Representation of Persons with Targeted Disabilities

An Analysis of Barriers to Employment in the Department of Defense Civilian Workforce

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Preface

Although a representative federal workforce is a strategic personnel priority, certain demographic groups have historically been underrepresented, and these groups may continue to face employment barriers. One such group includes persons with targeted disabilities (PWTD), who are the focus of this report. The federal workforce has a 2-percent representation goal for the employment of persons with specific disabilities or health conditions, known as *targeted disabilities*. Targeted disabilities include developmental disabilities, deafness, blindness, missing extremities, partial paralysis, complete paralysis, epilepsy, intellectual disabilities, psychiatric disabilities, and dwarfism.

Overall, the U.S. Department of Defense (DoD) has not in recent years met the federal goal for employment of PWTD in its civilian workforce. DoD therefore needs to examine actions it can take to increase employment of PWTD in its civilian workforce. This report discusses employment barriers within DoD that PWTD may experience.

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Summary

Although a representative federal workforce is a strategic personnel priority, certain demographic groups have historically been underrepresented in the federal workforce, and these groups may continue to face employment barriers. One such group includes persons with targeted disabilities (PWTD), who are the focus of this report. Federal policy defines *a person with a disability* as one who "(1) has a physical impairment or mental impairment (psychiatric disability) that substantially limits one or more of such person's major life activities; (2) has a record of such impairment; or (3) is regarded as having such an impairment" (U.S. Office of Personnel Management [OPM], 2010; OPM, 2016a; OPM, 2016b).[1] The federal workforce has a 2-percent representation goal for the employment of persons with specific disabilities or health conditions, known as *targeted disabilities*. These include, for example, developmental disabilities, deafness, blindness, missing extremities, partial paralysis, complete paralysis, epilepsy, intellectual disabilities, psychiatric disabilities, and dwarfism (OPM, 2010; OPM, 2016a; OPM, 2016b). The 2-percent goal for PWTD was established as part of the Leadership for the Employment of Americans with Disabilities (LEAD) initiative (U.S. Equal Employment Opportunity Commission [EEOC], 2008b). There is no information on why the LEAD initiative chose a 2-percent goal.[2] If 2 percent of the relevant U.S. population does not have these targeted disabilities, agencies will have difficulty meeting this goal.

The U.S. Department of Defense (DoD) has not met the federal employment goal for this group (OPM, 2014a). To better understand the representation of PWTD in the DoD civilian workforce and how to improve that representation, the Office of the Secretary of Defense (OSD) Office of Diversity Management and Equal Opportunity (ODMEO) asked the RAND Corporation to examine contributors to the underrepresentation of PWTD and provide recommendations based on these analyses. The RAND team's work encompassed several tasks, including

- assessing trends in DoD employment of PWTD over time and across DoD components
- comparing trends in the employment of PWTD among DoD and non-DoD components
- identifying and assessing practices for recruiting PWTD
- gathering information from DoD hiring managers and university representatives regarding employment of PWTD
- surveying a sample of hiring managers or supervisors regarding employment of PWTD.

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[1] See also the Americans with Disabilities Act Amendments Act of 2008 (Pub. L. 110-325, 2008).

[2] This federal goal may have been based on or influenced by the U.S. Department of Defense (DoD) goal of 2 percent for PWTD that was established in 1987 (DoD, 2014).

Definition and Data on the Employment of Persons with Disabilities in the United States

In the United States, multiple national household surveys collect information on persons with disabilities. Some researchers have characterized these various data-collection efforts as "fragmented and sporadic" (Stapleton et al., 2009, p. 1). These surveys were created by different agencies, tend to have different populations of interest, and often ask different questions to identify whether individuals may be characterized as having disabilities (Barnow, 2008; Employment and Disability Institute, 2013; Livermore et al., 2011; Maag and Wittenburg, 2003).

In part because of the absence of a universal definition of *disability* across different organizations, there are no well-defined rules for how to measure disability across U.S. national data sets. No data-collection effort that obtains nationally representative samples acquires the precise information permitting identification of the prevalence of the federal government's specific targeted disabilities in the total U.S. population or the civilian labor force (CLF) each year. Thus, although the federal government has established a 2-percent goal for particular disabilities, it is not possible to accurately determine the prevalence of these disabilities in the U.S. population and whether 2-percent representation would be overrepresentative, underrepresentative, or accurately representative of the CLF.

EEOC–Recommended Self-Assessment Involving Employment of PWTD

The EEOC and other organizations provide guidance for agency self-assessments of participation and representation among PWTD. The EEOC describes six essential elements that must exist within a model federal equal employment opportunity (EEO) program. One of these elements—proactive prevention of discrimination and elimination of barriers to employment —requires federal executive agencies and military departments (excluding uniformed personnel) to assess the effects of their policies, programs, and procedures on the employment of certain demographic groups, including PWTD.

Assessment of the participation and representation rates of certain demographic groups within an agency necessitates comparison with some sort of standard rate or a benchmark population. To determine whether federal agencies and military departments (excluding uniformed personnel) have adequate representation and participation of various demographic groups in different grades, occupations, and groups, the EEOC requires agencies to compare their participation and representation rates with standard rates for participation and representation. For racial, ethnic, and gender groups, these standard rates are obtained from the relevant CLF, with agencies comparing their own racial, ethnic, and gender participation and representation rates with those of the relevant CLF using U.S. Census Bureau data (EEOC, 2004). The EEOC uses a 2-percent representation rate for PWTD. Participation and representation rates below the benchmark population or standard rate indicate possible barriers to employment within the agency.

Results of EEOC–Based Barrier Analysis of Targeted Disability Representation in DoD and Its Components

In line with EEOC recommendations for evaluating whether PWTD are adequately represented in the federal workforce, we compared the percentage of PWTD within DoD and its components (i.e., Department of the Air Force, Department of the Army, Department of the Navy, and Fourth Estate[3]) with the 2-percent federal representation goal and with the percentage of PWTD employed in the rest of the federal workforce. Our data predate the changes made to federally targeted disabilities in August 2016 (OPM, 2016a). Hence, we focus on the disabilities of interest to the federal government prior to August 2016 (OPM, 2010).

Our analyses show that DoD representation of PWTD is lower than both the 2-percent federal representation goal and the level of representation in the non-DoD federal workforce. However, this pattern is not present for broader definitions of disability status that include conditions that do not meet the EEOC's criteria for targeted disabilities. For people with disabilities in general, the level of representation in DoD actually meets or exceeds the level of representation in the non-DoD federal workforce. Furthermore, DoD has much higher representation of veterans with at least a 30-percent disability rating than the non-DoD federal workforce, so comparisons that include this group show relatively high disability representation in DoD.

Furthermore, information on veteran disability status indicates that underreporting may present a problem for DoD efforts to measure targeted disability representation. Statistics on targeted disabilities rely on employees to accurately report their disability status, but veterans with disabilities (i.e., veterans with at least a 30-percent disability rating) might not report what type of disability they have to their hiring agency. If some veterans who are not reporting their exact disability have a targeted disability, or if similar underreporting exists among nonveterans, the true percentage of DoD employees with a targeted disability would be higher than current statistics indicate.

We also assess four triggers that the EEOC (2014) notes are frequently observed in workforce data and would suggest the presence of barriers. The first of these triggers, low entry–high exit, is present when a group with a low rate of participation in the workforce enters the workforce at a low rate and exits at a high rate. The second, glass wall, exists when a group has low representation in occupations that are tracked for upward mobility (i.e., mission-critical occupations [MCOs]). The third, blocked pipeline, is present when a group has a low rate of participation and promotion within MCOs, and the fourth, glass ceiling, is present when a group has a low rate of promotion into leadership positions, including from General Schedule (GS)-13 to Senior Executive Service.

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[3]   The Fourth Estate includes the following agencies: Defense Logistics Agency, Defense Contract Management Agency, Defense Commissary Agency, Defense Finance and Accounting Service, Defense Contract Audit Agency, Defense Information Systems Agency, DoD Education Activity, Defense Health Agency, Office of the Inspector General, Defense Threat Reduction Agency, Missile Defense Agency, Defense Human Resources Activity, Pentagon Force Protection Agency, OSD, Washington Headquarters Services, Defense Security Service, Defense Security Cooperation Agency, Defense Media Activity, Joint Staff, National Defense University, Defense Technology Security Administration, Defense Legal Services Agency, Defense Technical Information Center, Defense Acquisition University, Defense POW/Missing Personnel Office, Business Transformation Agency, Defense Microelectronics Activity, American Forces Information Service, Defense Advanced Research Projects Agency, United States Court of Appeals for the Armed Forces, and Office of Economic Adjustment.

Results show that each of these triggers may be present in the current workforce data. PWTD are more highly represented among separations than among new hires, and they separate at higher rates than those without targeted disabilities. Additionally, PWTD are hired into lower grades, on average, than those without targeted disabilities. Altogether, relative to persons without targeted disabilities, PWTD are underrepresented among higher-promoting occupations, are promoted at lower rates in those occupations, and are underrepresented in higher grades.

Analysis of Disability Representation in DoD Agencies

We found that the proportion of PWTD in the DoD civilian workforce is 0.42 percentage points lower than in the non-DoD federal workforce. To put this number in perspective, we note that DoD would need to increase the level of employment of this group by more than 50 percent, or by more than 2,500 workers, to put it on par with the representation level in the non-DoD federal workforce. To reach the federal goal of 2-percent representation, DoD would need 2.5 times as many PWTD in its workforce as it had in 2013.

Examining why PWTD are underrepresented in DoD is a useful starting point for identifying barriers to their employment. Analyses showed that available workforce characteristics (e.g., occupation, education, location) do not explain the underrepresentation. Many of the current differences in workforce characteristics are already favorable to the employment of PWTD within DoD, which means that we estimate that the gap would be larger if the two workforces had similar characteristics. Analyzing the difference between DoD's overrepresentation of all persons with disabilities and the representation of such persons in the non-DoD federal workforce confirms that the large proportion of veterans in the DoD workforce accounts for much of the difference. For example, 45.9 percent of all DoD civilian employees are veterans, compared with 21.9 percent of those in non-DoD agencies. Differences in occupation account for smaller proportions of the difference.

Analysis of Job Applicant Data and Representation of PWTD in DoD

We also analyzed DoD job applicants to illuminate the potential characteristics contributing to the representation of PWTD in DoD. The composition of the applicant pool at various stages in the process indicates where the greatest reductions in representation occur. Accurate applicant information can lead to better policies for identifying barriers to representation and reducing their impact.

We used data on DoD job applicants captured through the federal government's official online job listing site, usajobs.gov, and compared it with information on the DoD civilian workforce gleaned from OPM data. We found that targeted disability representation among applicants is similar to the overall level of representation in the DoD workforce, but higher than that among recent new hires. This is because applicants with targeted disabilities are referred and selected at lower rates than other applicants (see Table S.1). When we compare the available characteristics of the applicants—education level, career experience, and current federal employment status—applicants with and without disabilities appear similarly qualified.

Table S.1
Percentage Referred, Selected (Given Referral), and Overall Percentage Selected for Fiscal Year 2015 DoD Applications, by Disability Status

Disability Status	Referred (%)	Selected (Referred Applications) (%)	Selected (All Applications) (%)
No disability	30.0	9.5	2.8
PWTD	27.2	6.5	1.8
Individuals with disabilities	28.4	6.4	1.8
Veteran with 30% disability or higher	79.9	9.0	7.2

NOTE: All differences in rates between disability groups and applicants without disabilities are statistically significant at the $\alpha = 0.05$ level. The individuals with disabilities group includes both those with targeted disabilities and those with nontargeted disabilities.

We also examined whether job characteristics, such as minimum salary, grade, and location, are associated with whether a job posting received an applicant with a disability. We found few strong relationships between job characteristics and garnering an applicant with a disability, suggesting that application behaviors may be similar across groups. However, this conclusion is tenuous, given the limitations of the data.[4]

Qualitative Assessment of Representation Gaps Among PWTD in the DoD Civilian Workforce: DoD Interviews

To further assess possible reasons for representation gaps among PWTD in the DoD civilian workforce, we conducted 22 semistructured interviews with DoD personnel, including EEO and diversity staff, disability program managers, and hiring managers and supervisors. These interviews included representatives from OSD, each of the military services, and a number of DoD agencies (e.g., Army Air Force Exchange Service, Defense Logistics Agency, Defense Commissary Agency, Washington Headquarters Service).

When asked what contributed to low representation rates among PWTD, more than half of interviewees named implicit bias (i.e., unconscious prejudice against PWTD), making it the most frequently mentioned potential barrier to representation for PWTD. Some interviewees also perceived that employees with targeted disabilities, particularly those who are disabled veterans, are reticent to disclose their disability status. Other barriers included processing time for accommodation requests and lack of support for accessibility technologies and equipment.

Interviewees noted two primary outreach and recruitment strategies for PWTD, the OPM Chief Human Capital Officers' Shared List of People with Disabilities (OPM Shared List) and Workforce Recruitment Program (WRP), and offered suggestions for improving or better leveraging these. Other outreach and recruitment strategies they mentioned were con-

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[4] Although these data provide some information on which applications met minimum qualifications, the data-capture process excludes certain applications, such as those with no demographic information and those that were not referred to the application process. In addition, these data are at the application level (not the applicant level), and there is currently no variable available to identify applicants who apply to more than one position. It is also not possible to identify which applications are for full-time permanent positions.

necting with disability advocacy groups and participating in relevant job fairs and in programs for students with disabilities at colleges and universities.

Interviewees identified the special authority of Schedule A to hire persons with disabilities directly and noncompetitively into federal government positions as a useful tool for employing PWTD.[5] However, interviewees also discussed challenges in using it, including lack of awareness and understanding of proper use among hiring managers, confusion regarding reporting of disability status for Schedule A hires, and inconsistencies in organizational processes for including Schedule A candidates in the job evaluation process.

Interviewees also noted that PWTD have limited opportunities in MCOs and outside entry-level positions, as well as limited training or other career development opportunities because of the lack of reasonable accommodations. They noted that reasonable accommodations and a welcoming and inclusive work environment could boost retention of employees with targeted disabilities.

Qualitative Assessment of Representation Gaps Among PWTD in the DoD Civilian Workforce: Interviews with University Representatives

We also interviewed representatives from universities designed for individuals with disabilities or that include large numbers of students with disabilities and support them with inclusive environments and robust programs. These interviews aimed to provide input regarding how both federal and private organizations engage with students at these schools in terms of employment opportunities. Interviewees included representatives from Gallaudet University; National Technical Institute for the Deaf (NTID); Rochester Institute of Technology; University of California, Berkeley; and University of Colorado, Colorado Springs, as well as DoD's Recruitment Assistance Division (RAD), which oversees the Student Training and Academic Recruitment (STAR) Program, identified by NTID as an effective DoD outreach practice. Most of these interviewees had experience interacting with DoD as an employer of persons with disabilities.

Overarching potential barriers to employment of PWTD identified in these interviews included a lack of confidence or anxiety among students with disabilities about obtaining employment; nondisclosure of disability status by students during the recruitment process, which can result in a lack of accommodations during an interview; and organizational cultures that are not welcoming to PWTD. DoD-specific potential barriers included a lack of awareness of DoD civilian opportunities and challenges associated with students obtaining medication documentation for Schedule A eligibility while living away from their home doctor.

Interviewees offered potential strategies to overcome these barriers and more effectively recruit and hire students at their universities, including more on-campus presence beyond job fairs to increase face-to-face interactions with students with disabilities. University representatives also suggested greater leveraging of successful programs like WRP, including increasing the number of positions located outside of the Washington, D.C., area and more opportunities for permanent positions rather than just internships. Other strategies included recognizing that talent in students with disabilities may be demonstrated in nontraditional ways and retaining

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5   Schedule A is a federal hiring authority for people with disabilities that serves as an exception to the traditional hiring process; it does not require them to compete for a specified job position.

employees with disabilities by ensuring welcoming and inclusive environments. Interviewees noted two promising DoD practices: the STAR program and Naval Air Systems Command's outreach initiative with Gallaudet students. These practices were discussed both by those who participated in and by those who were aware of, but not participants in, these practices.

Review of the Content and Design of the Survey of PWTD

We sought to examine attitudes toward and perceptions of PWTD in the DoD civilian workforce, obtain recent information regarding employee knowledge of disability-relevant employment policies and practices in DoD, and assess perceptions and experiences relevant to employment aspects addressed in DoD's operational plan.[6] To do so, we worked with ODMEO to design an online survey of DoD hiring managers and supervisors. Because we administered this survey after implementation of the August 2016 federally targeted disability categories (OPM, 2016a), we were able to consider these new categories in the survey.[7] Altogether, we sent the survey to 33,556 email addresses and 6,532 individuals completed the informed consent and entered the survey.

The design of the survey provided a general framework for the topics considered in this report. In the first section, we assessed perceptions of agency and office characteristics relevant to the employment of PWTD. In the second section, we assessed stereotypes, prejudice, and discrimination toward PWTD in participants' components or agencies. In the third section, we measured participant opinions on the presence of and response to employment barriers for PWTD. Finally, we obtained demographic information of participants.

Results of the Survey of PWTD

In the next sections, we review survey results regarding organizational incivility toward PWTD, perceptions of PWTD as workers, knowledge of employment goals for PWTD, and views of barriers to employment of PWTD. Notably, we did not add weights to the data, because a complete sample frame containing the characteristics of all federal employees who have supervisory, managerial, or hiring-related responsibilities was not available.

Organizational Incivility Toward PWTD

The survey responses suggest that harmful behaviors toward PWTD are rare and that perceptions of PWTD in DoD are broadly positive. Figure S.1 displays responses to the four survey items measuring different aspects of organizational incivility. The colored sections of each bar correspond to the percentage of employees who indicated each response. The responses are split into positive and negative groupings (divided by the vertical line at zero), and the adja-

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[6]   To improve the employment of persons with disabilities, DoD developed an operational plan addressing four aspects of employment: measurable goals, accountability, recruitment and hiring, and retention (DoD, 2011). The operational plan incorporates avenues for addressing employee perceptions regarding the employment of persons with disabilities, employee knowledge of disability-relevant employment policies and practices, and agency or component utilization of disability-relevant services and programs. DoD's operational plan is designed, in part, to address attitudes, perceptions, and knowledge that may influence representation of persons with disabilities.

[7]   This change primarily involved a reduction in the specificity of disabilities within targeted disability categories.

Figure S.1
Survey Responses Among Hiring Managers and Supervisors in DoD on Incivility Toward PWTD
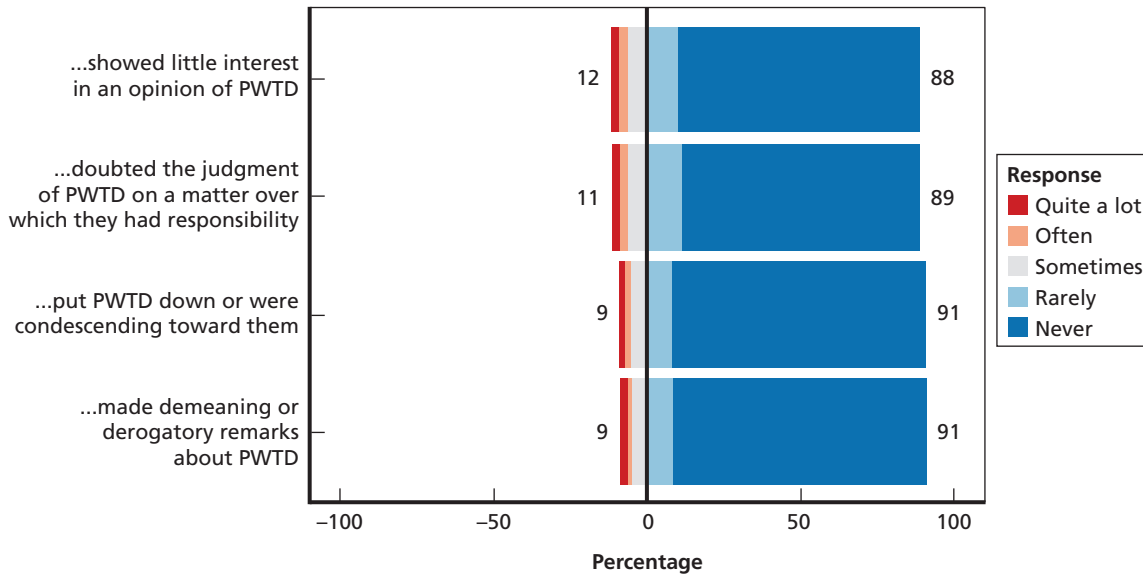
SOURCE: Authors' calculations from survey data.
NOTE: Percentages reflect a total of 2,039 respondents who answered all four incivility questions.
RAND *RR2297-S.1*

cent numbers indicate the total percentage of positive or negative responses. Between 88 and 91 percent of respondents indicated that these uncivil behaviors toward PWTD "rarely" or "never" occur, and 72 percent answered "never" on all four items. These results did not significantly differ by component, agency, or occupation.

Perceptions of PWTD as Workers

We measured perceptions of PWTD along two main dimensions: *warmth* (i.e., liking) and *competence* (i.e., respecting). These dimensions appear to serve as the foundation for individuals' perceptions of different groups. Survey respondents tended to provide ratings that suggested employees perceive PWTD as moderately to extremely warm and competent, with approximately 66 to 81 percent providing responses that suggested positive perceptions of PWTD. However, warmth perceptions of PWTD are much more strongly positive than competence perceptions.

Knowledge of Federal Employment Goals for PWTD

Reaching a representation level of 2 percent is perhaps the most fundamental and visible employment goal for PWTD, so we asked respondents to enter the goal as a percentage. Relatively few respondents provided the correct answer, and responses varied widely. Only 17 percent of respondents to this question correctly indicated that the employment goal for PWTD was 2 percent. Knowledge of this goal is also localized among employees in certain roles, particularly in human resources management.

Respondent Views of Barriers to Employment and Remedies

We also asked respondents about their views of barriers to employment for PWTD, as well as their assessments of how effective different policies might be in reducing barriers. The greatest perceived barriers involved either a lack of information (e.g., information on how to enhance employment of PWTD) or characteristics of PWTD (e.g., lack of requisite skills). By contrast, attitudinal barriers, such as reluctance to hire PWTD or negative attitudes, were perceived as moderate to extreme barriers by a smaller percentage of respondents. For example, 23 percent of respondents indicated that negative attitudes and stereotypes toward PWTD were at least a moderate barrier, while 77 percent thought that these problems were either minimal or not a barrier. Employee views of the effectiveness of potential solutions closely mirror their assessments of the barriers. The top solutions to promote employment of PWTD involved directly helping PWTD (e.g., skills training and mentoring), providing additional information (e.g., training on accommodation resources), and visible top management commitment.

Conclusions and Recommendations

Our assessments suggest several potential avenues that DoD may pursue to continue to assess and improve representation of PWTD in the DoD civilian workforce. Most of these involve specific areas DoD may address, such as improving outreach and recruiting, promoting education and accountability, and collecting better data. The final avenue we address serves as an overarching recommendation regarding DoD efforts, namely performing evaluation. We include this recommendation because it is not yet clear what policies and actions will be most effective, so DoD should consider options in a systematic way.

Use Targeted Outreach to Increase Awareness of DoD Civilian Opportunities for PWTD

Our interviews and analyses of job applicant data suggest that DoD can address low representation of PWTD in its civilian workforce through targeted outreach to increase awareness of DoD civilian opportunities for such persons. For example, representation of PWTD in the DoD applicant pool is probably lower than the federal representation goal of 2 percent, and interviewees noted that students may not be aware of DoD civilian employment opportunities. Therefore, DoD should seek to increase its presence at universities that are designed for students with disabilities or connect with student disability programs at universities with large populations of such students. As part of its campus outreach, DoD should consider expanding the STAR program at more universities designed for students with disabilities. DoD can also encourage more of its organizations to participate in site-visit events for students with disabilities.

More Effectively Leverage Vetted Talent Pools of Potential Job Candidates with Targeted Disabilities

Interviewees also highlighted promising avenues for better leveraging talent pools. Beyond campus presence and outreach, DoD can work to more effectively leverage vetted talent pools of potential job candidates with targeted disabilities. The WRP provides an opportunity for students with disabilities to learn about DoD careers, and it promotes interactions among DoD employees and individuals with disabilities. DoD should consider ways to leverage the WRP database more regularly for permanent positions. The OPM Shared List represents another

resource for vetted Schedule A–eligible job candidates and includes a broader range of individuals beyond students and recent graduates, who are the focus of the WRP. DoD should explore options to increase the use and effectiveness of the OPM Shared List.

Better Educate Employers and Applicants About the Hiring Process for PWTD

During interviews, individuals reported confusion regarding disability status disclosure requirements for Schedule A hires and suggested that this may be resulting in underreporting of PWTD in the workforce. Survey results further suggest that DoD hiring managers and supervisors have limited knowledge and information regarding employment of PWTD, and these were believed to be some of the strongest barriers to employment of PWTD. To combat this, DoD should better inform managers of the SF-256 requirement for participation in the disability tracking program for Schedule A hires. Interview findings also revealed confusion and inconsistency across DoD agencies related to Schedule A candidates and the Request for Personnel Action (RPA) process when hiring managers have a position to fill. DoD should consider standardizing the RPA process to ensure that qualified Schedule A candidates are automatically considered for a position.

Survey responses further indicated that better education regarding policies, procedures, and resources could improve representation of PWTD in the DoD workforce. DoD may increase leadership and employee awareness of DoD disability policies, programs, and resources by incorporating additional information regarding these elements into current training provided to employees. Our survey results suggest that these topics should be addressed at least annually, particularly among GS-11 to GS-15 employees.

Inform Supervisors and Managers About Disability Representation Goals and Hold Them Accountable for Meeting Those Goals

The views of the hiring managers and supervisors that we surveyed suggest that goal communication and leadership accountability are important in improving representation of PWTD in DoD. To be able to address disability representation goals, supervisors and managers must know what these goals are. Going forward, DoD should modify the information it provides to leadership regarding goals for disability representation. It should better educate those in leadership positions—including hiring managers and supervisors—on the goals for representation of PWTD and those with other disabilities in the federal government.

Knowing the goals does not ensure that leadership will know how to meet them. DoD should thus modify outreach and education on hiring processes and examine the utility of consistently providing disability awareness and etiquette training.

Address Targeted Disability Disclosure, Particularly Among Veterans

Our analyses of workforce composition showed that, because of high numbers of veterans with disabilities in DoD, levels of representation for all persons with disabilities—beyond those with targeted disabilities—meet or exceed representation levels in the non-DoD federal workforce. Furthermore, our information on veteran disability status suggests that veterans may underreport targeted disabilities, which would be problematic in DoD's efforts to measure and address targeted disability representation in its civilian workforce. Accurate information regarding targeted disability representation guides policy considerations. Therefore, DoD should evaluate whether employees and supervisors understand targeted disability disclosure processes. In

addition, DoD should encourage employees to report targeted disabilities by highlighting the utility of this information for the department.

Increase Understanding of the U.S. Population with Targeted Disabilities

The most significant limitation to understanding barriers to federal employment for PWTD is the lack of comparable, systematic knowledge of the characteristics of PWTD in the U.S. labor force. For example, DoD recruiters seeking to increase the number of applicants with targeted disabilities have no knowledge of where PWTD are likely to live, whether they are actively seeking employment, their desired occupations, or their relevant education and work experience. This lack of information limits the effectiveness of DoD efforts to attract and recruit PWTD. A cost-effective way to fill this gap would be to increase overlap in the disability surveys within DoD and the nationally representative surveys conducted by other government agencies, such as the U.S. Census Bureau or the U.S. Bureau of Labor Statistics. Alternatively, DoD could commission its own nationally representative survey to better understand the U.S. population with targeted disabilities.

Evaluate DoD Efforts to Promote Employment of PWTD

When applying a new effort or modifying current efforts, DoD should systematically evaluate these efforts. To do so, the office implementing each effort will need to identify the core components of the effort, such as resources, activities, outputs, and outcomes, and that office should also identify the concepts that should be measured (Helmus et al., 2017). This office will then need to evaluate the utility of current measures and identify whether new measures might better capture these constructs (Savitz, Matthews, and Weilant, 2017).

Acknowledgments

Abbreviations

ACS	American Community Survey
ADA	Americans with Disabilities Act
AFD	applicant flow data
BRFSS	Behavioral Risk Factor Surveillance System
CAP	Computer/Electronic Accommodations Program
CLF	civilian labor force
CPS	Current Population Survey
DoD	U.S. Department of Defense
EEO	equal employment opportunity
EEOC	U.S. Equal Employment Opportunity Commission
FedSEP	Federal Sector Equal Employment Opportunity Portal
FY	fiscal year
GS	General Schedule
ICF	International Classification of Functioning, Disability and Health
LEAD	Leadership for the Employment of Americans with Disabilities
MCO	mission-critical occupation
MD	Management Directive
NAVAIR	U.S. Navy Naval Air Systems Command
NHANES	National Health and Nutrition Examination Survey
NTID	National Technical Institute for the Deaf
ODMEO	Office of Diversity Management and Equal Opportunity
OPM	U.S. Office of Personnel Management

OSD	Office of the Secretary of Defense
PWTD	persons with targeted disabilities
RAD	Recruitment Assistance Division
RPA	Request for Personnel Action
SES	Senior Executive Service
SIPP	Survey of Income and Program Participation
STAR	Student Training and Academic Recruitment
WHO	World Health Organization
WRP	Workforce Recruitment Program

Introduction

Federal policy defines *a person with a disability* as one who "(1) has a physical impairment or mental impairment (psychiatric disability) that substantially limits one or more of such person's major life activities; (2) has a record of such impairment; or (3) is regarded as having such an impairment" (U.S. Office of Personnel Management [OPM], 2010; OPM, 2016a; OPM, 2016b).[1] The federal workforce has a 2-percent representation goal for the employment of persons with specific disabilities or health conditions, known as *targeted disabilities*. Targeted disabilities include developmental disabilities, deafness, blindness, missing extremities, partial paralysis, complete paralysis, epilepsy, intellectual disabilities, psychiatric disabilities, and dwarfism (OPM, 2010; OPM, 2016a; OPM, 2016b).[2] The 2-percent goal for persons with targeted disabilities (PWTD) was established as part of the Leadership for the Employment of Americans with Disabilities (LEAD) initiative (U.S. Equal Employment Opportunity Commission [EEOC], 2008b). There was no available information on why the LEAD initiative chose a 2-percent goal.[3] If 2 percent of the relevant U.S. population does not have these targeted disabilities, agencies will have difficulty meeting this goal. Within this report, we focus our analyses on the representation of PWTD in the U.S. Department of Defense (DoD).

Overall, DoD has not in recent years met the federal goal for employment of PWTD in its civilian workforce (OPM, 2014a). To better understand the representation of PWTD in the DoD civilian workforce and how to improve that representation, the Office of the Secretary of Defense (OSD) Office of Diversity Management and Equal Opportunity (ODMEO) asked the RAND Corporation to examine contributors to the underrepresentation of PWTD and provide recommendations based on these analyses.

Study Tasks and Analytical Approach

Our work encompassed several tasks, including

- assessing trends in DoD employment of PWTD over time and across DoD components

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[1] See also the Americans with Disabilities Act Amendment of 2008 (Pub. L. 110-325, 2008).

[2] In January 2017, the U.S. Equal Employment Opportunity Commission (EEOC) also established a 12-percent representation goal for persons with disabilities (EEOC, 2017). This representation goal did not apply to the personnel data in this report, which were collected before January 2017, and this goal was implemented after all interviews were conducted for this report.

[3] This federal goal may have been based on or influenced by the U.S. Department of Defense (DoD) goal of 2 percent for PWTD that was established in 1987 (DoD, 2014).

- comparing trends in the employment of PWTD among DoD and non-DoD components
- identifying and assessing practices for recruiting PWTD
- gathering information from DoD hiring managers regarding employment of PWTD
- surveying a sample of hiring managers or supervisors regarding employment of PWTD.

We gathered information from different sources and conducted several reviews and analyses. Using guidance from the EEOC and OPM data on civilian employees across the federal government, we conducted employment barrier analyses for PWTD within DoD. We also considered trends in DoD applicant and application data from 2012 to 2014 for the USAJobs website, linking this information to corresponding job announcements. We analyzed USA Staffing applicant flow data (AFD) for fiscal year (FY) 2014. To identify and assess current practices for recruiting civilians with targeted disabilities, we reviewed federal laws and initiatives for boosting employment of PWTD. We also interviewed representatives from colleges and universities, DoD and its components, and other federal agencies. Finally, we surveyed DoD hiring managers and supervisors on perceptions of employees with targeted disabilities, knowledge of policies relevant to the employment of PWTD, and perceptions regarding barriers to employment of PWTD.[4]

Organization of This Report

The remaining chapters in this report provide additional information, our analyses, and our recommendations. Chapter Two reviews relevant aspects of how disabilities are conceptualized and measured. Chapter Three describes analyses recommended by the EEOC for assessing barriers to employment in the federal workforce. Chapter Four describes our analyses of trends in workforce representation of PWTD in DoD and other federal agencies. Chapter Five explores how labor-force characteristics within DoD might account for levels of representation among PWTD in its workforce. Chapter Six examines trends in applicants and applications to DoD. Chapter Seven presents information from interviews with DoD hiring managers and supervisors, and Chapter Eight describes information from interviews with university representatives. Chapter Nine describes the content of a survey addressing employment of PWTD that we administered to hiring managers and supervisors in DoD, and Chapter Ten presents results from this survey. Finally, Chapter Eleven provides several avenues by which DoD may promote representation of PWTD in its workforce.

Several online appendixes complement our research. Appendix A describes legal requirements and initiatives regarding employees with disabilities in the federal workforce and in DoD specifically. Appendix B summarizes relevant national data sets with information on persons with disabilities. Appendix C provides example workforce data tables that have been used by the EEOC. Appendix D describes additional analyses that we conducted on representation of PWTD in DoD, drawing from guidance provided by the EEOC. Appendix E provides information on representation of PWTD among full-time, nonseasonal, permanent employees by DoD component and year. Appendix F provides information for several different occupa-

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[4] This project was reviewed and approved by the RAND Human Subjects Protection Committee and DoD's Research Regulatory Oversight Office. For the online survey, DoD provided the following survey report control symbol: DD-P&R(OT)2614.

tions for DoD and its components. Appendix G provides additional information regarding the quantitative analyses we conducted, addressing characteristics of the decomposition method. Appendix H lists the questions we used in our DoD interviews. Appendixes I and J provide information on the survey that we administered to hiring managers and supervisors in DoD and present detailed survey outcomes, respectively.

Definition and Data on the Employment of Persons with Disabilities in the United States

Various federal policies and programs promote the employment of persons with disabilities in the public and private sectors (see Appendix A). Researchers have conducted multiple studies to examine the impact of these policies, drawing from diverse data sources on participants' disability characteristics. In this chapter, we review data on the employment of persons with disabilities in the United States and consider the limitations and implications of such data. We begin with a review of how disability is defined by different organizations. Next, we briefly describe national data sets used to identify individuals with disabilities (see Appendix B for additional information on national data sets). After that, we compare findings of these different data sets. This information provides a context and framework that may allow readers to better understand our subsequent analyses, including how a given definition may influence estimates of persons with disabilities in the workforce.

Defining Disability

In the United States, multiple national household surveys collect information on persons with disabilities. Some researchers have characterized these various data-collection efforts as "fragmented and sporadic" (Stapleton et al., 2009, p. 1). These surveys were created by different agencies, tend to have different populations of interest, and often ask different questions to identify individuals with disabilities (Barnow, 2008; Employment and Disability Institute, 2013; Livermore et al., 2011; Maag and Wittenburg, 2003).

