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Panel 5: Labor Markets and Working Conditions

Moderator

Joseph F. Quinn (Boston College)

The Changing Nature of Work

Italo Lopez-Garcia (RAND Corporation), Nicole Maestas (Harvard Medical School and NBER), and Kathleen Mullen (RAND Corporation)

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The Changing Nature of Work

Italo Lopez-Garcia (RAND Corporation),
Nicole Maestas (Harvard Medical School and NBER), and
Kathleen Mullen (RAND Corporation)*

Introduction

After decades of growth, since 2010 both applications and awards for Social Security Disability Insurance (DI) have steadily declined. This decline in DI applications has not been accompanied by an improvement in overall health as measured in national surveys. A plausible hypothesis for this phenomenon is that physical job demands have decreased in recent years, leading to a decline in the prevalence of disability. In fact, recent trends showing a decline in physically demanding tasks and an increase in cognitive and interpersonal demanding tasks in the United States and OECD countries have been cited as a potential source of decreased or delayed disability or old-age pension claiming (Johnson, Mermin, and Resseger 2011; Handel 2012).

In this project, we provide new evidence on the changing nature of work over the past 15 years and its influence on individuals' capacity to work by linking historical measures of occupational job demands with harmonized data on individual abilities from a unique survey conducted in the RAND *American Life Panel* (ALP) in 2018. In our previous work, we developed a new method to measure individuals' latent work capacity by comparing individuals' self-reported levels for 52 abilities to the corresponding minimum levels required to perform nearly 800 occupations in the economy obtained from the O*NET Database (Lopez Garcia, Maestas, and Mullen 2019). Using this framework, we expand our data set on contemporary job demands in 2018 to include job demands in 2003. Combining this panel data on job demands with our contemporaneous data on individual abilities, we construct time-varying measures of work capacity that hold abilities fixed in 2018, which enable us to assess how many jobs of the past the individuals of today would have been able to perform given their current abilities.

We start by examining how job demands have evolved over time for different dimensions of abilities (cognitive, psychomotor, physical, and sensory). We then decompose changes in job

* The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA), funded as part of the Retirement and Disability Research Consortium. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the federal government, RAND Corporation, Harvard Medical School, NBER, or the University of Michigan Retirement and Disability Research Center.

demands into within-occupation changes and changes in the distribution of jobs in the economy. Finally, we provide preliminary evidence on how work capacity has evolved over time due to changes in job demands.

Data and Methods

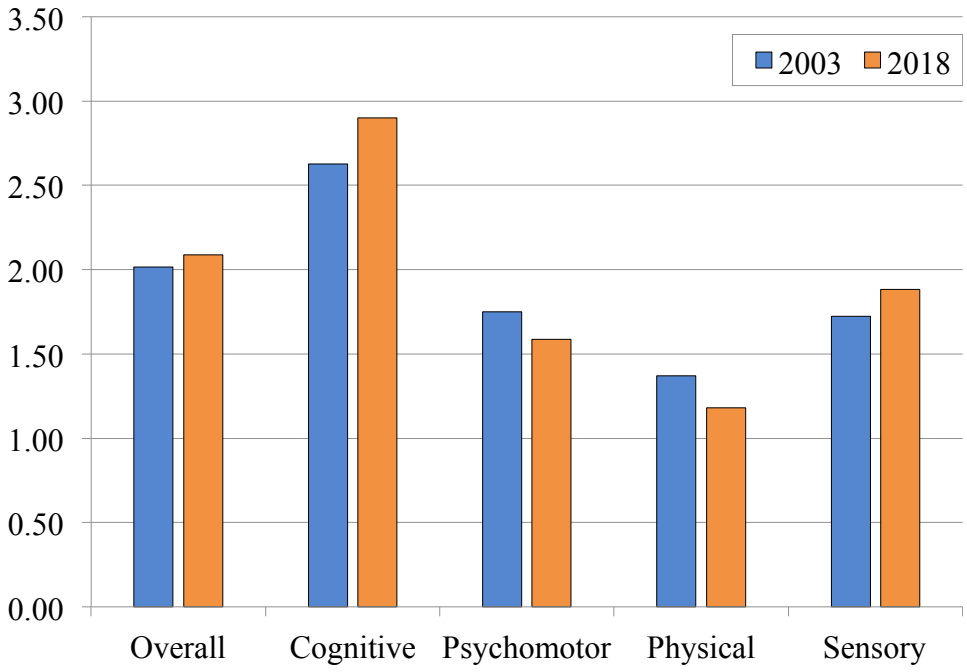
We use data from two sources. The first is the O*NET database, which contains the list of minimum levels of abilities required to perform work across all six-digit Standard Occupation Classification (SOC) occupations in the economy, which numbered 679 in 2003 and 773 in 2018. Between 2003 and 2018, two occupations disappeared, 88 new occupations were added, and 675 occupations were present in both years. O*NET identifies 52 abilities grouped into four domains: cognitive, psychomotor, physical, and sensory abilities. For each occupation and for each ability, analysts rate the *importance* of the ability for the performance of the occupation on a scale from 1 to 5, and the *level* of ability needed to carry out those work activities on a scale from 1 to 7. Each ability-level scale has a unique set of scale anchors that provide an example of an activity that could be done at that ability level. The second dataset is a unique survey modeled on the O*NET abilities survey and fielded to working-age respondents in the ALP (n=2,244 individuals ages 25-70). Whereas the O*NET surveys ask workers to rate what level of a given ability is needed for their job, we adapted these questions to instead ask individuals to rate their *own* level of a given ability for all 52 O*NET abilities, regardless of their current job.

