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New Work-Limiting Health Events and Occupational Transitions Among Older Workers

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ABSTRACT

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Title

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Key findings and implications

In this study, we descriptively examine whether the occupational path of older workers who report a new work-limiting health condition in the years before retirement differs from that of workers who remain limitation-free. Even for those without significant work limitations, transitions in work near retirement are common, so it is important to differentiate between transitions made in response to new disabling conditions and transitions that occur as part of the usual path toward retirement. The onset of a work-limiting health condition in the years approaching retirement significantly reduces earnings and income and leads to a sustained increase in the risk of poverty. If workers with new disabling conditions near retirement have different occupational paths than those who remain relatively healthy, then it may be beneficial to intervene and help workers with new disabling conditions remain in the workforce.

We use the Health and Retirement Study (HRS) to compare the preretirement occupational trajectories of workers who experienced a new work-limiting health condition in their late working years to those who did not. We consider workers who temporarily reported work limitations as well as those who had more persistent work limitations between ages 55 and 67. For each worker, we trace the occupation they held at ages 59, 63, and 67 relative to the occupation they had at age 55, before they reported a work limitation. At each age, we determine whether the worker (1) had stopped working for pay; (2) was working in the same occupation; (3) was working in a different, though similar, occupation; or (4) was working in a substantially different occupation.

We find the following:

- The occupational trajectories of workers who experience new, but temporary, work-limiting conditions are nearly identical to those of workers who do not experience limitations. However, workers who experience new, persistent work-limiting health conditions are significantly more likely than their peers without such conditions to stop working at ages 59, 63, and 67. For example, at age 59, stopping work was 2.5 times more likely for those who had a new persistent work limitation than for those who did not (27.8 percent versus 11.1 percent).

- For workers who experience persistent work-limiting health conditions and continue to work, significant occupational changes are at least as common as for those without such health conditions who continue working. For example, by age 63, 51 percent of those with persistent work limitations who were working had made a significant occupational change, compared with 43 percent of the non-work-limited group.
- After accounting for demographic and socioeconomic characteristics, we did not find that the attributes of the occupation a worker held at age 55 were correlated with particular occupational paths for workers with a persistent work-limiting health condition.

The implications of the findings are:

- The declines in average earnings after disability onset in the late working years that have been documented in the literature appear to be largely driven by stopping work entirely, as opposed to occupational changes. Although federal disability and retirement benefits offset some of those lost earnings, they do not replace that lost income. Interventions to assist older workers who experience new health conditions should focus on maintaining connections to the labor force, potentially including retraining to prepare for significant occupational changes.
- Because we did not find that certain types of occupations were associated with particular occupational trajectories, targeting interventions to workers on the basis of their job attributes will be difficult. Instead, continuing efforts to help employers retain older workers following new work-limiting health conditions—including offering accommodations or retraining for alternate positions—may be most fruitful.

Abstract

Occupational transitions in the late working years are common, and may reflect a desired gradual transition to retirement or bridge jobs. Yet such transitions may also be responses to adverse health events, which occur with increasing frequency as workers age. Understanding how the occupational paths for workers who experience new health conditions differ from those for workers who do not may point to the types of supports that might allow the former to remain in the labor force longer, thus delaying claims for federal disability and retirement benefits, and potentially reducing the risks of poverty into the retirement years. In this paper, we use data from the Health and Retirement Study linked to the Department of Labor's O*NET data to assess variations in occupational transitions for workers who experience a new work-limiting health condition after age 55 and for those who do not. We find that for workers who remain in the labor force, occupational transitions are common for both groups. Transitions to occupations that are substantially different from the occupation held at age 55 are more common than transitions to occupations that are similar. Relatively few workers remain in the occupation they held at age 55 until they reach age 67, after full Social Security retirement benefits are available. The largest difference between workers who experience new health conditions and those who do not is that the former are much more likely to stop working early: Conditional on remaining at work, the transitions between those who experience new health limitations are quite similar to those who do not.

Keywords: occupations, transitions, disability, work limitations

New Work-Limiting Health Events and Occupational Transitions among Older Workers

The onset of a work-limiting health condition in the years approaching retirement significantly reduces earnings and income and leads to a sustained increase in the risk of poverty. For workers in their 50s and early 60s who experienced a new disabling condition, earnings fall by 50 percent, on average, two years after the onset of the disability, and their poverty rates are nearly double those of similar workers without such a condition (Schimmel & Stapleton, 2012). Workers whose disabling condition is sufficiently severe in the late working years apply for Social Security Disability Insurance benefits or claim Old Age Survivors' Insurance (OASI) benefits early, benefit patterns that are correlated with higher rates of poverty (relative to those who claim OASI at full retirement age), which persist into later retirement (Wu & Schimmel Hyde, 2018).

Older workers approaching retirement age might respond to the onset of a work-limiting health condition in various ways. Some of these responses, such as reducing their hours and earning less at the same job, may be similar to younger worker's responses to disability onset (Burkhauser & Daly, 1996; Meyer & Mok, 2006; Meyer & Mok, 2013; Charles & Stephens, 2004; Mok, Meyer, Charles, & Achen, 2008). However, the close proximity to retirement age means that other responses may be more likely. Older workers who experience the onset of a work-limiting health condition might exit the labor market completely, or they might continue to work in some other capacity, perhaps taking a different job with the same or a different employer. That new job could be relatively similar to the old job or a radical departure from past work.

In this study, we compare the occupational trajectory of older workers who report new work-limiting health conditions to that of workers who remain healthy. Even for those without

significant work limitations, transitions in work near retirement are common, often with relatively large changes in occupation (Cahill, Giandrea, & Quinn, 2006, 2018; Sonnega, McFall, & Willis, 2016; Sanzenbacher, Sass, & Gillis, 2017; Munnell & Sass, 2008). To our knowledge, the literature to date has not focused on the extent to which occupational transitions in the late working years are associated with new health conditions. By separating transitions made in response to health conditions versus those made in response to voluntary decisions about work, we may be able to isolate a group of workers for whom services and supports may delay exit from the labor force.

We use the Health and Retirement Study (HRS) to examine the preretirement occupational paths of workers who at age 55 did not report having a work-limiting health condition. We stratify these workers on the basis of whether they subsequently experience a new work-limiting health condition by age 67, and whether such a condition is temporary or more persistent. For each worker, we identify the occupation held at ages 59 (before Social Security retirement benefits are available), 63 (after Social Security's earliest age of eligibility at age 62), and 67 (after Social Security's full retirement age [FRA]). We determine at each age whether the worker, relative to the occupation held at age 55, (1) had stopped working for pay; (2) was working in the same occupation; (3) was working in a different, though similar, occupation; or (4) was working in a substantially different occupation. In addition to documenting the trajectory of workers experiencing a new work-limiting health condition relative to their nonlimited peers, we assess whether certain occupational attributes protect against or are predictive of labor force exit or occupational changes.

This paper proceeds as follows. We begin with a discussion of the existing literature related to occupational changes in older ages. We then describe the structure of the HRS, our

sample selection, and definitions of work-limitation onset and occupational change. Following a discussion of our multivariate models, we present results. We end with a discussion of our findings and implications for policies targeting at helping older workers remain in the labor force.