The definitions that particular organizations or researchers use can influence the questions selected to estimate disability characteristics, which subsequently influence the obtained results (Weathers, 2009). Notably, a single, universally agreed-upon definition of disability does not exist (Burkhauser, Houtenville, and Wittenburg, 2003; Jette and Badley, 2000; Stapleton et al., 2009).

Two conceptual frameworks that often guide research definitions of disability are the International Classification of Functioning, Disability and Health (ICF), developed by the World Health Organization (WHO, 2002), and Nagi's disablement model (Nagi, 1991). Both definitions conceptualize disability as a process involving interactions among several elements, including health condition, personal characteristics, and environmental characteristics.

The ICF addresses two broad concepts of functioning and disability. These concepts are multidimensional and encompass the functioning and structure of the body, one's activities

and participation in activities, and environmental factors (WHO, 2001). Building from these concepts, WHO (2001, p. 213) defines *disability* as follows:

> Disability is an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Nagi's model encompasses the four concepts of active pathology, impairment, functional limitations, and disability. Like the ICF, Nagi emphasizes that disability involves the limitations of an individual in certain contexts. He notes the following:

> Disability refers to social rather than to organismic functioning. It is an inability or limitation in performing socially defined roles and tasks expected of an individual within a sociocultural and physical environment. These roles and tasks are organized in spheres of life activities such as those of the family or other interpersonal relations; work, employment, and other economic pursuits; and education, recreation, and self-care. Not all impairments or functional limitations precipitate disability, and similar patterns of disability may result from different types of impairments and limitations in function (Nagi, 1991, p. 315).

To synthesize differing definitions, researchers have proposed the use of four concentric circles to classify individuals with disabilities (Barnow, 2008; Burkhauser, Houtenville, and Wittenburg, 2003). As shown in Figure 2.1, the largest circle encompasses the entire working-age population. This includes all working-age adults, regardless of whether they have impairments. The next circle encompasses individuals within the total working-age population with any impairments (e.g., visual, hearing, speech, intellectual, absence of limbs/kidney/breast/tips of fingers, complete or partial paralysis, cerebral palsy, deformities, spina bifida, flatfeet, clubfoot, cleft palate). The third circle includes those with impairments whose daily activities are limited in some way. The fourth circle encompasses those with impairments and limitations that are severe and long-term.[1] As described later, federal definitions of disability focus on specific impairments rather than functional limitations associated with impairments. Therefore, those with targeted disabilities fall within the second-largest circle in Figure 2.1.

U.S. Code, Title 42, Section 12102, defines *persons with disabilities* as individuals

> (A) [who have] a physical or mental impairment that substantially limits one or more major life activities of such individual[s] (including caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working),
>
> (B) [who have] a record of such impairment, or
>
> (C) who are regarded as having this impairment (such as if the individual establishes that he or she has been subjected to an action prohibited under this chapter because of an actual or perceived physical or mental impairment, whether or not the impairment limits or is perceived to limit a major life activity).

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[1] Notably, the concepts displayed in these circles do not always follow a progression from impairment to activity limitation and so forth. For example, because of one's environment, one may have an activity limitation without an impairment (Weathers, 2009).

Figure 2.1
Conceptualization of the Population of Persons with Disabilities
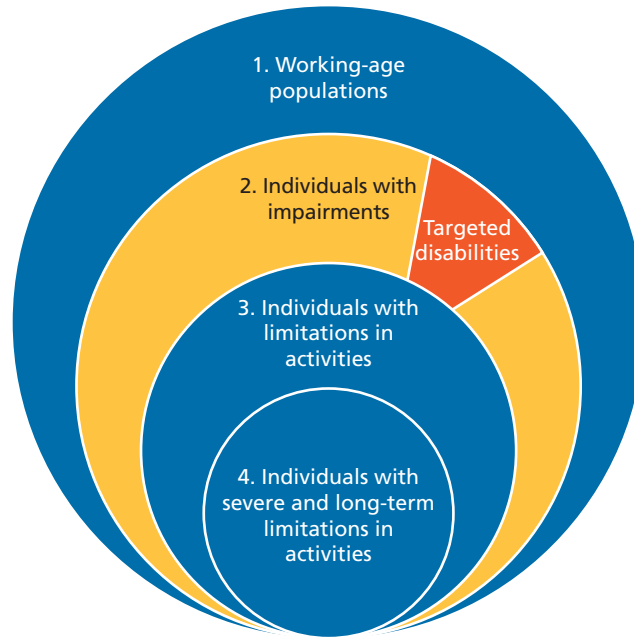
SOURCE: Modified from Burkhauser, Houtenville, and Wittenburg, 2003.
RAND *RR2279-2.1*

This definition is used in the Rehabilitation Act of 1973 and is presented in OPM's form for self-identification of disability among federal employees (SF-256) (OPM, 2010; OPM, 2016a; OPM, 2016b). Given this definition, individuals with impairments (circle 2 in Figure 2.1) appear to be of greatest interest for the employment of individuals with disabilities in the federal government. This is also the population considered to be covered under the Americans with Disabilities Act (ADA). Within this circle, the federal government and DoD have targeted a specific subset of impairments in employment considerations (OPM, 2010; OPM, 2016a; OPM, 2016b).

The federal government and DoD seek to have 2 percent of their civilian labor force (CLF) composed of persons with this particular subset of impairments.[2] In August 2016, OPM modified the impairments of interest to encompass a broader set of impairments. Personnel data and interviews described in this report address a period when the federal government considered the previous impairments of interest. Survey analyses considered the impairments targeted in August 2016 and later. Therefore, Table 2.1 lists both the federally targeted disabilities prior to August 2016 and those targeted in August 2016 and later.

The above definitions of disability differ from those used in many national data sets by emphasizing specific impairments rather than functional limitations. Some impairments may not substantially limit an activity in all environments. For example, someone with well-

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[2] In January 2017, the EEOC implemented a 12-percent federal civilian workforce representation goal for persons with disabilities. This goal was implemented toward the end of data collection and analysis for this project and additional analyses and data collection addressing this new goal were outside the scope of this project.

controlled epilepsy may not have substantial limits to many life activities. Most national surveys focus on functional limitations associated with disability rather than on the specific impairments.

Table 2.1
Federally Targeted Disabilities

Prior to August 2016	August 2016 to Present
Total deafness in both ears (with or without understandable speech)	Deafness or serious difficulty hearing, benefiting from, for example, American Sign Language, Communication Access Real-Time Translation (CART), hearing aids, a cochlear implant, and/or other supports
Blindness (no vision beyond light perception or inability to read ordinary-size print that is not correctable by glasses)	Blind or serious difficulty seeing even when wearing glasses
Missing certain extremities (missing one arm/leg, missing both hands/arms, missing both feet/legs, missing one hand/arm and one foot/leg, missing one hand/arm and both feet/legs, missing both hands/arms and one foot/leg, missing both hands/arms and both feet/legs)	Missing extremities (arm, leg, hand, and/or foot)
Partial paralysis of certain body parts (because of brain/nerve/muscle impairment, including palsy/cerebral palsy; some loss of ability to move or use a part of the body, including both hands; any part of both arms or legs; one side of body, including one arm and one leg; and/or three or more major body parts)	Partial or complete paralysis (any cause)
Complete paralysis of certain body parts (because of brain/nerve/muscle impairment, including palsy/cerebral palsy; complete loss of ability to move or use part of body, including both hands; one or both arms/legs; lower half of body; one side of body, including one arm and one leg; and/or three or more major body parts)	Partial or complete paralysis (any cause)
Epilepsy	Epilepsy or other seizure disorder
Severe intellectual disability	Intellectual disability
Psychiatric disability	Psychiatric disability[a]
Dwarfism	Dwarfism
N/A	Developmental disability (for example, autism spectrum disorder)
N/A	Traumatic brain injury
N/A	Significant mobility impairment, benefiting from the utilization of a wheelchair, scooter, walker, leg brace(s), and/or other supports
N/A	Significant disfigurement (for example, disfigurements caused by burns, wounds, accidents, or congenital disorders)

SOURCE: Information in the first column is from OPM, 2010. Information in the second column is from OPM, 2016b.

NOTE: N/A = not applicable.

[a] Formatting changes were made to the August 2016 version of the SF-256 and are contained within the October 2016 version of this form (OPM, 2016a; OPM, 2016b). The description of psychiatric disorders also changed from "psychiatric disability" to "Significant Psychiatric Disorder, for example, bipolar disorder, schizophrenia, [posttraumatic stress disorder], or major depression." Otherwise, the targeted disabilities listed within the August 2016 version of the SF-256 remained unchanged from August to October 2016.

Nationally Representative Data on Targeted Disabilities

No nationally representative data-collection effort has the precise information that permits identification of the prevalence of the federal government's targeted disabilities in the total U.S. population or the CLF each year.[3] That is, we cannot determine whether PWTD are overrepresented or underrepresented in the federal civilian workforce relative to such persons in the total population and CLF. (Appendix B provides information on 12 data sets most relevant for estimating disability prevalence and characteristics in the current U.S. population.[4]) To obtain such information, the federal government could commission a nationally representative survey of those in the CLF, asking questions regarding specific disabilities and disability categories in federal employment. It could also include disability-relevant questions, such as those contained in the American Community Survey (ACS) and in federal form SF-256 for self-identification of disability. Notably, the U.S. Census Bureau holds responsibility for conducting both the ACS and the decennial census. Both provide estimates of the characteristics of the CLF (see U.S. Census Bureau, 2008). However, the census is conducted every ten years, whereas the ACS is conducted annually. Therefore, the ACS provides estimates of the CLF that can be compared with annual workforce data.

To compare the characteristics of the federal labor force and the CLF, the EEOC used information from the decennial census (EEOC, 2013). Because the decennial census has not collected information on disabilities since 2000, the U.S. Census Bureau now recommends use of the ACS to estimate disability prevalence (U.S. Census Bureau, 2014). Yet neither previous censuses nor the ACS contain information on the federal government's targeted disabilities.

Descriptive Data on Employment of Persons with Disabilities

Not surprisingly, given differences in question wording and data-collection methods, estimates of disability prevalence and employment vary by source. Table 2.2 lists disability estimates from the ACS (Erickson, von Schrader, and Lee, 2012), Current Population Survey (CPS; Nazarov and Lee, 2012), Behavioral Risk Factor Surveillance System (BRFSS; Centers for Disease Control and Prevention, 2014), National Health and Nutrition Examination Survey (NHANES), and Survey of Income and Program Participation (SIPP; Brault, 2012).[5] For more information on these surveys, see Appendix B. We report estimates from 2010, the most recent common year for these sources. Disability prevalence estimates from these sources range from 8.3 to 18.4 percent. Employment percentages for those with disabilities also vary.

Across data sets and years, estimates show that those with disabilities are employed at a much lower rate than those without disabilities in the United States (Brault, 2012; Erickson, Lee, and von Schrader, 2014; Kruse and Schur, 2003). This is also true across multiple levels

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[3]   Even where there appear to be overlapping categories of disability, such as deafness or blindness, comparisons of the overall federal workforce to the federal workforce in population surveys—theoretically the same population—show significant differences in prevalence. This suggests that disability information in these data sources is not directly comparable because of differences in data-collection methods.

[4]   For information on approximately 30 additional data sets, see Livermore et al., 2011.

[5]   We focus on these five data sets because they were large, had sufficient information from the overall U.S. labor force, and listed participant location. They also contained recent data that overlapped with employee data we analyzed.

Table 2.2
Disability Prevalence, by Survey

Survey Source and Year	Percentage of Population with Any Disability (21–64 Years of Age)	Percentage of Those with a Disability Who Are Employed (21–64 Years of Age)	Percentage of Those Without a Disability Who Are Employed (21–64 Years of Age)
ACS 2010	10.3	33.9	75.4
BRFSS[a] 2010	18.4	43.6	71.5
CPS 2010	8.3	16.2	75.5
NHANES 2010	11.2	38.2	83.1
SIPP 2010 (2008 panel)	16.5	41.1	79.1

[a] This estimate includes those 18–64 years of age.

of education, age groups, and disability types (Brault, 2012; U.S. Bureau of Labor Statistics, 2014). In other words, though varying from each other, data sources on disability consistently show that U.S. persons with disabilities have lower rates of employment than those without disabilities.

Each of these sources has strengths and limitations. Some provide more information on disability but can only be used for analysis at the national level. Others contain somewhat limited information on disability but allow for analysis at the state or local levels. For this work, we sought both national and state-level data. We also sought data complementary to that used by the EEOC on the CLF (i.e., the decennial census) and data collected annually. We therefore selected the ACS for estimates of disability in the remainder of this report.

Summary

A single, well-accepted definition of disability does not exist. Rather, different organizations use different measures to collect information on the prevalence of disability. The federal government's targeted disabilities further differ from most survey estimates in focusing on specific impairments rather than on functional limitations. Although such national data sets as SIPP and NHANES collect information on specific impairments, the impairments addressed in these surveys do not completely overlap with the targeted disabilities of interest to the federal government. Thus, it is not possible to determine precise estimates of the percentage of the U.S. population that has these disabilities. It is also not possible to determine whether PWTD are overrepresented or underrepresented in the federal civilian workforce.

Each data source has strengths and limitations. They vary in the detail of disability information collected and the extent to which they allow assessment of trends over time or on state and local levels. We believe the ACS is the optimal data source for our work in estimating broad disability prevalence in the United States because it permits state and local estimates; has annual waves of data; and, because it is based on past census questions, is comparable to other EEOC benchmarks. At the same time, like other sources, it does not offer nationally representative data on PWTD.

EEOC-Recommended Self-Assessment Involving Employment of PWTD

The EEOC describes six essential elements that must exist within a model equal employment opportunity (EEO) program. One of these—proactive prevention of discrimination and elimination of barriers to employment—requires federal executive agencies and military departments to conduct self-assessments on the effects of their policies, programs, and procedures for the civilian employment of certain demographic groups, including PWTD.

Federal Guidance on Disability Reporting

Section 501 of the Rehabilitation Act of 1973 requires each department, agency, and instrumentality in the executive branch of the federal government to conduct an annual review of its affirmative action programs for the EEO of persons with disabilities. The EEOC is charged with evaluating and approving these affirmative action programs and their operations. To assist with this, the EEOC uses Management Directive (MD) 715, which provides federal agencies and military departments (excluding uniformed personnel) with standards for their affirmative action programs and establishes annual reporting requirements.

MD-715 outlines six essential elements of a model Rehabilitation Act program. In implementing and maintaining a model program, federal entities should

1. demonstrate commitment to the EEO of persons with disabilities from agency leadership
2. integrate EEO into agency structure, mission, and operations
3. maintain policies and procedures that hold managers, supervisors, and EEO officials accountable for the agency's Rehabilitation Act program
4. proactively prevent discrimination and eliminate barriers to the employment of persons with disabilities in the agency
5. maintain efficient and fair processes for tracking and resolving EEO disputes and complaints
6. comply with EEOC regulations, orders, and instructions (EEOC, 2003).

The EEOC provides 33 bullet points regarding programs, procedures, and strategies that agency Rehabilitation Act programs should employ to achieve these six essential elements. The EEOC also provides a detailed description of the self-assessments that agencies should conduct to monitor their proactive prevention of discrimination and elimination of barriers to

employment (element 4). Information regarding these self-assessments is contained in Part B of MD-715, which we describe below.

MD-715 Part B: Section 501 of the Rehabilitation Act

The EEOC (2003) requires that federal executive agencies and military departments (excluding uniformed personnel) annually review the effects of "all current and proposed policies, practices, procedures and conditions" on the employment of PWTD and other demographic groups. To determine what these effects may be, the EEOC requires that agencies perform a workforce data analysis involving the collection and evaluation of numerical data on employee characteristics (EEOC, 2004).[1] This data analysis is to include workforce "snapshots" that may help determine whether barriers to employment exist within the agencies.

The EEOC (2003) has established several snapshots that agencies should include in their workforce data analysis. For example, for both an agency's permanent and temporary workforce, snapshots should include

- total workforce distribution of employees with disabilities
- representation and distribution of employees with disabilities, by grade
- participation of employees with disabilities in major occupational groups, by grade
- representation of persons with disabilities among applicants.

The analysis should also contain information on representations of employees with disabilities among those who

- received promotions, training opportunities, and performance incentives
- were voluntarily and involuntarily separated.

On the Federal Sector EEO Portal (FedSEP), the EEOC provides workforce data tables for agencies to record and disseminate these snapshots in standard formats. Appendix C provides the EEOC-formatted workforce data tables relevant for the employment of persons with disabilities (EEOC, 2014). The workforce data tables presented in Appendix C give special emphasis to PWTD as defined prior to August 2016.[2]

Agencies must provide numbers and proportions of participation and representation of those without disabilities, those who have not identified their disability status, those with any kind of disability, and those with targeted disabilities. In addition, agencies must provide employee numbers and proportions for each of the targeted disabilities in each of the data tables (i.e., blindness, deafness, missing extremities, partial paralysis, total paralysis, epilepsy, severe intellectual disability, mental illness, and dwarfism).

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[1]   The EEOC also expects agencies to review their processes for reasonable accommodation requests, the extent to which they provide comparable information and data to those with and without disabilities, and trend data on alleged violations of the Rehabilitation Act (EEOC, 2003).

[2]   The implementation of the August 2016 disability categories occurred at a late stage in the RAND study. The study therefore does not include analysis of data with the new categories.

Evaluation of Workforce Data

To determine whether federal agencies have adequate representation and participation of various demographic groups in different grades and occupations, the EEOC requires that agencies compare their participation and representation rates with standard rates for participation and representation. For racial, ethnic, and gender groups, standard or benchmark rates are available through data on the CLF (EEOC, 2004). If such comparisons show that an agency's participation and representation rates are lower than the benchmark population or standard rate, barriers to employment may be present.[3] If there are indicators of barriers to employment of populations of interest in an agency, the agency must conduct more in-depth assessments into possible causes of discrepancies (EEOC, 2014).

There is not a well-accepted technique for evaluating the size, or magnitude, of representation discrepancies. For example, there may be a 0.5-percent representation discrepancy between a group's representation in an agency and the standard or benchmark representation rate for that group. Such variation may be a result of chance or seasonal variation. If an agency were to interpret a 0.5-percent discrepancy as meaningful when it was not, it may devote unnecessary resources to address the discrepancy. At the same time, such a discrepancy could indeed be meaningful but could be dismissed as not so.

Although it encourages consideration of any discrepancy in representation, the EEOC does not provide a standard rule of thumb or set of rules of thumb for agencies to use when comparing representation within their workforces to a benchmark or standard rate of representation. Because agencies vary in workforce structures, sizes, locations, occupations, and other characteristics, it can be challenging to standardize an approach or set of approaches for assessing the magnitude of representation discrepancies. The lack of a standard rule can contribute to confusion among agencies when evaluating their workforce data. It may also lead different reviewers to reach different conclusions on the presence of employment barriers. It was beyond the scope of our work to collect and evaluate all potential rules for evaluating the magnitude of a representation discrepancy. A working group of practitioners, social and behavioral scientists, and representatives from federal agencies may be able to establish more-definitive rules for federal agencies to use when evaluating representation discrepancies.

Rules of Thumb

We next describe possible rules for determining the presence of discrepancies, or representation triggers. These rules are not without fault (for further discussion, see Greenberg, 1979; Peresie, 2009; and Roth, Bobko, and Switzer, 2006). Some may consider the rules to be arbitrary (Gold, 1985). We do not endorse them; rather, we use them as preliminary indicators for readers to consider further. Two of the rules we describe—the 80-percent rule and the two standard deviations rule—are frequently used for specific comparisons within a workforce, such as evaluating adverse impact within an agency (e.g., Kaye, 1983). These rules are not used as frequently to compare the representation of a group within an agency (e.g., DoD) to a standard rate of representation for that group.

In the absence of legislated or widely used rules of thumb for comparisons between an agency's group representation and that group's representation in a larger labor force, we draw

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[3] Whether a discrepancy between an agency's rate and the standard rate is considered sufficiently large to be a trigger depends on an EEOC reviewer's discretion and may vary by reviewer (EEOC, 2014).

from other available rules of thumb for such comparisons, such as those used in adverse impact analyses. Adverse or disparate impact occurs when an employment practice (e.g., selection or promotion) has a disadvantageous effect on members of protected groups, regardless of whether this effect was intended.[4] EEOC-supported rules of thumb for use by federal agencies to evaluate the magnitude of agency representation discrepancies with the standard rate or benchmark population rate would be most helpful for use in this context. As these rules do not exist, we consider rules of thumb used in other contexts. Other rules from the adverse impact analysis literature could be used or new rules could be developed for use in this context (e.g., Biddle and Morris, 2011; Kadane, 1990).

One technique for evaluating discrepancies involves highlighting and addressing any discrepancies in representation rates, without regard to how large or small the discrepancies are. The EEOC loosely follows this "any discrepancy" rule of thumb when evaluating representation discrepancies in federal agencies. Another rule of thumb is the 80-percent rule, under which a selection rate for one group that is less than 80 percent of that of the majority group would indicate a barrier.[5] A third rule involves assessing whether the representation rate for one group is two standard deviations or more below that of a reference group, without consideration of the impact that methodologies and sample sizes may have on this analysis. Notably, a standard deviation provides an estimate of the variability of a distribution, and this estimate is strongly influenced by sample size. We provide additional details regarding this method in the next chapter.

Common Triggers

The EEOC defines *barriers* as policies, practices, and procedures that limit or prevent employment of particular groups, including persons with disabilities. It considers discrepancies between agency and standard rates of participation and representation to be *triggers*, or indicators of possible barriers to employment in agencies, and notes a need for more self-assessments by agencies (EEOC, 2014). Lower representation in the agency workforce than in the comparison rate is one trigger suggesting the presence of barriers. Others include

- low entry–high exit: when a group with a low rate of participation in the workforce enters the workforce at a low rate and exits at a high rate
- glass wall: when a group has low representation in occupations that are tracked for upward mobility (i.e., mission-critical occupations [MCOs])
- blocked pipeline: when a group has a low rate of participation and promotion within MCOs
- glass ceiling: when a group has a low rate of promotion into leadership positions, including from General Schedule (GS)-13 to Senior Executive Service (SES)[6] (EEOC, 2014).

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[4] EEOC Uniform Guidelines outline rules of thumb that can be used to determine whether adverse impact is present.

[5] This rule applied to racial, gender, or ethnic groups and does not mention disability groups (29 CFR §1607.4[d]).

[6] GS-13 positions and above are considered top-level positions, and these are reserved for supervisors, specialists, and those with advanced degrees. The GS system is the largest pay system, covering over 76 percent of full-time, permanent, nonseasonal employees.

Benchmark for PWTD

As previously discussed, the EEOC has noted that "there is no comparable data currently available for individuals with disabilities" (EEOC, 2003). The EEOC therefore does not recommend use of data from the decennial census or complementary data-collection efforts for evaluating agency participation and representation rates involving PWTD.

Rather, the EEOC has recommended that agencies evaluate their participation and representation rates with those of the total federal government and with those of federal agencies with the highest rates of participation of PWTD (EEOC, 2003). These percentages could change annually, making it difficult for agencies to determine which participation and representation rates they should meet. The federal government has also seen the representation of PWTD in its workforce decrease (EEOC, 2008a).

As a result, more recently, the EEOC has compared agency total workforce rates of representation for those with targeted disabilities with the 2-percent goal for this group. The EEOC does not recommend the use of the 2-percent goal to determine whether triggers of concern exist for the inclusion of PWTD within an agency's workforce. Instead, it recommends calculation and comparison of inclusion rates (EEOC, 2014). These inclusion rates are calculated by comparing the number of persons within a subsegment of interest within an agency (i.e., target group) with the number of persons within a larger segment of interest within an agency (i.e., benchmark group). The inclusion rates are calculated both for PWTD and for persons without targeted disabilities. A trigger is present whenever the inclusion rate for the demographic group of interest is smaller than that for the relevant comparison group.

Figure 3.1 shows how inclusion rates may be calculated to assess for the presence of triggers for PWTD in senior official or management positions at an agency. This example indi-

Figure 3.1
Example Calculation of Inclusion Rates

Inclusion rate for PWTD in permanent leadership positions		Inclusion rate for persons without targeted disabilities in permanent leadership positions	
PWTD in permanent workforce, senior official, or management positions: **2 employees**	PWTD in total permanent workforce: **200 employees**	All employees in senior-level positions: **50 employees**	Persons in total permanent workforce: **800 employees**
		Total number of permanent senior officials and managers in workforce – number of PWTD in these positions: 50–2 = 48 employees	Total number of people in workforce – number of PWTD in total workforce: 800–200 = 600 employees
PWTD inclusion rate for permanent workforce leadership positions: **2/200 = 1 percent**		Persons without targeted disabilities inclusion rate for permanent workforce leadership positions: **48/600 = 8 percent**	
Compare inclusion rates to determine presence of trigger: 1-percent inclusion rate for those with targeted disabilities < 8-percent inclusion rate for those without targeted disabilities. A trigger is present.			

SOURCE: This figure reflects information originally presented by the EEOC (2014).
RAND *RR2297-3.1*

cates that a trigger is present because 1 percent of PWTD are in permanent workforce, senior official, or management positions compared with 8 percent of persons without targeted disabilities. In other words, PWTD as a group are less likely to be in senior positions, possibly indicating a glass ceiling.

To reduce the burden on agencies in calculating inclusion rates, the workforce data tables provided by the EEOC on the FedSEP automatically identify whether triggers are present, using workforce numbers entered by the agencies into the workforce tables.

Applicant Flow Information

A lack of available information, particularly on applicants, may be one issue that agencies face when completing the workforce snapshots recommended by the EEOC. Only a small percentage of agencies provide information to the EEOC on applicant characteristics (EEOC, 2014). This may be due, in part, to weaknesses in the available data.

The USAJobs website, maintained by OPM, is the federal government's official online job board for employment information (OPM, undated). The information collected and maintained on those who apply to positions through the website is limited in at least three ways. First, applicants are not required to provide information on their demographic characteristics, including their disability status. Second, identifiers are not available for all applicants, hindering agency ability to establish accurate numbers and proportions of applicants. Specifically, one job position in the federal government could be located in multiple offices and involve multiple grades or series, each of which one applicant may be eligible for. Hence, a single applicant may make multiple applications at different grades or series for a single position. Without unique identifiers for each applicant, an agency cannot accurately tabulate its numbers of applicants and their characteristics for workforce data analysis. Third, OPM can only provide information on applicants to job positions that have been audited (i.e., reviewed by relevant human resources professionals for applicants' eligibility for the positions). Data provided to the agencies on USAJobs applicants may not contain information on all advertised positions from a particular period.[7]

Post-Identification of Triggers

If triggers indicating possible discrepancies between agency and standard rates of participation for a group are present in the available workforce data, the EEOC expects agencies to investigate the root causes of those triggers (EEOC, 2014). For PWTD, the EEOC notes that agencies should consider whether barriers are evident in institutional policies or practices, employee attitudes toward PWTD, and physical accessibility (EEOC, 2014). This investigation may include a review of relevant agency documents and interviews with knowledgeable individuals in the agency.

Summary

Section 501 of the Rehabilitation Act of 1973 establishes that agencies and military departments (excluding uniformed personnel) in the federal government are to conduct an annual

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[7]   Information regarding applicant flow limitations was obtained during a discussion with personnel from OPM on December 4, 2014.

review of their affirmative action programs for persons with disabilities. The EEOC is charged with evaluating and approving these programs and uses MD-715 and corresponding workforce tables to assist federal entities with organizing, disseminating, and evaluating their workforce data. The EEOC gives special focus to the participation and representation rates of individuals with federally targeted disabilities.

To evaluate the adequacy of the participation and representation rates of PWTD in an agency, the EEOC requires that federal agencies assess whether their rates for PWTD are higher or lower than comparison rates. There is no nationally representative data on the specific disabilities of interest to the federal government, so it is not possible to use participation and representation rates of PWTD in the CLF for this comparison. To address this lack of a comparison rate in national data, the LEAD initiative established a 2-percent representation goal for PWTD in each federal agency's total workforce. It remains unclear whether 2 percent of the relevant CLF has the federally targeted disabilities; if it does not, this will hinder an agency's ability to meet this goal. To assess participation and representation in specific segments of a workforce, agencies are to calculate and compare inclusion rates involving those with and without targeted disabilities.

Some of the information that the EEOC wants agencies to provide as part of their self-assessments is difficult to obtain or may be inaccurate. In particular, federal agencies may use data collected from the USAJobs website to evaluate their applicant pools. However, these data have several limitations that make it difficult to ascertain accurate rates of application participation for PWTD.

After an agency evaluates its workforce data, it may discover discrepancies, or triggers, that suggest low participation or underrepresentation of PWTD. If these triggers are present, the EEOC expects the agency to conduct additional analyses to determine whether barriers to employment are present in the agency. These analyses may include assessment of institutional factors, attitudinal elements, or physical barriers in particular locations.

Results of EEOC-Based Barrier Analysis of Targeted Disability Representation in DoD and Its Components

In line with EEOC recommendations for evaluating whether PWTD are adequately represented in the federal workforce, we compare the proportion of PWTD within DoD and its components (i.e., Department of the Air Force, Department of the Army, Department of the Navy, and the Fourth Estate) with the 2-percent federal representation goal for these persons and with the proportion employed in the rest of the federal workforce.[1] In addition to evaluating the proportions of PWTD, we also assess the employment proportions of two other disability-related categories: persons with any disability and veterans with at least a 30-percent disability rating.[2] We focus on full-time, nonseasonal permanent employees, who constitute 85 to 90 percent of both federal and DoD employees and more than 90 percent of employees at GS-9 or higher in these workforces. We present additional analyses in Appendixes D, E, F, and G. All calculations in this chapter involving the federal workforce draw on annual snapshots provided by OPM, and we note statistically significant differences where applicable.[3]

We find that, using the different rules of thumb for evaluating discrepancies, DoD representation of PWTD is lower than both the 2-percent federal representation goal and the level of representation in the non-DoD federal workforce. For all persons with disabilities, however,

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[1]   The Fourth Estate includes the following agencies: Defense Logistics Agency, Defense Contract Management Agency, Defense Commissary Agency, Defense Finance and Accounting Service, Defense Contract Audit Agency, Defense Information Systems Agency, DoD Education Activity, Defense Health Agency, Office of the Inspector General, Defense Threat Reduction Agency, Missile Defense Agency, Defense Human Resources Activity, Pentagon Force Protection Agency, OSD, Washington Headquarters Services, Defense Security Service, Defense Security Cooperation Agency, Defense Media Activity, Joint Staff, National Defense University, Defense Technology Security Administration, Defense Legal Services Agency, Defense Technical Information Center, Defense Acquisition University, Defense POW/Missing Personnel Office, Business Transformation Agency, Defense Microelectronics Activity, American Forces Information Service, Defense Advanced Research Projects Agency, United States Court of Appeals for the Armed Forces, and Office of Economic Adjustment. In addition, our data predate the changes made to federally targeted disabilities in August 2016 (OPM, 2016a). Therefore, we focus on the disabilities of interest to the federal government before the August 2016 change in federally targeted disabilities (OPM, 2010).

[2]   The veteran disability rating provides a numerical assessment of a veteran's disability status. Those with a disability rating of 30 percent or higher are entitled to certain benefits (see Appendix A).

[3]   The fact that our personnel data files contain the entire federal workforce, rather than a sample, raises the question of whether statistical significance is meaningful in this case. Typically, statistically significant results are those that can confidently be distinguished from the expected amount of noise, which arises from sampling error. When data include the entire population of interest, one could argue that the sampling error is zero and statistical significance does not apply. We opt to still use significance as a measure of precision, because we view the administrative files as a "sample" from the broader population that includes the workforce at many other points in time (Cameron and Trivedi, 2005).

we find that the level of representation in DoD meets or exceeds that in the non-DoD federal workforce because of relatively high levels of employment of veterans with disabilities.

Information on veteran disability status indicates that underreporting may present a problem for DoD efforts to measure targeted disability representation. Statistics on targeted disabilities rely on employees to accurately report their disability status, but veterans with disabilities (i.e., veterans with at least a 30-percent disability rating) might not report what type of disability they have to their hiring agency. If some of these veterans with disabilities have a targeted disability, or if similar underreporting exists in the nonveteran population, the true percentage of DoD employees with a targeted disability is higher than current statistics indicate.

We also assess four common triggers that would suggest the presence of barriers: low entry–high exit, glass wall, blocked pipeline, and glass ceiling. We find that each of these triggers may be present in the current workforce data. PWTD are more highly represented among separations than among new hires. They are also hired into lower grades, on average, than those without targeted disabilities. PWTD are underrepresented among higher-promoting occupations, are promoted at lower rates in those occupations, and are underrepresented in higher grades. We provide additional analyses concerning these triggers in Appendix D.

Unfortunately, as discussed earlier, it is not possible to compare the proportion of people with disabilities among DoD civilian employees with the CLF as a whole. Instead, when appropriate, we use the 2-percent federal goal for PWTD as a benchmark while noting that actual representation in the CLF could be higher or lower. For specific subpopulations within a given department, we examine targeted disability representation in these sectors relative to the overall level of representation within broader areas. This is similar to the EEOC-recommended procedures in cases where no CLF metric is available. Still, one disability metric is consistent across data sources: veterans with a 30-percent or higher disability rating. Our comparisons for this disability category therefore include the CLF benchmark with the corresponding representation rates for the government populations.

Representation of PWTD in the Federal Workforce and DoD

Both DoD and the federal government have fallen short of the 2-percent representation goal for employment of PWTD in recent years (Figure 4.1). While employment of such persons has grown modestly in the federal government outside DoD, employment in DoD continues to lag. In 2013, DoD employment of PWTD was 0.7 percent, while that in the federal government outside DoD was 1.2 percent.

Employment of PWTD varies within DoD (Figure 4.2). Representation of PWTD among civilian employees of the services has been between 0.5 percent and 0.7 percent in recent years, while that of the Fourth Estate has been 1.2 percent to 1.3 percent. Across each of the services and the Fourth Estate, there has been little long-term growth in the employment of PWTD. Differences between each of the services and the non-DoD federal civilian workforce in representation of PWTD are statistically significant, as are the differences between each of the services and the Fourth Estate.

Fourth Estate agencies vary among themselves in representation of PWTD (Figure 4.3). Among the three largest such agencies, the Defense Finance and Accounting Service has been the closest to the 2-percent goal in recent years. The Defense Logistics Agency also has had

Figure 4.1
Percentages of Federal Civilians with Targeted Disabilities Compared with the 2-Percent Federal Representation Goal
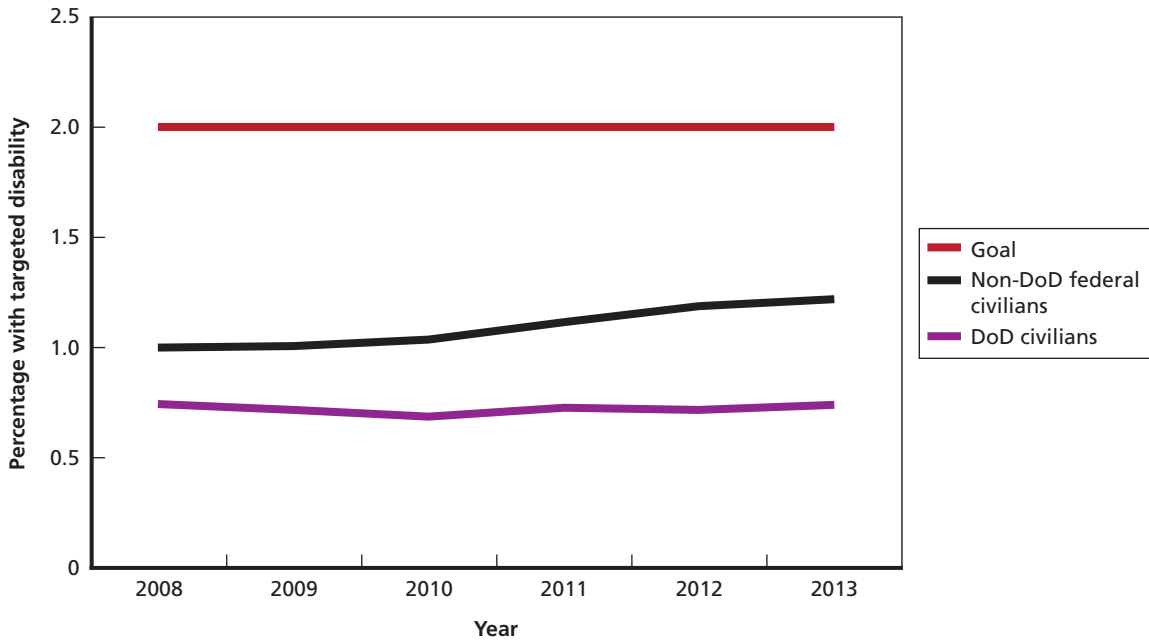
SOURCE: Authors' calculations from OPM federal workforce data.

