Occupational Requirements and Worker Physical and Mental Health Functioning: How Measuring Workplace Accommodation Use May Inform Disability Policy

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This study explores the role of workplace accommodations in enabling workers with disabilities to maintain or return to employment. It examines the interplay between accommodations, worker physical and mental functioning, and job requirements, focusing on workers in three occupations with relatively high proportions of Social Security Disability Insurance (DI) applicants. To test our hypothesis that the use of accommodations mitigates lower functioning, we surveyed 802 workers currently or recently employed as cashiers, receptionists, or nurses. We report the average levels of self-assessed functioning among these workers in each of four physical domains and four mental domains and compare results for respondents who use accommodations and those who do not need them. Our findings suggest that the Social Security Administration might consider how a measure of accommodation availability could provide better understanding of which occupations are primed either for worker retention or reentry after DI receipt.

Introduction

The disability determination process used by the Social Security Administration (SSA) to evaluate eligibility for disabled-worker benefits under its Disability Insurance (DI) program includes steps in which adjudicators compare an individual's mental and physical functioning to the occupational requirements for the individual's past job. If worker functioning and job requirements do not match, adjudicators consider whether the applicant is capable of making vocational adjustments—for example, involving the use of tools or alternative work settings or processes—to meet the requirements of any other jobs available in the national economy and thus remain employed (Wixon and Strand 2013; Code of Federal Regulations 2008). In contrast to a *vocational adjustment,* which is undertaken by a worker, a *workplace accommodation* is provided by an employer to enable the worker to meet the job requirements. SSA's disability determination process considers vocational adjustments, but it does not consider workplace accommodations.

Integrating workplace accommodations into the determination of work capability would be challenging because the need for accommodation is a personal

Selected Abbreviations

ACS	American Community Survey
DI	Disability Insurance
OIS	Occupational Information System
O*NET	Occupational Information Network
ORS	Occupational Requirements Survey
SSA	Social Security Administration
WD-FAB	Work Disability Functional Assessment Battery

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characteristic, but the availability of accommodation is a job characteristic. Yet we can envision a scenario in which a workplace accommodation would enable a worker to be reclassified from *able to do light work* to *able to do heavy duty work,* as defined in SSA's medical-vocational guidelines (a set of tables that adjudicators consult, when applicable, during the determination process). However, to date, information about workplace accommodation has not been collected systematically during the disability determination process, and such data collection is not featured in any new determination-system tools currently in development.

Two workers who have similar levels of functional capacity and who hold jobs with similar functional expectations may receive different levels of accommodation from their employers. Such variations in accommodation availability may influence whether a particular worker will leave the workforce and apply for DI benefits. Not only are accommodations provided inconsistently from one employer to another, a single employer might also provide them inconsistently. Nonetheless, knowing the relationship between disability, physical and mental functioning, and use of workplace accommodations within a given occupation may illuminate whether and when such accommodations are useful and effective. However, to date, researchers have lacked evidence linking the provision of accommodations to both a standardized measure of functional capacity and the statutorily defined occupational requirements that SSA uses in disability determinations.

This article does not examine the effects of accommodations on DI application rates. Instead, it lays important groundwork for further study by (1) linking receipt of workplace accommodations to worker capacity as defined by a standardized functional assessment tool and (2) examining the gap between self-reported need and use of accommodations. To do so, we focus on three occupations that are among those most frequently appearing in the work histories of DI claimants: cashiers, receptionists, and nurses.[1]

To date, few studies have closely examined how worker functional abilities align with both job demands and the presence of workplace accommodations, and how a successful alignment might support current and prospective workers with a disability. The relationship between functional capacity, job requirements, and accommodation is relevant to Social Security policy, as mismatches may cause individuals to switch occupations, leave the labor force, or apply for DI benefits. In 2020, SSA received 1.8 million DI disabled-worker benefit applications (SSA, n.d. b). No data are available to indicate whether the provision of workplace accommodations could, or did, affect this number.

Workplace accommodations might mitigate some of the mismatch between worker functional ability and job requirements, and thus could play an important role in the disability determination process, as we describe below. The Americans with Disabilities Act (ADA) defines "a reasonable accommodation" as "any change or adjustment to a job or work environment that permits a qualified applicant or employee with a disability to…perform the essential functions of a job." Accommodations can include a wide range of supports, including assistive technology (such as communication devices or ergonomic workstations), personal assistance, changes to the physical environment (such as ramps and accessible bathrooms, kitchens, and offices), and changes to workplace policies (such as flexible work schedules and teleworking) (Anand and Sevak 2017; Gates 2000; Padkapayeva and others 2017; Sundar 2017; Wong and others 2021; Yeager and others 2006). The ADA mandates employers with 15 or more employees to provide reasonable accommodations to employees with disabilities (Department of Justice, n.d.). However, many employees either are not aware of their rights under the ADA or do not want to disclose their disabilities and thus do not formally request accommodations from their employers (Gamble, Dowler, and Hirsh 2004; Gioia and Brekke 2003; Trotter, Matt, and Wojnar 2014; Wheeler-Scruggs 2002). For their part, employers are often not knowledgeable about accommodations, which further limits their ability to help workers meet job requirements (Padkapayeva and others 2017; Stoddard 2006; Inge and others 2000).

