPS) are the main challenges that come with using SIPP.

A.5 Longitudinal Employer-Household Dynamics (LEHD) Quarterly Wage Indicators (QWI)

The LEHD QWI is one of the few publicly available sources of U.S. firm-level labor market data. These data include firm-level changes in employment, hires, severances, and wages. However, in public form, firm-level data are available only aggregated up to the county or metropolitan-area level. For researchers, this level of aggregation precludes many kinds of detailed analyses of firm-level behaviors based on utilization of older workers. Researchers need access to firm-level data. Papers that have used the restricted version of LEHD QWI have been able to do so only due the fact that co-authors were Census Bureau employees.

A.6 National Longitudinal Survey of Youth (NLSY), 1979 Cohort

The NLSY is a longitudinal, nationally representative sample of young men and women interviewed on an annual/biannual basis. The NLSY captures data on a wide range of topics, including employment, education, income, crime, family life, and others. The first cohort was started in 1979, comprising a nationally representative sample of 12,686 men and women aged 14–22 at the time. Today, those in this cohort are now aged 51–59, and are beginning to move into the age range that constitutes older workers. Researchers in the near future will be able to use the data collected for this survey as another detailed data source to examine topics of older workers' labor market characteristics.

APPENDIX B. METHODOLOGY AND DATA OF KEY REFERENCES

IMPAQ performed an exhaustive and multidisciplinary literature review that began with a preliminary scan of the existing research on older workers. The purpose of this scan was to develop a targeted list of searchable terms, relevant trends, and data sources to systematically review and categorize the literature.

Having completed this step, IMPAQ developed detailed literature search parameters, such as literature sources and search terms, screening information and criteria. Using this information, we implemented the targeted search process to capture and catalog the relevant literature. In addition to IMPAQ's own literature search procedure, Linda Richer, the "Digital Curator" at the W.E. Upjohn Institute for Employment Research, assembled and shared with us a comprehensive bibliography of recent literature on older workers' labor force participation. After completing the search process, we also shared the list of identified literature with the Technical Working Group to ensure no critical pieces of literature were left out.

We synthesized research primarily conducted from 2010 to 2015 which was focused in the U.S. context. We also included a few pre-2010 articles that are considered seminal (referred by the Technical Working Group) and are critical to our understanding of the older workers literature. Similarly, for selected topics where only limited research has taken place during this period (e.g., demand-side issues), we reviewed selected studies written before 2010 or focused in non-U.S. contexts. In the exhibit below, we have captured information on the relevant characteristics of the literature we studied.

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Alpert, Abby, and David Powell.	Tax Elasticity of Labor Earnings for Older Individuals	2012	Michigan Retirement Research Center Research Paper WP 2012-272	Probit regression	Longitudinal	Health and Retirement Study (HRS), 2000-2008
Alpert, Abby, and David Powell.	Estimating Intensive and Extensive Tax Responsiveness: Do Older Workers Respond to Taxes?	2014	RAND Corporation Working Paper	IV-Probit; 2SLS	Longitudinal	Health and Retirement Study, 2000-2010
Altindag, Onur, Lucie Schmidt, and Purvi Sevak.	The Great Recession, Older Workers with Disabilities, and Implications for Retirement Security	2014	Michigan Retirement Research Center Research Paper No. 2012-277	Principal component analysis, multivariate regressions	Longitudinal	Health and Retirement Study (HRS), 2004-2010
Angrisani, Marco, Michael Hurd, Erik Meijer, Andrew Parker, and Susann Rohwedder	Labor Force Transitions at Older Ages: The Roles of Work Environment and Personality	2013	Michigan Retirement Research Center Research Paper 2013-295	Multinomial logit model	Longitudinal	Health and Retirement Study (HRS), 2002-2010; Leave-Behind (LB) Questionnaire
Argento, Robert, Victoria L. Bryant, and John Sabelhaus.	Early Withdrawals from Retirement Accounts during the Great Recession	2015	Early withdrawals from retirement accounts during the Great Recession. Contemporary Economic Policy, 33(1), 1-16.	Multivariate regression	Cross-sectional	Statistics of Income (SOI) data, 2004-2010
Auer, Peter, Umit Efenioglu, and Janine Leschke.	Active Labour Market Policies Around the World: Coping with the Consequences of Globalization	2005	International Labor Organization.	N/A	N/A	N/A