RAND *RR2279-4.1*

Figure 4.2
Percentages of Civilians with Targeted Disabilities, by DoD Component
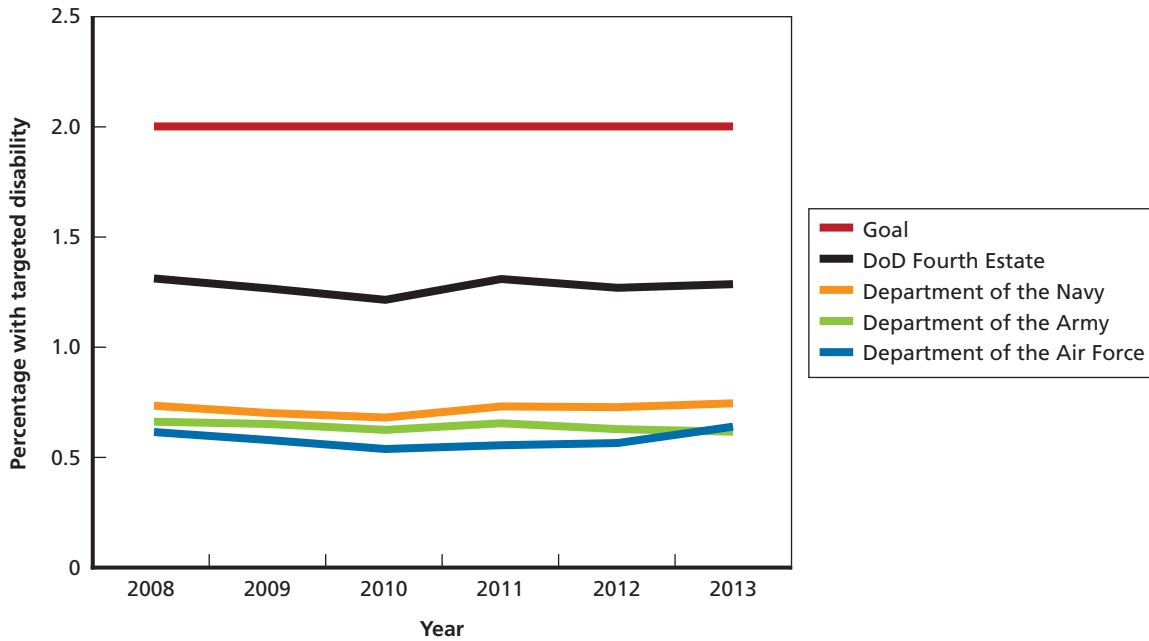
SOURCE: Authors' calculations from OPM federal workforce data.

RAND *RR2279-4.2*

Figure 4.3
Percentages of Civilians with Targeted Disabilities in the Three Largest DoD Fourth Estate Agencies
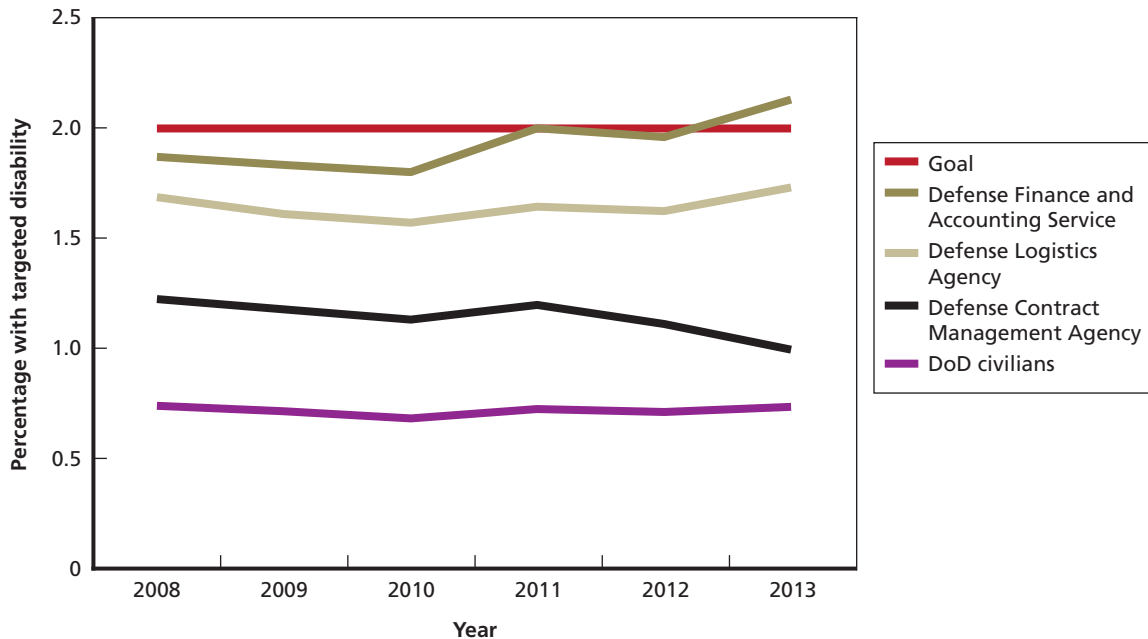
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.3*

higher levels of representation of PWTD than other federal agencies in recent years, while the Defense Contract Management Agency has had lower levels than other Fourth Estate agencies.

Comparing Representation with Possible Targets

As described in Chapter Three, there are several possible standards of comparison by which we can evaluate DoD representation of those with targeted disabilities. We consider each of these standards of comparison below.

The Any Discrepancy Rule of Thumb and the 80-Percent Rule of Thumb

One possible standard for evaluation is to assess whether there is any discrepancy between the reference group or goal—in this case, the 2-percent standard—and the agency. An alternative standard for evaluation that is not typically applied in this context is whether the agency's rates of representation are at least 80 percent of those of the goal. Because the DoD representation rate of 0.7 percent is below both the target of 2-percent representation and the 80-percent target of 1.6-percent representation, DoD does not pass either standard. This is also true for each of DoD's components, as well as for the rest of the federal civilian workforce (Figure 4.4).

Two Standard Deviations Rule of Thumb

Another evaluation standard that may be used in this new context to assess the adequacy of an agency's representation is whether the agency's rate of representation for the group of interest is within two standard deviations of its representation in the population of interest. Generally,

Figure 4.4
Percentages of Federal Civilians with Targeted Disabilities in 2013 Relative to the Federal 2-Percent Goal and 80 Percent of This Goal
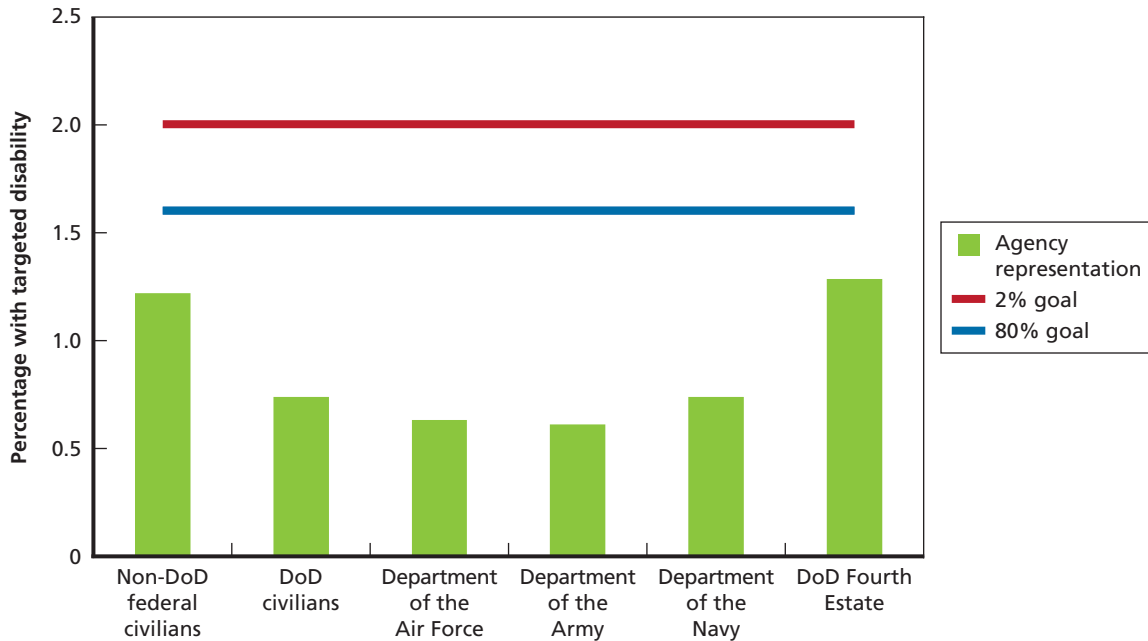
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.4*

this population of interest would be the CLF. Because figures on the percentage of PWTD in the CLF are not available, we use the 2-percent goal as if it were the population rate, acknowledging that this is a speculative exercise.

The standard deviation for an estimated rate can be calculated using the formula

$$\sqrt{\frac{r(1-r)}{N}} ,$$

where N is the sample size (or number of employees in the CLF) and r is the representation (or the percentage of the population that has targeted disabilities). Notably, the standard deviation is highly sensitive to the sample size, such that the standard deviation tends to decrease as the sample size increases. Because the CLF is so large, a two–standard deviation interval is very small, amounting to less than 0.01 percent. This is apparent in Figure 4.5, where the error bars on the 2-percent value are extremely narrow, shown as black lines nearly identical to the 2-percent line. Each of the actual proportions of PWTD is many standard deviations below this line. This means that a process that randomly drew employees from a population with 2-percent PWTD would almost never have percentages of such workers as low as those of DoD and its components.

Figure 4.5
A Two–Standard Deviation Assessment of the DoD Civilian Workforce in 2013, Based on a 2-Percent Population Estimate for PWTD
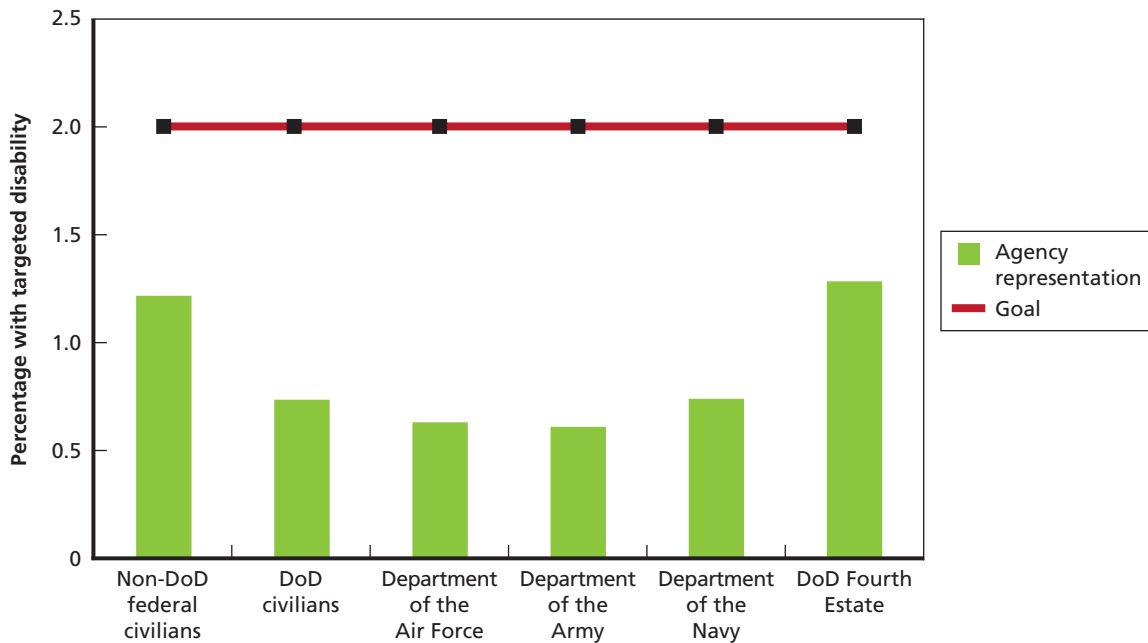
SOURCE: Authors' calculations from OPM federal workforce data.

RAND *RR2279-4.5*

Other Categories of Disability Across the Federal Workforce and DoD

Targeted disabilities are the only disability categories to which the 2-percent representation goal applies. However, to better understand the characteristics of the DoD workforce, we also present data on two other categories of disability: persons with any disability and veterans with at least a 30-percent disability rating.

Persons with Any Disability

Unlike the percentage of PWTD, the percentage of all persons with disabilities among DoD employees is similar to that among other federal employees (Figure 4.6). Both have increased in recent years, from about 7 percent to nearly 9 percent. In 2013, the percentage of such persons among DoD employees was greater than that among other federal employees by a small but statistically significant amount.

The Fourth Estate has still higher representation of such persons in its workforce (Figure 4.7). Differences in representation between the Fourth Estate and DoD components is statistically significant, as are the differences between each of the services.[4]

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[4] The significant increase in civilian workers with disabilities in the Air Force from 2012 to 2013 represents a reclassification of existing employees, not the hiring of new employees with disabilities. The employees who were newly classified as disabled were significantly less likely to have targeted disabilities and significantly more likely to report not wanting to identify their specific disability than employees who had previously been classified as disabled. We can speculate that this change was likely because of a change in classification, not because of the development of disabilities within the Air Force. We also note that there is significant variance by agency in the percentage of people with disabilities who are newly classified

Figure 4.6
Percentages of Civilians with Any Disability in the Non-DoD Federal Workforce and DoD Workforce
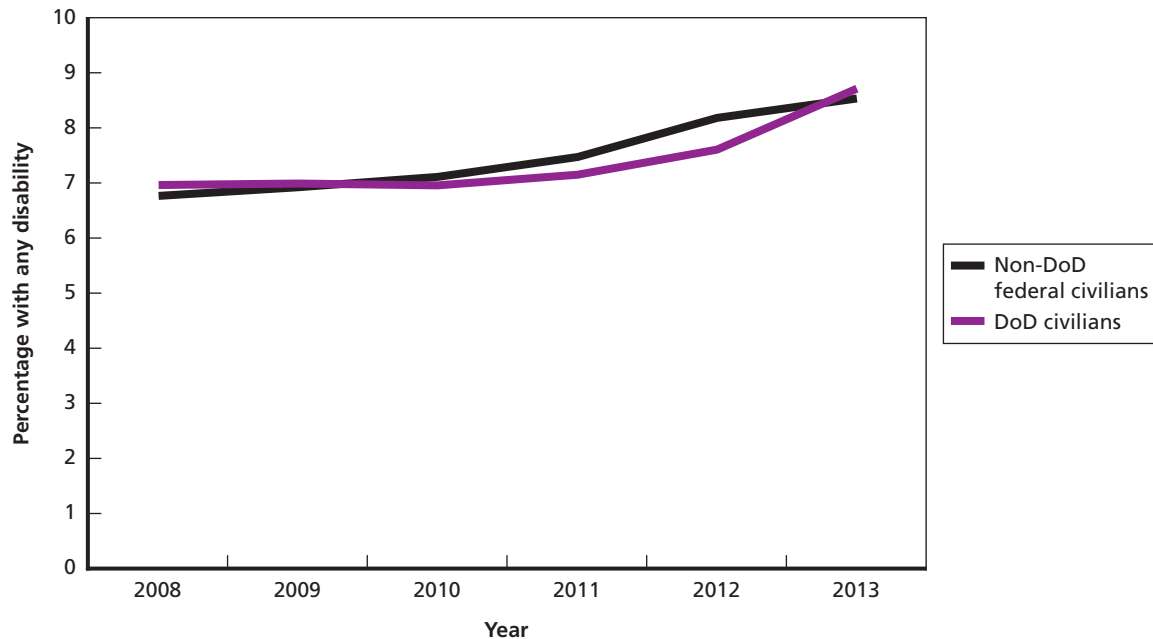
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.6*

Veterans With at Least a 30-Percent Disability Rating

We also examined the representation of one particular category of persons with disabilities: military veterans with at least a 30-percent disability rating (Figure 4.8). This is the only disability category for which it is possible to compare both CLF data and OPM data. We found that DoD has a higher representation rate for this group than both the rest of the federal civilian workforce and the CLF in general. From 2008 to 2013, the percentage of veterans with disabilities increased from less than 6 percent to nearly 10 percent among DoD civilian employees and from less than 2 percent to nearly 4 percent among non-DoD federal civilian workers while remaining less than 1 percent in the CLF. All of these differences are statistically significant. During this period, there have been various special hiring authorities both for veterans in general and for veterans classified as at least 30-percent disabled.[5]

DoD components vary in the representation of veterans with disabilities in their civilian workforce (Figure 4.9). The Department of the Army had the highest percentage and greatest increase in representation of this group, while the Department of the Navy and the Fourth Estate had the lowest. All, however, had representation levels well above both the CLF and the rest of the federal workforce.

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as such, more so than in the Army for that year. Therefore, whatever phenomena affected the Air Force may have affected only certain agencies.

[5] For example, in 2009, Executive Order 13518, Veterans Employment Initiative, established Veterans Employment Program Offices within agencies. Among other things, these offices develop training programs for veterans with disabilities (White House, 2009).

Figure 4.7
Percentages of Civilians with Any Disability, by DoD Component
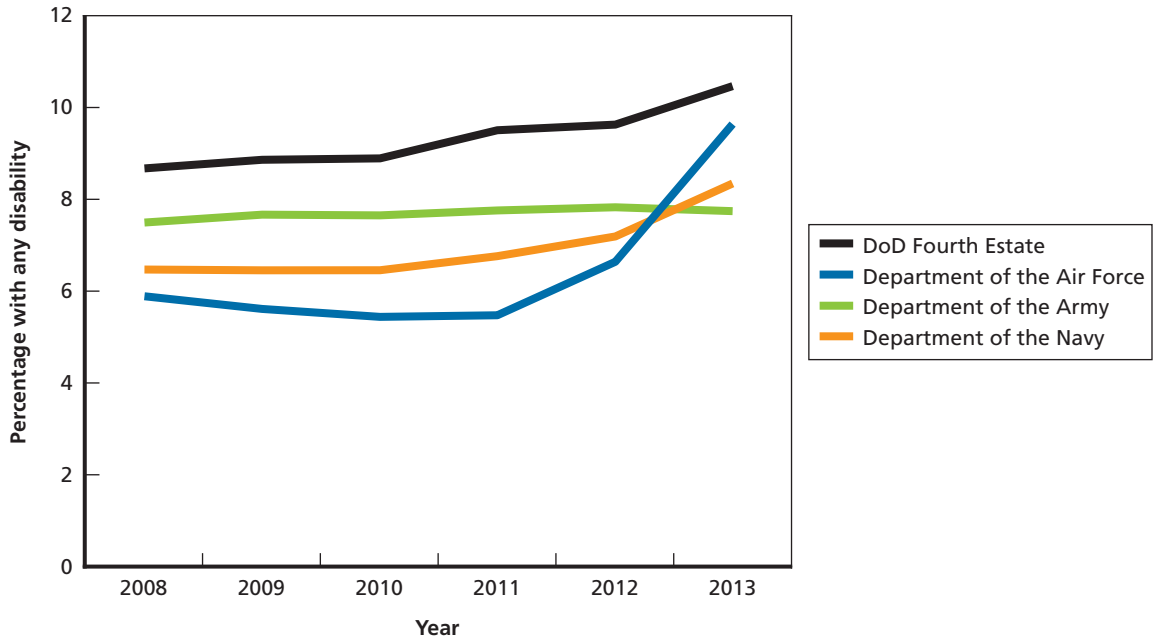
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.7*

Figure 4.8
Percentages of Veterans with a 30-Percent or Higher Disability Rating: Non-DoD Federal Civilian Workforce, DoD Civilian Workforce, and CLF
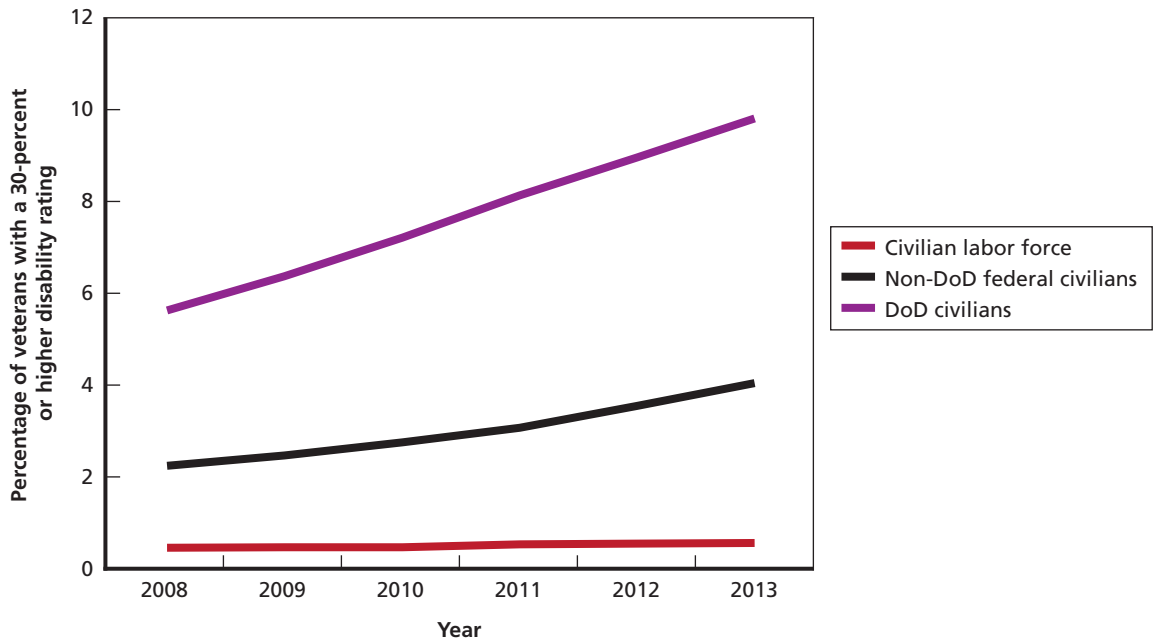
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.8*

Figure 4.9
Percentages of Veterans with a 30-Percent or Higher Disability Rating, by DoD Component
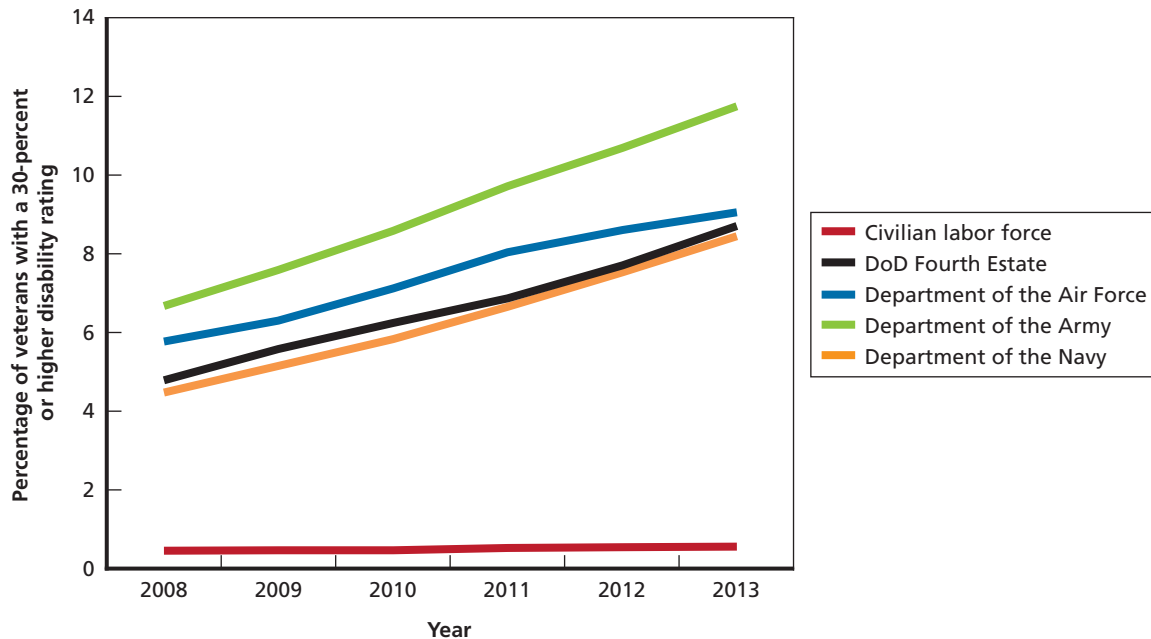
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.9*

Most veterans in DoD with at least a 30-percent disability rating do not report the type of disability they have to their hiring agency. Indeed, across DoD, almost 71 percent of veterans with at least a 30-percent disability rating actually report having no disability, compared with 53 percent of such veterans in the rest of the federal workforce. There are also differences between DoD and the rest of the federal government in terms of the percentage of such veterans who report having targeted disabilities. Across DoD, only 1 percent of veterans with at least a 30-percent disability rating report having a targeted disability; in other federal agencies, 4 percent of such veterans report a targeted disability. This difference in reporting likely affects analysis of disability representation, although it is likely not the sole reason that DoD does not meet non-DoD levels or federal goals for employment of PWTD. For example, if the percentage of disabled veterans who reported targeted disabilities was the same in the DoD civilian workforce as it is for the non-DoD federal workforce, this would only raise overall targeted disability representation in DoD by 0.1 percentage points.

Other Common Triggers

As noted earlier, there are four common data discrepancies, or triggers, that may indicate barriers to employment for PWTD in DoD. These are low entry–high exit, glass wall, blocked pipeline, and glass ceiling. We assess these triggers in the context of OPM data on DoD. Our results typically indicate the presence of triggers and the possible need for further barrier analysis.

Low Entry–High Exit

For this trigger, we examine whether PWTD are both entering the workforce at a low rate and exiting at a high rate. Among DoD employees, the pattern is somewhat consistent with low entry and high exit. From 2009 to 2013, PWTD made up 0.4 percent of new hires and 0.8 percent of separations.[6]

Glass Wall

A glass wall trigger occurs when a group has low representation in occupations that are tracked for upward mobility. To assess this trigger, we examine the degree to which PWTD are in occupations that promote at high rates. To determine high-promoting occupations, we consider two different types of promotion: (1) moving from a nonsupervisory position to a supervisory position and (2) promoting to a higher GS level.[7] In both cases, we look at all DoD employees, not just those who remained within the same agency. For example, an employee who was promoted and changed agencies counts toward the promotion rate for his or her occupation. Having defined promotion rates for each occupation, the next step is to set minimum thresholds for occupations to qualify as high-promoting. Our (admittedly subjective) method is to set the cutoff rates at the point where 5 percent to 10 percent of DoD employees are classified into a high-promoting occupation. This analysis produced a cutoff promotion rate of 5 percent for nonsupervisory-to-supervisory promotions and a cutoff of 25 percent for promotions to a higher GS level. We next compare employees with targeted disabilities and employees without targeted disabilities by their representation in these high-promoting occupations.[8]

Because the glass wall trigger involves the analysis of specific segments of the DoD workforce, we compare the inclusion rates of PWTD with those of other persons, as recommended by the EEOC (2014). In this case, determining whether a trigger is present depends on the definition of a high-promoting occupation. Figure 4.10, using the supervisory definition of high-promoting, shows that 3.3 percent of PWTD and 5.4 percent of other employees are in high-promoting occupations. Using movement up the GS scale to define high-promoting, 7.1 percent of PWTD and 6.6 percent of other employees are in high-promoting occupations. Each of these differences is statistically significant.

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[6]   We determine year of hire for employees by the first year they appear in the data set. Our data begin in 2008, meaning that the first year we can determine new hire status is 2009. To further explore the exit rates of PWTD, we compare their exit rates with the exit rates of those without targeted disabilities, using longitudinal patterns seen in the data. This required examining changes from year to year, beginning with observed changes seen in 2009 as compared with 2008. Our results show that, between 2009 and 2013, 8.2 percent of PWTD in DoD left each year, as did 6.8 percent of persons without targeted disabilities. This is a substantially higher exit rate for people with targeted disabilities. It also may be an artifact of older employees being more likely both to have targeted disabilities and to retire.

[7]   An example of an occupation with high promotion rates to supervisory positions is program management: About 6 percent of persons in nonsupervisory positions each year were promoted to supervisory positions the next year. An example of an occupation with high promotion rates to the next grade is contracting: About 26 percent of workers each year in GS grades were promoted to a higher GS grade in the following year.

[8]   We also looked specifically at the lowest-promoting 5 to 10 percent of occupations out of concern that workers with targeted disabilities may be concentrated in these occupations. Jobs with very low promotion rates to supervisory positions include secretaries and miscellaneous clerks and assistants. We did find that individuals with targeted disabilities are concentrated in these occupations. Jobs with low promotion rates to the next grade include nurses and program assistants. PWTD have lower rates of representation in these jobs than those without targeted disabilities.

Figure 4.10
Percentages of PWTD and Those Without Targeted Disabilities in High-Promoting Occupations, 2009–2013
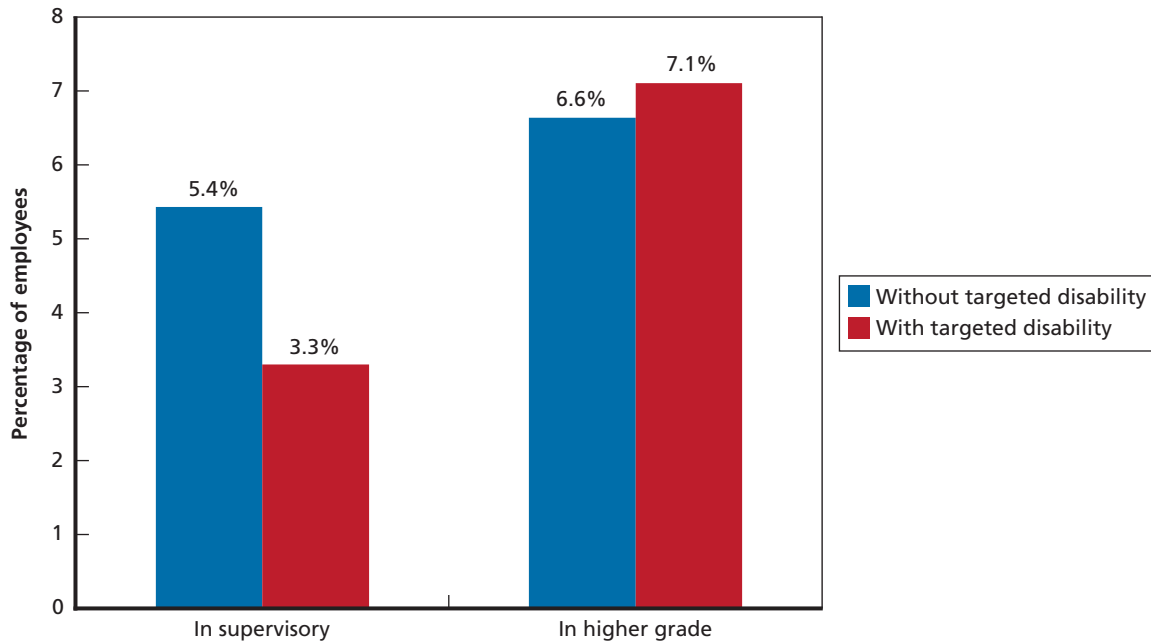
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.10*

Blocked Pipeline

Using the same definitions of high-promoting occupations, we tested whether PWTD in these occupations are being promoted to higher grades or entering supervisory jobs at the same rate as their peers. These analyses move beyond considering whether PWTD are in high-promoting occupations. They consider whether, once in these positions, PWTD are promoted at similar rates to those without targeted disabilities.

We find that PWTD in high-promoting occupations are promoted at lower rates than other persons in these occupations. As Figure 4.11 shows, PWTD in occupations with promotion rates of at least 5 percent (left) or 25 percent (right) were less likely than others to be promoted to supervisory positions. Additional analyses, described in Appendixes D and F, show that the differential promotion of persons with and without targeted disabilities in DoD is not limited to these occupations but that, in general, PWTD have lower rates of promotion. Each of these differences is statistically significant.

Glass Ceiling

A glass ceiling trigger is seen when a group has a low rate of participation in and promotion into leadership positions. For this trigger, we looked at both the overall representation of PWTD in wage grades and GS grades and at their representation at each GS grade level.[9]

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[9]   Employees paid under the wage grade pay plan tend to work in blue-collar occupations. Employees paid under the GS tend to work in white-collar occupations.

Figure 4.11
Percentages of PWTD and Those Without Targeted Disabilities to Be Promoted in High-Promoting Occupations, 2009–2013
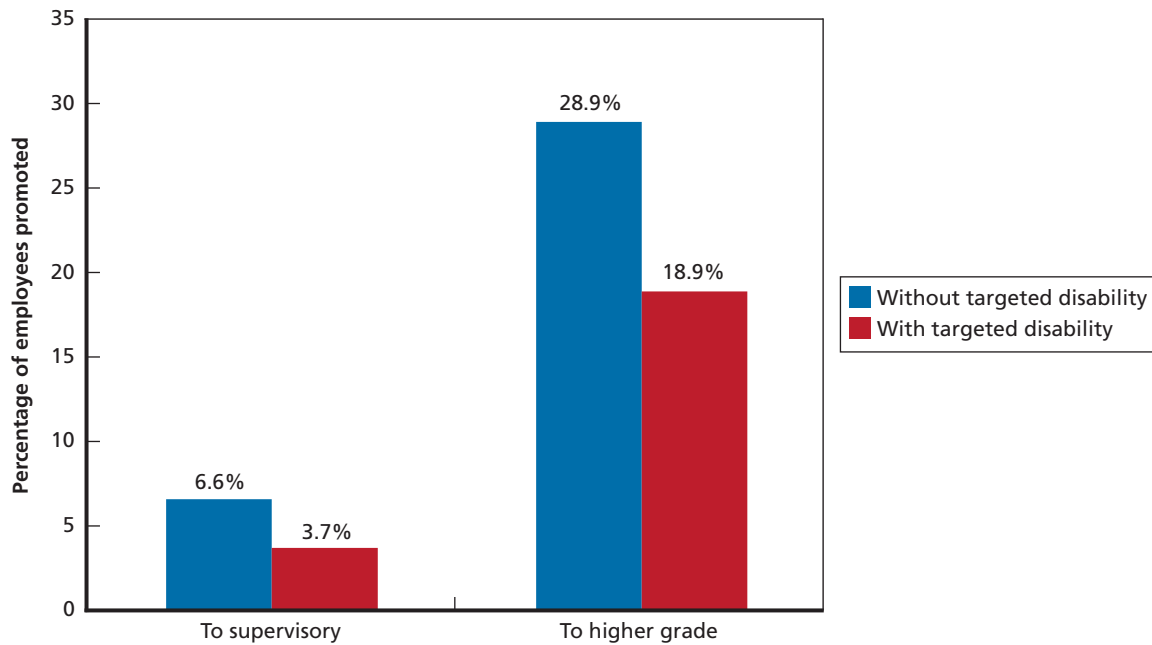
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.11*

First, to analyze representation of PWTD in the wage grades and the GS grades, we compared the percentage in each group and by agency. Figure 4.12 shows that representation of PWTD is similar in GS and wage-grade positions within DoD and across its components, although it is lower than in non-DoD federal civilian positions. These results suggest that DoD employment of PWTD is low but possibly without a glass ceiling, while other federal employment of PWTD is higher but possibly with a glass ceiling.[10]

Second, to analyze the representation of PWTD within the GS positions, we examined the difference by grade level between actual representation and what we would see if representation in each grade—from GS-4 to GS-15—was the same as the overall targeted disability percentage, 0.8 percent.[11] This 0.8 percent is the rate of targeted disabilities among the subset of full-time, permanent DoD employees on the GS pay scale, and it is slightly higher than the rate among all full-time, permanent DoD employees.