Occupational Changes in the Late Working Years

Occupational changes in the years prior to retirement are common, even for those who do not experience a major change in health status (Cahill et al., 2006, 2018; Sonnega et al., 2016). About half of all workers ages 59 to 62 work in a job they started after turning age 50 (Sanzenbacher et al. 2017; Munnell & Sass, 2008). Many of these job changes are cross-occupational: 48 percent of men and 38 percent of women who worked full-time after age 50 and changed jobs made a significant occupational change (Cahill et al., 2018). Many of the workers who make transitions in their late working years move from the job they had held longest at age 55 into jobs that pay lower wages and may be seasonal, easier to secure, or require fewer working hours (Sonnega et al., 2016). Even among workers who remain in the jobs they held for most of their working years, earnings may decline if hours are reduced. Cahill et al. (2018) found that about one-quarter of men and one-third of women who were working-full time after age 50 ultimately reduced their hours.

Work decisions in the years before retirement may reflect a variety of factors, of which health is just one. Some may reflect joint spousal employment decisions, a desire to try something new, or a desire to work in a less physically or cognitively demanding job, even if one's own health status has not changed. However, the health status of many individuals does change before full retirement age. By their early 60s, one in four workers has experienced the onset of a work-limiting health condition (Johnson, Mermin, & Resseger, 2007), and nearly four

in five adults in this age group have experienced the onset of a chronic health condition (Smith, 2003). Health status has been shown to be a critical determinant of why older workers may retire early or exit the labor force (see Topa, Moriano, Depolo, Alcover, & Morales, 2009; van Rijn, Robroek, Brouwer, & Burdorf, 2014; Fisher, Chaffee, & Sonnega, 2016; and Hudomiet, Hurd, Rohwedder, & Willis, 2017 for a few examples).

Several studies have documented that a person's ability to stay at work after a new adverse health event may depend on how the condition affects the person's ability to perform key job requirements (Case & Deaton, 2005; Modrek & Cullen, 2012; and Hudomiet et al, 2017). Angrisani, Kapetyn, and Meijer (2015) found that job requirements influenced decisions about continuing work at older ages, with physically demanding jobs in particular being associated with a higher likelihood of retiring early. One's ability to continue to perform job duties following a new work-limiting health condition may hinge on responses by the employer (including on-the-job accommodations) or by the individual (reducing effort at the same job, perhaps by working fewer hours; increasing effort at the same job, if possible, by working harder to perform the same task; changing occupations or employers; or exiting the labor force altogether).

It is important to note that the job one holds at age 55 may depend on a person's health up to that point, and the job itself may affect one's health trajectories in the late working years. One study found that those in more physically demanding jobs reported worse self-rated health in middle age (Fletcher, Sindelar, & Yamaguchi, 2011); another found that though physical and cognitive demands did not influence health, one's control over his or her job did (Schmitz, 2016). Nicholas (2014) found that older workers whose jobs involved nonroutine cognitive analytic and nonroutine physical demands were in worse health and exited the labor force earlier

than individuals who were not in those jobs. Yet another study found that despite differences in health in the late working years across occupations, health trajectories in the years approaching retirement did not vary across occupations (Gueorguieva et al., 2009).

Data and Analysis Sample

The HRS, a nationally representative panel study collected by the Institute of Social Research at the University of Michigan, follows older adults from as early as age 51 (and as late as age 61) until the die or otherwise exit from the survey; for most, this means data is available for many years before and after retirement (Fisher & Ryan, 2018). The HRS began interviewing respondents in 1992 and has replenished its sample with new cohorts of age-eligible respondents every six years. For many respondents, a quarter century of data are now available, with detailed information on their demographics, job and health history, income and wealth, attitudes toward retirement, and a range of other subjects.

Our sample consists of 3,105 HRS respondents who were born between 1931 and 1947 (first interviewed in 1992 or 1998 when they were between the ages of 51 and 55). When interviewed at age 55, individuals in our analysis sample were working for pay and did not report a health-related work limitation. Given the HRS's biennial interview cycle and variation in birth date relative to interview date, our analysis sample includes individuals who were interviewed between ages 54 and 56. The HRS's sampling frame recruits respondents between the ages of 51 to 56, so the initial interviews in our analysis sample include the first HRS interview for some respondents and the second or third HRS interview for others.

We follow an approach similar to that of Sonnega et al. (2016) to measure occupational status at several points in the late working years. We limited our sample to respondents who had been interviewed at least three times after age 55, at ages 59, 63, and 67. We selected these ages

because they align with retirement milestones—withdrawals of many pensions can begin at 60, the earliest age to claim OASI benefits is 62, and the FRA for OASI among these age cohorts was 65 or 66 (depending on the birth year). Because of differences between age and interview date in the HRS, respondents in the analysis sample were generally ages 58 to 60, 62 to 64, and 66 to 68 at the time of follow-up data collection.¹

Our sample selection criteria imply that our sample is healthier than a random cross section of all older adults. First, we include only adults who were still working and did not have a work-limiting health condition at age 55. Many individuals already have a work-limiting health condition by that age (Smith, 2003; Johnson et al., 2007). Consequently, we excluded 575 respondents who were interviewed but not working at age 55 (some of whom had a work-limiting health condition), as well as another 298 who were working but reported a work-limiting health condition.² Second, we limit the analysis sample to adults who were interviewed—and alive—until their FRA. Specifically, we excluded 379 individuals who died between 55 and FRA and another 448 who were not interviewed at all three later points (ages 59, 63, and 67). Missing interviews is more common among those in worse health status, meaning that those in our sample are likely to be healthier, on average, than all workers of the same age.

¹ We defined these three key points on the basis of HRS waves relative to the wave in which a respondent was at ages 54 to 56. Specifically, the wave in which a respondent was at ages 58 to 60 is two waves after the HRS wave in which a respondent was at ages 54 to 56, and a wave in which a respondent was at ages 66 to 68 is six waves after the HRS wave in which a respondent was at ages 54 to 56.

² Although our sample respondents did not report a work limitation at age 55, some conditions are temporary, and they may have had a work-limiting condition before that age. For example, among respondents in our sample, about a third of our sample (1,029 respondents) were interviewed twice before the interview at age 55, when we started to follow them. Of those, 59 reported a work-limiting health condition in one of the two earlier interviews, and 21 reported a work-limiting health condition in both of those interviews.

Identifying New Work-Limiting Health Conditions

As done in previous HRS-based studies, we use a health condition that limits one's ability to work as a proxy for disability (Schimmel Hyde & Stapleton, 2017). We selected "work-limiting health condition" because the concept directly relates to employment, and other studies have found that it aligns relatively well with objective measures of health (Bound, 1989; Burkhauser & Daly, 1996).³ Recent work suggests that although reports of work-limiting health conditions may overstate the share of the population with a disability (Rupp & Dushi, 2016), most individuals who meet a stricter, more objective measure of disability almost always report a work-limiting health condition.

Our analysis is designed to be descriptive; we do not ascribe a causal relationship between new work limitations and occupational changes, for at least two reasons: First, reporting a work limitation is correlated with the type of work a person is doing and the accommodations made by the employer. For instance, a lawyer may not consider a condition affecting her legs to be work-limiting, and a secretary with diminishing eyesight may not consider the condition to be work-limiting if the employer provides accommodations such as better lighting, screen readers, or other assistive technologies. Second, reports of a work-limiting health condition may suffer from justification bias, in which individuals who have opted to leave the labor force base their decision on their health status *ex post*, although the reason for leaving work was not actually driven by health status (Dwyer & Mitchell, 1999; Kreider, 1999; Benítez-Silva, Buchinsky, Chan, Cheidvasser, & Rust, 2004).