We measure an individual's latent occupation-specific work capacity to do a specific occupation by relating that person's own ability levels to the minimum levels required for that job on a scale of 0-1, where 0 represents an individual who is unable to perform *any* of the abilities required for the job and 1 represents an individual who is able to perform *all* of the abilities required. Abilities are weighted by the relative importance of each ability for the job, taken from O*NET. Here we use a "weighted sum" measure of occupation-specific work capacity which allows for partial credit in the event that the individual is only missing a few unimportant abilities. The individual's total work capacity, defined as the fraction of jobs that the person can perform given their education level, is obtained as the weighted sum of occupation-specific work capacity where the weights are the occupation's share of jobs in the national economy by education level. For more details, see Lopez Garcia, Maestas, and Mullen (2019).

Preliminary Findings

Our first set of results describes changes in the weighted average job demands over time regardless of occupations that disappeared or were created in that time period, where the weight is the occupation's job share for a given education level in the economy. Figure 1 shows that overall average job demands across the 52 abilities measured in O*NET did not increase significantly over time, but this finding masks underlying changes within dimension. Consistent with previous literature, from 2003-2018, cognitive job demands increased from an average level of 2.63 to 2.90 (+9.3 percent), psychomotor demands decreased from 1.75 to 1.59 (-9.1 percent), physical demands decreased from 1.37 to 1.18 (-13.8 percent) and sensory demands increased from 1.72 to 1.88 (+8.5 percent). All changes over time within dimension are statistically significant ($p<0.01$).

Figure 1. *Changes in Job Demands Over Time*

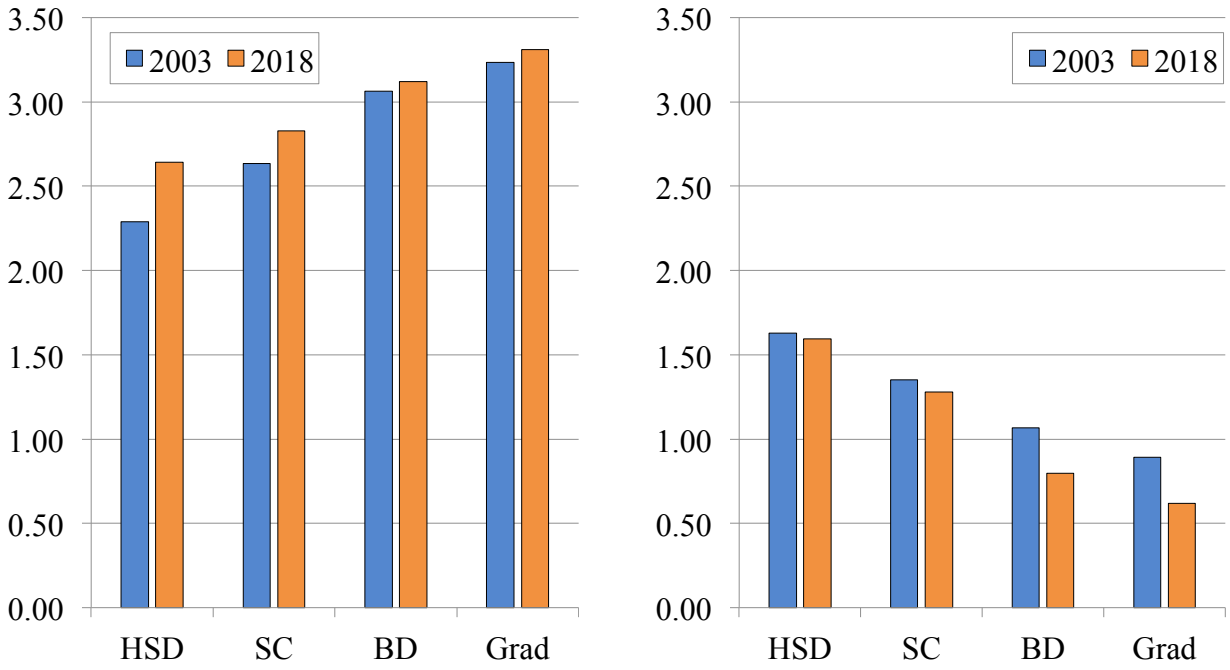


Source: Authors' calculations.