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[10] There is a statistically significant difference between the percentage of persons with disabilities in GS grades in DoD compared with non-DoD federal agencies. There are statistically significant differences between the percentage of PWTD in GS grades between the non-DoD federal agencies and the Departments of the Air Force, Army, and Navy, but not the Fourth Estate. There is also a statistically significant difference between the percentage of PWTD in wage grades in DoD and that in the non-DoD federal agencies. Finally, there are statistically significant differences between the percentage of people with targeted disabilities in wage grades between the non-DoD federal agencies and the Department of the Air Force, Department of the Army, Department of the Navy, and Fourth Estate.

[11] Because GS-1 through GS-3 have less than 0.02 percent of employees on the GS pay scale, we excluded them from our analyses.

Figure 4.12
Percentages of PWTD in GS and Wage-Grade Positions, 2013
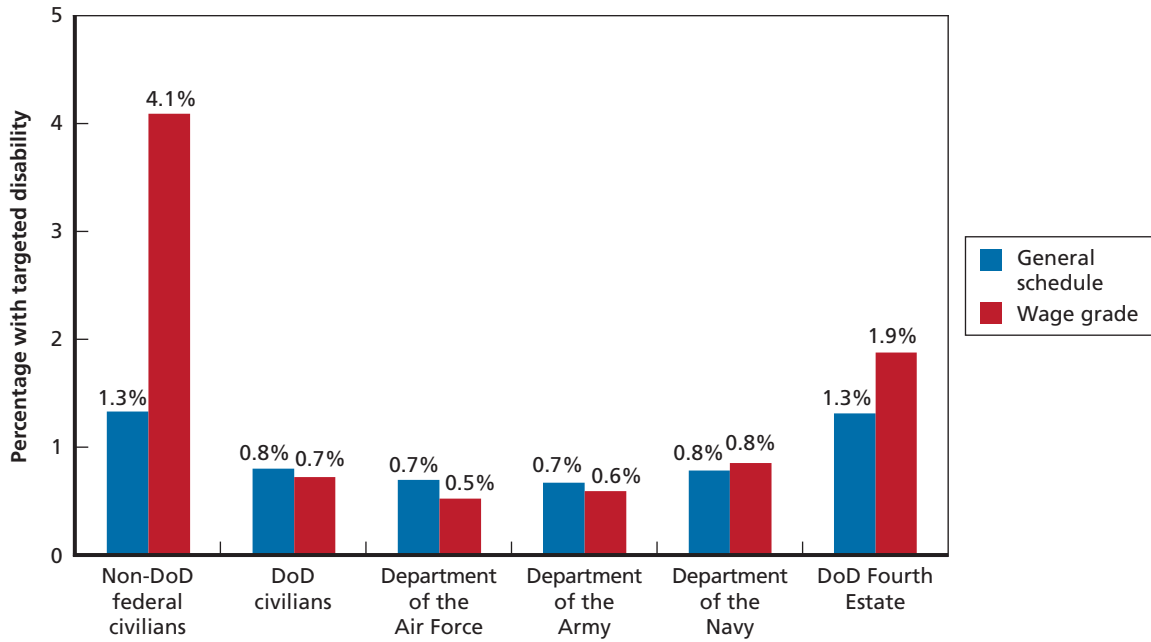
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-4.12*

Figure 4.13
Difference Between Actual and Expected PWTD in DoD, by Grade, 2009–2013
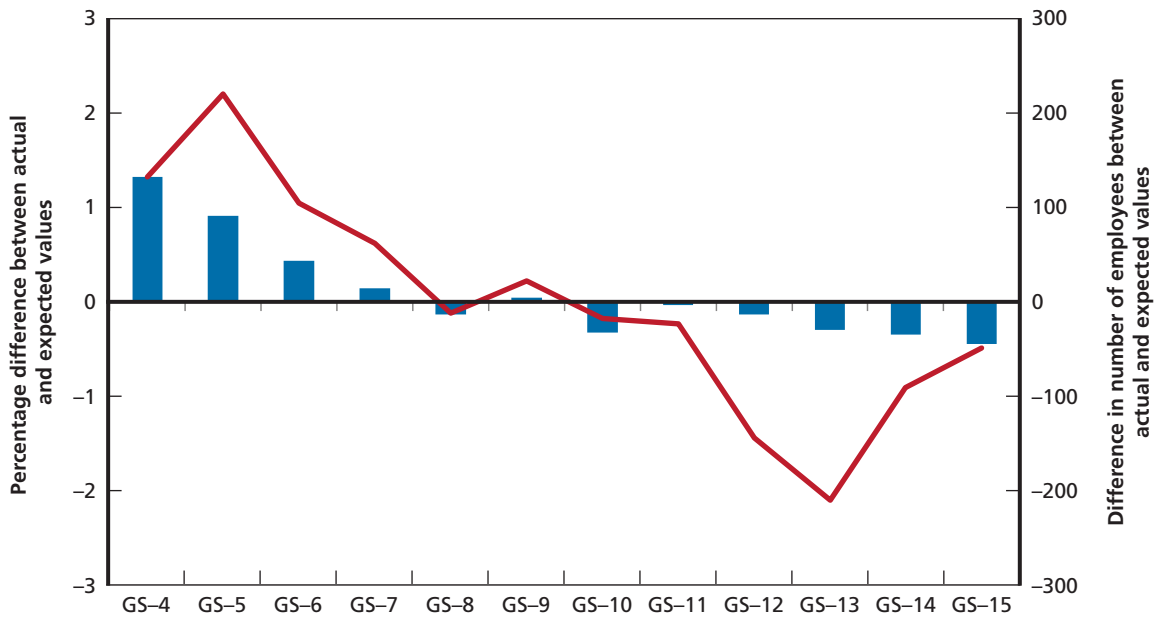
SOURCE: Authors' calculations from OPM federal workforce data.
NOTE: This figure uses data only from GS employees.
RAND *RR2279-4.13*

Figure 4.13 shows two ways of comparing actual and expected representation: the differences by percentages and the differences in actual numbers. The blue bars show the differences in percentage terms. For instance, PWTD make up 2.1 percent of GS-4s, compared with an overall representation of 0.8 percent, so the blue bar has a height of 1.3 percent, indicating overrepresentation of that amount. The red line shows the difference in numerical terms. For instance, GS-13 is a very big pay grade, so although the gap in the proportion of PWTD overall and in GS-13 is fairly small, it amounts to a gap of more than 200 people in absolute terms.[12] The biggest difference in percentage terms is the overrepresentation of PWTD in GS-4 and GS-5. In numerical terms, the biggest difference is the overrepresentation of PWTD in GS-5 and their underrepresentation in GS-12 and GS-13.

Overall, PWTD are more represented in lower grades and less represented in higher grades. We characterize GS-4 to GS-10, which contain 35 percent of employees, as the lower grades; GS-11 to GS-12, which contain 41 percent, as the middle grades; and GS-13 to GS-15, which contain 24 percent, as the upper grades. We found that PWTD make up 1.1 percent of the lower grades, 0.7 percent of the middle grades, and 0.5 percent of the upper grades. These differences are statistically significant. This could be characterized as a glass ceiling in DoD.

Glass Ceiling in Hiring

To further explore the general glass ceiling effect, we also considered the extent to which we found a glass ceiling among new hires specifically, rather than across all employees. To do so, we examined the degree to which new hires with targeted disabilities are represented in each grade compared with other new hires. To analyze this, we examined the difference by grade level between actual representation and the representation we would see in each grade, from GS-4 to GS-15, if representation was the same across grades as the overall percentage of new hires with targeted disabilities from 2009 to 2013, which was 0.5 percent.

Similar to Figure 4.13, Figure 4.14 shows two ways of comparing actual and expected representation: the differences by percentages and the differences in actual numbers. The blue bars show the difference in percentage terms. For instance, PWTD make up 0.7 percent of new hire GS-4s, compared with an overall representation among new GS hires of 0.5 percent, so the blue bar has a height of approximately 0.2 percent, indicating overrepresentation of that amount. The red line shows the difference in numerical terms. For instance, GS-12 is a very big pay grade for new hires, so although its gap in the percentage of PWTD is fairly small, it amounts to 40 individuals in absolute terms. Overall, the biggest difference in numerical terms is the overrepresentation of PWTD in GS-5. In percentage terms, the biggest difference is the underrepresentation of PWTD in GS-10 and GS-14, and their overrepresentation in GS-5.[13]

Overall, new hires with targeted disabilities are more represented in lower grades and less represented in middle and higher grades. More specifically, PWTD were 0.6 percent of new hires from the lower grades, 0.3 percent of new hires from the middle grades, and 0.3 percent of new hires from upper grades. These differences are statistically significant—indicating a possible glass ceiling in hiring.

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[12] The differences in the distribution of PWTD and others by GS level in hiring are statistically significant.

[13] There are statistically significant differences in the distribution of PWTD and others by GS level in hiring.

Figure 4.14
Difference Between Actual and Expected Hires with Targeted Disabilities in DoD, by Grade, 2009–2013
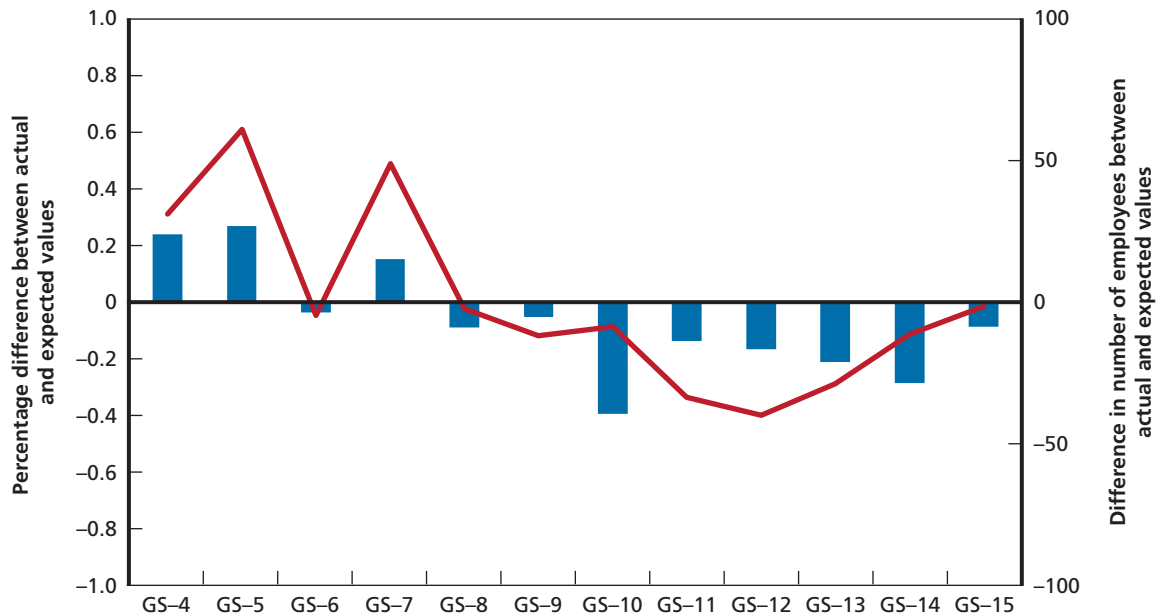
SOURCE: Authors' calculations from OPM federal workforce data.
NOTE: This figure uses data only from GS employees.
RAND *RR2279-4.14*

Representation by Disability Category

Finally, we examined differences by targeted disability type. To do so, we looked at the breakdown by broad GS level—lower, middle, and upper—of employees overall, employees with targeted disabilities, and each broad category of employees with targeted disabilities. We characterize GS-4 to GS-10 as the lower grades, GS-11 to GS-12 as the middle grades, and GS-14 to GS-15 as the upper grades. As shown in Figure 4.15, while employees with targeted disabilities are concentrated in lower grades compared with employees in general, there is significant variance by disability type. Employees with epilepsy and those with a missing or paralyzed limb have profiles that are the most similar to employees overall. By contrast, employees with intellectual disabilities have the most dramatically different profile, with more than 90 percent in the lower grades compared with less than 30 percent among employees in general.

Summary

This chapter showed that determinations of whether barriers may be present for individuals with disabilities depends on how the population is defined. While the percentage of DoD employees with targeted disabilities is below the 2-percent goal and the non-DoD federal rate, the percentage of employees with any disabilities in DoD is comparable to that in the rest of the federal government. Additionally, DoD employs veterans with at least a 30-percent disability rating at more than twice the rate of the rest of the federal government, so including them in the definition of employees with disabilities would further increase the relative repre-

Figure 4.15
Percentage of Employees, by GS Grade, 2013
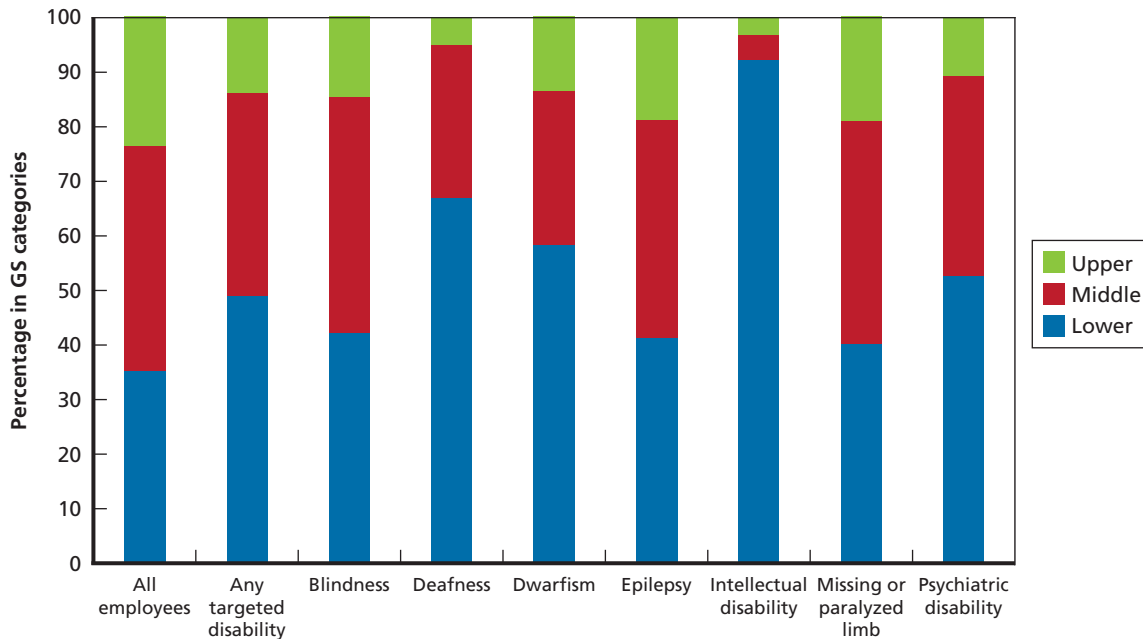
SOURCE: Authors' calculations from OPM federal workforce data.
NOTE: This figure uses data only from GS employees.
RAND *RR2279-4.15*

sentation level in DoD. The overall conclusion to the question of whether DoD has adequate representation of persons with disabilities is highly sensitive to the types of disabilities included in the definition and how that information is obtained.

When looking specifically at targeted disabilities, several comparisons indicate the presence of triggers, which could point to barriers to both employment and advancement. PWTD make up a higher percentage of separations than new hires, promote at lower rates, and are underrepresented in upper-grade GS levels relative to lower-grade GS levels. Unfortunately, these triggers could point to barriers in a broad range of areas, such as recruiting and outreach, career development, and promotions. These results suggest that barriers to employment may be particularly pronounced among DoD employees identified as having targeted disabilities.

Analysis of Disability Representation in DoD Agencies

Applying the targeted disability categories of interest to the federal government during the time span of personnel data available to RAND (OPM, 2010), the proportion of PWTD in the DoD civilian workforce is 0.42 percentage points lower than in the non-DoD federal workforce.[1] The magnitude of this difference appears small but reflects a large number of employees. DoD would need to increase the level of employment of this group by more than 50 percent, or more than 2,500 workers, to put it on par with the representation level in the non-DoD federal workforce. To reach the federal goal of 2-percent representation, DoD would need 2.5 times as many PWTD in its workforce as it had in 2013.

Given these gaps, examining why this group is underrepresented in DoD compared with the non-DoD federal workforce is a useful starting point for identifying barriers to the group's employment in DoD. Such an analysis can provide insight into the relationship between workforce characteristics and targeted disability representation. As noted above, this chapter uses the federally targeted disability categories in place prior to August 2016. In addition, this chapter uses the Oaxaca-Blinder decomposition method to explore the extent to which observable differences between the DoD and non-DoD federal workforces (such as in types of occupations, education requirements, and work locations) can account for the representation gap. Results of the decomposition analyses show that the available workforce characteristics do not explain the 0.42–percentage point difference in targeted disability representation between the DoD and non-DoD workforces. Many of the current differences in workforce characteristics are already favorable to the employment of PWTD within DoD. This means that the representation gap would be even larger if the two workforces were to have similar characteristics.

We also examined broader disability categories to see whether the patterns with these groups provide insight into the dynamics of targeted disability representation. To create the additional categories, we broadened the disability category to include individuals who report disabilities other than targeted ones, as well as veterans with at least a 30-percent disability rating. Broadening the disability category changed the picture significantly, as we found that DoD overrepresents individuals with disabilities by 5.8 percentage points. A decomposition of this difference indicates that the large proportion of veterans in DoD is strongly related to the disability differences between the DoD and non-DoD workforces. Other differences in workforce characteristics, such as differences in types of occupations, account for some of the

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[1]   As in earlier chapters, when we discuss the DoD labor force, we are including only civilians who work in the Department of the Air Force, Department of the Army, Department of the Navy, or Fourth Estate. For brevity, we drop the civilian moniker when discussing the DoD labor force in the remainder of the chapter.

DoD surplus in employees with disabilities, although these effects account for a much smaller fraction of the surplus than the prevalence of veterans.

We begin this chapter with a description of the data and a summary of the differences between the DoD and non-DoD workforces. We briefly describe how to interpret the results from the subsequent Oaxaca-Blinder decomposition analyses, and we present the results of these analyses comparing DoD with the non-DoD federal workforce in employment of persons with disabilities. We conclude with a discussion of the policy implications of our results. In Appendix G, we provide a detailed discussion of the Oaxaca-Blinder decomposition methodology.

Data and Descriptive Statistics

OPM provided data on all full-time, nonseasonal federal civilian workers in 2013. All of the following calculations and analyses are based on these data.

Characteristics of Each Workforce

Table 5.1 summarizes the key individual and occupational characteristics we observed for each worker in the sample.[2] Column 1 provides the summary statistics for workers in DoD agencies, while column 2 provides the summary statistics for the non-DoD agencies. The first four rows of Table 5.1 show how disability representation compares across the two labor forces for different disability definitions:[3]

- *targeted disability* includes only individuals who self-identify disabilities that fall into the federally targeted disability categories
- *reported disability* includes individuals who self-identify as having any disability, including federally targeted disability categories
- *veteran with at least 30-percent disability rating* includes veterans who have a disability rating of at least 30 percent
- *any disability* includes both those who report a disability, targeted or otherwise, and veterans with at least a 30-percent disability rating who do not report a disability.[4]

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[2] In addition to the variables described in Table 5.1, we also observed a few others that were not included in the table for brevity. These variables include state of residence; whether the worker is in a job that requires supervision of others; whether the worker is on the GS and, if so, what level he or she is on; and a two-digit occupation code, which classifies workers into 59 different categories according to their area of specialty. These areas include various white-collar classifications, such as social scientist or human resources, as well as various blue-collar classifications, such as electrical installation work or metal work. A detailed description of all specific job titles in each of these 59 categories is available in OPM's *Guide to Data Standards* (OPM, 2014b).

[3] It is not clear whether all members of the non–targeted disability categories would be considered "individuals with disabilities" under the Rehabilitation Act of 1973. The Rehabilitation Act defines *an individual with a disability* as one who "has a physical or mental impairment which for such individual constitutes or results in a substantial impediment to employment; and can benefit in terms of an employment outcome from vocational rehabilitation services" (29 U.S.C. 705).

[4] Note that only 33 percent of the veterans with at least a 30-percent disability rating self-identify a disability. This accounts for the discrepancies between rows 2, 3, and 4.

Table 5.1
Individual and Occupational Characteristics in the DoD Workforce and the Non-DoD Federal Workforce

Variable	DoD Workforce (1)	Non-DoD Federal Workforce (2)
Targeted disability	0.80%	1.22%
Reported disability	9.29%	8.55%
Veteran with at least 30% disability rating	10.40%	4.06%
Any disability	16.80%	11.00%
Race/ethnic groups		
White	69.70%	62.10%
African-American	15.80%	19.80%
Hispanic	6.34%	9.30%
Asian/Pacific Islander	6.02%	5.70%
Other	2.16%	3.06%
Female	34.10%	48.60%
Employee age	47.5	46.8
Years of educational attainment	14.6	15.1
U.S. citizen	100%	99.90%
Veteran	45.90%	21.90%
Occupational categories		
Professional–white collar (P)	25.10%	27.00%
Administrative–white collar (A)	36.60%	41.10%
Technical–white collar (T)	14.50%	18.10%
Clerical–white collar (C)	3.93%	5.31%
Other–white collar (O)	3.36%	4.40%
Blue collar (B)	16.60%	4.21%
Resides in a metropolitan area	97.90%	96.70%
Federal job categories		
Competitive service	93.00%	69.30%
Excepted services	6.75%	30.10%
SES general	0.06%	0.30%
SES career reserved	0.13%	0.27%
Sample	611,693	1,148,517

NOTE: For each variable in the table, all of the differences between columns 1 and 2 are statistically significant at the $\alpha = 0.01$ level.

Row 1 indicates that DoD is less likely to employ PWTD than other federal agencies. However, rows 2 through 4 show that DoD is more likely than other agencies to employ individuals with disabilities under broader disability definitions.[5]

Table 5.1 shows several other large differences between the DoD labor forces beyond disability status. For example, 45.9 percent of all DoD civilian employees are veterans, compared with 21.9 percent of those in non-DoD agencies. DoD employees are more likely to be white and male. DoD employees are also more likely to hold blue-collar jobs and to belong to the competitive service.

Characteristics of Workers by Disability Status

For these workforce differences to account for the targeted disability representation gap in DoD relative to the non-DoD federal workforce, PWTD would need to be less likely to have the characteristics and occupation-specific skills that are most common in DoD agencies. Table 5.2 examines whether this is the case by comparing the characteristics of individuals across the different disability definitions. Note that column 5 includes only individuals who list no disabilities and are also not veterans with a disability rating of 30 percent or more.

Comparing columns 1 and 5 in Table 5.2 indicates that PWTD are actually more likely than those with no disabilities to have some of the characteristics and job-specific skills preferred by DoD agencies. For example, Table 5.2 shows that 31.3 percent of PWTD are veterans, while only 24.9 percent of those with no disabilities are veterans.[6] PWTD are also more likely to be white, male, and blue-collar workers. The greater DoD tendency to employ individuals with these characteristics should, all else equal, boost representation of workers with targeted disabilities.

Comparing columns 2, 3, and 4 with column 5 shows how individuals in the broader disability classes compare with those with no disabilities. One key difference between these populations is that individuals in the broader disability classes are much more likely to be veterans relative to those with no disabilities. Specifically, while veterans comprise only 24.9 percent of those with no disabilities, they comprise more than 50 percent of those who self-identify any disability. The percentage of veterans increases even further (to 66.3 percent) when the disability definition includes veterans with at least a 30-percent disability rating who did not report having a disability. The analyses in the next section will examine how these differences in the percentage of workers who are veterans, combined with the relatively high prevalence of veterans in DoD, relate to the differences in disability representation across the federal workforce.

Oaxaca-Blinder Decomposition Results

One way to think about the relationship between each workforce's characteristics and the targeted disability representation gap is to ask the following question: If the DoD workforce

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[5]   The numbers reflecting disability representation across the labor forces differ slightly from those presented in Chapter Four because of different sample specifications. Relative to Chapter Four, the OPM data here drop almost 70,000 observations because they are missing information on at least one of the variables needed for analysis.

[6]   Note that this finding that veterans are more likely to have targeted disabilities pertains to the overall civilian federal workforce (i.e., pooling DoD and non-DoD together). Within DoD, veterans are less likely to have targeted disabilities. One potential explanation for this is that veterans in DoD may be less likely to report disabilities than those in the non-DoD workforce. We discuss this further in the conclusion.

Table 5.2
Comparing Workers Across Disability Classifications

Variable	Targeted Disability (1)	Reported Disability (2)	Veteran with at Least 30% Disability Rating (3)	Any Disability (4)	No Disability (5)
Racial/ethnic groups					
White	68.40%	65.20%	59.80%	63.40%	64.90%
African-American	18.50%	20.30%	26.40%	22.40%	17.90%
Hispanic	6.89%	7.19%	7.67%	7.35%	8.41%
Asian/Pacific Islander	3.42%	3.68%	3.44%	3.66%	6.13%
Other	2.79%	3.63%	2.75%	3.21%	2.68%
Female	41.70%	38.40%	20.70%	32.70%	45.20%
Employee age	48.8	50.0	48.4	49.4	46.6
Years of educational attainment	14.6	14.8	14.6	14.7	14.9
U.S. citizen	100%	100.0	100%	100%	99.90%
Veteran	31.30%	50.20%	100%	66.30%	24.90%
Occupational categories					
Professional–white collar (P)	17.60%	19.70%	9.80%	16.40%	27.80%
Administrative–white collar (A)	31.40%	39.50%	51.70%	43.70%	38.90%
Technical–white collar (T)	25.20%	21.00%	17.20%	19.50%	16.40%
Clerical–white collar (C)	13.00%	8.44%	6.85%	7.60%	4.41%
Other–white collar (O)	0.95%	1.90%	3.92%	2.81%	4.22%
Blue collar (B)	11.80%	9.49%	10.50%	9.99%	8.27%
Resides in a metropolitan area	98.00%	97.50%	98.40%	97.80%	97.00%
Federal job categories					
Competitive service	74.00%	78.00%	84.50%	80.60%	77.10%
Excepted services	25.80%	21.70%	15.40%	19.20%	22.40%
SES general	0.14%	0.13%	0.03%	0.09%	0.20%
SES career reserved	0.06%	0.12%	0.04%	0.09%	0.20%
Sample	18,903	155,049	110,286	229,019	1,531,191

characteristics (such as those in Table 5.1) were exactly the same as those in the non-DoD federal workforce, how much would the gap narrow? If adjusting for these characteristics were to erase the gap, this result would indicate that the gap is related to workforce characteristics. If, however, the gap remained or increased after accounting for these characteristics, we would conclude that other factors are driving the underrepresentation of PWTD in DoD.

We examine this question using the Oaxaca-Blinder decomposition method. This method calculates how much of the representation gap is attributable to the net effect of all workforce characteristics. This is known as the *explained component*. The representation gap that remains after accounting for workforce characteristics (i.e., the difference between the original gap and the explained component) is known as the *unexplained component*, since we cannot explain the remaining gap with basic characteristics alone. This analysis can tell DoD policymakers whether the majority of the gap is attributable to the workforce structure and requirements, or whether the gap is driven by unobserved characteristics, such as differences in recruiting and outreach or potential discrimination.

The decomposition method can also determine how much each individual characteristic contributes to the explained component of the gap. This additional detail will inform policymakers about how the individual characteristics influence the gap, potentially pointing to specific factors about the DoD structure to address in making an environment more conducive to hiring PWTD. In Appendix G, we discuss the mechanics of how the decomposition method performs these calculations. Next, we present the results and focus on the interpretation.

Comparing Targeted Disability Representation Between Labor Forces

Table 5.1 documented that 0.80 percent of the DoD workforce has a targeted disability, compared with 1.22 percent of the non-DoD federal workforce. The difference between these two numbers—0.42 percentage points—measures the gap in targeted disability representation across the two labor forces. These numbers are represented visually in the first two bars of Figure 5.1, with the orange block depicting the 0.42–percentage point representation gap. The third bar in Figure 5.1 represents the results of the Oaxaca-Blinder decomposition. The 0.80-percent level of DoD representation is shown again in blue, with additional sections that show how the workforce characteristics affect that level of representation.[7] Essentially, the decomposition reveals the portion of the gap that is attributable to each characteristic. For example, there is a section with the of height 0.08 percent on top of the DoD bar that shows the effect of the federal job category structure. This bar indicates that 0.08 percentage points of the original gap can be explained by differences in the percentages of employees that work in the different job categories (e.g., competitive service).

If the workforce characteristics played a strong role in the DoD versus non-DoD difference in representation, Figure 5.1 would depict them above the DoD bar, and their combined size would be similar to the original gap (indicating that they account for the difference). Instead, the other characteristics are attached to the bottom of the DoD bar, below the 0.0-percent level on the vertical axis. This means that these characteristics do not explain the

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7   Note that in Figure 5.1 and Table 5.3, "race/ethnicity" includes the combined impact of indicators for each of the race/ethnicity categories listed in Table 5.1; "age" includes the combined impact of both age and its square; "education" includes the combined impact of each category of educational attainment; "occupation" includes the combined impact of the 59 occupational categories; "federal job category" includes the combined impact of indicators for each of the four federal job categories listed in Table 5.1; and "location" includes the combined impact of both the state the individual resides in and whether the individual resides in a metropolitan area.

Figure 5.1
Difference in Targeted Disability Representation Between the DoD Workforce and the Non-DoD Federal Workforce, with Decomposition Results
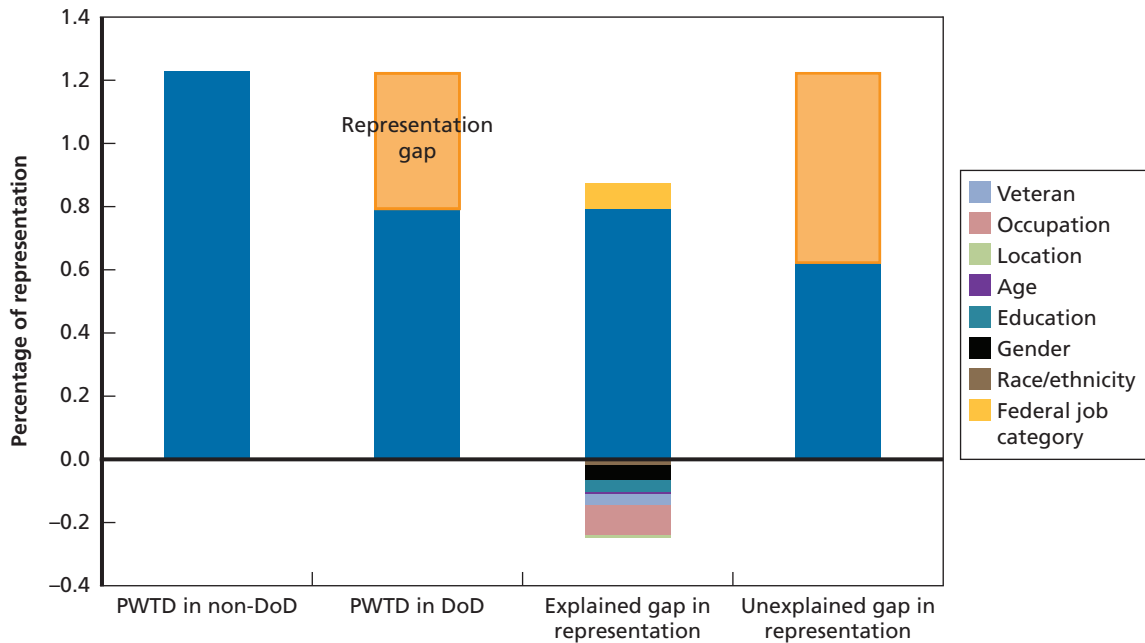
SOURCE: Authors' calculations from OPM federal workforce data.

gap at all—rather, they are mitigating factors masking an even larger gap. For example, the largest section of this portion of the stacked bar has a height of 0.10 percent and represents the net effect of the occupation structure. The interpretation of this effect is that the representation gap would be 0.10 percentage points larger if not for the favorable occupation structure in DoD.

Table 5.3 summarizes these individual effects, which are identical to the height of the respective sections of the stacked bar in Figure 5.1. The total effect of the characteristics is the explained component, representing the amount of the gap attributable to these characteristics. The negative value for the explained component in Table 5.3 indicates that adjusting for the workforce characteristics increases the representation gap. In other words, these characteristics tend to favor representation of PWTD among DoD workers. The remaining gap, or the unexplained component, refers to the size of the gap after accounting for characteristics. Because the explained characteristics tend to favor DoD representation, the unexplained gap is larger than the initial 0.43–percentage point gap.[8]

The fourth bar in Figure 5.1 shows the net effect of the workforce characteristics on the representation gap relative to the 1.22-percent representation in the non-DoD federal work-

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[8]   The value of 0.43 percentage points here and in Table 5.3 differs from the gap shown in Table 5.1 because of rounding error.

Table 5.3
The Impact of Workforce Characteristics on the Gap in Targeted Disability Representation Between the DoD Workforce and the Non-DoD Federal Workforce

Variable	Size of Effect on Targeted Disability Representation Gap Between Workforces
Total gap	0.43% points
Race	−0.02% points
Gender	−0.04% points
Age	−0.01% points
Education	−0.04% points
Veteran status	−0.03% points
Occupation	−0.10% points
Federal job category	0.08% points
Location	−0.004% points
Explained gap	−0.16% points
Unexplained gap	0.59% points

NOTE: Negative values indicate that adjusting for the characteristic widens the targeted disability gap between DoD and non-DoD, whereas positive values narrow the gap. All values except for the effect of location are statistically significant at the α = 0.001 level.

force. The orange section represents the size of the predicted gap between the two workforces after removing the impact of the characteristics, such as those detailed in Table 5.1.[9]

In sum, the results in Figure 5.1 and Table 5.3 demonstrate that workforce characteristics are not responsible for the lower level of targeted disability representation in DoD. With the exception of the federal job category structure, the differences between the DoD and non-DoD workforces should make it easier for DoD to represent employees with targeted disabilities, all else being equal. The occupations, education levels, and veteran statuses of DoD employees are actually mitigating factors, and a larger gap of nearly 0.6 percentage points would result in a hypothetical apples-to-apples comparison.

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[9]   The specific controls used include race/ethnicity categories, gender, age and its square, education level, veteran status, detailed two-digit occupational categories, federal job categories (which are detailed in Table 5.1), metropolitan status, and state of residence. We do not control for citizenship because it effectively does not differ across the labor forces. We also do not use additional occupational controls, such as the worker's supervisory status or GS, because these variables highly overlap with the occupational controls used.

Comparing Representation Between Labor Forces for Broader Disability Categories

We also examine the representation gaps across the labor forces for the broader disability categories listed in Table 5.1 and Table 5.2. As detailed in Chapter Two, PWTD represent a very specific subset of the population, but barriers to employment for individuals with disabilities in general could also apply to PWTD. Examining more-inclusive disability categories may provide more information on the targeted disability representation gap.