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Autor, David, Nicole Maestas, Kathleen Mullen, and Alexander Strand	Does Delay Cause Decay? The Effect of Administrative Decision Time on the Labor Force Participation and Earnings of Disability Applicants	2015	NBER Working Paper No. 20840	Multivariate regressions, 2 stage regression	Longitudinal	Disability Operational Data Store (DIODS) 2005-2006; Case Processing and Management System (CPMS) 2005-2012; Detailed Earnings Record (DER) 2005-2011; Payment History Update System (PHUS) & Master Beneficiary Record (MBR)
Banks, James, Richard Blundell, Antoine Bozio, and Carl Emmerson	Disability, Health and Retirement in the United Kingdom	2011	National Bureau of Economic Research No. w17049	N/A	N/A	No primary data analysis done
Begley, Jaclene, and Sewin Chan	The Effect of Housing Wealth Shocks on Work and Retirement Decisions	2015	NYU Wagner Research Paper No. 2634284	Logit regression	Longitudinal l	Panel Study of Income Dynamics (PSID), 1999-2009
Behaghel, Luc, and David Blau	Framing Social Security Reform: Behavioral Responses to Changes in the Full Retirement Age	2010	IZA Discussion Paper No. 5310	Difference-in-differences (DID) model	Longitudinal	Health and Retirement Study (HRS), Longitudinal Employer-Household Data (LEHD)

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Behaghel, Luc, Eve Caroli, and Muriel Roger	Age-Biased Technical and Organizational Change, Training and Employment Prospects of Older Workers	2014	Economica, Vol. 81, Issue 322, pp. 368-389	Joint generalised least squares & the SUR method	Cross-sectional	COI survey (Changements Organisationnels et Informatisation) 1997; DADS files (Déclarations Annuelles des Données Sociales); BRN (Bénéfices Réels et Normaux)
Belbase, Anek, Geoffrey T. Sanzenbacher, and Christopher M. Gillis	Does Age-Related Decline in Ability Correspond with Retirement Age?	2015	Center for Retirement Research at Boston College, WP No. 2015-24	Probit regression	Longitudinal	Health and Retirement Study (HRS), 1992-2012
Bernard, André	The Job Search of the Older Unemployed	2012	Component of Statistics Canada Catalogue no. 75-001-X, Perspectives on Labour and Income	Multivariate & probit regressions	Longitudinal	Employment Insurance Coverage Survey (EICS) 2006-2010
Bertschek, Irene, and Jenny Meyer	It is Never Too Late for Changes? Analyzing the Relationship between Process Innovation, IT and Older Workers	2010	ZEW - Centre for European Economic Research Discussion Paper No. 10-053 25	Probit model, Linear probability model	Longitudinal	ICT survey of the Centre for European Economic Research (ZEW) 2004 & 2007