Figure 2 examines how cognitive and physical job demands have changed over time for different education groups. The increase in cognitive job demands shown in Figure 1 is mostly concentrated among low-skill jobs, or those prevalent among individuals with less than a college

degree. In contrast, the decrease in physical job demands is concentrated among high-skill jobs, or those prevalent among individuals with at least a college degree. These results suggest low-education workers have been penalized as their jobs have become more cognitively demanding without any alleviation of the physical burden of performing these jobs. (Psychomotor (sensory) job demands exhibit similar education patterns to physical (cognitive) job demands.)

Figure 2. *Changes Over Time in Cognitive (Left) and Physical (Right) Demands by Education*

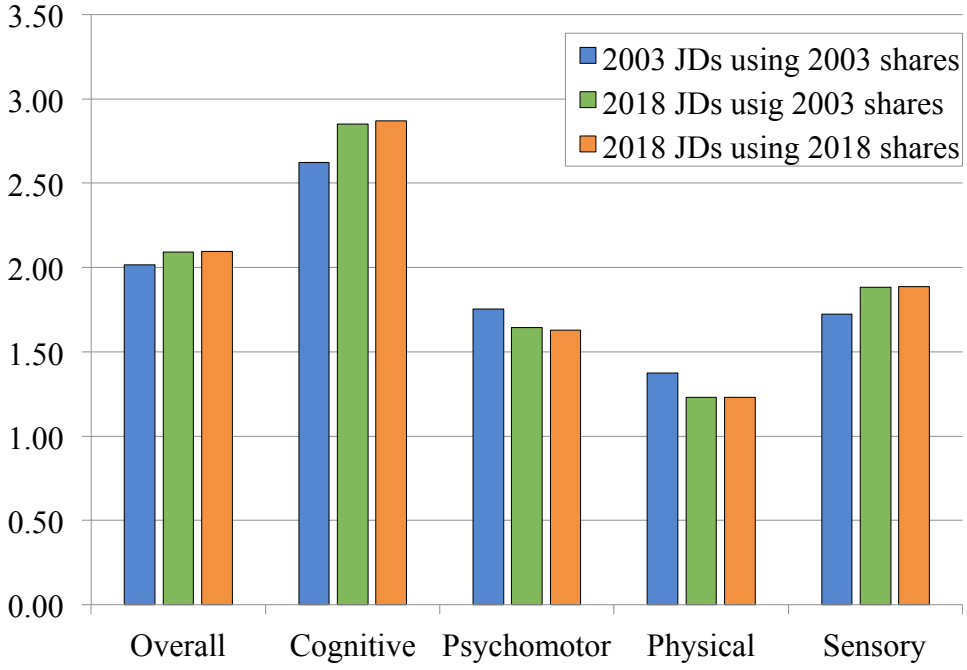


Source: Authors' calculations.

The next set of results reveals how changes in job demands can be decomposed into within-occupation changes and changes in the distribution of jobs. Figure 3 compares average job demands in 2003 and 2018 (weighted by occupation shares in their respective year) with average job demands in 2018 reweighted using the occupation shares from 2003, with the sample of occupations restricted to be observed both in 2003 and 2018 (n=675). We find that average job demands in 2018 reweighted using 2003 job shares are statistically the same as job demands in 2018 across all dimensions, but statistically different from job demands in 2003 (except for overall). Therefore, we conclude that changes in the nature of work in the last 15 years have

been mostly due to changes *within* occupations and not changes in the distribution of occupations in the national economy.

Figure 3. *Changes in Job Demands Over Time*



Source: Authors' calculations.

This result is corroborated by a formal decomposition of total changes into within- and between-occupation changes following equation 1 (below). In this equation, the first term on the right-hand side represents the within-occupation change in job demands (***X***) holding fixed occupation shares (***s***) in 2003, and the second term is the between-occupation change holding fixed job demands in 2018.

$$\sum_{j=1}^{J}(s_{j,18}X_{j,18} - s_{j,03}X_{j,03}) = \sum_{j=1}^{J} s_{j,03}(X_{j,18} - X_{j,03}) + \sum_{j=1}^{J} X_{j,18}(s_{j,18} - s_{j,03}) \qquad (1)$$

Table 1 shows that changes within-occupation are the main driver of total changes in job demands, ranging from 88 percent in psychomotor job demands to 100 percent in physical job demands.