³ The HRS contains other information on health conditions that may occur with increasing frequency during retirement, but those measures are limited to about a half dozen conditions, and the severity of conditions is not recorded. The six-question series that is often used to measure disability in other national surveys is not available in the HRS.

We consider an individual to have experienced a work-limiting condition if in one HRS interview after age 55, but before FRA, the response is affirmative to the question about being limited in the type or amount of work the person can do for a health reason. Over one-third of our sample reported acquiring such a condition during that period (1,136 respondents, 37 percent of the analysis sample). The likelihood of experiencing a new work-limiting health condition during this period was fairly steady: About 14 percent experienced the onset of a work-limiting health condition by age 59, another 12 percent by age 63, and the remaining 10 percent by age 67 (these sum to less than 37 percent because of rounding).

Reporting a work-limiting condition in a single interview may signal only a temporary condition or one that it is not particularly severe (Rupp & Dushi, 2016; Schimmel & Stapleton, 2012). Less severe or temporary conditions may not lead to occupational adjustments; consequently, we separate those with such conditions from those who have more persistent impairments. Among those who reported having a working-limiting health condition at least once at age 59, 63 or 67, about one-third (37 percent) had a temporary work limitation (such a condition was reported in only one interview).⁴

Demographic and Socioeconomic Differences at Age 55

At age 55, before any of the workers in our sample reported having a health-related work limitation, there were already notable differences between those who subsequently experienced the onset of a limitation and those who did not. The differences were more pronounced between those with a persistent work limitation and those without one than they were for those with a temporary work limitation and those without.

⁴ By virtue of our selection criteria, respondents in our sample had at least three points in which they could have reported a work limitation (ages 59, 63, and 67), but potentially could have reported a work-limitation at up to six points (if the respondent also completed an HRS interview biennially, at ages 57, 61, and 65).

Despite not reporting a health condition limiting work at age 55, the group that subsequently reported such a condition was in worse health at age 55 (Table 1). For example, those who subsequently reported a persistent work limitation were more than four times as likely as those who did not report any limitations to say that they were in fair or poor health (16.5 versus 3.8 percent), were three times as likely to report a difficulty with at least one of six activities of daily living (6.6 versus 2.3 percent), and about twice as likely to report difficulty with one of seven instrumental activities of daily living (3.7 versus 2.0 percent). On average, those who experienced the new onset of a work limitation were also more likely to be obese, to report a higher number of depressive symptoms, to have ever smoked, and to drink alcohol.

There were also demographic and socioeconomic differences between workers who experienced work limitations relative to those who did not, some of which may be correlated with preretirement occupational paths. Workers who experienced a work-limiting health condition were less likely than those who did not to be married—72.3 percent among those with a temporary limitation and 72.9 percent among those with a persistent limitation, compared with 79.8 percent of those who did not report a limitation by FRA (Table 1). Workers who experienced a persistent limitation were more likely to be African-American (10.9 percent versus 7.8 to 7.9 percent among those with temporary or no limitations). Workers who experienced limitations were also less educated (more likely to have less than a high school education and less likely to be college graduates) and had lower household incomes than those who did not, with the outcomes of those with temporary limitations falling between the other two groups.

Occupational Transitions and Job Attributes

Our main outcome of interest is occupational transitions after age 55. We used occupational information collected from HRS respondents to measure each respondent's occupation (if any) at each data point. In particular, we accessed detailed occupational codes available by permission from the HRS (to protect privacy, the HRS public-use file contains substantially less detail).⁵ We developed a crosswalk to map the detailed occupational data in the HRS to the Bureau of Labor Statistics' Standard Occupational Classification (SOC) system. SOC codes in turn allowed us to map to the HRS data to the U.S. Department of Labor's Employment and Training Administration O*NET data.⁶ The 2000 SOC coding scheme contained 821 detailed occupations, which were aggregated into 449 broad occupations, 96 minor groups, and 23 major groups. The different levels allow for consideration of occupations with varying levels of specificity. For example, a school bus driver is categorized under the broad group of "bus drivers, school," the minor group of "motor vehicle operators," and the major group of "transportation and material moving occupations."

Occupational transitions. After defining the occupation held at each age, we created four respondent occupational classifications for the follow-up interviews. The classifications are as follows:

1. Had stopped working for pay.

⁵ The unmasked data contain over 500 three-digit Occupational Codes (OCC) depending on the HRS interview wave. The public-use version of HRS reports 17 2-digit occupational categories based on 1980 census codes; 25 2-digit occupational categories based on 2000 census codes, and 23 2-digit occupational categories based on 2010 census codes.

⁶ Because the Census occupational codes have changed over time, the occupational coding schemes in the HRS data also have changed (Nolte, Turf, and Servais, 2016). Respondents in our sample had Census occupation codes from the 1980, 2000, and 2010 schemes. After mapping from OCC to the corresponding Census occupation codes, we aligned all values to 2000 Census occupation codes. From there, we crosswalked these codes to 2000 SOC to map to O*NET data. In a minority of cases, when the crosswalk did not result in a match, we manually inspected the reported occupation and identified others in the data with the same occupation to complete the mapping.

2. Was working in the same occupation as at age 55. Workers in this category were working in the same broad occupation as in the job they held at age 55. This does not preclude a job change, and could in fact could also be true for a person making a change to a highly similar occupation. For example, a respondent can be a computer science teacher at age 55 but a math teacher at age 59 and still be considered in the same occupation, because both are in the same broad occupation group “math and computer teachers, postsecondary.”
3. Was working in a similar occupation as at age 55. Workers in this category changed broad occupation groups, but the new occupation was in the same major group as the job held at 55 (either in the same or a different minor group). For example, a worker in this category could include someone who was a carpenter at age 55 but a floor sander at age 63, because although these two jobs are in different minor groups (carpenters versus carpet, floor, and tile installers and finishers), they are under the same major group, namely, construction trades workers.
4. Was working in a significantly different occupation than at age 55. Workers in this group had moved to a different major group than the job held at age 55. For example, a worker in this group could include someone who was a computer scientist at age 55 but became a realtor at a later age, as these two occupations are under different major groups (computer and mathematical occupations versus sales and related occupations).

In addition to measuring occupational transition at each follow-up age, we also developed an occupational transition summary measure that takes into account occupational changes across the entire follow-up period. The measure categorizes individuals in accordance with the most substantive occupational transition they had. We first identified anyone who had a significant occupation change in any of the three waves. If the person did not make any significant occupational changes, we looked for changes to a similar occupation. We classified those respondents who did not have any occupational changes on the basis of whether they remained in the same occupation through FRA.

Figure 1 highlights the share of workers in each of the occupational transitions categories at ages 59, 63, and 67 and across the full period. Consistent with other studies in the literature, we find that occupational changes are common. At each follow-up point, about one-third of workers are employed in a different occupation than at age 55, whether the occupation is similar

or substantially different. Over the full period, 43.8 percent of respondents made a significant occupational change, and another 14.1 percent moved into a similar occupation. A minority (26.2 percent) remain employed in the same occupation as they held at age 55 until they reach age 67.