Prior estimates of the percentage of workers with disabilities who need or use work accommodations vary depending on the target population and the study methodology. Yelin, Sonneborn, and Trupin (2000) report that less than 20 percent of workers with musculoskeletal disorders use accommodations. Allaire, Li, and LaValley (2003) find that, of the workers with rheumatic disease they interviewed, 98 percent experienced at least one difficulty at work, either with accessibility, carrying out essential job tasks, working conditions, or company policy; but only 38 percent of them used accommodations. Research focusing on older workers finds that only 26 percent of those aged 65 or older who have disabilities receive

accommodations from their employers (Hill, Maestas, and Mullen 2016). Using data from an Internet panel of adults aged 18–70, Maestas, Mullen, and Rennane (2019) estimate that 12 percent of respondents overall (including nonworkers) use workplace accommodations for health reasons. However, when they focus on "accommodation sensitive" workers—that is, those who have a work-limiting condition—Maestas, Mullen, and Rennane find that between 42 percent and 53 percent receive an accommodation at work. The varying estimates of the need for accommodations in the existing literature are largely due to the difficulty of capturing a representative sample of this target population—particularly because a lack of accommodations may cause workers to leave the labor force, thereby removing them from the pool of potential respondents.

Beyond the difficulty of capturing self-reported need or use of accommodations from workers, researchers are challenged by the limited availability of data on accommodations from employers or administrative records. SSA regulations currently do not require adjudicators to collect accommodation information in the award determination process (SSA, n.d. a), but such data could indicate the effect of accommodations on application and award rates. Prior research has, in fact, determined that workers who experience disability and receive workplace accommodations are significantly less likely to apply for DI benefits in the first few years after disability onset than are those who do not receive accommodations (Burkhauser, Butler, and Weathers 2001).

During the disability determination process, the adjudicator assesses an applicant's residual functional capacity (RFC). Broadly speaking, DI disabled-worker benefits are awarded if the applicant's RFC is deemed insufficient to allow the worker either to resume prior work or to make vocational adjustments that could enable the acquisition of other work. The process does not account for the availability or use of workplace accommodations.

Because workers with limited RFC can use accommodations to meet job requirements, this article outlines a method that may be used to quantify and analyze the effect of workplace accommodations in the dual contexts of functional ability and occupational requirements. It also provides some descriptive information about how such a measure could be used for three occupational categories that have relatively high proportions of DI applicants—cashiers, receptionists, and nurses—to assess the extent to which individuals with functional limitations can work if appropriate accommodations are provided.

We hypothesize that people who need accommodations report lower levels of functioning than those who do not. To test a related hypothesis that a workplace accommodation allows some people to remain employed who might not otherwise do so, we examine survey data collected from workers in these three occupations to see if the use of accommodations is associated with lower self-reported functioning.

Methods

In this section, we describe the survey we conducted to gather our data, the measures we used to assess functional capacity, and the approach we took to analyze the results.

Data

In the spring of 2021, we surveyed an Internet opt-in panel selected with purposive sampling. Respondents were aged 18–67 and currently (or had recently) worked as cashiers, receptionists, or nurses. We instituted a quota to recruit at least 800 respondents who had worked in one of these three occupations, which we chose because of the relatively high frequency of DI applicants among them. As such, they may exemplify groups for whom worker functional ability, job requirements, and accommodation availability and use are mismatched.

We collected the data during an 8-week period in March–May 2021. Because of the economic instability associated with the COVID-19 pandemic, we surveyed not only persons who were currently employed but also those who were not employed but had worked in one of the three occupations in January 2020, before the pandemic. The recently employed workers constituted 5 percent of our sample. The panel manager, QualtricsXM, recruited the participants. QualtricsXM maintains a double opt-in market research panel and, with opt-in sample partners, complements their participant lists as needed. Panel members must be able to participate online (using a smart phone or computer with Internet access) and they receive incentives such as cash or gift cards for participation in individual surveys.