Note that Table 5.1 (rows 2 through 4) indicates that DoD is more likely than other federal agencies to employ individuals in these broader disability categories. When we repeat the Oaxaca-Blinder decomposition analysis for the broader categories, the interpretation of results is slightly different. When DoD overrepresents a particular group, we seek to understand which observable factors contribute to the DoD surplus in representation rather than to the DoD gap.

We first examine how the DoD workforce compares with the non-DoD federal workforce with respect to the most inclusive definition of disability status. This definition (previously "any disability") includes all employees who report having a disability, as well as recipients of a veteran hiring preference for having a disability rating of at least 30 percent. Figure 5.2 and Table 5.4 present the overall results from the decomposition analysis in the same fashion as the previous targeted disability results. Negative values in Table 5.4 continue to indicate that the characteristic already favors DoD representation relative to the non-DoD workforce, but these negative values are inverted in Figure 5.2 so that they intuitively appear to fill in the representation surplus on top of the first bar.

Figure 5.2
Difference in Disability Representation for All Individuals with Disabilities Between the DoD Workforce and the Non-DoD Federal Workforce, with Decomposition Results

SOURCE: Authors' calculations from OPM federal workforce data.

RAND *RR2279-5.2*
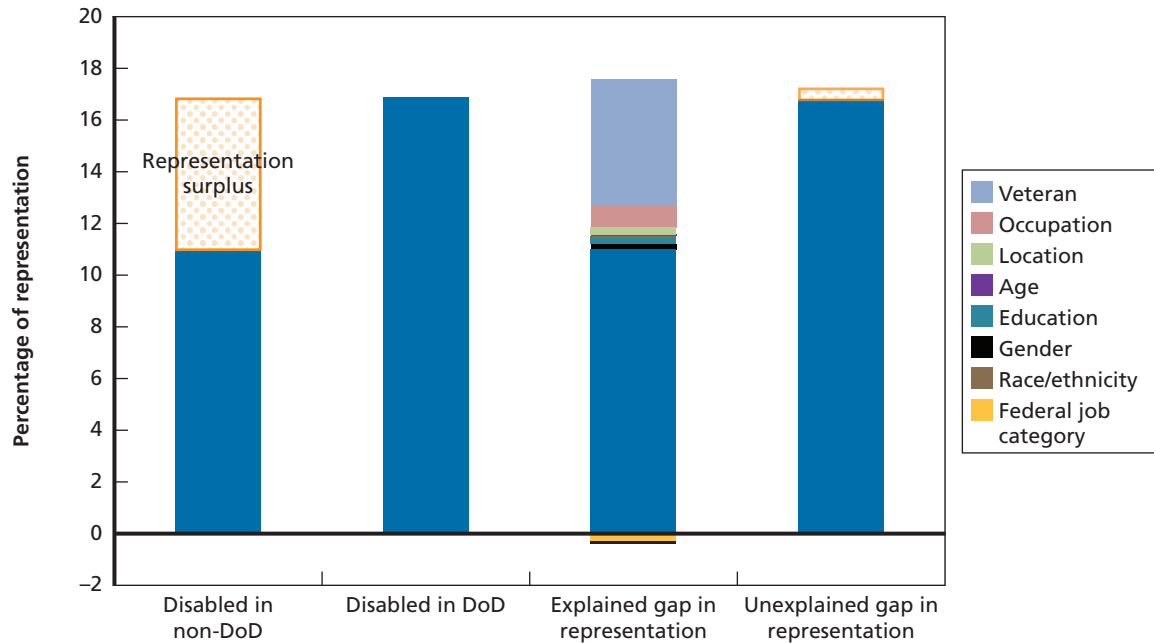
Table 5.4
The Impact of Workforce Characteristics on the Gap in Disability Representation for All Individuals with Disabilities Between the DoD Workforce and the Non-DoD Federal Workforce

Variable	Size of Effect on Disability Representation Gap Between Workforces
Total gap	−5.8% points
Race	0.03% points
Gender	−0.17% points
Age	−0.13% points
Education	−0.28% points
Veteran status	−4.9% points
Occupation	−0.85% points
Federal job category	0.43% points
Location	−0.29% points
Explained gap	−6.1% points
Unexplained gap	0.27% points

NOTE: As in Table 5.3, negative values indicate that the characteristic decreases DoD representation relative to non-DoD, whereas positive values increase DoD representation relative to non-DoD. Negative values are shown as positive in Figure 5.2, so that they are easier to compare with the representation gap, which is also shown as positive. All values are statistically significant at the $\alpha = 0.001$ level except for the unexplained gap, which is significant at the $\alpha = 0.05$ level.

The results in Figure 5.2 and Table 5.4 show that the most important factor in explaining the DoD surplus in representation of all individuals with disabilities is the veteran population. According to the decomposition results, 80 percent of the explained component can be attributed to differences in the percentage of each workforce who are veterans. Another 14 percent of the gap is explained by differences in the occupational structure of the two workforces. After accounting for all characteristics, a small unexplained gap in representation remains. This shows that DoD underrepresents individuals with disabilities after observed characteristics are taken into account, albeit by a small amount. Taken at face value, this would indicate that DoD overrepresents individuals with disabilities, and this overrepresentation can be attributed to unique DoD characteristics.

However, the conclusion changes if the disability definition relies exclusively on whether employees report having a disability. Figure 5.3 and Table 5.5 present the results of the same decomposition analysis, but for reported disabilities only, excluding veterans with at least a 30-percent disability rating who do not report a disability. The raw comparison shows a smaller DoD representation surplus of 0.74 percentage points, but the decomposition yields an unex-

Figure 5.3
Difference in Reported Disability Representation Between the DoD Workforce and the Non-DoD Federal Workforce, with Decomposition Results
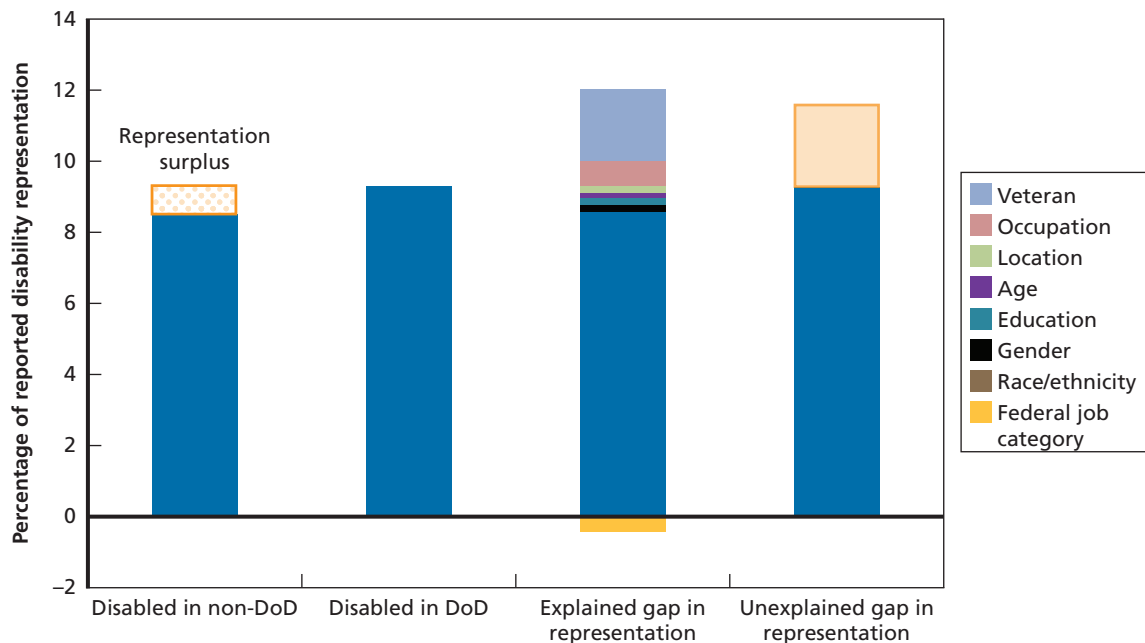
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-5.3*

plained gap of 2.2 percentage points. The same characteristics of veteran status and occupational structure account for 91 percent of the explained component in this instance, but the unexplained gap now shows that DoD underperforms relative to other federal agencies.

The underlying issue behind these results appears rooted in a lack of consistency in disability reporting. In the first comparison (Figure 5.2/Table 5.4), all veterans with at least a 30-percent disability rating are automatically included, regardless of whether they report a disability. This partly drives the result that the veteran characteristic is the most significant part of the explained component. By contrast, when knowledge of veteran disabilities from the hiring system is omitted from the definition (Figure 5.3/Table 5.5), the analysis projects that the DoD level of representation should be higher, mostly because of its high veteran population. These two results stem from the fact that veterans in DoD may be less likely to report disabilities than those in other federal agencies. In DoD agencies, only 27.5 percent of veterans who received a hiring preference for a disability rating of at least 30 percent reported having a disability, whereas 40.3 percent of these veterans in other federal agencies reported disabilities. We did not find any prior research that addresses the low percentage of veterans that report their disability status or the differential response rates between the DoD and non-DoD workforces. This difference in reporting makes it difficult to assess the true impact of workforce characteristics on representation of persons with disabilities. It also suggests that the true level of targeted disability representation in the federal workforce may be higher than is evident in the OPM data.

For the last auxiliary definition of disability status, we examined only veterans with a disability rating of at least 30 percent. This definition captures a group of individuals with dis-

abilities regardless of whether they self-identify their disabilities. Figure 5.4 and Table 5.6 show the overall representation comparison for this group, along with the detailed decomposition results that analyze the gap according to differences in workforce characteristics.

Table 5.5
The Impact of Workforce Characteristics on the Gap in Reported Disability Representation Between the DoD Workforce and the Non-DoD Federal Workforce

Variable	Size of Effect on Reported Disability Representation Gap Between Workforces
Total gap	−0.74% points
Race	−0.02% points
Gender	−0.16% points
Age	−0.13% points
Education	−0.22% points
Veteran status	−1.99% points
Occupation	−0.71% points
Federal job category	0.44% points
Location	−0.17% points
Explained gap	−3.0% points
Unexplained gap	2.2% points

NOTE: As in previous tables, negative values indicate that the characteristic decreases DoD representation relative to the non-DoD workforce, whereas positive values increase DoD representation relative to the non-DoD workforce. Negative values are shown as positive in Figure 5.3, so that they are easier to compare with the representation gap, which is also shown as positive. All values are statistically significant at the $\alpha = 0.001$ level.

The results in Figure 5.4 and Table 5.6 show that DoD employs veterans with a disability rating of 30 percent or more at over 2.5 times the rate that other federal agencies do, with a representation surplus of 6.3 percentage points. The decomposition indicates that workforce characteristics explain roughly 30 percent of this gap, while 4.5 percentage points of the gap cannot be attributed to these characteristics. Among the workforce characteristics that explain this gap, gender plays the largest explanatory role—the fact that a higher percentage of both DoD employees and veterans with at least 30-percent disability ratings are male accounts for 48 percent of the explained gap, or 0.91 percentage points. Other factors, such as occupation, education, and location, appear to play small contributing roles in the representation gap.

Figure 5.4
Difference in Representation of Veterans with 30-Percent or Higher Disability Rating Between the DoD Workforce and the Non-DoD Federal Workforce, with Decomposition Results

RAND *RR2279-5.4*
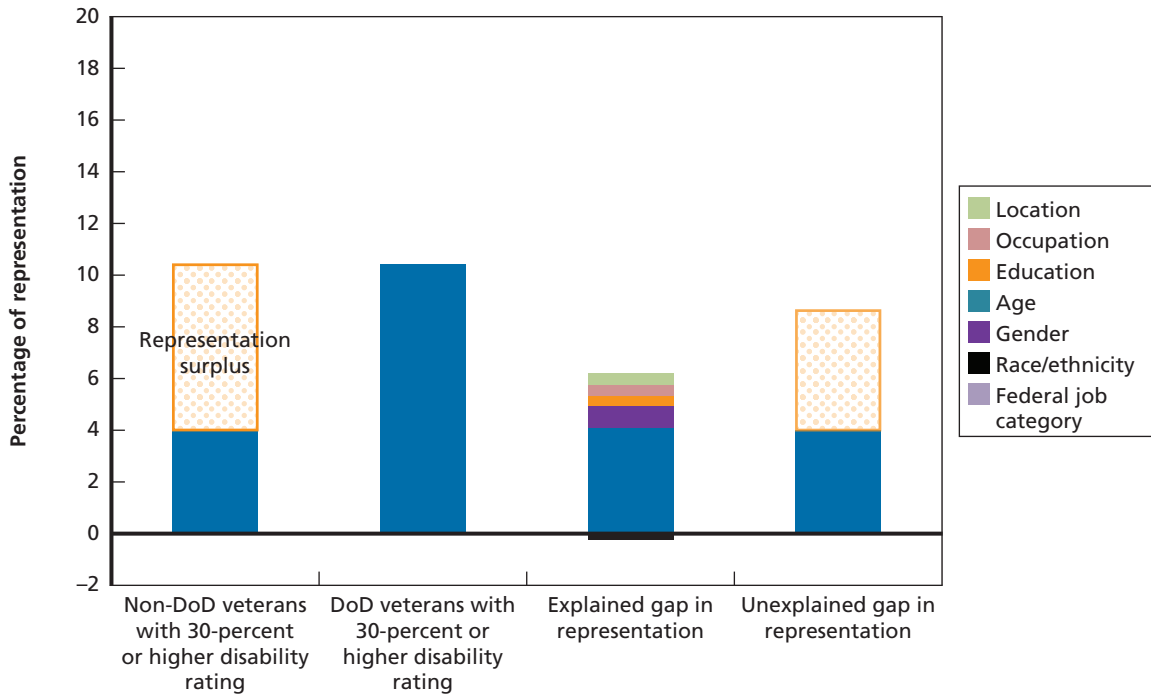
Table 5.6
The Impact of Workforce Characteristics on the Gap in
Representation of Veterans with 30-Percent or Higher Disability
Rating Between the DoD Workforce and the Non-DoD Federal
Workforce

Variable	Size of Effect on Disability Representation Gap Between Workforces
Total gap	−6.3% points
Race	0.11% points
Gender	−0.91% points
Age	−0.02% points
Education	−0.33% points
Occupation	−0.46% points
Federal job category	0.09% points
Location	−0.36% points
Explained gap	−1.9% points
Unexplained gap	−4.5% points

NOTE: As in previous tables, negative values indicate that the characteristic decreases DoD representation relative to the non-DoD workforce, whereas positive values increase DoD representation relative to the non-DoD workforce. Negative values are shown as positive in Figure 5.4, so that they are easier to compare with the representation gap, which is also shown as positive. All values are statistically significant at the $\alpha = 0.001$ level.

Summary

The decompositions show that DoD workforce characteristics do not tend to limit targeted disability representation relative to the non-DoD federal workforce. Several workforce characteristics relate to targeted disability status, but federal employees with targeted disabilities are more likely than the average federal employee to mirror the DoD characteristics. The workforce structure alone does not explain why DoD underrepresents PWTD relative to the non-DoD federal workforce.

Comparing DoD with the rest of the federal workforce cannot fully answer how workforce characteristics relate to targeted disability representation because so little is known about PWTD in the CLF. For example, we reported that the DoD occupational structure favors DoD targeted disability representation relative to the non-DoD federal workforce, in part because DoD occupations are more likely to be blue collar. However, DoD occupations are much *less likely* than occupations in the CLF to be blue collar, so the occupational structure could be a barrier to targeted disability representation relative to the national civilian work-

force. With no CLF benchmark, we cannot confirm which DoD characteristics represent a significant barrier to meeting the federal goal of 2-percent targeted disability representation.

The previous analysis also showed that there is a strong association between the tendency to employ veterans and general disability rates, but only a weak association between veteran employment levels and targeted disability representation. This pattern could reflect the nature of the subset of targeted disabilities. Some targeted disabilities reflect injuries that may occur during military service (such as missing limbs), but others (such as epilepsy or dwarfism) reflect conditions that would disqualify individuals from military service and should be rare among veterans. The net impact of a high level of veteran employment on targeted disability representation is unclear.

Another potential explanation for these patterns is underreporting of disabilities. Although it is not possible to determine the extent of underreporting for the overall federal workforce, the information that is available on veteran disabilities suggests that underreporting may be a significant problem. Specifically, 61 percent of veterans in the federal workforce who have a disability rating of at least 30 percent report having no disability to their agency. If just 17 percent of these employees were to have a targeted disability, the overall targeted disability rate in DoD would reach the 2-percent federal goal. The fact that veterans in DoD are less likely than veterans in other federal agencies to report having a disability suggests that underreporting tends to bias cross-agency comparisons. However, additional research would need to address whether and why veterans underreport targeted disabilities and how DoD can promote reporting within this group. Comparisons discussed in this chapter should therefore be interpreted with such limitations in mind.

To the extent that accurate reporting continues to indicate that the representation of targeted disabilities is lower in DoD than in other federal agencies, it is important to identify the source(s) of the difference. Further research could assess the extent to which other federal agencies are better able to accommodate individuals with targeted disabilities; whether these agencies more aggressively recruit and hire these individuals using the special authority of Schedule A; or whether these agencies are less likely to discriminate. To the extent that any of these differences explain the difference in representation rates, they provide guidance on measures DoD can take to increase the percentage of PWTD in its labor force.

Analysis of Job Applicant Data and Representation of PWTD in DoD

This chapter examines the population of recent applicants to DoD jobs to further illuminate the potential characteristics that contribute to the level of representation for persons with disabilities in DoD. The composition of the applicant pool at various stages in the process indicates where the greatest reductions in representation occur. Accurate applicant information can lead to better policies for identifying barriers to representation and reducing their impact.

We use data on DoD job applicants captured through the federal government's official online job listing website, USAJobs, and compare them with OPM data on the DoD civilian workforce. The data captured through the USAJobs website present a unique opportunity to examine the hiring process in the aggregate, although they will not include instances where employees are recruited and hired exclusively through special hiring authorities (which the OPM data show are especially important to PWTD). We focused on the federally targeted disabilities of interest prior to the changes made to these disabilities in August 2016. We found that targeted disability representation among applicants is similar to the overall level of representation in the DoD workforce but higher than that among recent new hires, because applicants with targeted disabilities are referred and selected at lower rates than applicants with no disabilities. When we compared the characteristics of the applicants, we found that those with disabilities appeared similarly qualified to applicants without disabilities.

Finally, we examined whether job characteristics, such as minimum salary, grade, and location, are associated with whether a job received an applicant with a disability. We found few strong relationships between job characteristics and garnering an applicant with a disability, suggesting that application behaviors may be similar across groups. However, this conclusion is tenuous, given the limitations of the data.

Data on DoD Online Job Applicants

We obtained data on all DoD job applicants who applied through the USAJobs website from 2012 to 2014. These data were linked to information listed in the corresponding job announcements. Applicants have the option to provide demographic information in their USAJobs profiles. We refer to these data as the USAJobs data. The USAJobs data contain some applicant and job characteristics but contain no information on the results of the applications at any stage of the hiring process.

We also received USA Staffing AFD files for FY 2015. USA Staffing is an automated hiring software system that OPM provides to federal agencies. It allows data on the hiring

process to be captured, stripped of personally identifiable information, and used for assessment of the hiring process. It builds from, but does not completely overlap with, the USAJobs data. The AFD files contain fewer applicant characteristics than the USAJobs data but have information on which applicants met minimum qualifications (for certain applications), which were referred to the selecting official, and which were ultimately selected for the position.

AFD files have some limitations. Although they provide some information on which applications met minimum qualifications, the data-capture process excludes certain applications, including those with no demographic information and those that were not referred to the application process.[1] Thus, the analysis of the AFD focuses on the three major stages of the hiring process: application, referral, and selection. The AFD data are at the application level (not the applicant level), and currently there is no variable available to identify applicants who apply to more than one position. Large differences between groups in the different job applications could bias the calculations in the subsequent figures.[2] It is also not possible to identify which applications were to full-time permanent positions. The analysis in this chapter must therefore, in contrast to previous chapters, focus on all jobs, including those for part-time or seasonal work. We do not expect this to greatly affect the results, as 92 percent of the positions in DoD are full-time, permanent positions.[3]

The USAJobs data and the AFD data provide different types of information on job applicants and have different limitations, so we draw on both for inferences about the application process. As in previous chapters, we compare these data with the OPM civilian personnel data files. The most recent year available for the OPM data files is 2013.

Disability Representation Through the DoD Application Process

Does the relatively low representation of PWTD in the DoD workforce result from a shortage of applicants or because such applicants are less likely to progress through the various stages of the hiring process?

Figure 6.1, using the most-recent data we had available from each source, shows how DoD representation of PWTD varies by phase of the hiring process. Overall, representation of PWTD is well below the 2-percent goal at each stage of the process. The AFD files also appear to indicate that representation decreases throughout the process, leading to a level among selectees that is slightly more than half that among all applications.

Some additional points of interpretation regarding Figure 6.1 should be noted. The gap between DoD selectees and new hires could be attributable to the fact that the new hire number relies on older data. There may also be differences between what the applicants reported at the time of their application and what they reported after being hired. Additionally, many appli-

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[1]   The AFD data include a variable for the total number of applicants for each job, so it is possible for us to determine how many applications did not provide demographic information for the subsequent charts. However, it is not possible to determine which missing applications met minimum qualifications for the job.

[2]   The USAJobs data, which allow identification of individual applicants, do not appear to indicate large differences by disability status in the number of different jobs that applicants seek, suggesting that this may not present a problem for our conclusions.

[3]   Later analysis using USAJobs data, rather than AFD data, show that only small differences exist between work types and schedules in the likelihood that a job received an applicant with a disability, conditional on other factors.

Figure 6.1
Representation of PWTD Through the DoD Application Process and in the DoD Workforce
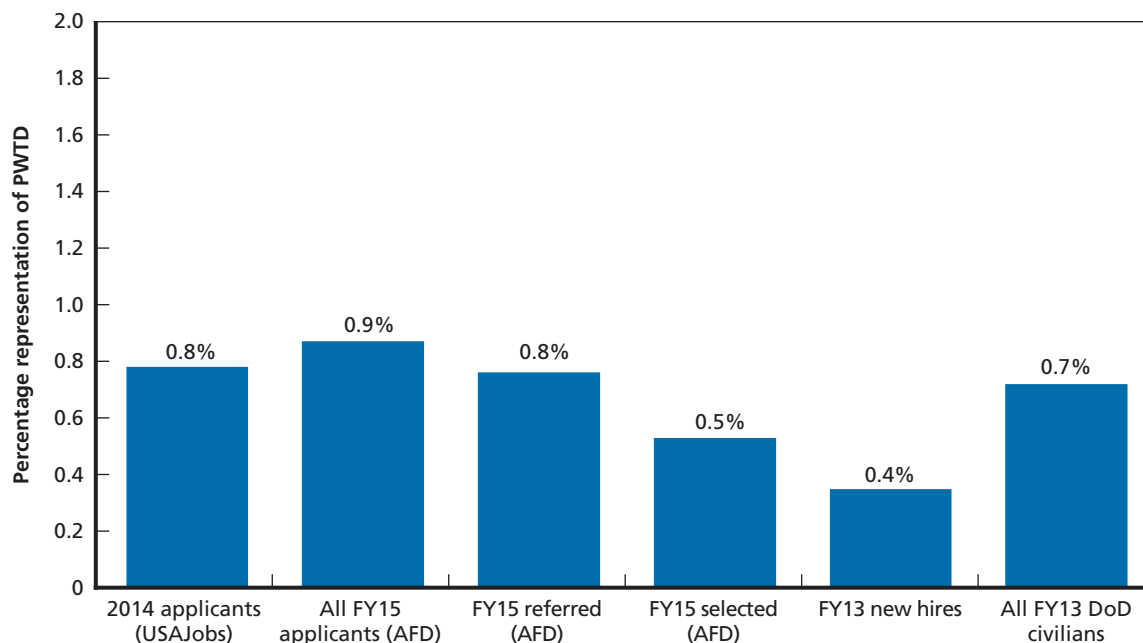
SOURCE: Authors' calculations from OPM federal workforce data.
RAND *RR2279-6.1*

cants with targeted disabilities are hired through special hiring authorities (such as Schedule A). These employees would appear among DoD new hires but not among AFD selectees. Thus, the representation bars for DoD new hires and all DoD civilians at the end of FY 2013 are useful as rough benchmarks but are not truly comparable to the adjacent AFD bars.

Figure 6.2 shows the same comparison as Figure 6.1 for DoD applicants with other types of disabilities—applicants who self-report any disability (including a targeted disability) and veterans with at least a 30-percent disability rating (some of whom may have also self-reported other disabilities).[4] Individuals with disabilities appear to follow a pattern that is similar to those with targeted disabilities, while representation for veterans with disabilities roughly triples between the application and referral stage. Representation for both groups appears higher in the recent personnel data for DoD than in the AFD. This could be because of differences over time, differences in reporting, or hiring that occurs outside of the USAJobs website.

There is a large discrepancy in DoD veteran representation between the USAJobs data and the AFD data. This difference likely stems from the fact that the AFD files contain information on verified veterans' preferences. The AFD data appear to indicate that a large percentage of veterans who claim preference for a 30-percent disability rating do not ultimately receive credit for it in the hiring process.

The changing levels of representation through the process imply that DoD referral and selection rates differ by disability status. Table 6.1 summarizes these differences by calculating the referral and selection rates, as well as the overall selection probability for each disability

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[4] Throughout this chapter, *individuals with disabilities* refers to those with any disability, including both those with targeted disabilities and those with non-targeted disabilities.

Figure 6.2
Representation of Persons in Other Disability Categories Through the DoD Application Process and in the DoD Workforce
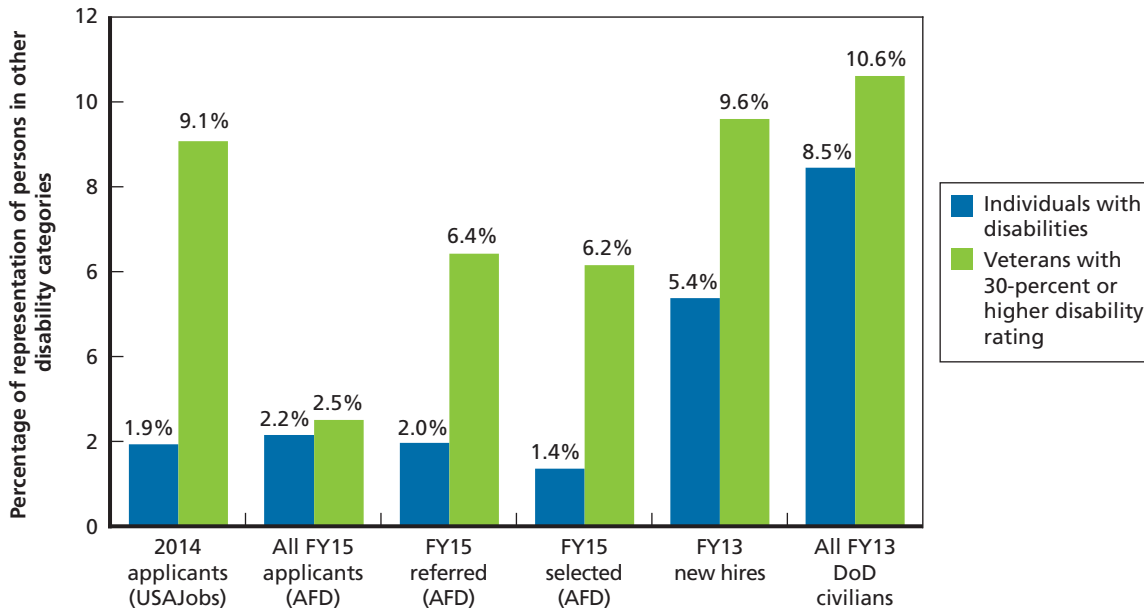
NOTE: The individuals with disabilities group includes those with targeted disabilities and those with non-targeted disabilities.

RAND *RR2279-6.2*

Table 6.1
Percentage Referred, Selected (Given Referral), and Overall Percentage Selected for FY 2015 DoD Applications, by Disability Status

	Referred (%)	Selected (Referred Applications) (%)	Selected (All Applications) (%)
No disability	30.0	9.5	2.8
PWTD	27.2	6.5	1.8
Individuals with disabilities	28.4	6.4	1.8
Veteran with 30-percent or higher disability	79.9	9.0	7.2

NOTE: All differences in rates between disability groups and applicants without disabilities are statistically significant at the $\alpha = 0.05$ level. The individuals with disabilities group includes both those with targeted disabilities and those with non-targeted disabilities.

group. The first two columns show that referral and selection (given referral) rates for DoD applications from PWTD tend to be about 3 percentage points lower than those for applications from individuals without disabilities. Individuals with any disabilities have a slightly higher referral rate than those with targeted disabilities, but similar selection rates. Veterans with a 30-percent disability rating, by contrast, have an extremely high referral rate (likely attributable in part to preferences in the hiring system), but these applications have a subsequent selection rate similar to applications from individuals with no disability.

The third column shows that the overall selection probability is about 1 percentage point lower for PWTD than for individuals with no disabilities. Applications from veterans with a

30-percent or higher disability rating, on the other hand, are 4.4 percentage points more likely to be selected overall than applications from individuals with no disabilities.

Overall, representation for PWTD appears to be limited both by insufficient levels of applicants and differential referral and selection rates. This result should be interpreted with caution, as comparisons with personnel data suggest that it could be sensitive to differences in how disability information is collected by each source.

Differences in DoD Applicant Qualifications by Disability Status

Given these potential differences in referral and selection rates, an important question is whether applicants with targeted or other disabilities tend to have different characteristics or qualifications than applicants without targeted or other disabilities. While we have little detailed information on applicant qualifications (compared with what a hiring authority would see), the USAJobs data include general self-reported qualifications that can be found in an applicant's individual profile, which present an opportunity to broadly examine this question. Table 6.2 shows education and experience information for 2014 applicants with targeted disabilities, applicants with any self-reported disabilities, and applicants without disabilities.[5] It suggests that DoD applicants with disabilities have similar qualifications to those of other applicants. For example, roughly half of all three groups have at least a bachelor's degree.

All three groups also have similar levels of experience in previous federal employment. This finding suggests that the differences in referral and selection rates probably do not reflect an "insider" advantage. If anything, applicants with targeted and other disabilities are more likely to be applying from within the federal civil service.

DoD Job Characteristics That Increase the Likelihood of an Applicant with a Disability

Previously, we focused on the characteristics of the DoD applicant pool. Here, we assess which job characteristics relate to whether a DoD job will receive an applicant with a targeted or other disability. We use a simple statistical model to test whether openings with certain characteristics, such as occupation or geographic location, are more likely than others to garner applicants with targeted or other disabilities. We use USAJobs data rather than the AFD data in these analyses because the USAJobs data included more-detailed job characteristics, such as the possible locations listed in the advertisement.

Previous chapters compared the characteristics of employees with targeted or other disabilities in the DoD workforce with their counterparts in the non-DoD workforce, but this analysis focuses on how well the federal government reaches workers with targeted or other disabilities outside its employment. If persons with targeted or other disabilities are more likely to prefer certain types of work, work schedules, or job locations, these characteristics should be correlated with whether those jobs received applicants with disabilities.

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[5]   Education information was missing for approximately 49 percent of the job applicants because information was only available for applicants who built their resume through the USAJobs resume builder. Persons with targeted disabilities and individuals with disabilities were about 5 percent more likely to have education information than other applicants. The reader should bear in mind that the education information may not be representative of the entire applicant population. Still, the broad similarity across the different types of career experience, which is likely correlated with education levels (but did not suffer from the same missing data problem) provides additional evidence of similar education levels across groups.

Table 6.2
Percentage of DoD Applicants in Each Education and Experience Category in 2014, by Disability Status

	No Disabilities (%)	PWTD (%)	Individuals with Disabilities (%)
Educational attainment			
Less than high school	0.6	0.4	0.4
High school/GED	17.8	16.5	15.7
Some college	20.0	21.7	21.1
Associate's degree	6.9	7.1	7.7
Bachelor's degree	28.9	27.8	27.3
Master's degree	19.4	19.0	19.8
Professional degree	4.1	5.0	5.4
Doctorate degree	2.4	2.5	2.6
Highest level of career experience			
Student (high school)	7.6	7.2	7.2
Student (college)	17.7	15.3	14.2
Student (graduate, post-graduate)	9.1	7.9	7.5
Entry level	10.0	10.1	8.7
Mid-career	26.3	25.3	25.6
Manager	20.7	22.7	24.6
Executive	3.2	3.9	4.3
Senior executive	1.0	1.3	1.4
Subject-matter expert	4.5	6.2	6.6
Federal employment status			
Current federal employee	21.7	20.2	22.0
Former federal employee	7.6	11.9	12.1
Never a federal employee	70.7	68.0	65.9

NOTE: GED = general equivalency diploma. The individuals with disabilities group includes those with targeted disabilities and those with non-targeted disabilities.

Methodology: Logistic Regression

In determining whether job characteristics predict whether a job received an applicant with a targeted or other disability, we are attempting to explain a dichotomous outcome variable (e.g., whether a job received an applicant with a targeted or any disability). Logistic regression is an appropriate tool to assess the relationship between DoD job characteristics and the probability of a DoD applicant with a disability. The essence of the methodology is that it assumes that there is an additive relationship among all potential characteristics and the likelihood of an applicant with a disability, and then uses the observed patterns in the data to infer the strength of the association between each characteristic and the outcome. The advantage of the regression approach over simple summary statistics in the current case is that it enables us to examine the partial effect of each variable, conditional on the other characteristics.

For the subsequent results, we calculate the average marginal effect of each variable on the probability of a DoD applicant with a disability. These values can be interpreted as the average change in the probability of a DoD applicant with a disability associated with a small change in the predictor, holding all other values constant. For the categorical variables, the average marginal effect is the average change in probability associated with the respective characteristic, relative to the base category.

Table 6.3 lists all of the job characteristics that we included in the model as potential predictors of whether an applicant for a job had a disability. The analysis included 113,872 job announcements, 0.94 percent of which received an applicant with a targeted disability and 2.26 percent of which received an applicant with any self-reported disability.

Results

Table 6.4 summarizes the results of the regression analysis by listing the average marginal effects on the probability of an applicant with a targeted disability or any self-reported disability.[6] It also lists the pseudo R^2 value, a measure on a scale of 0–1 of how much the characteristics improve the model relative to the empty model (higher values indicate a better fit).

In the targeted disability model, few characteristics are statistically significant and the R^2 value is extremely low. This indicates that there is not a strong relationship between the characteristics and the outcome variable. Thus, the types of DoD jobs that PWTD apply to are not different enough from the patterns in the general population to be detected.

Across the models, it appears that DoD applicants with targeted or other disabilities were slightly more likely to apply to administrative jobs and clerical jobs, but less likely to apply to other jobs, relative to professional jobs (the base category).[7] Jobs in the Air Force were less likely to receive applicants with disabilities. Increasing grade levels were less likely to receive applicants with disabilities, which is consistent with the finding in Chapter Four that workers with disabilities were overrepresented in lower pay grades. Finally, there was no discernible relationship between the region of the job's location and whether the job received an applicant with

Table 6.3
Potential Predictors of Whether a DoD Job Received an Applicant with a Disability

Characteristic	Description
Location	Region of job location (Northeast, South, Midwest, West, or multiple regions)
Occupation	Professional–white collar (P), Administrative–white collar (A), Technical–white collar (T), Clerical–white collar (C), Other–white collar (O), Blue collar (B) classification of advertised occupation
Grade	Minimum grade level (e.g., 11 for a job advertised as "GS-11 to GS-13")
Work schedule	Whether or not the job was full-time
Work type	Whether or not the job was permanent
Department	Whether the job listed was under DoD, Department of the Air Force, Department of the Army, or Department of the Navy

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[6] We do not analyze the probability of a veteran with a 30-percent disability rating because of the potential discrepancy between claimed and verified veteran status previously described. The USAJobs data appeared to have information only on applicants who claimed a hiring preference for a 30-percent disability rating.