Job attributes. We measured the requirements of the job held at age 55 in two ways to understand the extent to which certain job attributes were associated with a higher likelihood of labor force exit or occupational transitions. First, we used the respondent's self-report of job attributes (each HRS respondent answers questions about whether their job requires lifting, physical activity, stooping, good eyesight, or the ability to handle stress). We classified respondents as being in a physically demanding job if they reported that their job required "a lot" of any physical activity, stooping, or lifting. We classified respondents as being in a highly stressful job if they reported that their job involved a lot of stress.

Second, we used the SOC codes from the unmasked occupation data to link to the O*NET data. Earlier studies have shown that although the self-reported and O*NET measures are conceptually similar, they are not perfectly overlapping and complementary (Sonnega, Helppie-McFail, Hudomiet, Willis, & Fisher, 2017; Angrisani et al., 2015). For each occupation, O*NET offers a numeric score for the relevance of a set of attributes to job performance. We used O*NET to identify the attributes critical to job performance, splitting the attributes into two groups that follow the existing literature: ability and skill requirements. Ability requirements are more closely aligned with self-reported job attributes and reflect the demands of the job (Johnson, 2004). We classified workers according to whether their job required (1) high physical demands, (2) high cognitive demands, or (3) other "unpleasant" demands (high stress, dealing with unpleasant people, or difficult working conditions, for example). Skills are proficiencies that are developed through training or experience (Tsacoumis and Willison, 2010). We classified

workers in three ways, depending on whether their job required (1) basic skills,⁷ (2) complex problem-solving or resource management skills,⁸ or (3) system or technical skills.⁹

Occupational Differences at Age 55 Based on Subsequently Experiencing a New Work Limitation

Workers who experienced disability onset were working in lower-paying occupations at age 55, which presumably contributed to their lower household incomes. As with other outcomes, workers who subsequently had a temporary work limitation fared somewhere between those without a work limitation and those with a persistent limitation, so we focus on the other two groups. Workers who experienced a persistent work limitation earned about \$5 (18 percent) less per hour than those who never experienced a work limitation (\$25.40 versus \$30.88 per hour), translating into earnings that were about \$14,500 less annually (Table 2). Although there was no difference in average tenure in the current or longest-held job across the three groups (about 13.5 and 18 years), those who experienced a work limitation were more likely to work part-time, worked fewer hours per week on average, and were less likely to be self-employed.

Workers who experienced disability onset were working in more demanding, less skilled jobs at age 55 (Table 2). A significantly higher share of those with persistent limitations self-reported to the HRS that they were working in a physically demanding job compared with those who did not experience those limitations (50.4 versus 37.1 percent). A similar pattern held with O*NET data—with physical demands being more common among those with work limitations

⁷ Based on 10 elements that are developed capacities facilitating learning or the more rapid acquisition of knowledge, including active learning, active listening, critical thinking, learning strategies, mathematics, monitoring, reading comprehension, science, speaking, and writing.

⁸ Based on five elements that are developed capacities used to solve novel, ill-defined problems in complex, real-world settings, and capacities used to allocate resources efficiently.

⁹ Based on 14 elements that are developed capacities used to understand, monitor, and improve sociotechnical systems, and capacities used to design, set up, operate, and correct malfunctions involving application of machines or technological systems.

(16.4 versus 11.7 percent). The lower rates of physical demands in O*NET data (based on reported occupational demands across all ages) compared to the rates of physical demands among our sample of older workers suggests that jobs that are not difficult across the entire workforce may be more demanding on those at older ages. Workers with persistent limitations also had jobs with a higher likelihood of other negative characteristics, such as working with unpleasant people, stress, or difficult working conditions (22.7 versus 18.1 percent), but fewer cognitive demands (36.4 versus 52.4 percent). Finally, they were working in jobs that were less skilled and significantly less likely to require basic skills (58.2 versus 72.5 percent) and complex problem solving and resource management skills (22.5 versus 31.1 percent).

Empirical Methods

To understand how the onset of a work-limiting condition is associated with occupational change in the late working years, we estimated a multinomial logistic regression model, appropriate for jointly estimating discrete categorical outcomes. The probability of person i with occupational outcome j at time t is shown in model 1:

$$(1) \quad \Pr(OCC_{ijt}) = \frac{\exp(\alpha + \beta_1 WORKLIM_i + \beta_2 X_{ij})}{\sum_{k=1}^4 \exp(\alpha + \beta_1 WORKLIM_i + \beta_2 X_{ik})}$$

OCC_{ijt} is the four-category occupational transition measure described in Section II.D for person i at age t (59, 63 and 67, or using the measure of any occupational transition between 55 and 67). $WORKLIM_i$ is a vector of work-limitation status between age 55 and FRA, where we include a separate indicator for a temporary work-limitation report (in a single interview) and more persistent work-limitation (reported in two or more interviews).

X_i is a vector of individual characteristics measured at age 55. We account for individual characteristics that are likely to be correlated with late-age employment, among them age,

gender, race, marital status, education, health behaviors (including obesity, smoking, and drinking), and job characteristics at age 55 (full-time status, self-employed status, spouse's employment status if married, employer's firm size, years of tenure in that job, hourly wage, total household income, and job attributes measured by individuals' self-reports and O*NET). We did not control for individual health diagnoses and difficulties completing activities of daily living because those were highly correlated with subsequent onset of a work-limiting condition.

Interpreting the coefficients in a multinomial logistic regression model can be challenging because it involves the comparison of multiple outcomes. All of our models were estimated with Stata, using the weights provided by the HRS to account for its complex sample design, and with robust standard errors to account for heteroscedasticity in the error terms. To aid in the interpretation of our findings, we also used Stata to generate conditional adjusted probabilities. These probabilities used the covariate distribution of the workers who did not experience onset of a work-limiting condition, then predicted the probabilities if everyone in the sample had a work limitation (persistent or temporary, separately), then again if everyone in the sample did not have a work limitation. By holding the covariate distribution constant across workers, we limit the observed differences across groups to onset alone, as opposed to the differences in characteristics across the groups at age 55.¹⁰ For each conditional adjusted probability, we also report the 95 percent confidence interval, allowing us to assess the extent to which certain outcomes are more or less likely, based on work-limitation status.

We also sought to understand the extent to which aspects of the job one held at age 55 might have led to different occupational trajectories among those who experienced new work-

¹⁰ We also estimated models for which we assigned the covariate distribution of the group that experienced temporary and persistent work limitations; the substance of our findings remained unchanged. In almost all cases, the predicted probabilities were similar regardless of which set of covariates we used, consistent with low R² in our models (less than 10 percent).

limiting health conditions. In this case, we modified the model in equation (1) to interact job attributes with the work-limitation measure, where $ATTRIB_i$ is a binary indicator of whether the person's job had one of eight attributes (derived from self-reporting or O*NET data). The model estimated is given by:

$$(2) \Pr(OCC_{ijt}) = \frac{\exp(\alpha + \beta_1 WORKLIM_i + \beta_2 ATTRIB_i + \beta_3 WORKLIM \cdot ATTRIB_i + \beta_4 X_{ij})}{\sum_{k=1}^4 \exp(\alpha + \beta_1 WORKLIM_i + \beta_2 ATTRIB_i + \beta_3 WORKLIM \cdot ATTRIB_i + \beta_4 X_{ik})}$$

To simplify the presentation, we focus only on the measure of occupational transitions over the full period between age 55 and FRA, without considering transitions that we observed at ages 59, 63, and 67 separately. Additionally, although we estimated this model including those with temporary and persistent work-limitations (as we did in model 1), we focus on those with persistent limitations to streamline our discussion.