Respondents were screened into our survey sample if they reported, for their main occupation, either having a job title or performing job duties that were associated with our occupations of interest. We used the Department of Labor's Occupational Information

Network (O*NET) database to compile our job title and duty lists. O*NET has the dual objectives of helping workers find jobs or training and helping employers locate skilled workers. The database lists job titles and tasks performed by workers in these occupations (Department of Labor 2023). We selected six physical, communication-oriented, or other job tasks with which to screen respondents into the receptionist and nursing occupational groups. To screen in cashiers, we selected seven such tasks. Appendix A lists the screening criteria in full.

Our final analytic sample included 802 workers (320 cashiers, 361 receptionists, and 121 nurses). We use the term "nurses" for brevity in this article, but we note that the nursing field is the most diverse of the three categories, as it includes occupations ranging from registered nurse to nursing assistant. We applied within-occupation poststratification adjustments to align our estimates with a target population based on 1-year estimates from the Census Bureau's 2019 American Community Survey (ACS). Under this method, weights were designed to adjust the sample to more closely conform with the sex, age, race/ethnicity, and disability-status distributions of workers aged 18–67 in each occupation. We provide unweighted and weighted demographic information for our sample, but our discussion focuses on weighted results.

Measures

Our analysis required measures of worker functional capacity, the need for and receipt of workplace accommodations, and employment and sociodemographic characteristics. We describe each of these measures below.

Functional Capacity. To measure functioning, our survey included items from the Work Disability Functional Assessment Battery (WD-FAB). The WD-FAB was developed by SSA, the National Institutes of Health, and Boston University to comprehensively assess self-reported work-relevant functioning in various mental and physical domains (Chan 2018; Porcino and others 2018). The WD-FAB uses item-response theory, wherein successive items are selected for relevance based on the outcomes for prior items. Assessment items are delivered as brief 6- to 10-item computer-adaptive tests drawn from a bank of more than 300 items. The physical and mental domains map onto International Classification of Functioning, Disability and Health standards for describing and measuring functioning and disability. Since its 2014 launch, the WD-FAB has been tested extensively for reliability, comparability to legacy instruments, and criterion validity (Jette and others 2019; National Academies of Sciences, Engineering, and Medicine 2019; Porcino and others 2018). An indication of its efficacy is that researchers have advocated for integrating the WD-FAB into the DI and Supplemental Security Income disability determination processes (Brandt and Smalligan 2019).

Our survey uses four of the domains of physical functioning that the WD-FAB assesses: basic mobility (including walking and running), fine motor function (including levels of dexterity and ability to manipulate objects), upper body function (such as reaching, lifting, pulling, pushing, and carrying), and community mobility (such as driving a motor vehicle and navigating public transportation).[2] Subjects respond with a difficulty rating on a five-point scale ranging from "unable to do" to "no difficulty." Responses are converted to numerical scores, with higher scores reflecting higher levels of functioning (McDonough and others 2017).

For mental functioning, the WD-FAB assesses four domains: resilience and sociability (including the ability to interact with others and to handle stress and related issues), mood and emotions (including feelings of depression and anxiety), self-regulation (such as managing emotions and social appropriateness), and cognition and communication (including organizational skills and oral and written communication) (Marfeo and others 2018). Some of these items prompt the respondent for one of four frequency responses (ranging from "never" to "always") and the others prompt for one of five agreement responses (four options ranging from "strongly agree" to "strongly disagree," or "I don't know"). As with the physical functioning assessments, higher numerical scores on the mental scales reflect higher levels of functioning. The WD-FAB prompts respondents to indicate their level of usual ability "with any equipment or devices you normally use," which allows for an assessment of functioning *with adjustments* among those who use them. Importantly, "equipment" in the WD-FAB generally refers to items the respondent owns, such as a wheelchair or eyeglasses, rather than items provided by an employer as a workplace accommodation.

Work Accommodations. Before respondents were asked about disability or health status, they were asked about their need or use of workplace accommodations. To gather that information, we used a method outlined in Maestas, Mullen, and Rennane

(2019) and adapted a question from their study. They asked: "Many people need special accommodations for health problems to make it easier for them to work. This could include things like getting special equipment, getting someone to help them, varying their work hours, taking more breaks and rest periods, or learning new job skills. Does your employer currently do anything special to make it easier for you to work?" We revised the first sentence to ask about "special accommodations for health *or mental health* problems." Persons who responded that their employer provided any such assistance were asked to select the type(s) of accommodations their employer provided from an inclusive list of accommodations identified in previous literature such as Anand and Sevak (2017), Gates (2000), Padkapayeva and others (2017), Sundar (2017), Wong and others (2021), and Yeager and others (2006). Because the list of accommodations was expansive, nearly any change in the work environment could be considered an accommodation, whether it was intended primarily for that purpose or not.