[7] All jobs listed here are white-collar occupations.

Table 6.4
Average Marginal Effects from Logistic Regression Predicting the Probability of an Applicant with a Disability

	PWTD		Individuals with Disabilities	
	Marginal Effect	**Standard Error**	**Marginal Effect**	**Standard Error**
Occupation[a]				
Administrative	0.001	0.001	0.003*	0.001
Technical	−0.0004	0.001	−0.002	0.002
Clerical	0.002	0.001	0.004*	0.002
Other	−0.002	0.001	−0.007**	0.002
Blue collar	0.0003	0.001	−0.001	0.001
Department[b]				
Air Force	−0.004**	0.001	−0.007***	0.002
Army	−0.001	0.001	−0.002	0.002
Navy	−0.002	0.001	−0.002	0.002
Lower grade limit	−0.0003***	0.0001	−0.001***	0.0001
Permanent	0.001	0.001	0.003*	0.001
Full time	−0.002	0.002	0.00002	0.002
Region[c]				
Midwest	0.0003	0.001	0.002	0.002
South	0.001	0.001	0.005**	0.001
West	0.001	0.001	0.003*	0.002
Multiple regions	0.003	0.003	0.015**	0.005
Overall probability	0.0094		0.0226	
Pseudo R^2	0.005		0.0048	

NOTES: *, **, and *** denote statistical significance at the 0.05, 0.01, and 0.001 levels, respectively. A polynomial term was included for lower grade limit. The individuals with disabilities group includes both those with targeted disabilities and those with non-targeted disabilities.

[a] Base: Professional. Administrative, technical, clerical, and other are white-collar occupations.

[b] Base: DoD.

[c] Base: Northeast.

a targeted disability, but jobs in the South and West, as well as jobs listing multiple locations, were more likely to receive applicants with disabilities in general than jobs in the Northeast.

The lack of large and significant effects has several possible explanations. First, DoD applicants with targeted and other disabilities may, on average, be similar to other applicants. Second, the USAJobs data may not accurately measure the presence of targeted or other disabilities. For example, if there are many DoD applicants with targeted disabilities who have not reported them through the USAJobs website, we would not be able to identify all persons with such a disability who applied for DoD jobs. This would tend to mask the relationship between the characteristics and the likelihood of a job receiving an applicant with a targeted disability. Third, these general characteristics may not capture the most-important determinants of whether a position would receive an application of a person with a disability.

Fourth, and finally, DoD applicants with disabilities, especially those with targeted disabilities, have other paths to federal employment besides applying through USAJobs. OPM

data indicate that, in 2013, 51 percent of DoD new hires of persons with targeted disabilities were made under Schedule A authority, a special process reserved for hiring PWTD. Individuals who applied for DoD jobs through the USAJobs website thus may not be representative of all persons with disabilities seeking DoD employment.

Summary

This chapter expanded on previous chapters concerning potential barriers to employment in DoD for individuals with disabilities by examining recent applicants for DoD jobs. The findings suggest that representation of PWTD in the DoD applicant pool is probably lower than the federal goal, and that the representation of such persons decreases throughout the hiring process. Individuals with any disabilities show similar patterns of referral and selection to PWTD, but representation for veterans with disability ratings of at least 30 percent increases sharply at the referral stage, which is likely due in part to hiring preferences. Lower rates of referral and selection for DoD applicants with targeted disabilities cannot be easily attributed to lower levels of human capital or work experience.

When examining how the characteristics of the jobs relate to the likelihood of receiving an applicant with a targeted or other disability, few strong relationships emerge. Air Force jobs and jobs at higher grade levels were less likely to receive applicants with targeted or other disabilities, while jobs in the administrative and clerical sectors were more likely than professional jobs to receive these applicants.

These patterns point to two key policy implications. First, the consistently low rates of representation for persons with targeted and other disabilities at every phase of the process suggest that DoD would fall short of the federal representation goal even if all groups were selected at similar rates. To achieve the federal goal, DoD will need to expand the pool of potential employees with targeted disabilities through aggressive outreach. Second, policymakers should pay careful attention to whether disability information is comparable across populations. For example, the AFD data on veterans show that there can be large differences between claimed and verified disability status. Therefore, comparisons of self-reported information in USAJobs data with statistics from potentially more-accurate personnel data may be misleading. This point is part of a more comprehensive problem, which is that further research is needed to identify better ways to accurately measure disability status. Without accurate statistics, programs aiming to increase representation for disadvantaged groups will have difficulty targeting their efforts or measuring progress over time.

Qualitative Assessment of Representation Gaps Among PWTD in the DoD Civilian Workforce: DoD Interviews

To accompany our study's quantitative analyses and provide additional insights into underrepresentation of PWTD in the DoD civilian workforce, we also conducted a qualitative analysis. This qualitative analysis sought to assess perceptions of barriers regarding employment of PWTD. It also sought to examine DoD policies, procedures, and practices that may be associated with representation of PWTD in the DoD civilian workforce. This chapter provides an overview and methodology of our analysis and outlines qualitative findings based on our assessment.

Overview of Qualitative Analysis and Methodology

RAND conducted 22 semistructured interviews with a variety of representatives who could provide input to our analysis. We interviewed DoD personnel, including EEO and diversity staff, disability program managers, and hiring managers and supervisors. These interviews included representatives from OSD, each of the military departments (Air Force, Army, and Navy), and from a number of DoD agencies (e.g., Army Air Force Exchange Service, Defense Logistics Agency, Defense Commissary Agency, Washington Headquarters Service). Interviews with EEO and diversity personnel and disability program managers at the headquarters level provided perspectives of those whose primary mission involves understanding representation of demographic groups within the DoD workforce. They provided input on perceived barriers to increased representation of PWTD, as well as the relevant policies and practices that may impact representation of PWTD. DoD hiring managers and supervisors provided perspectives on how those policies and practices are implemented in the field and input regarding any potential barriers to the recruitment, hiring, promotion, and retention of PWTD. We also interviewed personnel from DoD's Recruitment Assistance Division (RAD), which leads DoD's marketing efforts for civilian employment opportunities, to provide additional perspectives on DoD outreach and recruitment initiatives regarding DoD civilian careers. We identified DoD interview participants primarily through snowball sampling, beginning with headquarters-level diversity and EEO personnel from each military department.[1] We also conducted interviews with representatives of federal agencies—including OPM, EEOC, and the U.S. Department of Labor—that have a role in the employment of PWTD. These interviews

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[1] Snowball sampling is a sampling technique by which initial study participants identify and suggest additional study participants to the research team.

sought to provide broader perspectives on increasing representation among PWTD in federal agencies to inform study recommendations.

Interviews were approximately one hour in length and were conducted by phone and in person. Participants were asked about perceptions of barriers to increased representation of PWTD, as well as outreach and recruitment, hiring, retention, and promotion strategies relevant to the workforce of PWTD. We did not ask about specific practices or programs. See Appendix H for the full interview protocol. We coded interview notes for content and analyzed them to identify key themes and trends. We also reviewed any supporting documents provided by interview participants. Next, we discuss the findings that emerged from these interviews. We cannot assume this sample is representative of the population. In addition, we recognize the possibility that some themes, although important, may have not been mentioned with frequency. To avoid inference regarding a larger population and to avoid overemphasis on theme counts, we chose not to include numbers or percentages in most cases.

Qualitative Assessment Findings

We summarize our findings by topic area: potential barriers to representation of PWTD, outreach and recruiting strategies, hiring strategies, and promotion and retention strategies.

Barriers to Representation of PWTD

When asked to identify factors that contribute to the small percentage of employees with targeted disabilities in interviewees' organizations within DoD and in the department as a whole, more than half of interviewees named implicit bias, making it the most frequently mentioned potential barrier to representation of PWTD. Interviewees described such implicit biases as perceptions from managers that PWTD would be incapable of performing the work that DoD positions require. Some interviewees thought that PWTD would not have the necessary skills to be effective DoD employees.

Interviewees also reported biases related to the accommodations that PWTD would require if hired. This included perceptions that PWTD would be too high-maintenance regarding accommodations and that the costs associated with these accommodations would be very high. Responses about implicit bias primarily referred to managers and other employees across interviewees' organizations, but some interviewees expressed similar views.

Some interviewees also suggested that PWTD would be reluctant to disclose their disability status. Such reluctance is seen as particularly prevalent among disabled veterans. Additionally, interviewees noted that some individuals with a psychological disability might not disclose it over fear of losing their security clearance.

Interviewees also mentioned barriers related to accommodations. These barriers included processing time for accommodation requests and a lack of support for accessibility technologies and equipment. Interviewees reported that the length of time required for reasonable accommodations equipment delivery or services needed is often not insignificant and limits the ability of employees with targeted disabilities to work effectively during this waiting period. Once accessibility technologies or equipment are delivered, interviewees noted that there is extremely limited support for their use. If there are equipment installation issues or software updates required, for instance, there is often not assistance provided to the employee using these technologies. The infrastructure and secure nature of DoD technologies and facilities can pres-

ent further barriers to PWTD. DoD's secure information technology systems can make the use of accessibility technologies difficult. Additionally, secure facilities can add complexity for accommodations, such as when an employee with targeted disabilities seeks to provide his or her own personal assistance services through a friend or family member who may not be able to access a secure facility.

Outreach and Recruiting Strategies

We asked DoD interviewees about the outreach and recruiting strategies their organizations are currently using or could use to encourage applications from PWTD. Interviewees mentioned two primary strategies: the OPM Chief Human Capital Officers' Shared List of People with Disabilities (OPM Shared List) and the Workforce Recruitment Program (WRP). While the focus of the OPM Shared List and WRP is on individuals with disabilities, not all of the individuals included in these sources have targeted disabilities.

OPM Shared List of People with Disabilities

The OPM Shared List, also referred to as the Bender List, was developed in response to Executive Order 13548, Increasing Federal Employment of Individuals with Disabilities, as a tool to help federal agencies increase representation of persons with disabilities (White House, 2010). The OPM Shared List is a database of candidates who are eligible to apply for federal employment through the Schedule A hiring authority. It is available at no cost to hiring managers across the federal government. This database was implemented and is maintained by OPM and its contractor, Bender Consulting Services, Inc., a private firm that is focused on the recruitment and employment of individuals with disabilities. Potential candidates are identified through OPM and Bender's outreach efforts with vocational rehabilitation programs, colleges and universities, and other networks. Interested candidates can also contact OPM and Bender directly about being added to the database. Candidates go through a screening process to assess qualifications and availability before being added to the database.

DoD interviewees had mixed views about the effectiveness of the OPM Shared List as a recruitment tool. Some emphasized that it is a useful pipeline for Schedule A candidates and is an underused resource. Others felt that it is not updated frequently enough and is inaccurate to some degree. Interviewees mentioned instances where hiring managers contacted a candidate on the list, only to learn that that person was no longer looking for employment, or, contrary to their expressed geographic preferences, was unwilling to relocate. Interviewees acknowledged that these experiences may be uncommon but noted that just one negative experience can discourage hiring managers from using the OPM Shared List. It is unclear whether such problems are prevalent or only perceived. While acknowledging that not every candidate profile in the database can be kept current at all times, OPM and Bender do seek to update the list regularly. Each month, Bender contacts a certain number of candidates who have been in the database for the longest amount of time to update their current employment status. If candidates do not respond to several emails, Bender calls these candidates; candidates who do not respond to phone calls are removed from the OPM Shared List.

While the OPM Shared List's online portal allows searching for candidates by geographic preferences, job occupation qualifications, education, clearance information, and veteran status, a few DoD interviewees suggested that candidates' skill sets are poorly categorized. Interviewees reported that some candidates were listed as qualified for all job categories requiring widely varying skill sets, indicating a lack of validity in candidate information. Bender's vetting pro-

cess determines job occupation qualifications for inclusion in the list, but it is unclear whether the categories included and the methods used to classify qualifications are appropriate and relevant.

Workforce Recruitment Program

DoD interviewees reported that the WRP is a useful recruitment tool for building a pipeline of PWTD and Schedule A candidates. WRP is a recruitment and referral program managed jointly by DoD and the U.S. Department of Labor for college students and recent graduates with disabilities. It connects hiring managers with college students and recent graduates with disabilities for the purpose of placement in internships or permanent federal positions. Interviewees reported that the WRP raises awareness of DoD civilian opportunities with college students and recent graduates with disabilities.

Trained federal recruiters interview interested candidates to evaluate their qualifications for the program. DoD interviewees noted that candidates included in the WRP database are thoroughly vetted and that it is a trusted resource of candidates. However, interviewees believed that DoD could benefit from increased awareness and broader use of the WRP. Across the federal government, DoD is the largest user of the WRP. Each year, approximately 1,800 candidates available for hire are included in the WRP database. As the largest federal government user, DoD hires approximately 300 interns with disabilities per year. Interviewees believed that this number could increase with more awareness of the program across the department.

Interviewees mentioned some misperceptions that WRP database candidates can only be hired into temporary positions (e.g., internships). As mentioned previously, while the program is primarily used for internships, it is possible to hire a WRP candidate into a permanent position. The WRP guarantees 14 weeks of funding for selected candidates, but such candidates can be converted to permanent positions via a Schedule A hire if an opportunity is available. Hiring managers can also use the WRP database as a resource to directly hire Schedule A–eligible candidates into permanent positions, using this database in a similar way to the OPM Shared List. Interviewees felt that these options for permanent hires could be leveraged to a greater extent within the department.

Other Outreach and Recruitment Strategies

Interviewees mentioned a few additional outreach and recruitment strategies. These included engagement with disability advocacy groups in the community and programs for students with disabilities at colleges and universities, as well as participation in relevant job fairs. A few interviewees specifically mentioned job or career fair events that target disabled veterans. One such event is the Hiring Heroes career fairs, held on installations, which connect employers with wounded service members leaving the military. The events also aim to inform these wounded warriors about opportunities to continue to serve their country in a civilian capacity with DoD and educate them about relevant hiring authorities, such as Schedule A, that may benefit them.

Some interviewees noted that DoD could do much more outreach to PWTD regarding civilian careers. However, funding limitations were mentioned as often restricting additional efforts.

Hiring Strategies

We also asked interviewees about hiring strategies that DoD could use for PWTD. Interviewees reported that Schedule A is a valuable hiring tool but that there are some challenges to using it.[2]

Despite training efforts for hiring managers on employment of persons with disabilities as mandated by Executive Order 13548 (White House, 2010), interviewees stated that issues regarding manager awareness and understanding of Schedule A persist. Some managers are reportedly unaware of Schedule A and some are unsure how and when to use it.

Interviewees also indicated confusion regarding disclosure of disability status for Schedule A candidates, which some felt resulted in inaccurate representation statistics for PWTD. While participation in disability status reporting is generally optional, it is not for Schedule A hires. SF-256, the federal self-identification of disability form, clearly states that for employees appointed under the Schedule A hiring authority, the disability reporting system is not voluntary. In fact, it states that Schedule A hires "will be requested to identify their disability status and if they decline to do so, their correct disability code will be obtained from medical documentation used to support their appointment." Still, some interviewees reported that Schedule A hires were not disclosing their disability status and that managers were not consistently following the reporting requirement of SF-256.

Interviews also revealed inconsistencies across DoD organizations regarding the process for hiring managers to request Schedule A–eligible applicants. When hiring managers have an open position to fill, they complete a Request for Personnel Action (RPA). However, there is confusion and inconsistency surrounding how the RPA process works for Schedule A candidates. Some agencies reported that hiring managers must proactively indicate on the RPA that they would like to receive Schedule A candidate applications as part of the review process. If they do not, applicants who indicate that they are eligible for Schedule A will not be routed for evaluation for this position. Some agencies say that this is not the case with their RPA system. A few stated that they have changed their systems so that qualified Schedule A candidates are automatically routed for positions. These systems essentially "opt out" rather than "opt in" for receiving Schedule A applicants, with any manager who opts out required to give an explanation. Other interviewees suggested general confusion about the RPA and Schedule A process in their organizations.

Some interviewees noted that PWTD may not apply for positions through Schedule A because of fears associated with disability status disclosure or even because they do not want to deal with the paperwork involved. Interviewees mentioned that the issue of not applying through Schedule A was particularly prevalent among disabled veterans. Despite these concerns, overall, interviewees emphasized Schedule A as the primary hiring strategy for bringing PWTD into their organizations.

Promotion and Retention Strategies

We also asked DoD interviewees about strategies to support the promotion and retention of DoD employees with targeted disabilities. Interviewees identified few such efforts and perceived that promotion and retention efforts in their organizations are largely not targeted to PWTD.

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[2] Schedule A allows "people with severe physical disabilities, psychiatric disabilities, and intellectual disabilities" to be hired into federal government positions noncompetitively.

Interviewees identified challenges to promoting employees with targeted disabilities in their organizations. Some interviewees noted that PWTD often lack opportunities in their organizations beyond entry-level positions. They also noted limited opportunities for PWTD in MCOs, which tend to have career paths to more-senior positions. This matches our quantitative analyses, which found that PWTD tend to be in positions in the lower grades and not in positions with career paths that lead to supervisory roles. When asked about potential reasons for this lack of opportunity in higher-level positions and MCOs, most interviewees were unable to offer an explanation for this trend. A few interviewees suggested that this trend was related to biases against PWTD in the department. Interviewees also identified a second potential barrier to promotions for employees with targeted disabilities: Training and other career-development opportunities may not always provide reasonable accommodations for employees with targeted disabilities, limiting their ability to participate in activities that can increase promotion potential.

Interviewees were not able to identify specific efforts to retain employees with targeted disabilities but felt that reasonable accommodations and an inclusive work environment had a positive impact. If reasonable accommodations are made for PWTD to do their jobs, they are more likely to stay. Similarly, an environment that welcomes PWTD will encourage them to remain as DoD civilian employees. Interviewees also suggested that promotion opportunities could help improve the retention of employees with targeted disabilities.

Summary

The most frequently mentioned potential barrier to employment of PWTD that our interviewees cited was the perception that PWTD do not have the skills for DoD jobs or would be too difficult to accommodate. Interviewees did note two primary outreach and recruitment strategies for PWTD—the OPM Shared List and WRP—and suggested ways these could be improved or better leveraged. Other outreach and recruitment strategies they mentioned were connecting with disability advocacy groups and participating in relevant job fairs and in programs for students with disabilities at colleges and universities.

In terms of hiring strategies, interviewees identified Schedule A as a useful tool for employing PWTD but also discussed challenges related to using it, including a limited or lack of awareness and understanding of proper use among hiring managers, confusion regarding Schedule A hires' disability status reporting, and inconsistencies in different organizations' RPA processes for including Schedule A candidates in the job-evaluation process. Interviewees largely felt that promotion and retention efforts in their organizations were not directed at supporting employees with targeted disabilities.

Some interviewees noted challenges to promotion opportunities and contributors to retention of PWTD. Challenges identified included employees with targeted disabilities having limited opportunities in MCOs and positions beyond entry level and the lack of reasonable accommodations for training or other career-development opportunities. Interviewees noted that reasonable accommodations and a welcoming and inclusive work environment can help in retaining employees with targeted disabilities.

Qualitative Assessment of Representation Gaps Among PWTD in the DoD Civilian Workforce: Interviews with University Representatives

In addition to interviews with DoD personnel, we conducted interviews with representatives from universities designed for individuals with disabilities or that include large numbers of students with disabilities who are supported by inclusive environments and robust programs for students with disabilities. Through these interviews, we sought input on how employers engage students with disabilities regarding work opportunities.

Overview of Qualitative Analysis and Methodology

To identify relevant universities for interviews, we spoke with a representative from the U.S. Department of Labor's Office of Disability Employment Policy, which oversees the WRP. This representative provided input to the study and named several universities that are active in the WRP. Our subsequent interviews included representatives from Gallaudet University; the National Technical Institute for the Deaf (NTID); the Rochester Institute of Technology; the University of California, Berkeley; and the University of Colorado, Colorado Springs.[1] Both Gallaudet University and NTID are designed for hearing-impaired students. We also interviewed representatives from DoD's RAD, which oversees the Student Training and Academic Recruitment (STAR) Program, identified by NTID as an effective DoD outreach practice.

We conducted seven semistructured interviews, each roughly one hour in length. We asked participants about the types of organizations recruiting at their universities; outreach, recruitment, hiring, and retention strategies these organizations employ or should employ to be most effective; and reasons for underrepresentation of PWTD in some organizations. See Appendix H for the full interview protocol. We coded the content of qualitative interview notes and analyzed them to identify key themes and trends. We also reviewed any supporting documents provided by participants.

Qualitative Assessment Findings

Our interviews had two broad areas of findings: barriers to employment of PWTD and strategies to overcome these barriers. We summarize each in the following sections.

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[1] Four of these institutions indicated that DoD recruits at their institution.

Barriers to Employment of PWTD

University representatives identified several potential barriers to employment of PWTD. These included both overarching barriers relevant to all organizations and those unique to DoD.

Overarching Barriers

Regarding overarching barriers, university representatives noted that students with disabilities can lack confidence and feel anxiety about obtaining employment. Representatives mentioned that this is often the result of past discrimination or other negative experiences that these students may have experienced. The resulting lack of confidence or anxiety may discourage students with disabilities who are actively seeking employment. This lack of confidence may be misconstrued by a recruiter or a hiring official as a lack of ability on the part of the student and thus result in an unsuccessful interview.

University representatives also noted that students often do not disclose their disability status during the recruitment process because of a fear of discrimination from potential employers. This nondisclosure may create a barrier to employment because it can result in a lack of interview accommodations. Representatives mentioned examples of hearing-impaired students not disclosing their disability status with potential employers because they did not want to be a burden and believed they could conduct the interview without an interpreter. Yet often these students did not communicate well without an interpreter, resulting in unsuccessful interviews. University representatives added that students who do not disclose their disability status may not signal recruiters to explore nontraditional experience or skills. Students with disabilities may have fewer opportunities to gain experience through summer jobs because of accessibility issues and will seek to gain these experiences in different ways. If recruiters are unaware of a disability, they may not be aware that they should look for this type of nontraditional experience.

Another potential barrier university representatives mentioned was organizational culture, which may not always welcome PWTD. Managers in some organizations lack awareness related to PWTD. Some universities offer training to employers to overcome this barrier. For instance, Gallaudet offers awareness training to potential employers who have never had a deaf employee or who request refresher training.

DoD-Specific Barriers

University representatives also identified potential barriers to increased employment of PWTD that are unique to DoD. First, they noted that students with disabilities are often not aware of or do not fully understand DoD civilian opportunities. Students with disabilities may associate DoD opportunities only with military service and think that it is not an opportunity available to them.

Second, university representatives noted that obtaining medical documentation for Schedule A can be a challenge for students away from their home doctor. Students with disabilities may not feel comfortable finding and visiting a new doctor near their university. This may be a particular challenge for students attending universities not designed for students with disabilities.

Potential Strategies to Overcome Barriers to Employment of PWTD

University representatives offered several strategies to address these barriers. In particular, they suggested a number of strategies for organizations to more effectively recruit and hire students with disabilities at their universities.

Representatives recommended that organizations increase campus presence at universities with high populations of students with disabilities. This would permit more face-to-face interaction between potential employers and students with disabilities. They emphasized that job fair participation alone is often not effective to connect with students. Job fairs can present accessibility issues for students at universities not designed for students with disabilities. For example, interpreters may not be readily available at job fairs for students who are deaf or hard of hearing. To effectively connect with students outside of job fairs, university representatives suggested that organizations increase their campus presence by holding workshops or information sessions with students. At universities where most students do not have disabilities, these workshops or information sessions could be held with campus groups for students with disabilities. Representatives suggested that organizations should consider giving presentations in classes through engagement with faculty in departments relevant to organizational skill needs. University representatives also suggested that organizations involve alumni with disabilities in recruiting activities when possible. This, they noted, sends a strong message to students with disabilities that the organization is interested in hiring them and could alleviate some fear of discrimination.

University representatives felt that the WRP was a beneficial hiring tool but that it could be better leveraged. They suggested that the WRP should expand to include more opportunities outside the Washington, D.C., area so that students with disabilities might have more geographic options for employment.[2] They noted that the WRP database could be used for more-permanent positions for graduating students with disabilities rather than focusing primarily on internships.

University representatives suggested that organizations seeking to increase recruitment and hiring of students with disabilities consider modifying traditional recruiting strategies to better recognize such students. Because of accessibility issues, students with disabilities may have limited conventional work experience and—at universities not designed for students with disabilities—lower grade point averages. For example, it may be more difficult for students with disabilities to have summer internships if they require accommodations or have to arrange transportation in a new area. However, interviewees stressed that these conventional measures are not necessarily a reflection of an individual's skills and what they offer an organization. Recruiters should recognize talent displayed in nontraditional ways. To do so, employers may create lists of comparable job-related experiences and qualifications so that students are able to demonstrate skills in other ways. Recruiters should also be open-minded about reasons for any gaps in work experience. Interviewees were very clear that these types of modified recruiting strategies were in no way intended to lower standards or qualifications. Therefore, although review and assessment would be needed, these strategies might be minimally affected by OPM occupational classification requirements, such as minimum qualifications. Rather, these strategies would give students with disabilities more flexibility and opportunity to demonstrate the skills and experience that qualify them for a position.

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[2] Interview participants stated that WRP opportunities were focused in the Washington, D.C., area, but we did not gather data to confirm this perception.

Interviewees also mentioned that recruiters should be aware that students with disabilities may have a lack of confidence that is reflected in their demeanor or body language when interacting with recruiters, such as not looking recruiters in the eye or not assertively "selling themselves." This low confidence could stem from experiences with past discrimination, and recruiters should be sensitive to this and recognize that a lack of confidence does not equal a lack of ability. For example, interviewees mentioned that, at job fairs or other recruiting events, especially at schools that are not designed for students with disabilities, students with disabilities may shy away from recruiters at the first sign that an organization may not be interested in them. This could be signaled to the student simply by a recruiter first asking about summer job experience if the student is lacking that type of experience. Interviewees also acknowledged that universities need to continue to educate students with disabilities about their potential in the job market.

To retain PWTD once they are hired, university representatives suggested that organizations educate coworkers and managers through disability etiquette or awareness training. As noted, some universities may offer such training. Representatives also noted that organizations should ensure that PWTD are comfortable requesting needed accommodations and that this should boost retention.[3]

Promising DoD Practices

University representatives noted two promising practices in which DoD currently engages: the DoD STAR Program and a U.S. Navy Naval Air Systems Command (NAVAIR) outreach program.

DoD STAR Program

The STAR program is managed by DoD's RAD and hires students part-time as on-campus representatives and advocates for DoD civilian career opportunities (Defense Civilian Personnel Advisory Service, undated). STAR representatives market DoD careers to fellow students through hosting information sessions, participating in career fairs, and facilitating other peer-to-peer interactions.

The first STAR students joined the program in 2007. Four universities, each with a STAR student, now participate in the program. These universities are Michigan Technological University; University of Puerto Rico, a Hispanic-Serving Institution; Tennessee State University, a Historically Black College and University; and Rochester Institute of Technology, which houses the NTID. The STAR program seeks to raise awareness about DoD civilian opportunities in student populations that are diverse and somewhat remote and have limited exposure to DoD opportunities. The RAD ensures that universities selected to participate in the STAR program have students with skills in demand for DoD civilian jobs.

STAR representatives receive one week of onsite training and orientation in the Washington, D.C., area. After orientation, they work offsite at their universities but are in regular contact with RAD personnel. STAR representatives also engage with DoD's Recruiters' Consortium about specific internship or job opportunities available to students across the department. They help facilitate the application process by walking fellow students through the USAJobs process.

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[3] We acknowledge that DoD Human Resource and EEO programs offer disability training and that the Computer/Electronic Accommodations Program provides assistive technology and support services to employees with disabilities.

While data are not available to assess whether the STAR program has increased the number of DoD applicants or hires with targeted disabilities, RAD personnel report that the program is highly effective in raising awareness of DoD civilian opportunities at participating universities. The interviewee from NTID reported that the STAR program has been a very effective outreach tool with its students. NTID's STAR representative being a deaf student sends a message to other deaf students that DoD is interested in hiring them. NTID views the program as helpful for attracting more PWTD to DoD civilian careers. The interviewee noted that NTID STAR representatives have often gone on to a full-time position with DoD after graduation.

NAVAIR Outreach Program

To increase awareness of opportunities for students with disabilities, NAVAIR organizes site visits to its Patuxent River facility for Gallaudet University students. This outreach program communicates to students that NAVAIR has a strong interest in hiring students with disabilities, because they have dedicated time and resources exclusively for Gallaudet students during the site visit. These site visits also educate students about DoD opportunities and the NAVAIR work environment. While this program is a promising strategy to address underrepresentation of PWTD, this study did not find data on its efficacy.

Summary

This chapter outlined the perspectives of universities that are designed for individuals with disabilities or that include large numbers of students with disabilities who are supported by inclusive environments and robust programs. University representatives identified potential barriers to increased representation of PWTD in organizations, both overarching and unique to DoD. Overarching potential barriers included anxiety or a lack of confidence among students with disabilities about obtaining employment; nondisclosure of disability status by students during the recruitment process, which can result in a lack of accommodations during an interview; and organizational cultures that do not welcome PWTD. DoD-specific potential barriers included students with disabilities being unaware of DoD civilian opportunities and challenges associated with students obtaining documentation for Schedule A eligibility while living away from home.

Interviewees also offered potential strategies to overcome barriers to employment of PWTD and more effectively recruit and hire students at their universities. These included more on-campus presence beyond job fairs to increase face-to-face interactions with students with disabilities. University representatives also suggested leveraging successful programs like WRP to a greater extent, including increasing the number of positions located outside the Washington, D.C., area and more opportunities for permanent positions. Other approaches included modifying recruiting strategies to recognize talent in students with disabilities that may be demonstrated in nontraditional ways and retaining employees with disabilities by ensuring welcoming and inclusive environments. Interviewees noted that the STAR program and NAVAIR's outreach initiative with Gallaudet students are two promising DoD initiatives.

Review of the Content and Design of the Survey of PWTD

In testimony to the 112th Congress, the director of strategic issues for the U.S. Government Accountability Office noted, "The most significant barrier keeping people with disabilities from the workplace is attitudinal" (Jones, 2011). Researchers tend to agree that attitudes and perceptions are subtle barriers to the employment of persons with disabilities (Antonak and Livneh, 2000). In addition to attitudes and perceptions, limited knowledge regarding disability employment policies and practices may also influence employment of persons with disabilities (Bruyère, 2000; DoD, 2011). For example, policies and programs to promote federal employment and retention of persons with disabilities will have a minimal impact on improving federal representation of this group if hiring managers and supervisors do not know about or use them.

To improve the employment of persons with disabilities, DoD developed an operational plan addressing four aspects of employment (DoD, 2011)—namely, measurable goals, accountability, recruitment and hiring, and retention. Objectives and actions within DoD's operational plan address employee perceptions regarding the employment of persons with disabilities, employee knowledge of disability-relevant employment policies and practices, and agency/component utilization of disability-relevant services and programs. Thus, DoD's operational plan is, in part, designed to address attitudes, perceptions, and knowledge regarding various elements that may influence representation of persons with disabilities.

We sought to examine attitudes and perceptions toward PWTD in the DoD civilian workforce, to obtain recent information regarding employee knowledge of disability-relevant employment policies and practices in DoD, and to assess perceptions and experiences relevant to DoD's operational plan. To do so, we worked with the ODMEO to design an online survey to be administered to hiring managers and supervisors throughout the DoD civilian workforce. This chapter describes the design and content of the final survey that we developed. Item wording and descriptive results are presented in Appendix I. We administered this survey after the August 2016 changes to the federally targeted disability categories (OPM, 2016a). This survey therefore considers the new targeted disability categories and diverges from our earlier analyses, which relied on previous federally targeted categories (OPM, 2010).

Participation

Randomly selected individuals who held positions rated as GS-11 to GS-15 in the civilian DoD workforce, including those employed by the Air Force, Army, Navy, and Fourth Estate components, were emailed four requests over three weeks to participate in the online survey. Email requests were sent to 33,556 email addresses. Of these, 3,525 of our emails could not be

delivered because of an undeliverable email address, and we repeatedly received out-of-office responses from 426 email addresses. Our survey link was opened 14,050 times.

After clicking on the email link and prior to receiving survey questions, we provided information on the survey purpose, what participation in the survey entailed, and how participant survey responses would be treated. Individuals were informed that the survey was voluntary, that there was no penalty for deciding not to complete the survey or certain questions in the survey, and that their responses were anonymous. They were also informed that the survey focused on individuals with responsibilities involving supervision or hiring. Before proceeding, individuals had to indicate that they had read the information and wanted to continue to the survey. A total of 7,518 individuals did not respond to the introductory informed consent question ("I have read the information and I want to continue"). A total of 6,532 participants, or 22 percent of those who received the email, completed the informed consent question and entered the survey.

Screening Questions

Hiring managers and supervisors can have a strong influence on the employment, retention, and accommodation of individuals in their offices (Bruyère, Erickson, and Horne, 2002; Gates, 1993; Nieuwenhuijsen et al., 2004). We therefore sought to survey hiring managers and supervisors in the DoD civilian workforce. To ensure that all survey participants were hiring managers or supervisors, we used two screening questions, one assessing whether individuals were DoD employees and the other assessing whether they were hiring managers or supervisors.

Specifically, we first provided a list of all DoD components and agencies and asked individuals to indicate with which DoD component or agency they were employed.[1] Individuals could select all that applied. If an individual was not an employee of a DoD component or agency, he or she was informed that we were unable to include him or her in the survey. We screened out 39 individuals because they indicated that they did not work for a DoD agency or component.

Next, we asked individuals to provide information on their job responsibilities. They could select one or more of the following options: recruiting, interviewing, hiring, supervising, managing, and none of these. Those who selected "none of these" were informed that we were unable to include them as participants in the survey. We screened out 3,062 individuals because they indicated that they did not perform tasks of interest. All others could proceed to the next survey items. We received partial or complete responses from 3,431 individuals.[2]

Survey Design

The design of the survey provides a general framework for the topics we considered. In one section, we assessed perceptions of agency and office characteristics relevant to the employment of PWTD. In the second section, we assessed stereotypes, prejudice, and discrimination toward

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[1]   Information, such as a sample frame, regarding the number of employees in each organization who have responsibilities involving hiring and supervision is not available. In addition, to reduce the potential for identification of individual employees, we did not request GS levels from individual participants.

[2]   We maintained all responses within analyses. Therefore, we did not screen out individuals based on the number of items they completed.

PWTD in participants' components or agencies. In a third section, we measured participant opinions on the presence of and responses to employment barriers for PWTD. Fourth, and finally, we obtained demographic information of participants. As noted previously, our survey used the August 2016 definition of PWTD and the goal of 2-percent representation.

We chose anonymous, online surveys in part to reduce social anxiety and the desire to provide responses that participants believe would be viewed favorably by others (Joinson, 1999). Nevertheless, although they were assured anonymity, respondents may have been hesitant or unwilling to provide accurate information about their own attitudes and knowledge regarding the employment of PWTD. Most of our questions therefore asked individuals to provide information regarding the knowledge, attitudes, and behaviors of others in their office, agency, or component (Fisher, 1993; Fiske et al., 2002).