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Blau, David, and Tetyana Shvydko	Labor Market Rigidities and the Employment Behavior of Older Workers	2011	Industrial & Labor Relations Review, 64(3): 64-484.	Multivariate regression	Longitudinal	U.S. Survey of Income and Program Participation (SIPP), 1990 – 2001 panels; Longitudinal Employer Household Dynamics (LEHD) files
Bloom, David E., and Alfonso Sousa-Poza	Ageing and Productivity: Introduction	2013	IZ Discussion Paper No. 7205	N/A	N/A	N/A
Boockmann, Bernard, and Tobias Brändle	Coaching, Counseling, Case-Working: Do They Help the Older Unemployed Out of Benefit Receipt and Back into the Labor Market?	2015	IZA Discussion Paper No. 8811	Propensity Score Matching (PSM), Difference-in-Difference Matching Estimator	Cross-sectional	Integrated Employment Biographies (IEB) Administrative Data
Börsch-Supan, Axel, and Matthias Weiss	Productivity and Age: Evidence from Work Teams at the Assembly Line	2013	MEA No. 148-2007	Multivariate regression	Cross-sectional	Data collected at Mercedes-Benz Plant in Southern Germany
Bosworth, Barry P., and Gary Burtless	Recessions, Wealth Destruction, and the Timing of Retirement	2010	Boston College Retirement Research Center Working Paper No. 2010-22	Multivariate regression	Longitudinal	Social Security Administration (SSA) 1971-2010, Current Population Survey (CPS) 1978-2010, The Annual Social and Economic Supplement (ASEC) 2001-2009

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Bound, John, Stephan Lindner, and Timothy Waidmann	Reconciling Findings on the Employment Effect of Disability Insurance	2014	IZA Journal of Labor Policy 3(11): 1-23.	Decomposition	Longitudinal	Census Bureau's Survey of Income and Program Participation (SIPP), 1983 cohorts
Brown, Melissa, Kerstin Aumann, Marcie Pitt-Catsouphes, Ellen Galinsky, and James T. Bond.	Working in Retirement: A 21st Century Phenomenon	2010	Families And Work Institute	Logistic regression	Cross-sectional	National Study of the Changing Workforce (NSCW), 2008
Burkhauser, Richard V., Mary C. Daly, Duncan McVicar, and Roger Wilkins	Disability Benefit Growth and Disability Reform in the U.S.: Lessons from Other OECD Nations	2014	IZA Journal of Labor Policy 3:4	Counterfactual disability recipiency rates	Longitudinal	Data from government sources across five countries ranging from 1970-2012
Burtless, Gary	The Impact of Population Aging and Delayed Retirement on Workforce Productivity	2013	Center for Retirement Research at Boston College, WP No. 2013-11	Descriptive analyses	Cross-sectional	Current Population Survey (CPS) 1985-2010; Bureau of Labor Statistics (BLS) historical data 1990-2012
Burtless, Gary	Labor Force Dynamics in the Great Recession and Its Aftermath: Implications for Older Workers	2016	Center for Retirement Research at Boston College, WP No. 2012-24.	Linear probability model	Cross-sectional	Current Population Survey (CPS)

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Butrica, Barbara A., and Karen Elizabeth Smith	401(k) Participant Behavior in a Volatile Economy	2012	Center for Retirement Research at Boston College, WP No. 2012-3.	Multivariate regression	Longitudinal	SIPP 1996, 2001, 2004, and 2008; Social Security Administration's (SSA) Detailed Earnings Record (DER) & Summary Earnings Record (SER)
Butrica, Barbara A., and Nadia Karamcheva	The Changing Causes and Consequences of Not Working Before Age 62	2012	Center for Retirement Research at Boston College, WP No. 2012-3.	Descriptive analyses only	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Butrica, Barbara A., and Nadia Karamcheva	Does Household Debt Influence the Labor Supply and Benefit Claiming Decisions of Older Americans?	2013	Center for Retirement Research at Boston College, WP No. 2013-22	Multivariate regressions, Bivariate Probit Models, Difference-in-differences estimators	Longitudinal	Health and Retirement Study (HRS), 1998-2010
Cahill, Kevin E., and Joseph F. Quinn.	A Balanced Look at Self-Employment Transitions Later in Life	2014	Public Policy & Aging Report, 24(4): 134-140.	N/A	N/A	No primary data analysis done
Cahill, Kevin E., Jacquelyn B. James, and Marcie Pitt-Catsouphes	The Impact of a Randomly Assigned Time and Place Management Initiative on Work and Retirement Expectations	2015	Work, Aging and Retirement 1(4): 350-368	Two-period utility maximization model	Longitudinal	Health and Retirement Study
Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn	Reentering the Labor Force after Retirement	2011	Monthly Labor Review, v. 134, no. 6, June 2011	Descriptive analyses only	Longitudinal	Health and Retirement Study (HRS), 1992-2010