We also asked respondents about the types of special equipment employers provided to help them do their jobs (such as devices to assist with mobility or communication). In addition, we asked all respondents (not only accommodation users) whether they believed that their employers provided all of the accommodations and supports necessary for them to continue doing their job.

Employment and Sociodemographic Characteristics. In addition to questions on occupational titles and job duties, our survey captured measures of job tenure, employer size (number of employees), and specific vocational preparation (one question on required training and education, and one on time spent learning job duties, with each item using specific wording and definitions outlined in the Department of Labor's Dictionary of Occupational Titles). The survey also collected standard demographic information, including age, sex, race, and ethnicity. Following ACS methodology, we asked respondents about disability status in each of six categories (hearing, vision, ambulation, cognition, self-care, and independent living). Two additional questions covered the presence and number of chronic health conditions. To establish a study population of workers who might use or need accommodations, we limited our analysis to people who report having one of the six types of disability or two or more chronic health conditions. For reasons related to respondent "priming" (described below in the Results section), all questions on demographic and work topics, including those addressing disability and health, were purposely placed after the questions about need and use of workplace accommodations.

Analysis

We first examined how frequently workers reported using any and specific types of accommodations, for respondents overall and by occupation. We next compared the WD-FAB scores of persons using accommodations with those of persons not needing accommodations, by occupation, with detail by functional domain and *t*-test analysis of the differences in means between accommodation-use categories. We used Stata statistical software (version 15.1) for all analyses. We report weighted results unless otherwise noted.

Results

Table 1 shows the demographic characteristics of our sample, before and after weighting and compared with the 2019 ACS, by occupation. Relative to the ACS, our sample overrepresented male workers among receptionists and underrepresented them among the nursing professions. Our sample underrepresented younger workers and non-White workers in all three occupations and substantially overrepresented those with disabilities. We therefore weighted our results to align our sample with the demographic distributions within each occupation in the 2019 ACS and applied those weights to the results we present in later tables.

We note that after answering questions on workplace accommodations, respondents were likely primed to report a disability. Such a phenomenon is observed when results for questions on disability prevalence in the National Center for Health Statistics' National Health Interview Survey (NHIS) are compared with those of other national surveys that do not focus on health. The NHIS' line of health-related questioning is thought to orient respondents' thoughts more toward disability than do questions focused on employment and housing, such as those in the Census Bureau's ACS or Current Population Survey.

Table 2 shows our summary accommodation need and use statistics for respondents reporting a disability or multiple chronic health conditions. Recall that we worded our question on accommodation to include any environmental, task-based, or scheduling change to accommodate a mental or nonmental health problem. Overall, 71.7 percent of respondents reported using an accommodation, ranging from a low of 66.4 percent for cashiers to a high of 77.3 percent for receptionists.

Table 1.

Workers in each of three occupations, 2021: Percentage distribution by demographic characteristics, weighted and unweighted with comparisons to 2019 ACS

	Cashiers			Receptionists			Nurses		
		This study (2021 opt-in survey)			This study (2021 opt-in survey)			This study (2021 opt-in survey)	
Characteristic	2019 ACS	Un-weighted	Weigh-ted	2019 ACS	Un-weighted	Weigh-ted	2019 ACS	Un-weighted	Weigh-ted
Sex									
Men	38.9	39.6	38.1	10.4	42.7	9.6	13.1	9.9	13.1
Women	61.1	60.1	61.9	89.6	57.3	90.4	86.9	90.1	87.0
Age									
18–34	60.2	31.2	59.9	52.5	27.8	53.7	34.7	29.8	32.1
35–44	12.8	26.5	10.6	15.0	31.9	14.6	21.8	18.2	21.1
45–54	11.9	12.2	12.6	14.4	14.7	13.2	20.8	24.0	23.7
55–67	15.2	30.2	16.0	18.2	25.6	18.6	22.7	28.1	23.2
Race/ethnicity									
White, non-Hispanic	53.9	81.3	59.3	57.9	81.7	56.8	53.9	80.5	60.5
Black, non-Hispanic	15.1	5.1	13.4	12.3	7.0	12.5	21.4	11.0	24.0
Other, non-Hispanic	9.7	6.4	10.2	7.7	5.9	7.2	11.0	4.2	10.3
Hispanic (any race)	21.3	7.3	17.0	22.1	5.3	23.5	13.7	4.2	5.2
Disabling conditions									
None	92.6	62.8	88.8	93.2	66.5	93.2	93.3	73.6	93.3
One	5.1	17.2	8.4	4.9	15.2	4.9	4.8	15.7	4.8
Two or more	2.2	20.0	2.8	2.0	18.3	2.0	1.9	10.7	1.9
Number of cases	62,136	320	320	12,662	361	361	64,490	121	121
Median weight	. . .	. . .	0.63	. . .	. . .	0.54	. . .	. . .	0.84
Mean weight	. . .	. . .	1.00	. . .	. . .	1.00	. . .	. . .	1.00
Standard deviation	. . .	. . .	1.30	. . .	. . .	1.59	. . .	. . .	0.84

SOURCES: 2019 ACS and authors' calculations based on March–May 2021 Internet panel of workers aged 18–67 currently or recently working in an occupation of interest.