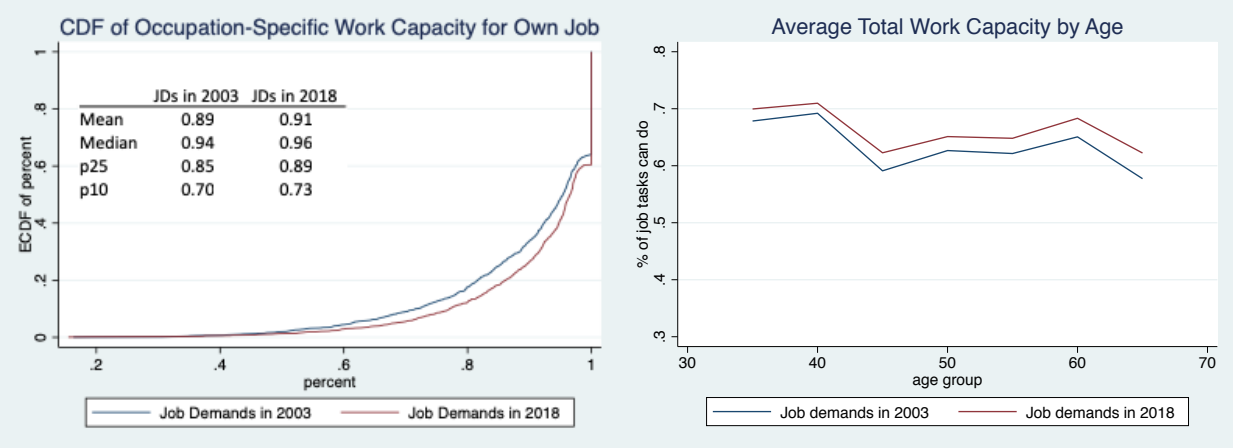
Table 1. *Changes in Job Demands Over Time*

	Total change	Within occupation		Between occupation	
Overall	0.081	0.077	94.4%	0.005	5.6%
Cognitive	0.247	0.229	93.0%	0.017	7.0%
Psychomotor	-0.124	-0.109	87.8%	-0.015	12.2%
Physical	-0.144	-0.145	100.8%	0.001	-0.8%
Sensory	0.163	0.159	97.6%	0.004	2.4%
N	675				

Source: Authors' calculations.

Finally, we present preliminary evidence on how changes in job demands translate into changes in work capacity. Figure 4a shows the cumulative distribution of occupation-specific work capacity for current workers in our data where the job evaluated is each respondent's actual job in 2018, but where job demands are taken from 2003 or 2018. The figure suggests that individuals can perform a greater fraction of the abilities required by their own job in 2018 than they would have been able to do *in the same job* in 2003, which is due entirely to the changing mix of job demands (by definition, as abilities are fixed in 2018). For example, the average worker could do 89 percent of their own job in 2003 but 91 percent in 2018. Similarly, the share of workers that could do at least 75 percent of their own job increased from 85 percent in 2003 to 89 percent in 2018. Figure 4b compares estimates of average total work capacity by five-year age group obtained using job demands in 2003 versus job demands in 2018. On average across age groups, the fraction of jobs in the economy that individuals were able to do in 2018 is 2.8 percent higher than the fraction of jobs they would have been able to do in 2003.

Figure 4. *Changes in Work Capacity: To Do Own Job (Left) and To Do All Jobs in the Economy (Right)*



Source: Authors' calculations.

Conclusion

In summary, our results suggest that over the last 15 years cognitive job demands have increased, particularly among low-skill jobs, and physical job demands have decreased, particularly among high-skill jobs. This change in the mix of job demands translates into an increase in individuals' work capacity, or their ability to perform a greater fraction of jobs in the economy in 2018 than they would have been able to perform with the same abilities in 2003.

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Employer Incentives in Return to Work Programs

Naoki Aizawa and Corina Mommaerts (University of Wisconsin-Madison and NBER) and Stephanie Rennane (RAND Corporation)*

Introduction

Approximately one in ten working-age adults in the United States currently has a disability which could impair their ability to work, and employment rates among working-age adults with disabilities are consistently low, ranging between 30 and 40 percent over the past decade (Kraus et al. 2018). While some adults with disabilities may not be able to work at all, others have some capacity to work under the right circumstances (e.g., Bound 1989, Krueger and Meyer 2002, Maestas et al. 2013). Labor force participation could have benefits for the individual, increasing their incomes and overall well-being (Waddell and Burton 2006), as well as benefits for society, leading to higher tax revenues and lower government expenditures.

As a result, there is significant policy interest in encouraging labor force participation among workers with disabilities. While the majority of return-to-work policies have focused on the roles of worker incentives and disability program attributes (e.g., Livermore et al. 2013, Kostol and Mogstad 2014, Koning and van Sonsbeek 2017), employers may also play a key role in enabling workers with disabilities to remain connected to the labor force. Recent evidence from Europe suggests that employer cost-sharing and experience rating reduce the flow into disability benefit programs (e.g., de Groot and Koning 2016, Hawkins and Simola 2018). Some evidence from reforms in shorter-term disability programs in the United States, such as the Washington COHE model in workers' compensation, also offer possible guides of successful approaches to involve the employer in return to work efforts for workers with disabilities (Stapleton and Christian 2016). Our study focuses on one particular employer-based intervention for workers with disabilities: accommodation.