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn	Older Workers and Short-Term Jobs: Employment Patterns and Determinants	2012	Monthly Labor Review, May 2012 (v.135, n.5)	Descriptive analyses only	Longitudinal	Health and Retirement Survey (HRS), 1992-2008
Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn	Are Gender Differences Emerging in the Retirement Patterns of the Early Boomers?	2013	BLS Working Paper 468	Descriptive analysis	Longitudinal	Health and Retirement Study (HRS)
Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn	New Evidence on Self-Employment Transitions Among Older Americans with Career Jobs	2013	BLS Working Paper 463	Logit multivariate regression model	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn	Evolving Patterns of Work and Retirement	2015	The Handbook of Aging and the Social Sciences (8th Edition)	Descriptive analyses only	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Card, David, Nicole Maestas, and Patrick Purcell	Labor Market Shocks and Early Social Security Benefit Claiming	2014	Michigan Retirement Research Center Research Paper No. 2014-317	Multivariate regression, Instrumental variables	Longitudinal	Social Security Administration's Continuous Work History Sample (CWHS)
Chan, Sewin, and Ann Huff Stevens	Job Loss and Retirement Behavior of Older Men	2001	Journal of Labor Economics 19(2): 484-521.	Reduced-form hazard models	Longitudinal	Health and Retirement Study (HRS), 1992-1996
Coe, Norma B., and Gopi Shah Goda	How Much Does Access to Health Insurance Influence the Timing of Retirement?	2015	SIEPR Discussion Paper No. 14-007	Difference-in-differences (DID) model	Longitudinal	Health and Retirement Study (HRS), 1996-2010

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Coe, Norma B., and Kalman Rupp	Does Access to Health Insurance Influence Work Effort Among Disability Insurance Recipients?	2012	Center for Retirement Research at Boston College WP, 10	Multivariate regression	Longitudinal	Individual-level data under a collaborative project between the Centers for Medicare and Medicaid Services and the U.S. Social Security Administration; Administrative data on Medicaid and Medicare coverage and expenditures.
Coile, Courtney C., and Phillip B. Levine	Recessions, Retirement, and Social Security	2011	American Economic Review, v.101, n.3, May 2011, p. 23-28	Linear probability model	Longitudinal	Current Population Survey - March Supp. 1980-2009; Census 2000; American Community Survey 2001, 2002, & 2006–2009
Coile, Courtney. 2015.	Disability Insurance Incentives and the Retirement Decision: Evidence from the U.S.	2015	NBER Working Paper No. 20916.	Descriptive analyses, regression models	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Conen, Wieteke S., Hendrik P. Van Dalen, and Kène Henkens	Ageing and Employers' Perceptions of Labour Costs and Productivity: A Survey Among European Employers	2012	International Journal of Manpower, 33(6): 629-647.	Descriptive analyses, logit regression models	Cross-sectional	Employer survey administered in Denmark, France, Germany, Italy, the Netherlands, Polan, and Sweden, 2009