We expected the survey to take approximately 20 minutes for participants to complete and we understood that participants may not have been able to complete the entire survey at one time. Therefore, we designed the survey so that participants could suspend their participation at any time. Upon suspending participation, respondents were directed to a webpage where they were provided a unique survey identifier. To complete the survey, participants could either bookmark this suspension page and return to it or they could click on the original email link to the survey and enter their unique survey identifier. Because the survey was anonymous, we did not maintain participant email addresses, so we could not send an email to participants with their unique identifier, nor could we use email addresses to track which individuals participated.

Agency and Office Characteristics

Participants who proceeded to the main survey following screening were asked to complete a series of questions regarding characteristics of their agency and office. Before being presented with these questions, we informed participants that this survey focused on PWTD, which we spelled out before using the acronym, and we provided them with a brief list of the federally targeted disabilities. This passage stated the following:

> This survey focuses on PWTD. Targeted disabilities are those disabilities that the federal government has identified for special emphasis. Specifically, as defined by Standard Form (SF) 256, the targeted disabilities are: developmental disabilities, traumatic brain injury, deafness or serious difficulty hearing, blindness or serious difficulty seeing even when wearing glasses, missing extremities (arm, leg, hand and/or foot), significant mobility impairments, partial or complete paralysis (any cause), epilepsy or other seizure disorders, intellectual disabilities, psychiatric disabilities, dwarfism, and significant disfigurements.

To ensure that participants remained aware of the disabilities of interest during completion of this survey, we included information on each page that defined targeted disabilities.

Agency Goal Communication

After providing information on targeted disabilities, we presented participants with questions addressing the communication of targeted disability employment goals. Effective communication of strategic organizational goals is one part of the successful implementation of these

goals (Garnett, Marlowe, and Pandey, 2008; Goodman, Lerch, and Mukhopadhyay, 1994). Furthermore, measurable goals are a key aspect of employment in DoD's (2011) operational plan for the employment of persons with disabilities.

We used three questions to address the extent to which an individual's component or agency effectively communicated its goals regarding the employment of PWTD (Bruyère, Erickson, and Horne, 2002). Specifically, we asked participants to respond to questions regarding how knowledgeable employees in their office are about their agency's goals for the employment of PWTD (1 = *not at all knowledgeable*, 5 = *extremely knowledgeable*), how achievable participants perceive these goals to be (1 = *not at all achievable*, 5 = *extremely achievable*), and how well participants' agencies or components communicate these goals (1 = *very poorly*, 5 = *very well*).

Accountability

Ensuring management accountability is another component of effective goal implementation and is addressed in DoD's operational plan (DoD, 2011; Naff and Kellough, 2003). Three items developed for this survey addressed accountability within participants' agencies and offices. We asked participants to indicate their level of disagreement or agreement (1 = *completely disagree*, 5 = *completely agree*) with statements regarding whether their component or agency holds supervisors accountable for enhancing employment opportunities for PWTD, whether supervisors in their office hold employees accountable for creating a disability-friendly work environment, and whether their office regularly provides a status report on its employment of PWTD to their component or agency.

Outreach and Recruitment

Lack of outreach to and recruitment of PWTD may serve as a barrier to the employment of these persons, and DoD's operational plan for employment of individuals with disabilities focuses on both (DoD, 2011; Iyer and Masling, 2015; Klimoski and Donahue, 1997). Four survey items addressed participants' perceptions of their office's outreach and recruitment of PWTD (DoD, 2011; Hemenway et al., 2003). We asked participants to indicate the extent to which they disagreed or agreed (1 = *completely disagree*, 5 = *completely agree*) with statements regarding whether their office actively recruits PWTD, whether their office actively recruits these persons to serve as interns, whether their office works with organizations that represent PWTD as part of the office's recruitment strategy, and whether top managers in their component or agency are committed to hiring PWTD.

Ability to Provide Accommodations

DoD is legally required to provide reasonable accommodations to qualified individuals with disabilities. The ability to accommodate employees with targeted disabilities may influence the hiring and retention of this group, which are aspects of interest in DoD's operational plan (2011). Three items, building from previous survey research, addressed perceptions on the extent to which a respondent's office could accommodate PWTD (Hemenway et al., 2003). We asked participants to indicate their level of disagreement or agreement (1 = *completely disagree*, 5 = *completely agree*) to statements regarding the ability of their office to provide reasonable accommodations for PWTD, knowledge of those in their office about what DoD resources are available to assist in the accommodation process, and whether personnel in their office know whom to ask when questions arise regarding the employment of PWTD.

Knowledge and Use of Disability Authorities and Resources

Hiring authorities and disability resources can promote the hiring and retention of PWTD (National Council on Disability, 2009). Previous survey research conducted with supervisors in federal agencies found that 56 percent were familiar with the special authority for hiring disabled veterans, and 30 percent were familiar with the hiring authority for those with cognitive or significant physical disabilities, known as Schedule A (Bruyère, Erickson, and Horne, 2002). Less than 10 percent used various programs and resources for disability accommodation assistance, and familiarity with interview accommodations varied from 35 percent (for using a reader to assist a person with a learning disability of visual impairment) to 72 percent (for framing questions to applicants about the ability to perform specific job tasks rather than about disability). Although highly informative, this research was conducted more than a decade ago and across federal agencies. To obtain current information about DoD specifically, we sought to assess perceived familiarity and use of hiring resources and programs.

Hiring Authorities

To determine knowledge and use of hiring authorities, we asked participants to complete four items. They indicated how familiar (1 = *not at all familiar*, 5 = *extremely familiar*) their office's employees are with Schedule A provisions for hiring persons with disabilities and with the program for hiring veterans with a disability rating of at least 30 percent. They also indicated how frequently (1 = *never*, 5 = *quite a lot*) their office uses the provisions and programs.

Programs and Resources

To determine knowledge and use of programs and resources for persons with disabilities, we asked participants to complete six items. Participants indicated how familiar (1 = *not at all familiar*, 5 = *extremely familiar*) their office's employees are with DoD's WRP for College Students with Disabilities, the Computer/Electronic Accommodations Program (CAP), and the DoD Pipeline Return-to-Work Program. We also asked them to indicate how frequently (1 = *never*, 5 = *quite a lot*) their office uses each of these programs and resources.

Interviewing Policies

Seven items addressed familiarity with disability-relevant policies and procedures during interviews with potential employees. We asked participants to indicate how familiar (1 = *not at all familiar*, 5 = *extremely familiar*) employees in their office are with the following: framing questions to applicants about their ability to perform specific job tasks; knowing when to ask an applicant how they would perform specific job tasks; using a relay service to set up interviews; using a reader to assist a person with a learning disability or vision impairment; adapting print materials used in the interview to large print, diskette, or Braille; and accessing sign-language interpreters. We also asked participants to indicate how familiar employees in their office are with restrictions on eliciting information about medical issues affecting an applicant's health and safety on the job.

Training on Disability Policies and Practices

Training programs that educate employees on disabilities and on the laws, policies, and procedures regarding the employment of persons with disabilities may improve hiring and retention of these individuals (Schur, Kruse, and Blanck, 2005). Training on the employment of individuals with disabilities is an area of focus for DoD because it may boost hiring and retention of individuals with disabilities (DoD, 2011). To address training, we asked participants

to respond to questions regarding whether any of their office's employees had been trained on ten different disability-relevant topics (Bruyère, Erickson, and Horne, 2002). These topics were nondiscriminatory recruitment and hiring practices, nondiscrimination in the disciplinary process, equal access in promotional opportunities, the accommodation process for persons with disabilities, available DoD resources to assist in the accommodation process, confidentiality requirements for medical information, defining essential job functions, disability awareness, Rehabilitation Act requirements, and Federal Hiring Schedules.

For each topic, we asked participants to indicate whether employees had or had not been trained on the topic. If they were unsure whether employees had been trained, participants could indicate that they did not know. When participants indicated that employees in their office had been trained on a topic, they were also asked to indicate who had been trained: human resources staff, managers/supervisors, EEO staff, or other staff. Participants could select all that applied.

Employee Perceptions and Discrimination

The next survey section addressed perceptions and behaviors toward PWTD. Many items in this section drew from survey items used in previous social psychological research on stereotypes, affect, and behaviors (Cuddy, Fiske, and Glick, 2008). This previous research suggests that people differentiate groups, like persons with disabilities, in terms of how warm or cold (e.g., liking) and competent or incompetent (e.g., respecting) they perceive the groups to be (Fiske, Cuddy, and Glick, 2007; Rohmer and Louvet, 2012). In previous research with both college students and nonstudents, persons with disabilities were perceived to be high in warmth and low in competence (Fiske et al., 2002). To assess stereotype content regarding PWTD, we assessed the perceived warmth and competence of this group among DoD employees (Fiske et al., 2002).

Employee Perceptions
We asked participants to rate PWTD based on perceptions of employees in their DoD component or agency. To assess perceptions regarding the competence of PWTD, we asked participants to indicate how competent, skillful, and efficient (1 = *not at all*, 5 = *extremely*) employees with targeted disabilities are perceived to be in their component or agency. To assess perceptions regarding the warmth of PWTD, participants indicated how tolerant, trustworthy, and friendly employees with targeted disabilities are perceived to be in their component or agency.

Employee Behaviors
We assessed two dimensions of discriminatory behaviors: active-passive and facilitation-harm. We based our assessment of these dimensions on previous research regarding stereotypes, prejudice, and discrimination (Cuddy, Fiske, and Glick, 2007). Active behaviors involve overt, directed efforts to impact employees with targeted disabilities. Passive behaviors involve less-directed behaviors toward the group. Facilitation involves behaviors that help employees with targeted disabilities. Harm involves acting in ways that may lead to detrimental outcomes for this group.

We assessed these behaviors by asking participants how often (1 = *never*, 5 = *quite a lot*) employees in their office assist employees with targeted disabilities (active help), harass and

argue with employees with targeted disabilities (active harm), cooperate and associate with employees with targeted disabilities (passive help), and ignore and exclude employees with targeted disabilities (passive harm).

To assess broad organizational incivility toward PWTD, we asked participants to indicate whether, in the past three years, they have seen several situations where any of their superiors or coworkers acted in a negative manner (Cortina et al., 2001). Participants indicated whether superiors or coworkers have (1 = *never*, 5 = *quite a lot*) put down or been condescending to an employee with targeted disabilities; shown little interest in the opinion of such an employee; made demeaning or derogatory remarks about such an employee; or doubted the judgment of an employee with targeted disabilities on a matter over which the employee had responsibility.[3]

Employee Interactions

A greater number of high-quality interactions with members of another group, such as PWTD, can reduce prejudice and discrimination toward that group (see, for example, Pettigrew and Tropp, 2006; Turner et al., 2008). To assess contact with PWTD, we asked participants how frequently (1 = *never*, 5 = *quite a lot*) they work on tasks or projects with current coworkers who have targeted disabilities and the quality (1 = *very poor*, 5 = *excellent*) of these interactions. We also asked how many of their coworkers during their entire employment history, including time worked both within and outside of DoD, had targeted disabilities (1 = *none*, 5 = *most*), how frequently they interacted with these individuals during their entire employment history (1 = *never*, 5 = *quite a lot*), and what the quality of their interactions had been like (1 = *very poor*, 5 = *excellent*).

Employment Barriers and Responses to These Barriers

The third survey section addressed perceptions of employment barriers for PWTD and of appropriate responses to employment barriers for this group. This section built from previous survey research conducted with federal supervisors (Bruyère, Erickson, and Horne, 2002). Based on discussions with DoD personnel, we incorporated additional items regarding employment barriers and responses to them.

Employment Barriers

Participants were presented with 14 potential barriers and were asked about the extent to which each pose a barrier to the employment of persons with disabilities (1 = *not a barrier*, 5 = *extreme barrier*). Three of these barriers involve resource requirements: cost of purchasing accommodations for PWTD, cost of implementing accommodations for PWTD, and the additional effort of supervising PWTD. Three involve knowledge limitations: limited information available on how to enhance employment of PWTD, limited supervisor knowledge of which accommodations to make, and lack of knowledge about available DoD resources to help the accommodation process. Two of the barriers involve accountability: limited supervisor accountability

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[3] We also examined perceptions regarding the perceived status of and competition with PWTD and affective reactions toward PWTD. However, results showed that, when considering these variables in mediation analyses, direct associations between perceptions and behaviors remained. Therefore, our description of the analyses does not focus on relationships with these additional variables. We do, however, include descriptive information in Appendix I.

for employment of persons with disabilities and lack of agency or component oversight over employment of PWTD. Two of the barriers involve negative perceptions: negative attitudes or stereotypes toward PWTD, and employer reluctance to hire PWTD. Four of the barriers involve perceived qualities of PWTD: lack of requisite skills, lack of related experience, lack of interest for work in the respondent's office, and lack of self-reporting on disability status.

Response to Barriers

We next asked participants how effective (1 = *not at all effective*, 5 = *extremely effective*) they feel each of eleven responses to employment barriers for PWTD would be. One response involves addressing resources: centralized funding, other than the CAP, for reasonable accommodations. One response involves addressing knowledge: training on DoD resources available to assist with the accommodation process. Three responses involve improving accountability: greater recognition of offices in the participant's DoD component or agency that hired PWTD, greater oversight from the participant's DoD component or agency, and increased accountability for supervisors to enhance employment of PWTD. Two responses address perceptions: changing coworker or supervisor attitudes toward PWTD and visible top management commitment. Four responses involve the recruitment and retention of PWTD: mentoring for employees with targeted disabilities, skills training for employees with targeted disabilities, increasing outreach to and recruitment of PWTD, and increasing the frequency with which employees are asked to provide information on disability status.

Demographic Characteristics

The final section of the survey requested demographic and additional descriptive information from participants. We asked participants to provide the total number of civilians in their office, the number of civilians in their office with targeted disabilities, and the targeted disabilities that civilians employed in their office had. We also asked participants to indicate how many employees their office had hired in the past three years and how many of these new hires had targeted disabilities. We asked participants in which state their office is located, whether they have any targeted disabilities, how many years they have been employed by their DoD component or agency, and their occupation series number. We also asked participants how many total days they have spent in formal training classes paid for by DoD or their agency and how much of this formal training is on improving employment opportunities for PWTD or related topics. Finally, we asked participants whether they know of the 2-percent representation goal for PWTD.

Summary

This chapter described the items and constructs contained in the RAND survey that address knowledge, attitudes, and perceptions among DoD hiring managers and supervisors regarding the employment of PWTD. These constructs and items build on previous research regarding intergroup attitudes and perceptions and addressing the employment of persons with disabilities in the federal government.

Results of the Survey of PWTD

In this chapter, we review the results of the survey we administered to civilian hiring managers and supervisors throughout DoD (see Chapter Nine). We focus on key results addressing DoD civilian employee perceptions of PWTD, and we address the relationships between these perceptions and factors relevant to policies for reducing barriers to employment of PWTD. The survey responses suggest that harmful behaviors toward PWTD are rare and that perceptions of PWTD in DoD are broadly positive. Furthermore, respondents who report more-positive perceptions of PWTD also tend to report more-positive perceptions of goal communication and accountability within their organizations, have better familiarity with disability programs, and have had positive past interactions with PWTD. These findings point to potential policy tools that DoD leaders might use to improve perceptions of PWTD. We provide additional descriptive information on every survey item in Appendix I and analyses of differences across services and occupation groups in Appendix J.

Analytic Approach

The original goal of this analysis was to gather a probability sample of employees responsible for recruiting, interviewing, hiring, supervising, or managing, using all employees in GS-11 through GS-15 as the sampling frame. Such a sample would permit the analysis to make inferences about how common certain perceptions are across these employees in DoD. However, when a large number of respondents indicated in the screening phase that they had none of these key responsibilities, this raised questions as to whether the remaining responses could be representative of the population from which we attempted to sample. Furthermore, the lack of systematic information on the characteristics of this target population eliminates from consideration potential weighting strategies that adjust for nonresponse bias.

Although there is still value in summarizing the patterns in the data, we approached statistical methods with caution in light of these challenges. For the relationships highlighted throughout the chapter, there is enough statistical precision to declare the patterns statistically significant, according to standard tests.[1] However, we generally refrained from doing so in order to not overemphasize the significance of the findings because of the uncertainty over whether the responses generalize to the broader population. Furthermore, we explored using a single scale for portions of the survey where multiple questions assessed the same construct

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[1] Most significance tests involved relating categorical predictors to Likert scale–type outcomes. To test for significance, we used Wald tests of the coefficients on a set of dummy variables in ordinary least squares regressions (with heteroskedasticity-robust standard errors) while also conducting the test with ordered logistic regressions as a sensitivity check.

(e.g., perceptions of warmth and competence), but in these results, we chose a single representative survey item to make each point more intuitively. Results are qualitatively similar regardless of which item we chose as the representative, and high-scale reliability statistics also indicate a good degree of internal consistency within each subgroup of items.[2]

Organizational Incivility Toward PWTD

We begin our discussion of survey results by focusing on a broad measure of general mistreatment toward PWTD in DoD—namely, *organizational incivility*. This measure assesses the extent to which any of a respondent's superiors or coworkers may have acted in a negative manner toward PWTD. Figure 10.1 displays the responses to the four survey items measuring different aspects of organizational incivility. The colored sections of each bar correspond to the percentage of employees who indicated each response. The responses are split into positive and negative groupings (divided by the vertical line at zero), and the adjacent numbers indicate the total percentage of positive or negative responses.

For each of the four items in Figure 10.1, the reported incidence of organizational incivility toward PWTD appears low, especially relative to prior work that has established much higher incivility incidence among public-sector employees in general (e.g., 71 percent reported that they had experienced some incivility over a five-year period; Cortina et al., 2001). Between

Figure 10.1
Survey Responses on Incivility Toward PWTD

Incivility: Within the past 3 years, have you seen a situation where any of your superiors or coworkers...
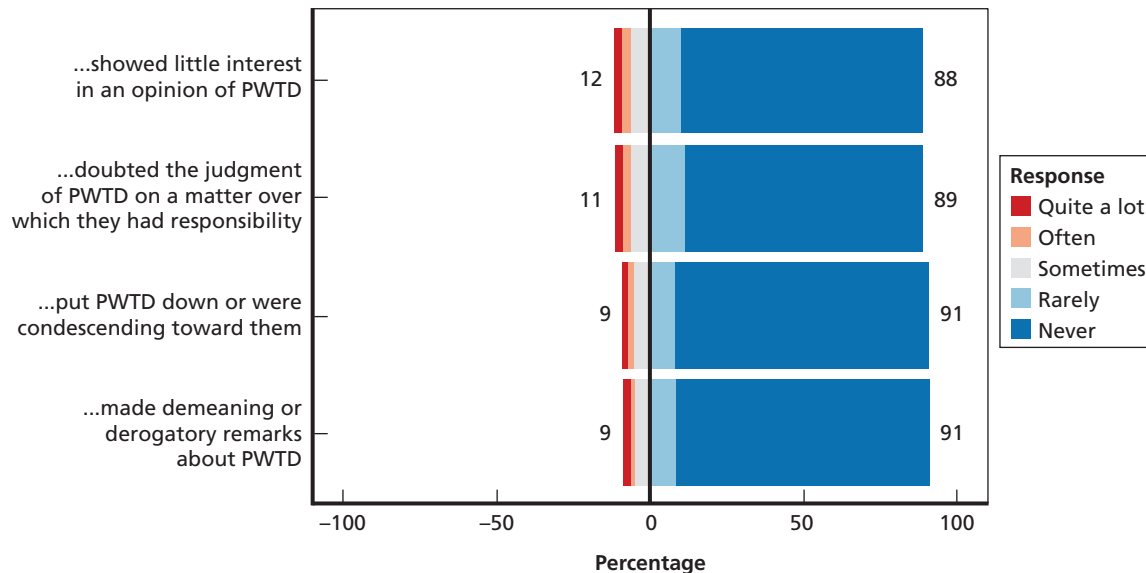
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 2,039 respondents who answered all four incivility questions.
RAND *RR2297-10.1*

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[2]   The following are Cronbach's Alpha values for each multi-item area examined in this chapter: incivility: 0.95; warmth: 0.91; competence: 0.96; helping behaviors: 0.91; harming behaviors: 0.87; goal communication: 0.76; accountability: 0.77; program familiarity: 0.85.

88 percent and 91 percent of respondents indicated that these behaviors "rarely" or "never" occur, and a large majority (72 percent) answered "never" on all four items.

Although most respondents indicated that incivility toward PWTD never occurs, we acknowledge that respondents may have been reluctant to report such negative behaviors. Such reluctance would lead to results showing less incivility than is actually present. We also note that PWTD are a small percentage of the DoD civilian workforce. If most respondents had not worked with any employees who had targeted disabilities in the past three years, a portion of the "never" responses could have been from those who had no opportunity to observe behaviors directed at PWTD.[3]

Although respondents indicated that incivility directed at PWTD is uncommon, negative behaviors could be more common in particular work contexts. To investigate this possibility, we examined whether organizational incivility (calculated as the average of the four items in Figure 10.1) appears to be clustered in a particular DoD component or occupation group. Figure 10.2 depicts this examination visually as a scatterplot of all responses, which are grouped by component and occupation. For an additional point of reference, the horizontal red line is the 90th percentile, meaning that 90 percent of all responses fell below it and the points above it reflect 10 percent of responses. No distinct component or occupation patterns emerge among the higher incivility responses. Although the Departments of the Army and Navy show more responses in the top region, this is because they had a higher overall number of responses to the survey. Responses indicating more-frequent incivility also reflect a mix of

Figure 10.2
Average Incivility Toward PWTD, by Component and Occupation
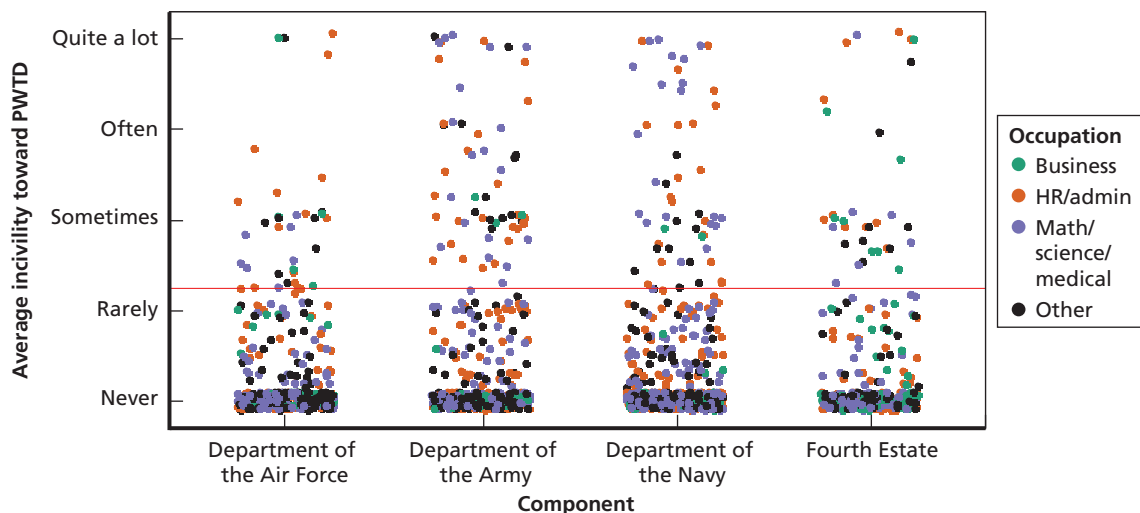
SOURCE: Authors' calculations from survey data.
NOTES: Values on the vertical axis reflect the average value of the four incivility survey items. Points with identical values are randomly spread out so that all responses are visible. The red horizontal line is the 90th percentile of the incivility values. The figure shows a total of 2,039 respondents who answered all four items.
RAND *RR2297-10.2*

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[3] Less than half of respondents (43 percent) indicated that neither they nor a current coworker had a targeted disability. This does not necessarily mean that they had no opportunity to observe incivility in the past three years. If this group were excluded from the calculations, the responses in Figure 10.1 would be more negative by 3 to 4 percentage points on each question. This is a relatively small change that does not substantially alter the conclusion.

occupational categories, such that one color or shape is not much more represented than others in the top half of Figure 10.2. The bottom of the figure shows that all components have many more responses indicating that organizational incivility is uncommon.
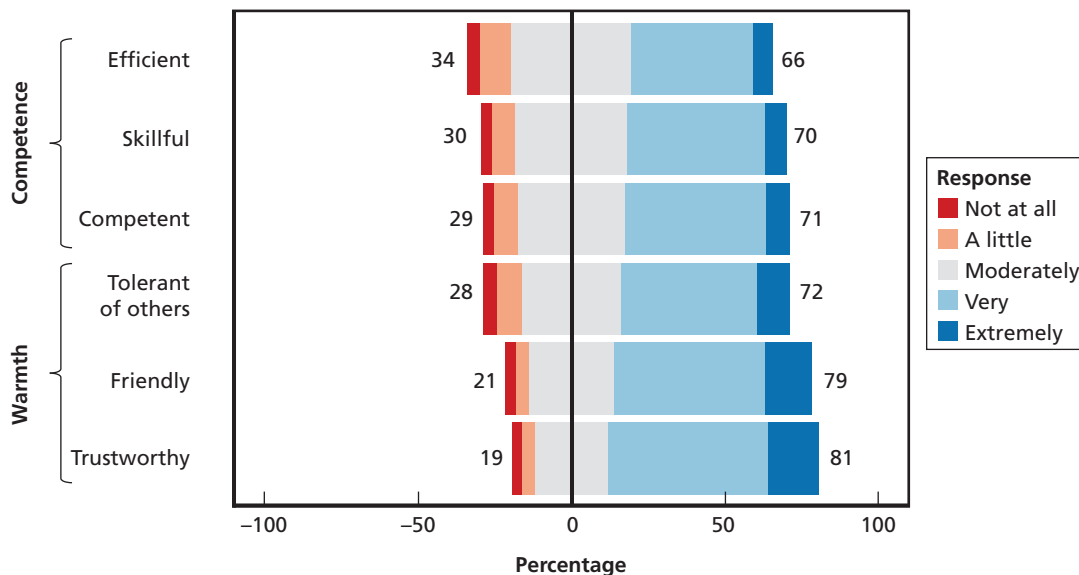
Perceptions of PWTD

We measured perceptions of PWTD along two main dimensions: *warmth* (e.g., liking) and *competence* (e.g., respecting). As noted in Chapter Nine, these dimensions appear to serve as the foundation for individuals' perceptions of different groups. Respondents with higher warmth perceptions indicated that employees in their component or agency think that PWTD are tolerant, trustworthy, and friendly, while respondents with higher competence perceptions indicated that PWTD are viewed as competent, efficient, and skillful.

Survey respondents provided ratings that suggest employees perceive PWTD to be moderately to extremely warm and competent (Figure 10.3; note that the vertical line now splits the "moderately" category so that half of those responses are positive and half are negative). Warmth perceptions of PWTD are much more strongly positive than competence perceptions of this group. This suggests that PWTD are viewed as having more warmth or likability than competence among DoD employees. This is consistent with other research on perceptions of people with disabilities (e.g., Fiske et al., 2002).

Figure 10.3
Warmth and Competence Perceptions of PWTD

SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,976 respondents who answered all questions assessing warmth and competence perceptions.
RAND *RR2297-10.3*

Connections Between Perceptions of and Behaviors Toward PWTD

Perceptions of the warmth and competence of PWTD are important to policy because previous research on discrimination has established that perceptions lead to positive or negative behaviors. In particular, we expect that employees with positive perceptions of PWTD would act kindly toward them, while those with negative perceptions would act harmfully toward them. Our survey assessed positive and negative behaviors by asking respondents whether employees in their components ignore, exclude, harass, or argue with PWTD (harming behaviors) or cooperate with, associate with, help, or assist PWTD (helping behaviors).

The next two figures depict the relationship between perceptions of the warmth (Figure 10.4) and competence (Figure 10.5) of PWTD and the frequency of harming behaviors (top panels) and helping behaviors (bottom panels) toward this group. The figures show the relationships as a linear trend overlaid on a scatterplot, with correlations (ρ) displayed in the top-left corner. Perceptions of both warmth and competence regarding PWTD are negatively correlated with harming behaviors and positively correlated with helping behaviors. This means that respondents indicating more-positive perceptions of PWTD also reported that their workplace was a better environment for employees with targeted disabilities.

While this sort of calculation cannot establish causality between perceptions and actions, it is a useful validity test that places these results in line with social psychologists' understanding of the causes of discrimination and previous evidence. The following sections will examine employee perceptions in more detail and show how they relate to the space of potential policies that might help foster more-positive perceptions toward PWTD.

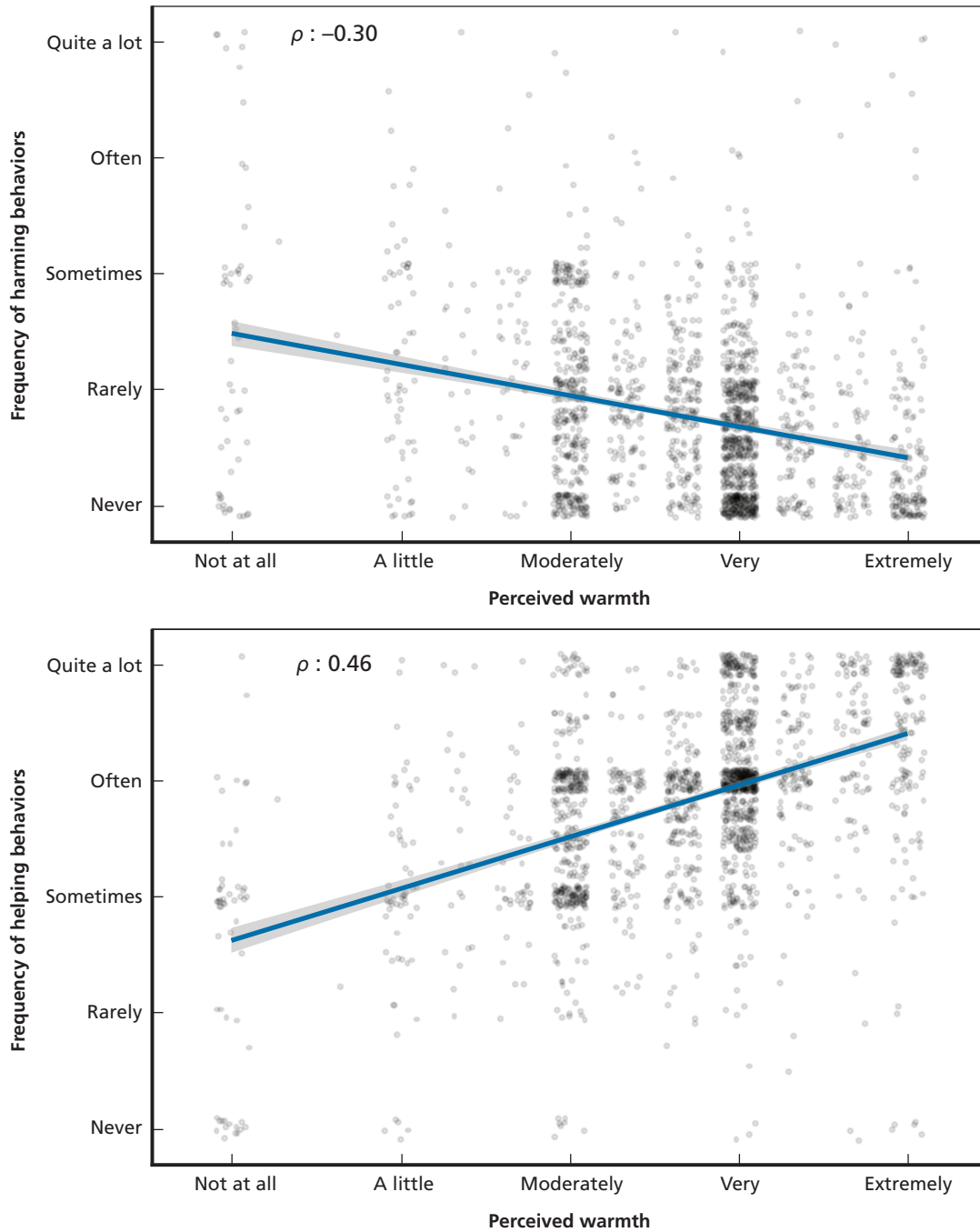## Potential Policy Tools to Foster More-Positive Perceptions

Having established a potential link between employee perceptions of PWTD and helping or harming behaviors toward them, a useful next step is to examine possible policy options related to these perceptions. These policy options can be broken down into three general categories: (1) agency knowledge of the federal employment goal and the communication and accountability of that goal, (2) training and familiarity with disability programs, and (3) employee interactions with PWTD. The following subsections examine each category individually.

Knowledge of the Federal Employment Goal for PWTD

Reaching a representation level of 2 percent is perhaps the most fundamental and visible employment goal for PWTD. Knowledge of this goal varies widely. We asked respondents to enter the goal as a percentage, and relatively few provided the correct answer (Figure 10.6, top panel). Only 17 percent correctly indicated that the employment goal for PWTD was 2 percent. Furthermore, there is some evidence that familiarity with the representation goal for PWTD is localized to employees in certain roles (Figure 10.6, bottom panel). In particular, employees who worked in human resources management were much more likely than other employees to indicate that the employment goal for PWTD was 2 percent.

Our survey may not be broadly representative of the DoD workforce, so this result should be interpreted with caution. However, the findings suggest one example where hiring managers and supervisors may not have absorbed the particular points of emphasis in past DoD efforts to promote employment for PWTD.