NOTES: Poststratification weights aim to align the demographic composition of the Internet panel with that of the population aged 18–67 working at least 1 hour in the 2019 ACS 1–year estimates. Margins were weighted within each demographic category and in the order in which the variables are shown.

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

. . . = not applicable.

Table 2.

Percentage distribution of workers with a disability or multiple chronic health conditions by reported need, provision, and use of workplace accommodation, by occupation, 2021

Accommodation status	Overall	Cashiers	Receptionists	Nurses
Needed and—				
Not provided	14.8	22.5	10.7	4.0
Used	71.7	66.4	77.3	71.6
Not needed	13.6	11.1	12.0	24.4
Number of cases	347	152	154	41

SOURCE: Authors' calculations based on March–May 2021 Internet panel of workers aged 18–67 currently or recently working in an occupation of interest.

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

In the three occupations combined, 13.6 percent of the sample reported not needing accommodations and 14.8 percent reported an unmet accommodation need.

Table 3 provides detail on the types of accommodations reported by respondents with a disability or chronic health conditions whose employers provided an accommodation, overall and by occupation. Note that workers could report multiple types of accommodation. The most common workplace accommodations involved providing a helper, permitting alternative scheduling, and adjusting work pace or allowing pauses. Of the three occupations, receptionists were most likely to report that their employer allows more break or rest periods (40.5 percent) or provides special equipment (22.9 percent). Considerably lower proportions of cashiers and nurses reported receiving these accommodations.

For cashiers, having someone help with their work was the most common accommodation type (53.4 percent), followed by altering the work schedule to accommodate medical appointments (27.6 percent), allowing changes to work arrival and departure times (25.7 percent), and being trained or coached in new job skills (23.2 percent).

For nurses, being able to schedule work around medical and mental health appointments (42.7 percent) and to modify work arrival/departure times (38.1 percent) were the most common accommodation types, followed by having someone available to help them (30.0 percent). Among respondents overall, 9.2 percent reported that their employer changed their job requirements, 8.2 percent reported physical modifications to the workplace, 6.8 percent received vocational rehabilitation services, and 6.2 percent reported that the employer arranged for special transportation, but for each of these accommodations, the percentages were lower, and in most cases considerably lower, for nurses.

Table 4 compares the WD-FAB scores in each domain of functioning for workers receiving accommodations and those not needing them, by occupation. Recall that respondents are instructed to account for any equipment or devices they own that they normally use in work tasks when reporting their level of functioning. We compared our WD-FAB scores with previous WD-FAB calibration samples that included the general population and found that workers in our sample's occupations scored relatively higher in all areas, suggesting that they had higher levels of physical and mental functioning than the general population (Marfeo and others 2019).

For cashiers, functioning was statistically higher for those who did not need accommodation in each of the physical functioning categories and in all but the resilience and sociability category of mental functioning. For receptionists, differences between accommodation

Table 3.
Percentage of workers with a disability or multiple chronic health conditions reporting employer provision of specific workplace accommodations, by occupation, 2021

Accommodation	Overall	Cashiers	Receptionists	Nurses
Employer—				
Gets someone to help me	43.1	53.4	38.2	30.0
Lets me change the time I come to/leave work	30.8	25.7	32.9	38.1
Allows me more breaks/rest periods	29.3	22.9	40.5	14.4
Schedules around my medical/mental health appointments	24.6	27.6	15.5	42.7
Shortens my workday	16.7	15.2	14.8	26.0
Has helped me learn new job skills	16.6	23.2	11.7	13.3
Provides special equipment for the job	16.0	12.2	22.9	6.1
Has changed the job to something I can do	9.2	18.4	3.6	1.0
Has modified the physical environment	8.2	6.4	12.5	1.0
Assists me in receiving vocational rehabilitation services	6.8	8.4	6.4	3.9
Arranges for special transportation	6.2	10.3	4.6	0.0
Has done something else	9.3	17.0	4.9	1.8
Number of cases	243	100	115	28

SOURCE: Authors' calculations based on March–May 2021 Internet panel of workers aged 18–67 currently or recently working in an occupation of interest.