Results

In this section, we first present differences in occupational trajectories after age 55 based on the onset of work limitations, accounting for the differences in demographic and socioeconomic characteristics at age 55 that we discussed earlier. Next, we highlight how job attributes of the job held at age 55 are associated with subsequent occupational transitions and work-limitation onset.

Occupational Transitions After Age 55, by Work Limitation Onset

The statistics in this section, which report estimates from equation 1, are comparable to those shown in Figure 1, but stratified by the onset of new work-limiting health conditions. Specifically, we produce conditional adjusted probabilities by considering those with and without the onset of work-limiting health conditions, accounting for the differences in characteristics that had emerged by age 55.

The results in Table 3 show that the occupational trajectories for those with temporary work limitations are not substantially different from those for workers who did not report any limitations, suggesting that such conditions did not have lasting effects. For example, considering the full occupational trajectory from age 55 to 67, the never-limited and temporarily limited groups have very similar paths, with just under 50 percent making a significant occupational change; 15 to 17 percent making a less significant change; an equal share making no change before FRA; and about 18 to 20 percent not making an occupational change, but stopping work before age 63. By comparison, the group that was persistently work-limited was about 20 percent less likely to make a significant occupational change (39.1 percent), less likely to make a smaller occupational change (12.7 percent) or stay in the same occupation until FRA, and more than twice as likely to exit work before age 63 (42.7 percent). Similar patterns are also evident at each of the individual ages. As a result, in the remainder of our discussion, we will focus on differences between those with persistent work limitations and those without such limitations.

Workers who experience a new, persistent work-limiting condition are substantially more likely to stop working at every age than their peers who were nonlimited. (Table 3).¹¹ For example, at age 59, stopping work was 2.5 times more likely among those with persistent work limitation than among those without (27.8 percent versus 11.1 percent). Those who experience the onset of persistent work limitations were about twice as likely to stop work before age 63 (59.8 versus 30.5 percent). Because a substantially higher share of those who experience work

¹¹ The adjusted probabilities shown in Table 3 were almost identical to the unadjusted ones at each age and across all ages, suggesting that the differences in characteristics at age 55, beyond work-limitation onset, did not contribute substantially to the differential trajectories of these groups.

limitations stop working, a correspondingly lower share make occupational transitions relative to those without work limitations.

Conditioned on remaining at work, however, the story becomes more nuanced. For example, at age 59 the likelihood of each occupational transition is nearly identical across the three groups. Among those who remain at work, about 31 percent of each group made a significant occupational change, about 15 to 18 percent made a smaller occupational change, and a little over 50 percent remained working in the same occupation (calculated from the percentages shown in Table 3). It is important to note that at age 59, only one-third of those we categorize as work-limited had already reported a limitation; the remainder first reported such a condition between ages 61 and 67. Thus, the occupational transitions observed by age 59 might not have reflected responses to acute onset conditions that occurred after that age. By age 63, those with persistent work limitations who remained working were more likely to have made a significant occupational change than the nonlimited group (51 versus 43 percent). At age 63, two-thirds of those with work limitations had already reported such a condition at least once. By age 67, of those who remained working, having made a significant occupational change since age 55 was most common for those with persistent work limitations, both relative to the other work-limitation groups and also relative to a smaller occupational change or remaining in the same occupation.

The Role of Job Attributes in Predicting Occupational Transitions by Work Limitation

Onset

We did not find strong evidence that disability onset led to dramatically different occupational pathways for those working in certain types of jobs. In Table 4, we summarize the results from the models estimated in equation (2), in which we interacted job attributes with disability onset. We show the results for the full sample in the top panel, then results stratified by the requirements of the job held at age 55 in the remaining rows to contrast the subsequent experience of workers with and without the particular job requirement. By stratifying in this way, we essentially are “matching” workers based on the job attributes they held at age 55, thus isolating the effect of work-limitation onset for workers with a given job attribute, holding constant the rest of their characteristics at the average values of those without such onset.

The values reported in Table 4 represent the difference in the conditional adjusted probabilities of a given occupational transition for the group that experienced persistent work-limitation onset relative to the group without that onset. In all cases, we control for other job attributes, not interacted with work-limitation onset, as we did in the results presented in Table 3. For ease of presentation, we focus on the occupational transition measure that spans ages 55 to 67; the results were qualitatively similar when we considered each age. In other words, the probabilities shown are the percentage point differences attributable to work-limitation onset. For example, the top row of Table 4 shows that overall, those with persistent work limitations were 11.4 percentage points less likely than those never reporting limitations to make a significant occupational change, had the same likelihood of a change to a similar occupation (0.2 percentage points less likely and not statistically significant), and were 11.8 percentage points less likely to

stay in the same occupation until age 67, but 23.4 percentage points more likely to stop work entirely.¹²

Regardless of the demands of the job held at age 55, workers who experience a new work-limiting condition are less likely to make a significant occupational change, less likely to remain in the same job, and more likely to stop working before age 63 than those who do not experience a work limitation. In most cases, the estimated difference in job transitions between those with and without work-limitation onset is about the same regardless of whether the person is working in a job with or without particular job demands. For example, individuals with disabilities in physically demanding jobs were 10.7 percentage points less likely to make a significant occupational change relative to their never-limited peers, but that difference is not statistically different from the 11.9 percentage point difference for those in nonphysically demanding jobs.

In almost every case, the demands of the job did not significantly affect the likelihood of occupational transitions for those who experienced disability onset relative to those who did not. The estimates show that disability onset is associated with a significantly higher likelihood of transitioning to a similar occupation for those working in nonphysically demanding jobs, relative to those without disability onset. This effect seems unlikely to be meaningful when it is the only statistically significant effect out of so many comparisons; we did not adjust our threshold of significance to account for the multiple hypotheses being tested.

Conditioned on remaining at work, certain types of jobs are more likely to be associated with significant occupational changes than others. For example, experiencing a new persistent

¹² These values could also be calculated by taking the difference in predicted probabilities across these groups in the bottom panel of Table 3.

work limitation was more likely to lead to a significant occupational change when working in physically demanding job or in a job with “unpleasant” demands than when working in a job without physical demands. Furthermore, new persistent work limitations were associated with a lower probability of making a significant job change when the person was working in a job requiring complex problem-solving or resource management skills.

Discussion

The measurement of work-limitation onset in the HRS limits the interpretation of our findings in two key ways. First, the HRS does not collect information on the type or severity of the condition one reports—it may be that some with persistent limitations are truly unable to work in any job. We cannot separate out those cases from individuals whose limitations may be less of a barrier to work in a different occupation or who receive additional supports from their employer. Second, we may be capturing individuals who had work limitations in our nonlimited group in a way that is correlated with occupational transitions. The HRS interviews respondents every two years, meaning that between interviews, an individual could experience a new health condition and change occupations as a result. Although we would be able to identify the occupational transition, the individual in a new job may not report a work limitation in the new job, so we would include that person in the nonlimited group. The same would be true if a person stopped working and no longer said their condition was limiting their work (perhaps the person might consider themselves retired). If anything, this measurement issue would bias our findings away from finding a difference based on work-limitation onset.