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Congdon-Hohman, Joshua	Love, Toil, and Health Insurance: Why American Husbands Retire When They Do	2015	Contemporary Economic Policy 33(1): 118-140.	Probit regression	Longitudinal	Health and Retirement Study (HRS), 1992-2006
Congdon-Hohman, Joshua	Retirement Reversals and Health Insurance: the Potential Impact of the Affordable Care Act	2015	College Of The Holy Cross, Department Of Economics And Accounting Faculty Research Series, Paper No. 15-01	Survival time analysis	Longitudinal	Health and Retirement Study (HRS), 1992-2006
Couch, Kenneth A., Christopher R. Tamborini, Gayle L. Reznik, and John W. Phillips	Divorce, Women's Earnings, and Retirement Over the Life Course	2013	Lifecycle events and their consequences: Job loss, family change, and declines in health, pp. 133-157.	Fixed-effects regression model	Longitudinal	Survey of Income and Program Participation (SIPP), 2004
de Hek, Paul, and Daniel van Vuuren	Are Older Workers Overpaid? A Literature Review	2011	International Tax and Public Finance 18(4): 436-460.	Descriptive analyses only	N/A	No primary data analysis done
Dennis, Helen	The Older Entrepreneur: Why Employers Should Embrace This Trend	2012	Blog Post, The Center on Aging and Work at Boston College	N/A	N/A	N/A
Even, William, and David A. Macpherson	The Affordable Care Act and the Growth of Involuntary Part-Time Employment	2015	IZA Discussion Paper No. 9324.	Difference-in-difference	Cross-sectional	Current Population Survey, 1994-2015
French, Eric, and John Bailey Jones	The Effects of Health Insurance and Self-Insurance on Retirement Behavior	2011	Econometrica 79(3): 693-732	Method of simulated moments (MSM)	Longitudinal	Health and Retirement Study (HRS), 1992-2006

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Ghilarducci, Teresa, Joelle Saad-Lessler, and Kate Bahn	Are US Workers Ready for Retirement? Trends in Plan Sponsorship, Participation, and Preparedness	2015	Journal of Pension Benefits, Ferenczy Benefits Law Center, pp. 25-39	Descriptive statistics	Longitudinal	Current Population Survey - March Supplement 2011 & 2012; 2008 SIPP Panel Wave 11
Giandrea, Michael D., Kevin E. Cahill, and Joseph F. Quinn. 2010	The Role of Re-entry in the Retirement Process	2010	BLS Working Paper 439	Multivariate regression	Longitudinal	Health and Retirement Study (HRS), 1992 - 2008.
Gobel, Christian, and Thomas Zwick	Which Personnel Measures Are Effective in Increasing Productivity of Old Workers?	2010	ZEW Discussion Paper No. 10-069	Karup-King third-difference formula for osculatory interpolation	Longitudinal	Dataset of the Social Security Administration (SSA), 1960-2004
Goda, Gopi Shah, John B. Shovan, and Sita Nataraj Slavov	What Explains Changes in Retirement Plans during the Great Recession?	2011	The American Economic Review 101.3, pp. 29-34.	Multivariate regression	Longitudinal	Health and Retirement Study, 2006-2008, Standard and Poors (S&P) 500 and Federal Housing Finance Agency (FHFA) indices
Gorodnichenko, Yuriy, Jae Song, and Dmitriy Stolyarov	Macroeconomic Determinants of Retirement Timing	2013	Working Paper No. 2013-281	Non-parametric econometric model	Longitudinal	Continuous Work History Sample (CWHS) dataset of the Social Security Administration (SSA). Early 1950s-2012

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Gorodnichenko, Yuriy, John P. Laitner, Jae Song, and Dmitriy Stolyarov	Technological Progress and the Earnings of Older Workers	2013	Michigan Retirement Research Center Research Paper 2013-280	Descriptive analyses, logit regression models	Cross-sectional	Employer survey administered in Denmark, France, Germany, Italy, the Netherlands, Polan, and Sweden, 2009
Gustman, Alan L., and Thomas L. Steinmeier	Behavioral Effects of Social Security Policies on Benefit Claiming, Retirement and Saving	2012	Michigan Retirement Research Center Research Paper 2012-263	Multivariate regression, Method of simulated moments (MSM)	Longitudinal	Health and Retirement Study (HRS), 1992
Hairault, Jean-Olivier, Francois Langot, and Thepthida Sopraseuth	Why Is Old Workers' Labor Market More Volatile? Unemployment Fluctuations over the Life-Cycle	2014	IZA Discussion Paper No. 8076.	Various	Cross-sectional	Monthly Current Population Survey (CPS) data
Heflin, Colleen M., and Peter R. Mueser.	Aid to Jobless Workers in Florida in the Face of the Great Recession: The Interaction of Unemployment Insurance and the Supplemental Nutritional Assistance Program	2013	IZA Discussion Paper No. 7772	Descriptive analyses	Longitudinal	Florida Department of Children and Families (DCF) state administrative data, 2003-2010; Florida Unemployment Insurance Weekly Data UI Benefit Receipt, 2006-2010