Table 4.
Mean WD-FAB scores in each domain of functioning for workers by occupation and whether workplace accommodations are used or not needed, 2021

Domain	Cashiers			Receptionists			Nurses		
	Accommodations—			Accommodations—			Accommodations—		
	Used	Not needed	Difference	Used	Not needed	Difference	Used	Not needed	Difference
Physical functioning									
Basic mobility	60.5	63.4	2.9**	62.2	62.5	0.3	61.5	62.1	0.6
Upper body movement	54.6	57.7	3.1***	55.9	57.7	1.8*	56.4	57.4	1.0
Fine motor capability	64.2	68.4	4.2***	66.6	69.1	2.5**	64.9	67.9	3.0
Community mobility	49.3	53.9	4.6***	50.4	53.9	3.5***	51.9	55.2	3.3*
Mental functioning									
Mood and emotions	54.9	60.2	5.3**	57.5	59.6	2.1	59.8	61.2	1.4
Self-regulation	51.6	55.7	4.1**	51.5	55.8	4.3***	53.4	55.9	2.5
Resilience and sociability	50.0	49.6	-0.4	50.3	49.6	-0.7	50.9	49.9	-1.0
Communication and cognition	52.4	55.6	3.2***	54.3	55.0	0.7	54.2	55.3	1.1

SOURCE: Authors' calculations based on March–May 2021 Internet panel of workers aged 18–67 currently or recently working in an occupation of interest.

NOTE: * = statistically significant at the $p < 0.05$ level; ** = statistically significant at the $p < 0.01$ level; *** = statistically significant at the $p < 0.001$ level (t-test comparisons of means across accommodation-use categories in each occupation).

users and those not needing accommodations were significant in all physical functioning categories except basic mobility and in one mental category (self-regulation). For nurses, only the scores for community mobility differed significantly between accommodation users and those not needing them.

Limitations

We acknowledge some limitations to this analysis. The primary data collection methodology likely prevents results from being representative of a full range of functioning for two reasons. First, the study targets people working in only three occupations selected because of the relatively high share of workers who claim DI disabled-worker benefits. Caution should be used in extrapolating the findings beyond these occupations. Expanding the occupational scope of the study would likely alter the findings on functioning scores and accommodation need and use.

Second, we focus on potential DI applicants (whom we expect to be working) and beneficiaries who want to work, which raises the question of whether those who are not working because of disability could have remained employed if they were accommodated. This study design does not fully address workers with an unmet need for accommodation. Relatedly, because we use a broad measure of accommodation, it likely includes reports of job modifications made for health problems that might not generally be counted as a disability (such as temporary injury or illness).

Third, the sampling procedures are biased in that they do not enable the participation of people without Internet access. Further, because our sample constitutes an opt-in panel, it is less likely to include people who have difficulty navigating online surveys because of low vision or other disabilities (even though our survey instrument used accessibility features aiming to make it more compatible with screen readers). In addition, the sampling methodology was not meant to yield a nationally representative sample. Through weighting, we attempted to adjust for the overrepresentation of workers with disabilities and the underrepresentation of non-White and younger workers.

Fourth, the extent to which our results can be generalized may be diminished by the timing of our data collection, given the COVID-19 pandemic's effects on respondent work routines and mental health. During the spring of 2021, workers may have faced unique challenges that affected their job tasks. The extent to which receptionists and cashiers may have had their job tasks modified to provide service during the pandemic is unknown. However, workers in the medical field are known to have experienced heavier workloads during this period. Recent research focusing on nursing assistants found that during the pandemic, employers were likely to modify schedules to maintain

work-life balance in hopes of retaining their employees, irrespective of their disability status (Franzosa and others 2022). This development could affect the reported prevalence of disability-related accommodations, producing an estimate of prevalence that may not reflect pre- or post-COVID-19 work environments. Future research should examine how the pandemic affected job tasks and work routines in these (and other) occupations. Additionally, self-reported mental health functioning during the pandemic likely was lower than in typical prepandemic self-assessments. One WD-FAB data collection effort in the spring of 2020 found that the mental health functioning of respondents with a work-limiting disability was substantially lower than that of samples collected prior to the pandemic, particularly in the category of resilience and sociability (Henly and others 2023). Although those WD-FAB respondents are not directly comparable with our sample of employed respondents, other studies also have found higher rates of stress, anxiety, and depression during 2020 (Twenge and Joiner 2020) and one might expect that mental health functioning remained lower into 2021.