Our findings suggest that the documented declines in average earnings following disability onset in the late working years are largely driven by exits from the labor force. A substantially higher share of workers with persistent work-limiting health conditions were not

working at ages 59, 63, and 67, relative to their nonlimited peers. At age 59, for example, 26.8 percent of those who ultimately reported a persistent work limitation were not working, compared with 11.1 percent of those who never reported a limitation. The share of each group who was not working at older ages was higher, but at all points, the share of those with work-limiting health conditions who had stopped work was substantially higher than that of their nonlimited peers. Our analysis was not designed to be directly comparable to earlier studies of earnings declines, although the reduction in average earnings attributable to the large share with no earnings would be consistent with earlier work.

Our study documents that stopping work is more likely for those with persistent work-limiting health conditions; and, conditional on remaining at work, that group is at least as likely as the group without work limitations to make significant occupational changes. Unfortunately, the data do not allow us to fully assess the factors that led to those decisions. For some, the new health conditions were severe enough to prohibit work. For others, though, some who left work may have preferred to remain working. A critical factor to remaining in the labor force is the employer's willingness to retain and retrain workers after disability onset. Keeping workers with their pre-onset employer would help workers maintain their firm-specific capital and reduce the likelihood of being unable to find a new employer.

We also cannot ascertain whether workers who exited the labor force or made significant occupational changes did so after seeking accommodations from their employer, or whether they received those accommodations.¹³ A recent study of employers found that many were willing to

¹³ The HRS does contain measures about job accommodations, but interpreting the information reported by respondents can be challenging. For example, some workers indicated that being retrained for alternate work would be a helpful accommodation, yet it is not clear that a worker who had been retrained for alternate work (in our analysis, likely a change to a different occupation) would report such a change as having received an accommodation.

assist workers following disability onset, but employers often did not know how to provide accommodations or were not aware of supports they may be able to access for doing so (Gould-Werth, Morrison, & Ben-Shalom, 2018). Hill, Maestas, and Mullen (2016) found that less than one-quarter of older workers reported receiving accommodations following the onset of disabling conditions, although many believed their job performance could have been improved had they received them. These studies found that employers may not uniformly offer accommodations to all workers: Gould-Werth et al. (2018) found that employers were more likely to find ways to retain high-performing employees, whereas Hill et al. (2016) found that employees who had characteristics correlated with assertiveness and open communication were more likely to receive accommodations.

Our analysis did not consider whether occupational changes were made while working for the same employer at age 55 or whether individuals applied for and sought jobs with different employers. In an unknown share of cases, a new work-limiting condition might not have been well-suited for available jobs with their current employer. In those cases, older workers might have been especially receptive to programs offering to retrain them for a new skill set. The availability of retraining, in fact, could mean the difference between remaining in the labor force in a different occupation or stopping work early.

Targeting for programs to assist workers after new health limitations strike can be a challenge, because no worker can predict when or how a health condition will limit work. Reaching workers after they are limited in their work is likely too late, especially if their job performance is suffering or they have already exited the labor force. Unfortunately, our work did not find strong evidence that certain occupations could be targeted for interventions to help work-limited individuals remain in the labor force. Evidence about effective ways for targeting

may become available as the recent collaborative effort between the U.S. Department of Labor and the Social Security Administration, RETAIN—Retaining Employment & Talent After Injury/Illness Network, develops. RETAIN seeks to identify promising interventions that will allow workers to remain connected to their employer following disability onset and will test interventions across the country. This effort is part of a broader set of federal initiatives to offer earlier interventions to reduce labor force exits and claims for federal disability benefits. For example, the Department of Labor’s Stay-at-Work/Return-to-Work collaborative is targeted at employers to assist them in retaining and retraining workers after disability onset.

Existing initiatives for retraining workers following disability onset are not targeted at older workers, but there also remains considerable interest in assisting older workers remain working longer, for financial as well as psychosocial reasons. Interventions targeting workers with disabling conditions may want to draw on the lessons learned from the Department of Labor’s earlier Aging Workers Initiative and other similar efforts. The Aging Workers Initiative sought to evaluate pilot programs operated by nonprofit agencies and public–private partnerships to retrain older workers with outdated skills who wanted to remain in the labor force. Presumably many of the workers targeted in programs to assist older workers stay in the labor market face health conditions that make their career jobs more difficult, and thus, sharing information across federal efforts may be beneficial.

Conclusion

Our results confirm that making occupational changes in the preretirement years is common, regardless of health status. Among workers who experience new work-limiting health conditions after age 55, however, the likelihood of stopping work is significantly higher than for their nonlimited peers. Interventions to help older workers with disabilities retrain for different

occupations—with their current or a new employer—may forestall labor force exit, reduce claims for federal disability and early retirement benefits, and lead to greater financial security into the retirement years. Effectively targeting those interventions could, of course, prove to be challenging. Nonetheless, our work suggests that targeting employers may be a more promising approach than targeting workers based on the attributes of the job they hold as they reach their late working years.

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Table 1

Personal Characteristics Reported at Age 55, by Subsequent Work Limitation Onset

Characteristic	All	Never work-limited	Temporarily work-limited	Persistently work-limited
Number of respondents	3,105	1,969	424	712
Weighted number of respondents	13,135,419	1,850,460	8,270,587	3,014,372
Percentage of total	100.0	14.1	63.0	23.0
Health and functional status at age 55				
Reports excellent or very good health (%)	66.5 (1.0)	76.1 (1.0)	57.7 (2.4)***	45.8 (1.9)***
Reports good health (%)	26.2 (0.9)	20.4 (0.9)	33.2 (2.3)***	37.8 (1.8)***
Reports fair or poor health (%)	7.3 (0.6)	3.6 (0.4)	9.2 (1.4)***	16.5 (1.4)***
Reports difficulty with any of 6 ADLs ^a (%)	2.3 (0.3)	0.7 (0.2)	2.7 (0.8)***	6.6 (0.9)***
Average number of ADL difficulties ^b (1–6)	1.4 (0.1)	1.1 (0.1)	1.4 (0.2)	1.5 (0.1)*
Reports difficulties with any of 7 IADLs ^c (%)	2.0 (0.2)	1.3 (0.2)	2.2 (0.7)	3.7 (0.7)***
Average number of IADL difficulties ^b (1-7)	1.1 (0.0)	1.1 (0.1)	1.1 (0.1)	1.1 (0.0)
Average CESD score ^d (0–8)	1.0 (0.0)	0.7 (0.0)	1.0 (0.1)**	1.5 (0.1)***
Obese (%)	24.4 (0.9)	19.4 (0.9)	29.8 (2.2)***	34.9 (1.8)***
Ever smoke (%)	59.4 (1.1)	55.1 (1.1)	57.9 (2.4)	72.3 (1.7)***
Ever consume alcohol (%)	65.9 (1.0)	71.3 (1.0)	60.0 (2.4)***	54.9 (1.9)***
Demographics and socioeconomic status				
Age (years)	55.5 (0.0)	55.4 (0.0)	55.6 (0.0)	55.5 (0.0)

Characteristic	All	Never work-limited	Temporarily work-limited	Persistently work-limited
Female (%)	44.9 (1.1)	44.0 (1.1)	47.2 (2.4)	46.0 (1.9)
Married (%)	77.1 (0.9)	79.8 (0.9)	72.3 (2.2)***	72.9 (1.7)***
White (%)	87.7 (0.6)	88.2 (0.7)	89.2 (1.5)	85.7 (1.3)
Black (%)	8.5 (0.5)	7.8 (0.6)	7.7 (1.3)	10.9 (1.2)*
Hispanic (%)	6.2 (0.5)	6.5 (0.6)	5.7 (1.1)	5.7 (0.9)
Less than high school (%)	11.1 (0.6)	9.8 (0.7)	11.7 (1.6)	14.3 (1.3)**
High school diploma/GED (%)	34.7 (1.0)	32.2 (1.1)	34.1 (2.3)	41.8 (1.9)***
College graduate (%)	54.2 (1.1)	58.0 (1.1)	54.2 (2.4)	43.9 (1.9)***
Total household income (\$)	119,721 (2,457)	130,817 (2,632)	108,813 (5,227)***	95,975 (3,204)***

^aThe activities of daily living (ADLs) included in the summary measure are walking across a room, dressing, bathing, eating, getting in/out of bed, and using the toilet.