We define accommodation as any action the employer takes to adjust the work environment in a way that better enables individuals with disabilities to work. Accommodation policies that target the employer could be effective for several reasons. First of all, employers

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are well positioned to provide accommodation: they understand the skills and tasks required for a worker to do their job, and can observe a worker's needs in order to accomplish those tasks in the event of a disability. Employers also observe these needs quickly, as soon as the worker is unable to perform their job, meaning that employers can play a key role in early intervention by providing physical accommodations, flexible work schedules, or alternative tasks (Autor and Duggan 2010, Bronchetti and McInerney 2015). On the other hand, accommodation can be costly – particularly if employers bear the full cost – and employers may not capture the benefits of accommodating workers with disabilities if workers have other employment options and do not remain with employers for long. This incentive structure may lead accommodation to be under-provided: indeed, approximately half of workers who would benefit from accommodation do not receive it (Maestas et al. 2019). Policies that decrease the costs to employers of accommodating injured workers (e.g., by reimbursing accommodation costs or subsidizing wage payments to injured workers) may increase the amount of accommodation to a more optimal level. Few studies, however, have analyzed how firms decide to accommodate workers, and the effects of accommodation on subsequent labor market outcomes of workers after disability.

In our study, we analyze the Employer at Injury Program (EAIP) in the Oregon workers' compensation (WC) system. The EAIP reduces employers' costs of providing accommodations that enable the early return to work of individuals with workplace injuries. Specifically, the EAIP reimburses employers for wages and expenses for a variety of accommodation costs for employees who have work restrictions and who return to limited or transitional work during an ongoing workers' compensation claim. Approximately 25 percent of workers' compensation claims in Oregon have had some accommodation costs reimbursed via the EAIP since 2010.

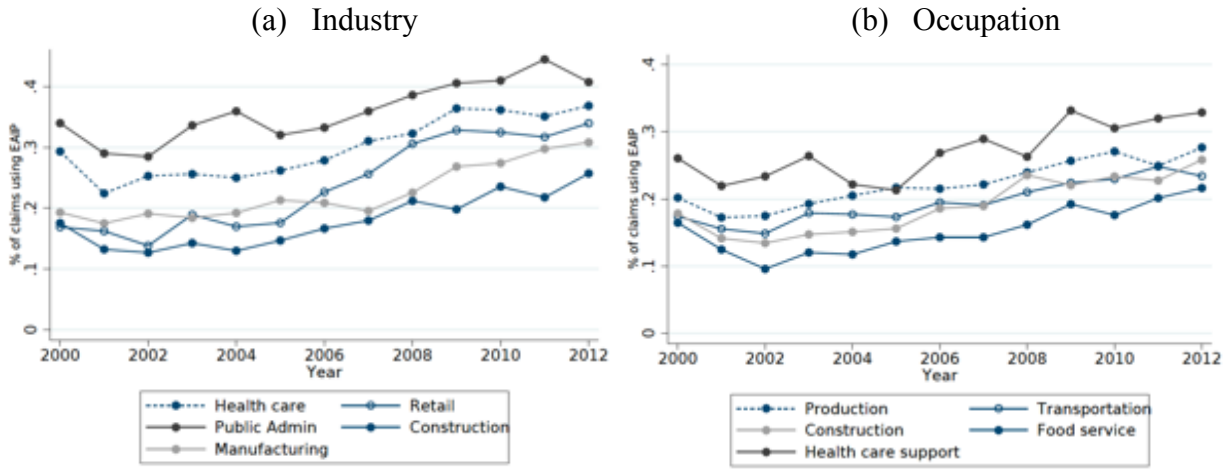
Our study uses detailed administrative claims data from Oregon's WC program to develop empirical estimates of the effectiveness of return to work programs on later employment outcomes of injured workers. One advantage of our data is that it allows us to document firm accommodation choices in great detail. First, we provide an empirical analysis of current use of these employer incentive programs and show that the take-up of employer-based return to work programs depends on not only worker characteristics, but also industry and firm characteristics. Then, we exploit a policy change in the generosity of the EAIP wage subsidy to identify the effectiveness of these programs on improving the subsequent labor market outcomes of injured

workers. Finally, we study the welfare implications of alternative WC policies within an equilibrium model of worker labor supply decisions and firm accommodation decisions.

Our analyses rely on several administrative data sources from the Oregon Department of Business and Consumer Services (DBCS) and the Oregon Employment Department (OED). Our main dataset includes closed workers' compensation claims from the early 2000s through the present. These data include information about worker demographics, injury characteristics, worker occupation and industry, and detailed data on dates, duration and value of workers' compensation benefits and EAIP reimbursements. We are also able to observe firm accommodation decisions within EAIP, including whether the injured worker performed alternative tasks. We link these claims to employment records from the OED which provide information about quarterly earnings and hours before and after injury for workers observed in our claims database. Our data use agreement is currently in the final stages of review with the Oregon Department of Justice, so we present data on trends from an earlier version of the claims database through 2012.