Discussion

Our study yields important results in four areas. First, our research highlights differences in functional abilities by accommodation receipt for specific types of workers. This suggests that accommodations are important in helping individuals maintain employment. Specifically, we find that persons who work as cashiers, nurses, or receptionists are more likely to receive accommodations from their employers if they have lower levels of functional capacity. Although the differences in these functional-capacity scores are statistically significant, they are somewhat small; in some instances, they are smaller than the minimal detectable change observed in prior test-retest validation studies of the WD-FAB (Meterko and others 2019). However, we believe that these findings indicate a meaningful relationship between self-reported level of functioning, accommodation use, and having a work-limiting disability. Although many studies have examined whether individuals receive accommodations, our study is the first, to our knowledge, to examine accommodation receipt by individual *domains* of functioning, as captured in a validated functional-ability assessment tool (WD-FAB), for specific occupations. This provides more detailed information than prior studies—information which might, in turn, point to more targeted employment or rehabilitation policies and practices that can address disparities in the provision of accommodations.

Second, our study presents a unique method of collecting information on accommodation need and use for various domains of functioning within occupations. These domains are included in the WD-FAB and could be mapped to worker requirements in the Bureau of Labor Statistics' Occupational Requirements Survey (ORS), which in turn suggests a process that could lead to the incorporation of accommodation information into SSA's forthcoming Occupational Information System (OIS), with which the agency will collect and maintain comprehensive listings of job titles and work requirements.[3] The OIS will include measures of a job's cognitive and mental demands in addition to its physical demands, and certain accommodations can map to specific job demands. For instance, accommodations provided to persons with physical limitations who work in occupations that require high functioning in basic mobility should focus on providing physical modifications to the work environment. For persons with mental health conditions who work in jobs that require high mental functioning, accommodations might prioritize scheduling flexibility, which could provide relief when standard scheduling reduces mental performance. The role of accommodation in encouraging labor force participation, ensuring equal employment, and facilitating the return to work could be better understood by routinely collecting this information. That better understanding could in turn lead to more effective targeting of accommodations and thereby encourage return-to-work efforts that are readily identified for certain functional limitations and occupations.

Third, we find high percentages of workers with a disability or multiple chronic health conditions in these three occupations using accommodations (about 72 percent overall). Previous studies have found a wide range of reported accommodation use, depending on the population studied and methodology used, from 12 percent (Maestas, Mullen, and Rennane 2019) to 38 percent (Allaire, Li, and LaValley 2003). Our higher percentage may be attributed to more inclusive criteria, our focus on these specific occupations, or some other methodological issue. In any case, our study adds another estimate of accommodation use to the research on this subject.

Fourth, we find that approximately 15 percent of respondents reported needing accommodations but not receiving them. Our study builds on prior work by

Maestas, Mullen, and Rennane (2019) to help fill a gap in the literature on accommodation need. Other data sources that capture accommodation use, namely the University of Michigan's Health and Retirement Study (HRS), do not account for the entire accommodation-sensitive population. Although the HRS includes questions about accommodation use, only respondents who reported a work-limiting condition at the time they were employed are queried. This restricts the intended target population because it excludes those who (1) use an accommodation at work and do not report their health condition as "work-limiting" as a result of the intervention, (2) were not employed at the time their health condition began to limit their work, or (3) already experienced a work-limiting condition prior to working. These exclusions limit our understanding of the role that accommodation availability plays in shaping work patterns for those who may benefit from their use. Other data sources might enable researchers to examine accommodations in more detail in the future. For example, the Current Population Survey Disability Supplement, last conducted in July 2021, is scheduled to be fielded again in 2024. This presents an opportunity for the Bureau of Labor Statistics, which sponsors the Disability Supplement, to incorporate questions addressing accommodation need, use, and receipt into its data collection, although it is not yet known whether these items will be added.

Aside from researchers, policymakers may benefit the most from the inclusion of accommodation information in the OIS. Information on accommodations could not easily be incorporated into the ORS, which currently has no way to evaluate the substitutability of occupational requirements. Until complementary tasks are captured in some manner, the ORS database cannot reasonably be used for this purpose. However, the O*NET database could be a useful first place to capture information on accommodation, as it already includes detail on occupational tasks, work environment, and tool use. Adding accommodation-availability data to O*NET would be useful for both research and policy. O*NET alone cannot be used in SSA disability adjudication because it lacks necessary details on occupations' physical requirements (SSA, n.d. a), but O*NET information could be integrated into the forthcoming OIS, whose designers envision its use specifically for disability determinations.