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Heidkamp, Maria, Nicole Corre, and Carl E. Van Horn	The New Unemployables Older Job Seekers Struggle to Find Work During the Great Recession: Comparing the Job Search, Financial, and Emotional Experiences of Older and Younger Unemployed Americans	2010	The Sloan Center on Aging & Work, Issue Brief 25	Descriptive analyses	Longitudinal	Heldrich Center for Workforce Development National Survey, May 2010
Heim, Bradley	Understanding Self-Employment Dynamics Among Individuals	2014	Small Business Administration	Markov chain model	Cross-sectional	March Current Population Survey, 1994-2012
Hipple, Steven	Self-Employment in the United States	2010	Monthly Labor Review 133(9): 17-32.	Descriptive analyses only	Cross-sectional	March Supplement of Current Population Survey, 2010
Hipple, Steven	People Who Are Not in the Labor Force: Why Aren't They Working?	2015	*Beyond the Numbers* 4(15).	Descriptive analyses only	Cross-sectional	Current Population Survey (CPS) and its Annual Social and Economic Supplement (ASEC)
Hollenbeck, Kevin, and Wei-Jang Huang	Workforce Program Performance for the Commonwealth of Virginia	2008	Upjohn Technical Report No. 08-024	Descriptive analyses, multivariate regressions	Cross-sectional	State agency administrative data for FY2005; Wage record data from the Unemployment Insurance System (2005-2006)

Authors	Title	Publication Year	Periodical Title/Issue	Methodology Used	Type of Data	Data Source & Years
Khan, Mashfiqur, Matthew S. Rutledge, and April Yanyuan Wu	How Do Subjective Longevity Expectations Influence Retirement Plans?	2014	Netspar Discussion Paper No. 02/2014-082	Instrumental variables	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Kreisberg, Nicole	New Careers for Older Workers	2015	American Institute for Economic Research Report	Descriptive analyses only	Cross-sectional	Current Population Survey, primary survey data
Krueger, Alan B., and Andreas Mueller	Job Search, Emotional Well-Being, and Job Finding in a Period of Mass Unemployment: Evidence from High-Frequency Longitudinal Data	2015	Brookings Papers on Economic Activity, pp. 1-57	Probit regression	Longitudinal	Princeton University Survey Research Center (PSRC) 2009; New Jersey Department of Labor and Workforce Development (LWD) data
Laun, Lisa	The Effect of Age-Targeted Tax Credits on Retirement Behavior	2012	IFAU- Working Paper No. 2012: 18.	Multivariate regressions	Longitudinal	Longitudinal Database on Education, Income and Employment (LOUISE) 2001-2009
Lee, Seonglim, Sang-Hee Sohn, Eunyoung Rhee, Yoon G. Lee, and Hua Zan	Consumption Patterns and Economic Status of Older Households in the United States	2014	Monthly Labor Review, September 2014	Factor analysis, cluster analysis, GLM and Scheffe tests	Cross-sectional	Bureau of Labor Statistics Consumer Expenditure Survey (CE) 2010-2011