EAIP participation ultimately is a joint decision between an employer who chooses to provide accommodation and a worker who chooses to return to transitional work. As a result, we examine trends in the characteristics of both employers and employees who participate in the EAIP. Figure 1 shows that significant variation exists in EAIP use among workers from different types of employers. EAIP use is highest among claims in public administration, health care, retail, construction and manufacturing industries, and highest among workers with occupations in health care support, production, construction, transportation, and food service. Analyses from DCBS show that EAIP use is significantly higher among employers that are self-insured for workers' compensation (Helmer 2018). In future analyses with our complete dataset, we also plan to examine variation in EAIP use by firm size.

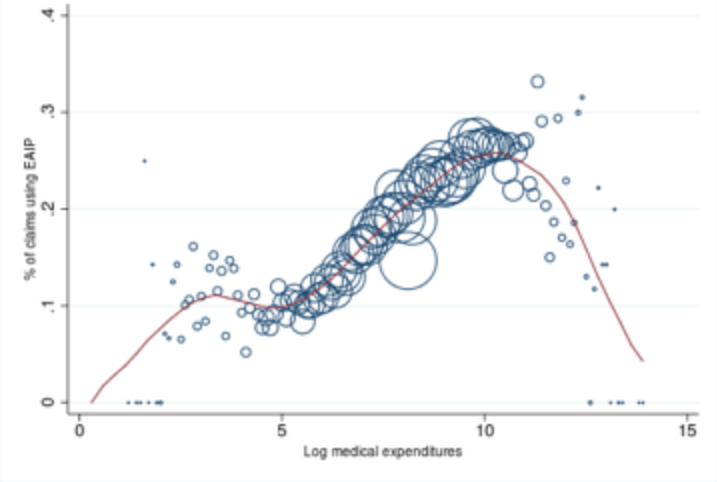
Figure 1. *Trends in EAIP Participation by Industry and Occupation, 2000-2012*



Source: Data from the Oregon Department of Business and Consumer Services.

Next, we explore characteristics of workers whose costs are reimbursed by EAIP. Because workers must have work restrictions and require accommodation in order to be eligible, workers with the least severe injuries typically do not qualify for EAIP. At the same time, workers with extremely severe injuries may not be able to return to work even if accommodations were provided. As a result, workers with moderately severe injuries are likely the best candidates for EAIP participation. Figure 2 shows EAIP participation among claims with different levels of severity, where we use the total medical expenditures of the claim as a proxy for severity on the x-axis. The inverse-U shape of this graph confirms this trend in participation by severity. Workers who participate in EAIP also tend to have higher wages before injury and longer workers' compensation claim durations, perhaps in part due to the fact that their claim must remain open while participating in EAIP.

Figure 2. *EAIP Participation by Severity of Injury*



Source: Data from the Oregon Department of Business and Consumer Services.

After exploring these descriptive trends in EAIP participation, we will exploit a policy change in 2013 that reduced the EAIP wage subsidy from 50 percent of wages during the transitional work period to 45 percent of wages.[1] We will use this exogenous variation to estimate the effect of EAIP on later work outcomes in an instrumental variables analysis. We will run the following two-stage regression:

First stage: $$EAIP_{ifjt} = \beta_0 \cdot S_t + \gamma_0 X_{it} + \phi_0 Q_{fjt} + t * \alpha_{0j} + \varepsilon_{0ifjt}$$

Second stage: $$Y_{ifjt} = \beta_{IV} \cdot EAIP^*_{ifjt} + \gamma_{IV} X_{it} + \phi_{IV} Q_{fjt} + t * \alpha_{IV,j} + \varepsilon_{IV,ifjt}$$

where $EAIP_{ifjt}$ is an indicator for participation in the EAIP for worker i in firm f and industry j at time t, S_t reflects the value of the subsidy in year t, X_{it} reflects individual worker characteristics, Q_{fjt} contains firm characteristics, and Y_{ifjt} is either participation, earnings, or hours worked in a given quarter after the claim has closed. The main assumption for the exclusion restriction in this approach is that the subsidy value S_t only affects post-claim labor market outcomes via its impact on participation in EAIP. Because other factors, such as the characteristics of workers' compensation claims, may shift over time (Boone and van Ours 2011), we will interact the value of the subsidy with a measure of exposure to the EAIP which

[1] Because our current version of the dataset ends in 2012, we are unable to execute these analyses until our data use agreement is refreshed.

reflects a firms' likelihood of participating in the program. We will explore several possible candidates for exposure including insurance status (e.g., self-insured vs privately insured), firm size, or a measure of labor market tightness, with our refreshed data.