^bAverage among those reporting any difficulties on the same measure.

^cThe instrumental activities of daily living (IADLs) included in the summary measure include using a map, a calculator, and a telephone; managing money; taking medications; shopping for groceries; and preparing hot meals.

^dThe Center for Epidemiological Studies Depression (CESD) score is based on responses to questions about mental health, including whether the respondent felt depressed, felt that activities took considerable effort, experienced restless sleep, felt lonely, felt sad, felt unmotivated, or was happy and enjoyed life.

Note. Authors' calculations using the Health and Retirement Study. Percentage of total sums to greater than 100.0 because numbers have been rounded to one decimal place. Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$. Each work-limitation onset group is compared to the group that never experiences a work-limiting health condition by full-retirement age.

Table 2

Characteristics of the Job Held at Age 55, by Subsequent Work Limitation Onset

Characteristic	All	Never work-limited	Temporarily work-limited	Persistently work-limited
Working full-time (%)	83.0 (0.8)	84.2 (0.8)	86.5 (1.7)	77.7 (1.6)***
Self-employed (%)	17.2 (0.82)	19.4 (0.9)	13.2 (1.7)**	13.8 (1.3)***
Hours worked per week at main job	42.2 (0.3)	42.9 (0.28)	42.16 (0.57)	40.3 (0.5)***
Works for a firm with more than 500 employees (%)	13.9 (0.7)	13.6 (0.8)	12.36 (1.6)	15.5 (1.4)
Works for a firm with less than 100 employees (%)	54.4 (1.1)	56.2 (1.1)	53.9 (2.4)	50.0 (1.9)**
Tenure in current job (years)	13.5 (0.2)	13.6 (0.3)	13.7(0.6)	13.1 (0.4)
Tenure in longest reported job (years)	17.9 (0.2)	17.9 (0.2)	18.3 (0.5)	17.7 (0.4)
Hourly wage (\$)	28.7 (0.7)	30.9 (0.8)	24.3 (1.1)***	25.4 (1.2)***
Annual earnings (\$)	54,476 (1,156)	58,818 (1,275)	51,548 (2,187)*	44,361 (1,516)***
Whether spouse working for pay (%) ^a	58.9 (1.1)	61.8 (1.1)	55.5 (2.4)*	53.3 (1.9)***
HRS job attribute (%)				
Physically demanding	40.2 (1.0)	37.1 (1.1)	37.7 (2.4)	50.4 (1.9)***
Highly stressful	64.8 (1.0)	63.7 (1.1)	64.51(2.3)	67.8 (1.8)
O*NET ability requirement (%)				
High physical demands	13.1 (0.7)	11.7 (0.7)	14.5 (1.7)	16.4 (1.4)**

Characteristic	All	Never work-limited	Temporarily work-limited	Persistently work-limited
High cognitive demands	47.1 (1.1)	52.4 (1.1)	40.8 (2.5)***	36.4 (1.8)***
Other demands	19.6 (0.8)	18.1 (1.0)	21.6 (2.0)	22.7 (1.6)**
O*NET skill requirement (%)				
Basic skills	68.6 (1.0)	72.5 (1.0)	68.0 (2.3)	58.2 (1.9)***
Complex problem solving/resource management skills	29.1 (1.0)	32.1 (1.1)	26.8 (2.2)*	22.5 (1.6)***
Technical and system skills (%)	34.4 (1.0)	35.0 (1.1)	34.3 (2.3)	32.9 (1.8)

^a Limited to married respondents.

Note. Authors' calculations using the HRS restricted occupation data linked to the U.S. Department of Labor's O*NET. Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$. Each work-limitation onset group is compared to the group that never experiences a work-limiting health condition by FRA.

Table 3

Regression-Adjusted Share of Each Work-Limitation Group that Made the Given Type of Occupational Transitions at Ages 59, 63, and 67 and Across All Years

Age	Onset group	Employed in significantly different occupation (%)	Employed in similar occupation (%)	Employed in same occupation (%)	Stopped working (%)
Age 59	Never work-limited	27.9 (25.5, 30.3)	13.9 (12.1, 15.8)	47.1 (44.5, 49.6)	11.1 (9.5, 12.8)
	Temporarily work-limited	27.9 (22.8, 32.9)	13.2 (9.1, 17.2)	46.7 (41.3, 52.2)	12.3 (8.5, 16.0)
	Persistently work-limited	22.4** (18.4, 26.5)	13.0 (9.5, 16.4)	36.8*** (32.6, 41.1)	27.8*** (23.5, 32.0)
Age 63	Never work-limited	30.0 (27.6, 32.5)	13.0 (11.2, 14.9)	26.4 (24.2, 28.7)	30.5 (28.1, 32.9)
	Temporarily work-limited	30.8 (25.6, 36.0)	15.7 (11.2, 20.1)	22.3* (18.1, 26.5)	31.3 (26.1, 36.4)
	Persistently work-limited	20.6*** (16.9, 24.4)	10.6 (7.2, 13.9)	9.0*** (6.7, 11.4)	59.8*** (55.2, 64.3)
Age 67	Never work-limited	26.3 (24.0, 28.6)	11.9 (10.1, 13.6)	14.5 (12.7, 16.3)	47.3 (44.7, 49.9)
	Temporarily work-limited	20.3** (15.7, 24.8)	6.7*** (3.9, 9.6)	8.5*** (5.5, 11.5)	64.5*** (59.2, 69.8)
	Persistently work-limited	13.6*** (10.4, 16.8)	5.8*** (3.6, 8.0)	3.4*** (1.9, 4.8)	77.2*** (73.5, 81.0)

		Significant occupational change (%)	Less significant occupational change (%)	No occupation change by FRA (%)	No change, but stopped work early (%)
Ages 55 to 67	Never work-limited	49.6 (47.0, 52.2)	15.5 (13.6, 17.4)	17.2 (15.3, 19.1)	17.7 (15.8, 19.7)
	Temporarily work-limited	47.0 (41.4, 52.5)	17.6 (13.1, 22.1)	15.4 (11.7, 19.1)	20.0 (15.8, 24.3)
	Persistently work-limited	38.4*** (33.9, 42.9)	15.3 (11.6, 19.1)	5.3*** (3.7, 7.0)	40.9*** (36.4, 45.4)

Note. Authors' calculations using the HRS restricted occupation data linked to the U.S. Department of Labor's O*NET. Row percentages may not sum to 100.0 percent because of rounding to the first digit. Values shown are the conditional adjusted probabilities derived from the multinomial logit model, with the 95 percent confidence interval of each probability in parentheses; these values were generated using Stata's margins command. Significance of the coefficient on the work-limitation group in the multinomial logit model (relative to the never-work-limited group) indicated by *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$. The multinomial logit model had controls for demographic and socioeconomic characteristics at age 55 (gender, marital status, race, Hispanic ethnicity, education, and household income), along with characteristics of the job held at age 55 (full-time status, self-employment status, firm size, tenure on the current job, hourly wage, and attributes as self-reported and measured in O*NET data).