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Leonesio, Michael V., Benjamin Bridges, Robert Gesumaria, and Linda Del Bene	The Increasing Labor Force Participation of Older Workers and Its Effect on the Income of the Aged	2012	Social Security Bulletin, Vol. 72, No. 1, p. 59-77	Descriptive analyses only	Cross-sectional	Current Population Survey (CPS), Annual Social and Economic Supplement (ASEC) 1980-2010.
Li, Yanan, and Victoria Prowse.	The Insurance Role of Household Labor Supply for Older Workers	2014	Michigan Retirement Research Center Research Paper WP 2014-309	Logit model	Longitudinal	Panel Study on Income Dynamics (PSID), 2003, 2005, 2007, 2009, 2011
Lusardi, Annamaria, and Olivia S. Mitchell	Older Adult Debt and Financial Frailty	2013	Michigan Retirement Research Center Research Paper No. 2013-291	Multivariate regressions	Longitudinal	Health and Retirement Study (HRS), 1992, 2002 and 2008; National Financial Capability Study (NFCS) 2009, 2012

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Maestas, Nicole, Kathleen J. Mullen, and David Powell	The Effect of Local Labor Demand Conditions on the Labor Supply Outcomes of Older Americans	2013	RAND Working Paper Series WR-1019	Instrumental variable (Bartik instrument) regression	Longitudinal	5% Census Samples, 1980, 1990, 2000; American Community Survey (ACS) 2009-2011; Health and Retirement Survey (HRS), 1992-2008; Quarterly Census of Employment and Wages (QCEW), 1992-2008
Marmora, Paul, and Moritz Ritter	Unemployment and the Retirement Decisions of Older Workers	2015	Journal of Labor Research 36: 274-290.	Difference-in-differences linear-probability-model	Longitudinal	Survey of Income and Program Participation (SIPP) 1996-2011
McFall, Brooke Helppie	Crash and Wait? The Impact of the Great Recession on the Retirement Plans of Older Americans	2011	American Economic Review, v.101, n.3, p. 40-44	Tobit regression	Longitudinal	CogEcon survey by University of Michigan.
Modrek, Sepideh, and Mark R. Cullen	Job Demand and Early Retirement	2012	Boston College Center for Retirement Research Working Paper No. 2012-19	Logistic & Cox proportional hazard regressions	Longitudinal	Alcoa personnel, physical job demand, pension, health, and wage data 1985

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Montizaan, Raymond Michel, Andries de Grip, and Didier Fouarge	Training Access, Reciprocity and Expected Retirement Age	2015	IZA Discussion Paper No. 8862	Ordered probit regressions	Cross-sectional	Dutch ROA Public Sector Survey 2012; Dutch pension fund for public sector employees (ABP) data
Munnell, Alicia H., Matthew S. Rutledge, and Anthony Webb	Are Retirees Falling Short? Reconciling the Conflict Evidence	2014	Center for Retirement Research; Working Paper No. 2014-16	Multivariate regression	Longitudinal	Health and Retirement Study (HRS), 1992-2010
Neumark, David and Patrick Button	Did Age Discrimination Protections Help Older Workers Weather the Great Recession?	2013	NBER Working Paper 19216.	Difference-in-differences (DDD) model	Cross-sectional	Current Population Survey (CPS), Quarterly Workforce Indicators (QWI)
Neumark, David, and Joanne Song	Do Stronger Age Discrimination Laws Make Social Security Reforms More Effective?	2013	Journal of Public Economics 108, 1-16.	Multivariate regression	Longitudinal	Health and Retirement Study (HRS), 1992-2008
Park, Jungwee	Job-Related Training of Older Workers	2012	Perspectives on Labour and Income, 24(2).	Descriptive statistics, Blinder-Oaxaca decomposition	Cross-sectional	Access and Support to Education and Training Survey (ASETS) 2008
Picchio, Matteo, and Jan van Ours	Retaining through Training Even for Older Workers	2011	IZA Discussion Paper No. 5591	Dynamic Unobserved Effects Probit Model	Longitudinal	ECHP (Netherlands) 1994–2001
Rix, Sara E.	Recovering from the Great Recession: Long Struggle Ahead for Older Americans	2011	AARP Policy Institute	Descriptive analyses	Cross-sectional	AARP Public Policy Institute Survey, 2010