Finally, we study the welfare implications of WC policies by developing an equilibrium model of workers and firms in which firms pay taxes to the workers' compensation system and choose whether to accommodate injured workers, and injured workers choose whether or not to return to transitional work. The government has two policy levers to maximize social welfare: provision of a short-term cash benefit for workers with disabilities, and provision of wage subsidies to employers who accommodate workers with disabilities. Employers may under-accommodate workers due to two main channels. First, they may not account for the effect of their accommodation decisions on the government's WC costs. Second, employers may not fully capture the benefits of accommodation if injured workers do not remain with their employers for long. Including accommodation subsidies in workers' compensation policy also has the additional benefit of increasing the optimal time loss benefit, as accommodation can lower the moral hazard effect of insurance. Our preliminary findings show that when the government provides wage subsidies, firms respond by increasing the amount of accommodation provided. We will quantitatively examine the importance of these channels by fitting our model to the estimates from our empirical analyses.

Conclusion

This project contributes to our understanding of disability policy by providing one of the first empirical analyses of the impact of policies that offer employer incentives to accommodate workers after injury. Our descriptive analyses uncover that take-up of such policies varies with worker and firm characteristics, including higher take-up by workers with moderate injuries and firms who self-insure their workers' compensation costs. Our causal analysis and modeling exercise will quantify the extent to which employer incentives to accommodate may affect return to work outcomes, and provide insight into the value of employer-side interventions for disability policy.

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Firm Willingness to Offer Bridge Employment

David Powell and Jeffrey Wenger (RAND Corporation) and
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Abstract

While some research exists on the prevalence of bridge employment and partial retirement behavior from the worker perspective, we have no evidence about firms' ability and willingness to accommodate worker demands for job amenities as they transition into retirement. Is bridge employment costly to firms? This project will provide the first estimates of firms' perceived costs of provision of desirable working conditions for older workers. We will survey firms about their willingness to accommodate new and current employees who express a desire to reduce hours or have more flexible schedules as they transition into retirement. More prevalent bridge employment opportunities could drastically alter retirement rates and Social Security claiming behavior, but we have little evidence about whether firms have the ability to accommodate these types of transitions. This research will produce novel findings on the potential role of firms in lengthening working lives.

Introduction

There is significant interest in extending the working lives of older individuals. While some evidence exists about the types of jobs that older workers seek and that are associated with remaining in the labor force (e.g., Ameriks et al. 2017; Maestas et al. 2018), whether such jobs are, or could be, readily available in the labor market is less certain. Surveys of older workers regularly report their high demand for workplace flexibility – specifically, hours flexibility – as well as other working conditions. Recent work has found that job preferences vary significantly throughout the lifecycle (Maestas et al. 2018). On almost all dimensions, older workers valued better working conditions more than any other age group.

Worker responsiveness to working conditions is only half of the labor market equation. There is little work studying the employer side of the equation to understand firm-level incentives and capabilities. We study within- and between-firm switches by older workers

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transitioning into retirement. We will survey firms about their ability and willingness to accommodate workers who are transitioning into retirement and demanding working conditions, such as flexible work schedules and reduced responsibilities, often associated with bridge employment.

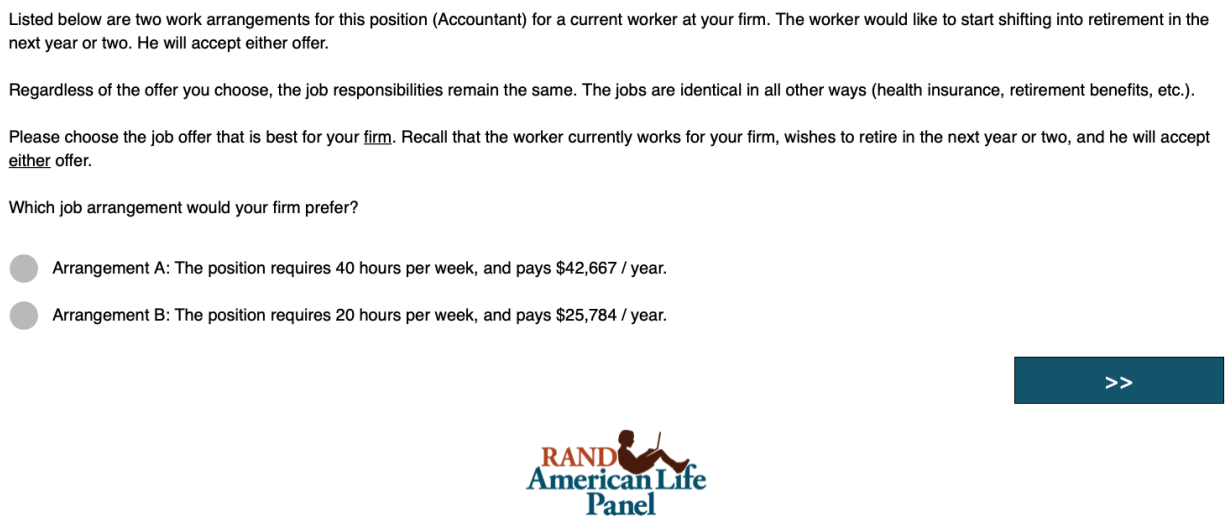
Bridge employment is a foundational issue to the Social Security Administration, as it can extend working lives and potentially delay Social Security benefit receipt. A meaningful increase in the fraction of older workers that remain in the labor force because of increased availability of bridge jobs would alter the retirement landscape substantially with direct effects on the timing and magnitude of Social Security benefits. Interestingly, while several studies have examined the prevalence of, and demand for, alternative work arrangements (e.g., Quinn and Kozy 1996; Ruhm 1990; Maestas 2010; Bennett et al. 2016), little work has been done on the employer side of this equation.