Table 4

Difference in the Likelihood of Occupational Transitions for Workers Who Experience Persistent Work Limitations Relative to Those Who Never Experience a Limitation, by Attributes of Job Held at Age 55

Attribute required by job		Significant occupational change (%)	Less significant occupational change (%)	No occupation change by FRA (%)	No change, but stopped work early (%)
Overall		-11.4*** (-16.6, -6.2)	-0.2 (-4.2, 3.8)	-11.8*** (-14.4, -9.2)	23.4*** (18.6, 28.3)
HRS job attribute					
High physical demands	No	-11.9*** (-19.1, -4.7)	5.3* (-0.8, 11.5)	-10.8*** (-14.1, -7.4)	17.3*** (10.7, 24.0)
	Yes	-10.7*** (-18.0, -3.5)	-6.0*** (-10.5, -1.5)	-13.2*** (-17.3, -9.2)	30.0*** (23.3, 36.8)
High stress	No	-14.4*** (-23.1, -5.7)	-0.4 (-6.2, 6.9)	-12.3*** (-15.9, -8.6)	26.3*** (18.2, 34.4)
	Yes	-9.9*** (-16.2, 3.5)	-0.5 (-5.4, 4.4)	-11.6*** (-15.0, -8.3)	22.0*** (16.1, 27.9)

O*NET ability requirement					
High physical demands	No	-11.2*** (-16.8, -5.5)	-0.0 (-4.4, 4.5)	-10.7*** (-13.4, -7.9)	21.8*** (16.5, 27.0)
	Yes	-12.3* (-24.9, 0.2)	-1.7 (-9.9, 6.5)	-19.3*** (-27.3, -11.4)	33.4*** (21.7, 45.1)
High cognitive demands	No	-13.1*** (-19.8, -6.5)	-1.9 (-6.7, 2.8)	-11.4*** (-14.8, -8.0)	26.5*** (20.3, 32.6)
	Yes	-9.1** (-17.2, -1.0)	2.2 (-4.5, 8.8)	-12.2*** (-16.0, -8.4)	19.1*** (11.5, 26.7)
High other demands	No	-14.4*** (-20.2, -8.6)	-0.0 (-4.5, 4.7)	-10.4*** (-13.2, -7.6)	24.7*** (19.1, 30.3)
	Yes	-0.4 (-11.4, 10.5)	-1.1 (-8.4, 6.2)	-17.5*** (-23.6, -11.5)	19.1*** (9.8, 28.3)
O*NET skill requirement					
Basic skills	No	-12.4*** (-20.6, -4.1)	-0.6 (-4.9, 6.1)	-13.4*** (-18.1, -8.7)	25.1*** (17.5, 32.8)
	Yes	-10.7*** (-17.3, -4.2)	-0.7 (-6.0, 4.6)	-11.1*** (-14.1, -8.1)	22.5*** (16.4, 28.7)

Complex problem-solving or resource management skills	No	-10.0*** (-15.9, -4.0)	-1.8 (-6.2, 2.5)	-12.6*** (-15.6, -9.6)	24.4*** (18.8, 30.0)
	Yes	-15.8*** (-25.9, -5.7)	4.6 (-4.1, 13.3)	-9.7*** (-14.7, -4.6)	20.9*** (11.7, 30.1)
Technical or systems skills	No	-10.7*** (-16.9, 4.4)	-1.3 (-6.1, 3.5)	-12.2*** (-15.5, 8.9)	24.2*** (18.3, 30.1)
	Yes	-13.1*** (-22.0, -4.2)	2.0 (-5.0, 9.0)	-11.0*** (-14.9, 7.1)	22.1*** (13.9, 30.3)

Note. Authors' calculations using the HRS restricted occupation data linked to the U.S. Department of Labor's O*NET. Each cell shows the difference in the conditional adjusted probability of a given occupational transition for workers who experienced a persistent work-limitation after age 55 relative to the conditional adjusted probability of the same occupational transition for workers who did not experience a work-limitation between ages 55 and 67. A negative (positive) value means the transition was less (more) likely for workers with a persistent work limitation than those without. The conditional adjusted probabilities were generated from a multinomial logit model with the covariates shown in the notes of Table 3, using Stata's margins command. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$ indicates that the difference in conditional adjusted probabilities was statistically significant; these tests were performed with Stata's margins contrast option.

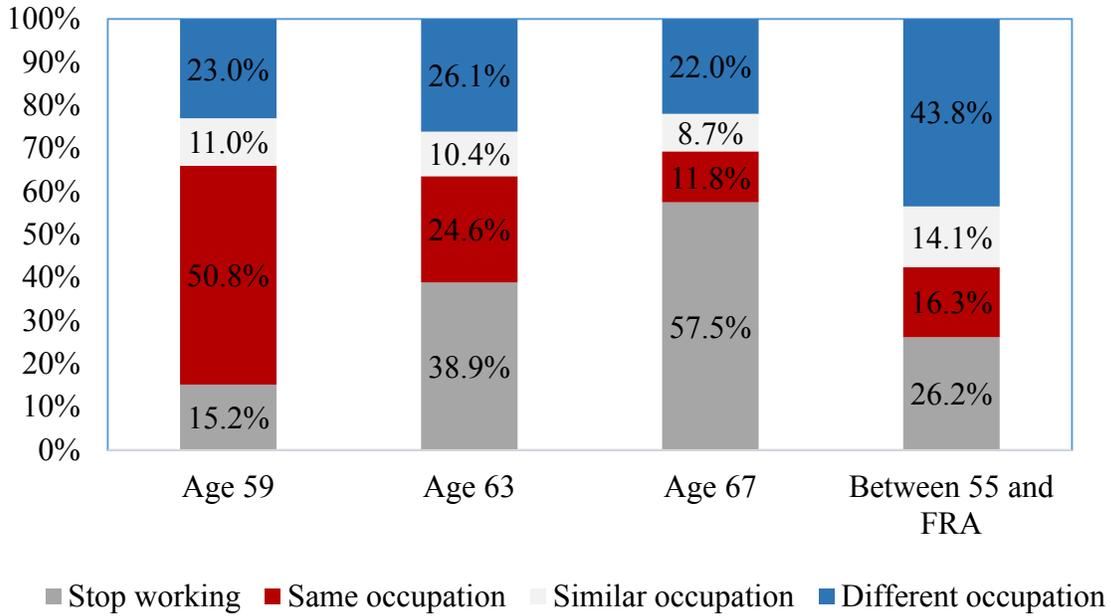


Figure 1

Occupational Transitions at Ages 59, 63, 67, and Between 55 and FRA, Relative to the Job Held at Age 55

Note. The figure is based on authors’ calculations using the HRS restricted occupation data linked to the U.S. Department of Labor’s O*NET. The occupational status at each age is relative to the job held at age 55, with the same, similar, and different occupations defined based on SOC codes as described in the text. Never work-limited consists of respondents who never reported having a work-limiting health condition at any HRS interview after age 55 through FRA.