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Roger, Muriel, and Malgorzata Wasmer	Heterogeneity Matters: Labour Productivity Differentiated by Age and Skills	2009	PSE Working Paper No. 2009-51.	Nested constant-elasticity-substitution (CES) production estimation function	Longitudinal	Benefices Reels Normaux (BRN) and Declarations Administratives de Donnees Sociales (DADS), 2003-2004
Rutledge, Matthew S., Christopher M. Gillis, and Anthony Webb.	Will the Average Retirement Age Continue to Increase?	2015	Center for Retirement Research at Boston College; Working Paper No. 2013-22	Multivariate regression	Longitudinal	Health and Retirement Study (HRS), 1992-2010; Survey of Income and Program Participation (SIPP), 1955-1987
Rutledge, Matthew S., Steven A. Sass, and Jorge D. Ramos-Mercado	How Does Occupational Access for Older Workers Differ by Education?	2015	Center for Retirement Research at Boston College; Working Paper No. 2015-20	Multivariate regression	Cross-sectional	January/March Current Population Survey, 1996-2012, Occupational Information Network (O*NET) data
Sass, Steven A., and Anthony Webb	Is the Reduction in Older Workers' Job Tenure a Cause for Concern?	2010	Center for Retirement Research at Boston College; Working Paper No. 2010-20	Multinomial logit model	Longitudinal	Health and Retirement Study (HRS), 1992-2008
Schimmel, Jody, and David C. Stapleton	The Financial Repercussions of New Work-Limiting Health Conditions for Older Workers.	2012	Inquiry 49(2): 141-163.	Propensity Score Matching (PSM)	Longitudinal	Health and Retirement Study (HRS), 1992-2008
Sheaks, Chantel, Marcie Pitt-Catsouphes, and Michael A. Smyer	Phased Retirement	2010	Georgetown University Law Center Legal and Research Summary Sheet	N/A	N/A	No primary data analysis done

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Skira, Megan	Dynamic Wage and Employment Effects of Elder Parent Care	2012	Center for Retirement Research at Boston College; WP No. 792	Dynamic Discrete Choice Model	Longitudinal	Health and Retirement Study (HRS), 1994-2008
Sloan Center on Aging & Work	Flex Strategies to Attract, Engage & Retain Older Workers	2012	Sloan Center on Aging & Work, Boston College	Descriptive analysis	Qualitative data	Telephone interviews, case histories of three organizations, available literature
Venti, Steven, and David A. Wise	The Long Reach of Education: Early Retirement	2014	NBER Working Paper No. 20740	Probit regression	Longitudinal	Health and Retirement Study (HRS), 1994-2010
Vere, James P.	Social Security and Elderly Labor Supply: Evidence from the Health and Retirement Study	2011	Labour Economics 18(5): 676-686.	Instrumental variable, 2SLS	Longitudinal	Health and Retirement Study (HRS), 1992-2006
Wandner, Stephen A., David Balducchi, and Christopher J. O'Leary	Selected Workforce Development Programs in the United States: Lessons Learned for Older Workers.	2015	AARP Research Report	N/A	N/A	No primary data analysis done
Zhang, Ting	Workforce Investment Act Training for Older Workers: Toward a Better Understanding of Older Worker Needs during the Economic Recovery	2011	ETA Occasional paper - ETAOP 2011-10	Fixed Effect Panel Data Model, Random Effect Panel Data Model	Longitudinal	Workforce Investment Act Standardized Record Data (WIASRD) 2007, Bureau of Labor Statistics (BLS)
Zhivan, Natalia A., Mauricio Soto, Steven A. Sass, and Alicia H. Munnell.	How the Risk of Displacement for Older Workers Has Changed	2012	Labour: Review of Labour Economics and Industrial Relations 26(1): 90-10	Blinder–Oaxaca decomposition	Cross-sectional	Displaced Workers Survey, 1996-2006