Methods

This project focuses on firms' ability and willingness to provide certain working conditions and accommodate transitions into retirement. We are fielding a survey through Indeed.com, the world's largest online job site. In the U.S., Indeed has nearly 60 million unique visitors per month, with more than 1.5 million companies using Indeed to hire. Indeed provides half of total job applicants from all offline and online sources, and six times as many hires as any other jobs site. Indeed's job postings, employers, and job seekers represent the wide range of industries in the U.S. economy, in all parts of the country, and in both large and small firms.

We will field a survey targeted to hiring managers, human resource (HR) professionals, and other members with knowledge about decision-making regarding working conditions at their firm using the Indeed sampling frame. The primary focus of this survey will be a set of stated preference experiments asking hiring managers to choose which job to offer to potential candidates. In each experiment, the respondent is asked to select between two job offers on behalf of their firm. The job offers vary based on the wage paid to the employee and based on a working condition. Wages are randomized. The job attributes that are randomly assigned include hours per week, hours per day, working remotely, schedule flexibility, working weekends and nights, work shifts, paid time off, and family leave benefits.

We will also ask respondents to make similar choices for current employees. An example of one of these experiments is provided directly below.

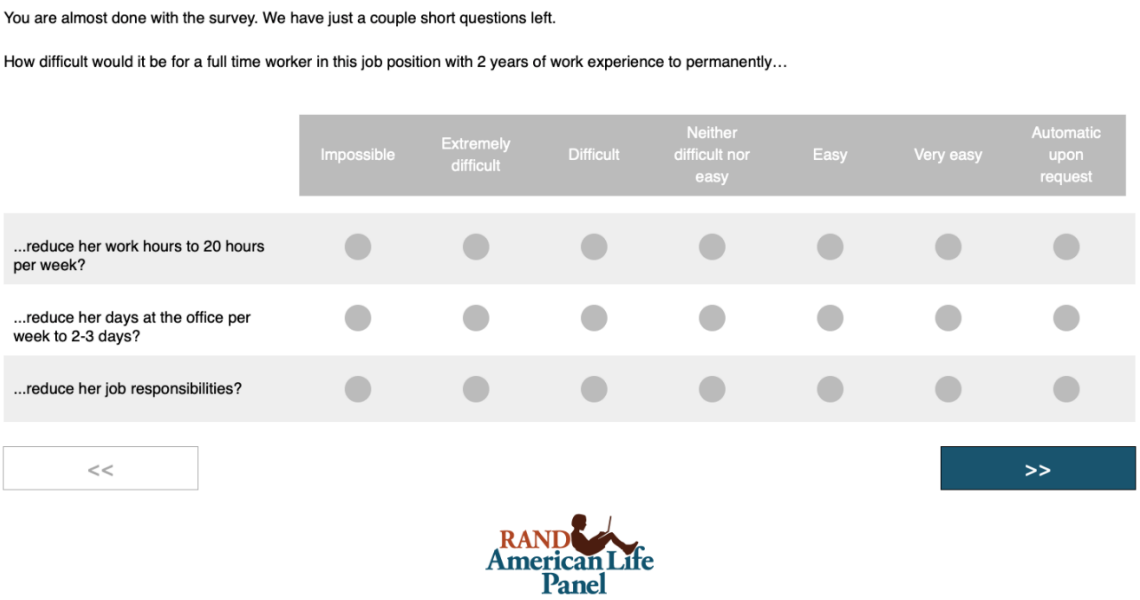


Given answers to these questions, we are able to non-parametrically estimate the cumulative distribution function (CDF) of firms' willingness to provide the amenity. Consider cases in which Job A provides an amenity wage $\boldsymbol{w_A}$ while Job B pays wage $\boldsymbol{w_B}$ and does not provide the amenity. The fraction of firms selecting Job B identifies:

$$P(Firm\ Cost > w_B - w_A).$$

Varying the wage difference (and which job provides the amenity) identifies probabilities for a wide range of wage differences, permitting graphical representation of the full distribution of firm costs. Given estimates of the CDF, we will be able to estimate the mean costs as well.

We will also ask supervisors, hiring managers, and HR professionals to answer the following:



We will use these responses to determine how difficult it is to transition to bridge employment at the employees' current firm. Our data collection will allow us to control for 3-digit industry as well as characteristics of the respondents (hiring manager, supervisor, HR professional). We will also be able to control for the respondents' firm size, level of education, years of experience, age of firm, and other attributes that may influence hiring.

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