In addition, for nurses, we found only one domain of functioning with a statistically significant difference between workers using and not needing accommodations. This may in part be due to the smaller sample size of nurses (121 observations) and the resulting lower statistical power of the estimates, as the direction of the score differences is consistent with those of the other two occupations. This outcome may also be due to the greater heterogeneity of this group, which includes both registered nurses and nursing assistants, occupations with widely varying job requirements. When comparing the domains of functioning, we note that scores in all categories except resilience and sociability are slightly higher for the group not needing accommodation. This one inconsistency appears to be related to the timing of data collection.

One consideration that warrants further investigation is how the racial/ethnic make-up of these professions may affect the provision of accommodations. Prior work in this area finds that accommodation recipients are more likely to be White and non-Hispanic than any other group (Hill, Maestas, and Mullen 2016; Charles 2004) and that employers may grant accommodation requests unevenly, favoring those who they value (Gould-Werth, Morrison, and Ben-Shalom 2018), a qualitative assessment that may be subconsciously tied to race. Although the data used in this study are not well-suited to investigate the role of race and ethnicity in accommodation receipt in these three occupations, future research should consider the role of race in occupational sorting (Hellerstein and Neumark 2005) and in the uneven provision of accommodations.

Concluding Remarks

The complex interactions among physical and mental functioning, work requirements, and the work environment make disability status difficult to determine and measure. Information on accommodations in the context of job requirements and functional ability would be useful but is not yet systematically available. This research aims to be a first step toward developing such information, demonstrating an approach to compiling information about job demands and worker functional capacity that indicates both the potential effects of and continuing need for workplace accommodations. Such information could augment the O*NET and ORS systems, which currently do not recognize potential substitutability (and complementarity) among occupational requirements and workplace accommodations. That substitutability is necessary to understand the role that accommodations play in facilitating labor force participation, equal employment, and return to work.

Appendix A: Screening Potential Respondents into Our Internet Panel

We used occupational criteria listed in the Department of Labor's O*NET database to select respondents for our Internet panel survey. If a potential respondent reported current or recent work in a job with a title or duties that corresponded with any of the O*NET criteria listed below, that person was screened into the panel.

Our initial questions addressed industry of employment so that we could filter subsequent questions toward job titles appropriate to the reported industry.

Box 1.
Screening criteria for study inclusion

Aspect	Cashier	Receptionist	Nurse
Job title	• Cashier • Gambling change person or booth cashier • Counter clerk or rental clerk • Parts salesperson • Retail salesperson	• Receptionist • Information clerk • Clerk specialist • Front desk • Greeter • Member service representative • Office assistant • Scheduler	• Registered nurse • Nursing assistant • Orderly • Psychiatric aide • Home health aide or personal care aide • Certified nurse aide (CNA) • Licensed nursing assistant (LNA) • Certified home health aide (CHHA) • Certified medical aide (CMA) • Home attendant • Caregiver
Job duty	• Receive payments by cash, check, credit card, voucher, or automatic debit • Help customers locate products • Issue receipts, refunds, credits, or change due • Provide customer assistance (give information, resolve complaints) • Establish or identify prices of goods, services, or admission; tabulate bills using calculator, cash register, or optical price scanner • Stock shelves; sort and restock returned items; mark prices on items and shelves • Offer carry-out service at transaction completion	• Operate telephone switchboard to answer, screen, or forward calls; provide information; take messages • Schedule appointments; maintain and update appointment calendars • File and maintain records • Perform administrative support tasks including proofreading; transcribing handwritten information; and preparing, reviewing, or revising pay records, invoices, balance sheets, and other documents using calculators or computers • Transmit information or documents to customers using computer, mail, or fax machine • Perform maintenance duties such as tending to plants and straightening the lobby/reception area	• Turn or reposition bedridden patients • Monitor and respond to patient call signals (lights, bells, intercom) and determine patient's needs • Feed patient or assist with eating/drinking • Provide physical support or assist with activities of daily living such as getting out of bed, bathing, dressing, using the toilet, standing, walking, or exercising • Prompt/remind patients to follow their medicinal and nutritional-supplement regimens • Lift/move patients on or off beds, examination or surgical tables, or stretchers

Notes

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[1] This finding is based on an unpublished review of an Occupational Information Development Advisory Panel (OIDAP) analysis of 5,000 DI claims, partially summarized in Trapani and Harkin (2011). Active during 2009–2012, OIDAP provided independent advice to SSA on how best to replace the Department of Labor's Dictionary of Occupational Titles with a new occupational information system tailored specifically to SSA's adjudicative needs.

[2] The WD-FAB also includes a wheelchair mobility domain. Because few of our respondents are wheelchair users, we did not analyze this domain.

[3] For a description of the OIS project, see https://www.ssa.gov/disabilityresearch/occupational_info_systems.html.

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