Figure 10.4
Warmth Perceptions Versus Frequency of Harming Behaviors (Top Panel) and Helping Behaviors (Bottom Panel)

SOURCE: Authors' calculations from survey data.
NOTE: Panels display the average response across all relevant items for 1,976 employees who responded, with a linear regression line in blue and 95-percent confidence interval in gray. Correlation value (ρ) is shown in the top left of each panel. Scatterplot points with identical values are randomly spread out so that all are visible.
RAND *RR2297-10.4*

Figure 10.5
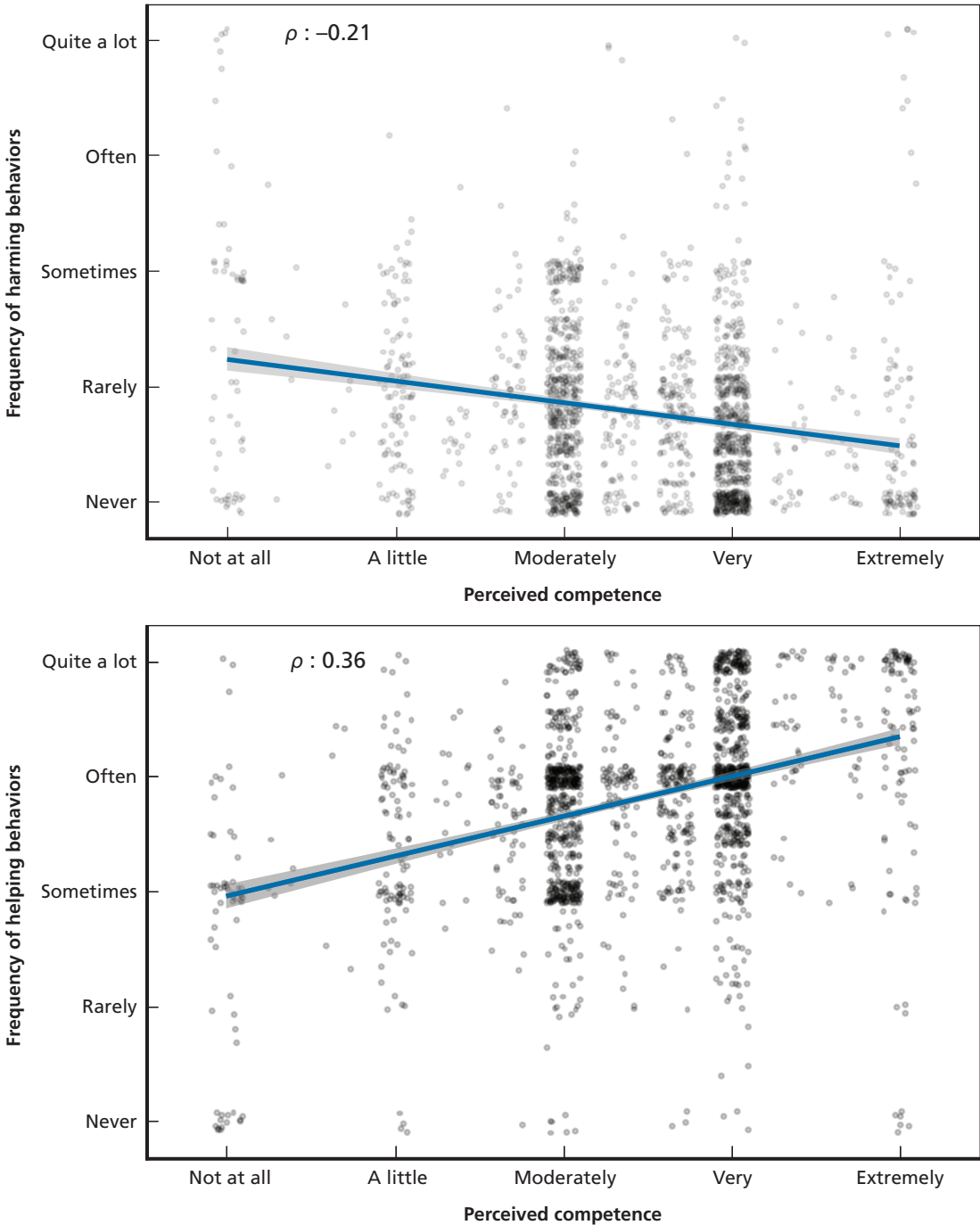**Competence Perceptions Versus Frequency of Harming Behaviors (Top Panel) and Helping Behaviors (Bottom Panel)**

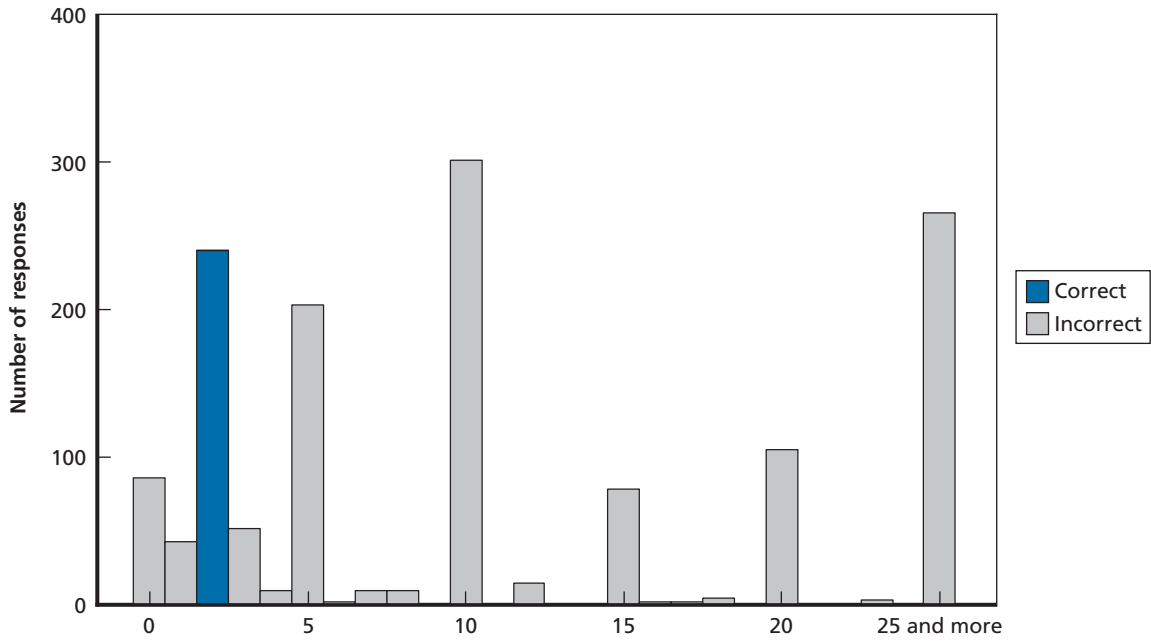SOURCE: Authors' calculations from survey data.
NOTE: Panels display the average response across all relevant items for 1,976 employees who responded, with a linear regression line in blue and 95-percent confidence interval in gray. Correlation value (ρ) is shown in the top left of each panel. Scatterplot points with identical values are randomly spread out so that all are visible.
RAND *RR2297-10.5*

Figure 10.6
Representation Goal for PWTD Responses (Top Panel) and Percentage Correct (Bottom Panel), by Occupation
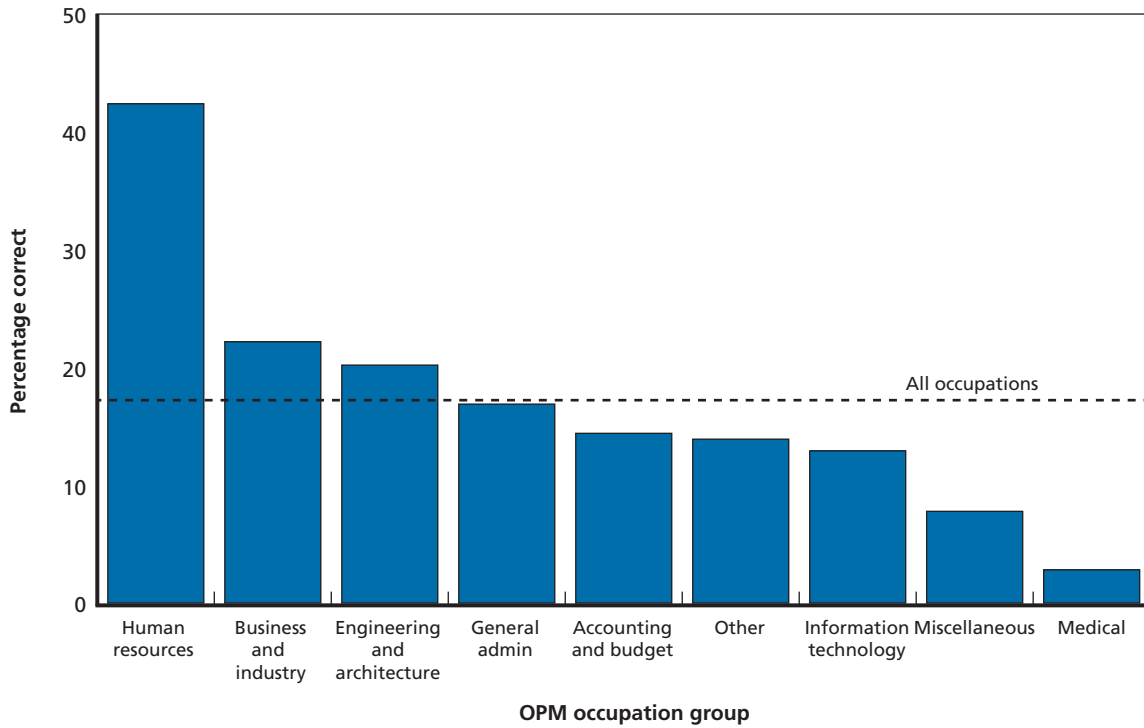
SOURCE: Authors' calculations from survey data.
NOTE: Panels reflect responses for 1,408 employees who answered all relevant items.
RAND *RR2297-10.6*

Communication of Goals and Accountability for Employment of PWTD

Several survey items gauged perceptions of how well the respondent's component communicates its goals regarding employment for PWTD. The survey asked how knowledgeable employees are about employment goals, how achievable employment goals are, and how well the component communicates employment goals. Employees who rated their component higher on goal communication generally had more-positive perceptions of PWTD.

Figure 10.7 shows employee perceptions of the warmth and competence of PWTD grouped by responses to the question "How well does your component communicate its goals for the employment of PWTD?" Respondents' assessments of the quality of goal communication were associated with more-positive perceptions regarding PWTD. In particular, employees who indicated that their component communicates its goals "very well" were much more likely to respond that their coworkers perceive PWTD as extremely trustworthy (warmth) and skillful (competence). Similarly, though not shown in Figure 10.7, employees who thought their component's goals were achievable and who indicated that their office's employees were knowledgeable of employment goals for PWTD also had more-positive perceptions of PWTD. This pattern does not establish a causal link between the communication of goals regarding employment of PWTD and employee perceptions regarding PWTD. Still, it provides some evidence that the level of goal communication is associated with employee perceptions of PWTD.

The survey also probed whether leaders at different echelons hold employees accountable for their actions toward PWTD. The survey explored respondent agreement on whether the component or agency holds supervisors accountable, whether supervisors hold employees accountable, and whether the respondent's office regularly provides a status report on employment of PWTD to higher echelons. As with goal communication, respondents who indicated higher levels of accountability in their work contexts had more-positive perceptions of PWTD (illustrated in Figure 10.8 with accountability at the supervisor level, but responses are similar across the three accountability items).

Taken together, these patterns suggest that leadership commitment and accountability might be important to nurturing positive perceptions of employees with targeted disabilities. The employees who reported the most-positive perceptions of PWTD tended to report that those above them clearly established goals regarding PWTD and held employees accountable for behaviors toward this group.

Training and Familiarity with Disability Programs

Beyond leadership and accountability, another potential tool to influence employee perceptions regarding PWTD is education and training. Several portions of the survey asked respondents about either recent training or general knowledge. We examined potential associations of these with employee perceptions of PWTD.

The most general question about recent training asked respondents how much of their formal training in the past year was on "improving employment opportunities for PWTD or similar disability-related topics." Figure 10.9 shows perceptions of the warmth and competence of PWTD for respondents who received differing amounts of formal training on disability employment. Those who had some formal training had more-positive perceptions of PWTD compared with those who had none. However, additional time spent in training does not strongly relate to more-positive perceptions: Employees with less than half a day of training had similar perceptions to those who had more.

Figure 10.7
Respondents' Perceptions of the Quality of Goal Communication Versus Warmth (Top Panel) and Competence (Bottom Panel) Perceptions

How trustworthy are PWTD in your component/agency?
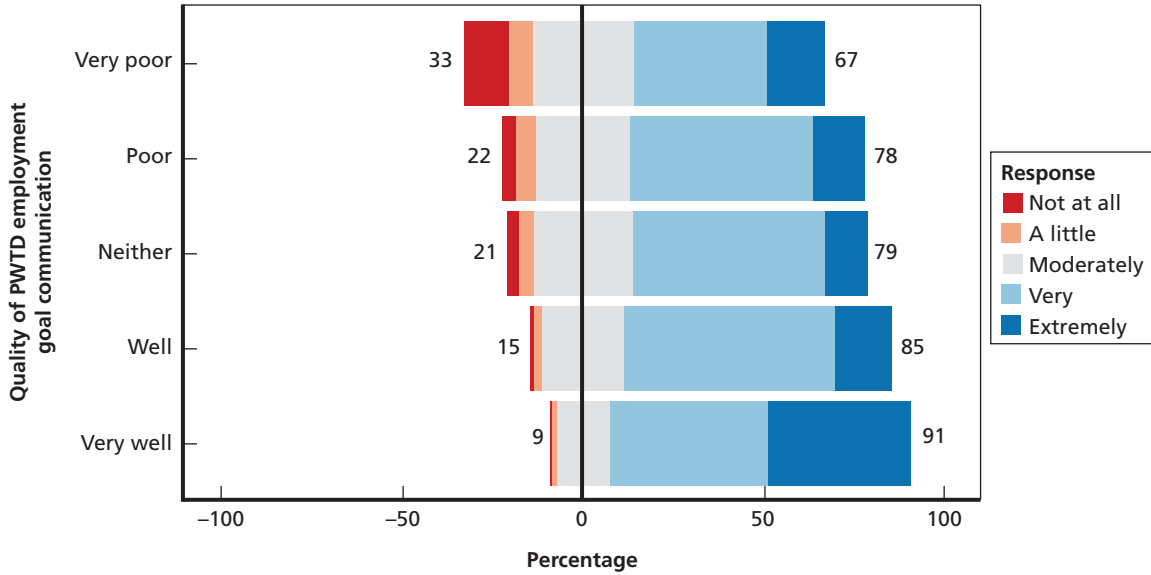
How skillful are PWTD in your component/agency?
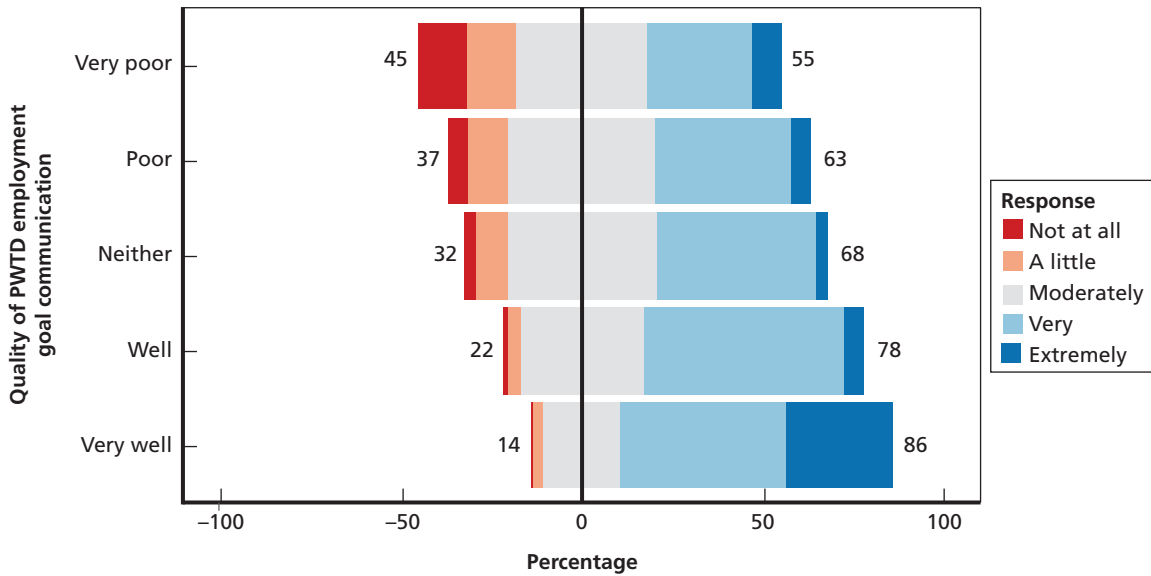
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,953 respondents who answered all relevant items.
RAND *RR2297-10.7*

Figure 10.8
Respondent Perceptions of Accountability Versus Warmth (Top Panel) and Competence (Bottom Panel) Perceptions

How trustworthy are PWTD in your component/agency?

How skillful are PWTD in your component/agency?

SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,953 respondents who answered all relevant items.
RAND *RR2297-10.8*

Figure 10.9
Recent Formal Training on Disability Topics Versus Warmth (Top Panel) and Competence (Bottom Panel) Perceptions

How trustworthy are PWTD in your component/agency?

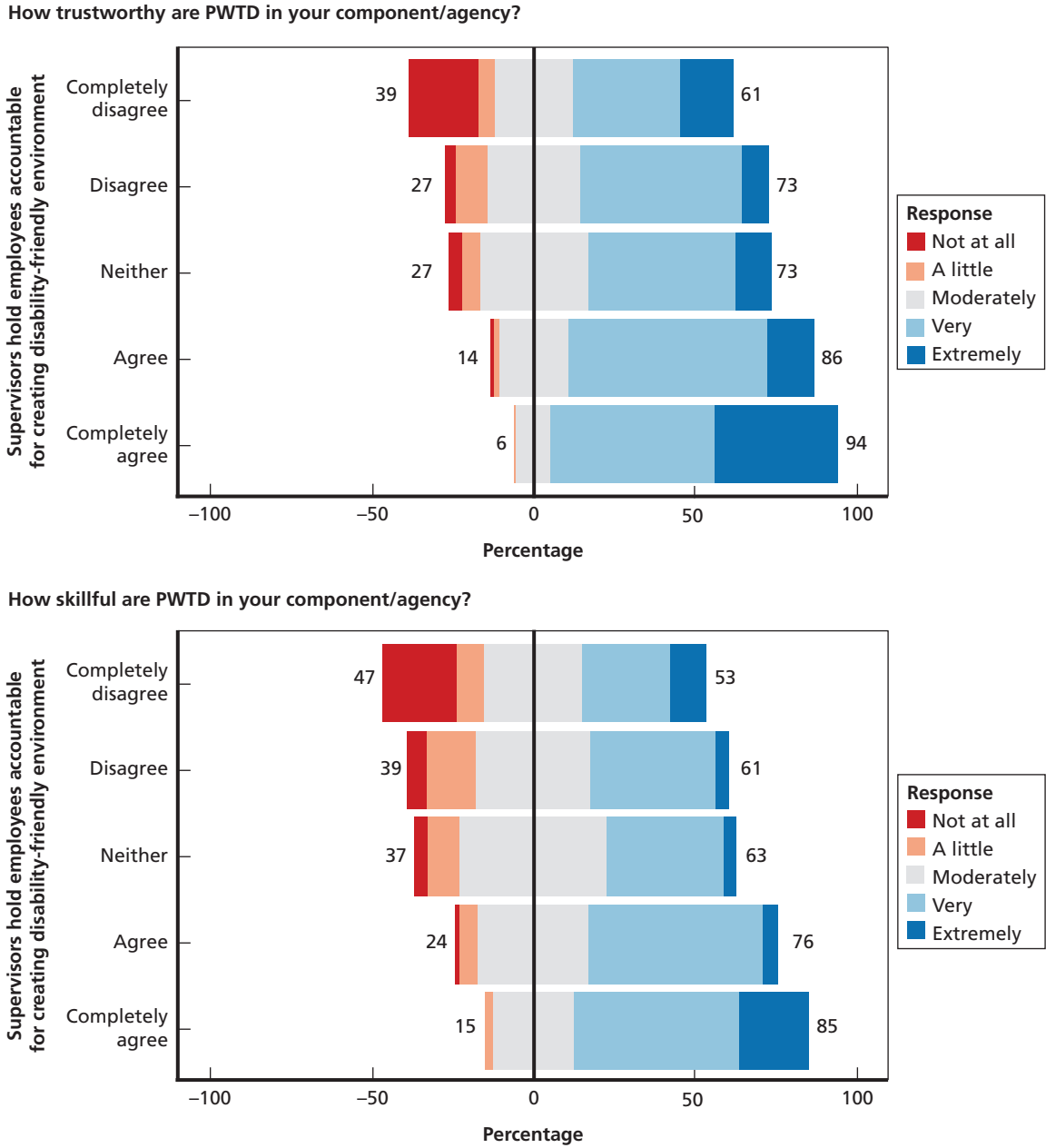**How skillful are PWTD in your component/agency?**

SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,445 respondents who answered all relevant items.
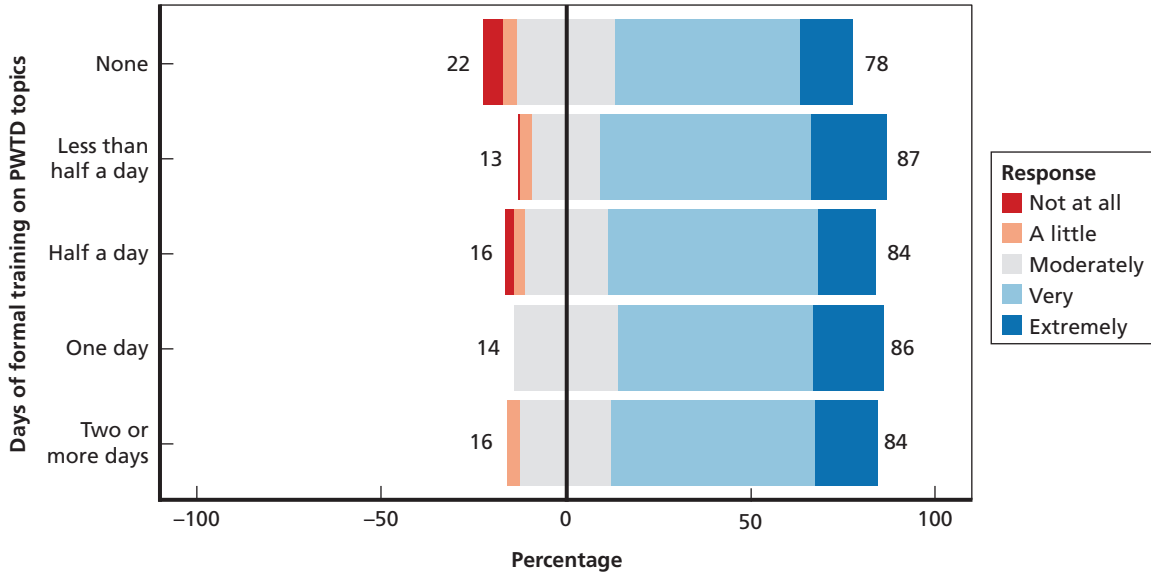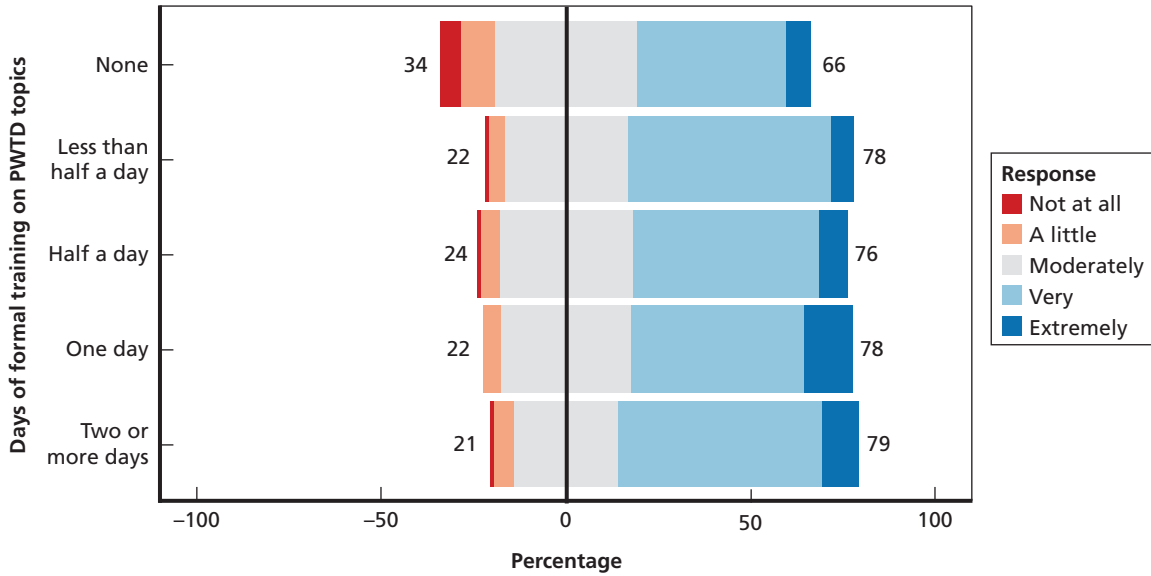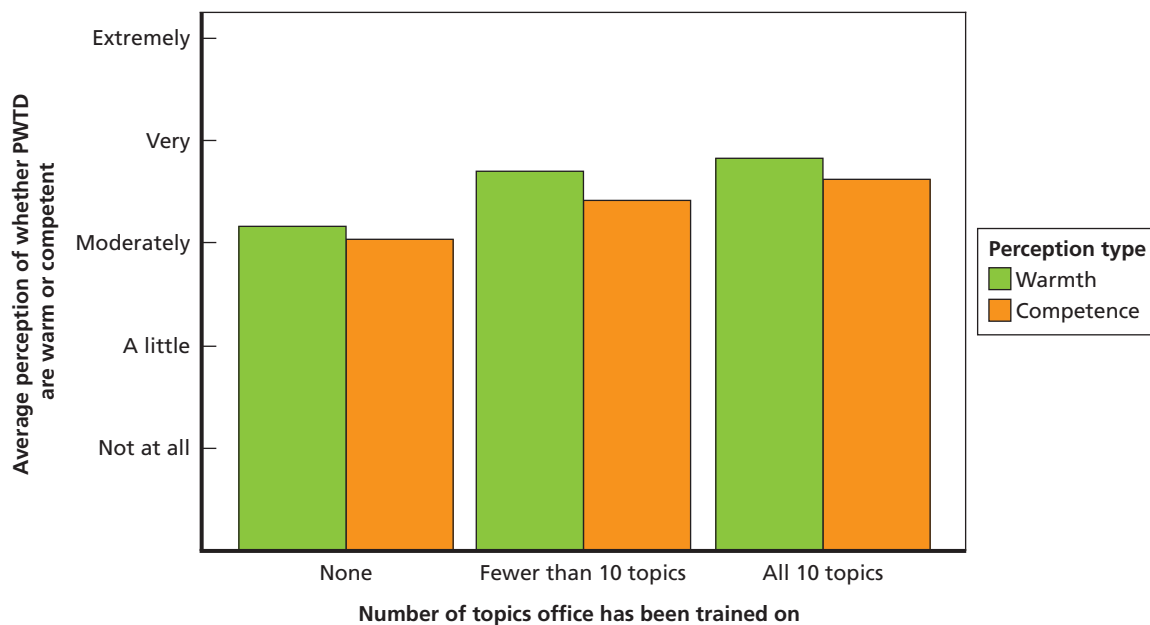**RAND** *RR2297-10.9*

The survey also asked respondents whether employees in their office had been trained on ten general topics related to enhancing employment for persons with disabilities. Examples of these topics include "the accommodation process for persons with disabilities" and "disability awareness" (see Appendix I for the full list of survey questions). Those who reported that their offices had received training on the surveyed topics had slightly more-positive perceptions than those who had not (Figure 10.10). Those who indicated that their office had received training on all ten surveyed topics had the most-positive perceptions of PWTD.

One reason for the weak relationship between the amount of training employees have received and their perceptions of PWTD could be that the training does not always increase employees' knowledge and awareness. The survey permits some investigation of this possibility; it also asked about employee perceptions of their office's knowledge regarding various disability programs and special hiring authorities.[4]

Figure 10.11 shows the relationship between time spent in formal training on disability-related topics and familiarity with the Schedule A hiring authority—a core resource for PWTD. While employees who had spent more time in formal training had higher familiarity with Schedule A, formal training is a very imperfect indicator of familiarity. Even among those who had spent two or more days in training on disability-related topics, a substantial percentage perceived familiarity among their office's employees with Schedule A to be no more

Figure 10.10
Average Warmth and Competence Perceptions, by Number of Disability Topics That Respondents' Office Had Been Trained On

SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,445 respondents who answered all relevant items.
RAND *RR2297-10.10*

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[4] Asking respondents for their perceptions of other employees in their office was part of a strategy to encourage more-honest responses (see Chapter Nine) but is not an objective measure of employee knowledge. Further research could identify a link between knowledge and outcomes by testing employee knowledge directly (e.g., with a questionnaire on the details of disability policy).

Figure 10.11
Recent Formal Training on Disability Topics Versus Perceived Program Familiarity

How familiar are your office's employees with Schedule A provisions?
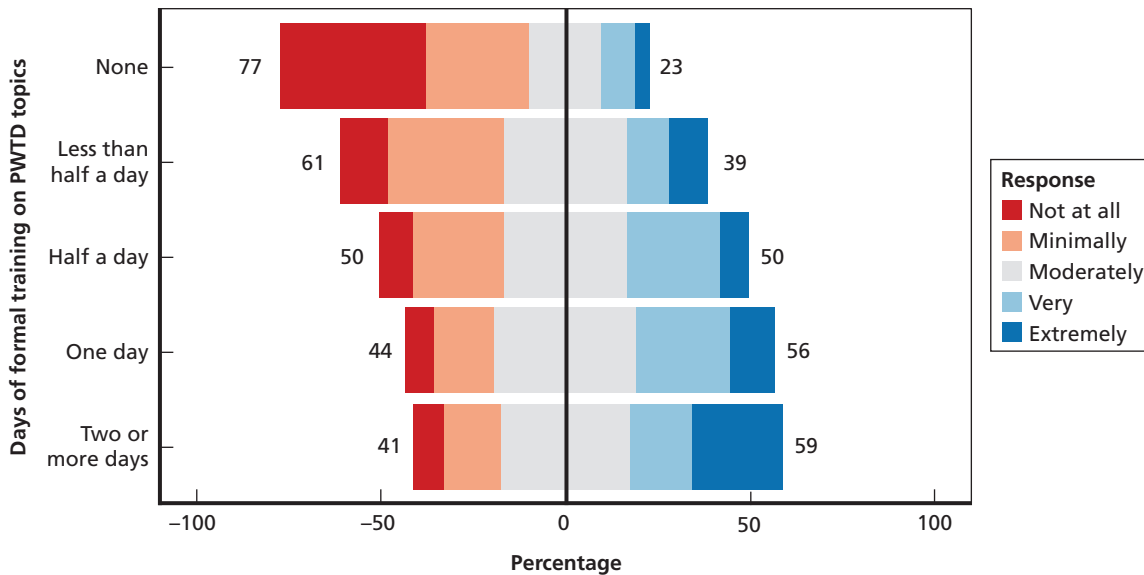
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,445 respondents who answered all relevant items.
RAND *RR2297-10.11*

than minimal. However, it is also possible that there is additional noise in the relationships in Figure 10.9 and Figure 10.11 that is introduced by attempting to link individual self-reported training history to perceptions about individuals' offices (which, as described in Chapter Nine, was part of a strategy to mitigate the bias resulting from individual reluctance to admit unfavorable views).

The survey asked respondents to rate how familiar their office's employees were with a variety of disability programs and disability-specific interview techniques. As before, those who indicated higher familiarity also indicated more-positive perceptions. Figure 10.12 shows the relationship between familiarity with the Schedule A hiring authority and employee warmth and competence perceptions. Using the figure's conventions for dividing positive and negative perceptions, one-fourth to one-third of those who had negative perceptions of trustworthiness and skillfulness of PWTD said workers in their office were "not at all" familiar with Schedule A. By contrast, only about one-tenth to one-seventh of those who said workers in their office were "extremely" familiar with Schedule A said their office had negative perceptions of the trustworthiness and skillfulness of PWTD.

Employee Interactions with PWTD

There is a long tradition in social science supporting the notion that increased contact with members of different groups can influence attitudes, positively or negatively depending on the conditions of the contact (see Pettigrew, 1998, for a review). Our survey incorporated this possibility by asking respondents how frequently they had worked with coworkers with targeted disabilities and by asking them to rate the quality of those interactions. This allowed us

Figure 10.12
Perceptions of Program Familiarity Versus Warmth (Top Panel) and Competence (Bottom Panel)
Perceptions

How trustworthy are PWTD in your component/agency?
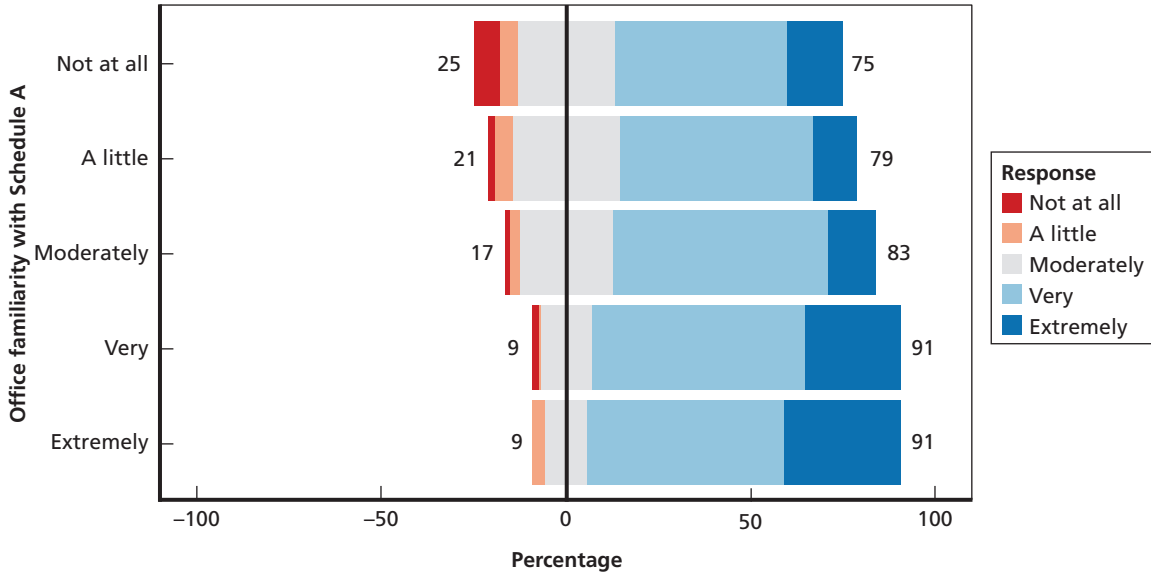
How skillful are PWTD in your component/agency?
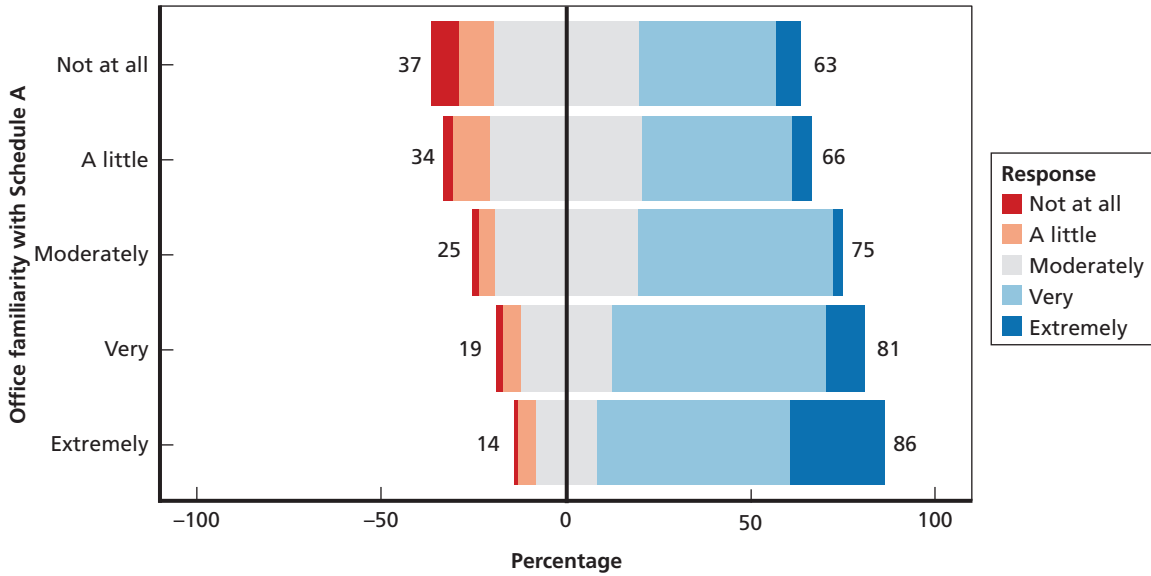
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,445 respondents who answered all relevant items.
RAND *RR2297-10.12*

to gauge the potential importance of intergroup contact and how it relates to perceptions of warmth and competence.

Figure 10.13 depicts the frequency and quality of interactions with PWTD. To permit a clearer presentation of subsequent results, we categorize frequency responses of "often" and "quite a lot" as high frequency (shown as circles, versus 'x's for low frequency), while grouping quality responses of "good" or "excellent" as high quality (shown in green, versus blue for low quality). The density of points in each cluster on Figure 10.13 gives a sense for how common the response was. The larger number of green points indicates that responses noting high-quality interactions with PWTD were much more common than low-quality ones. Most of the low-quality interactions were among those rep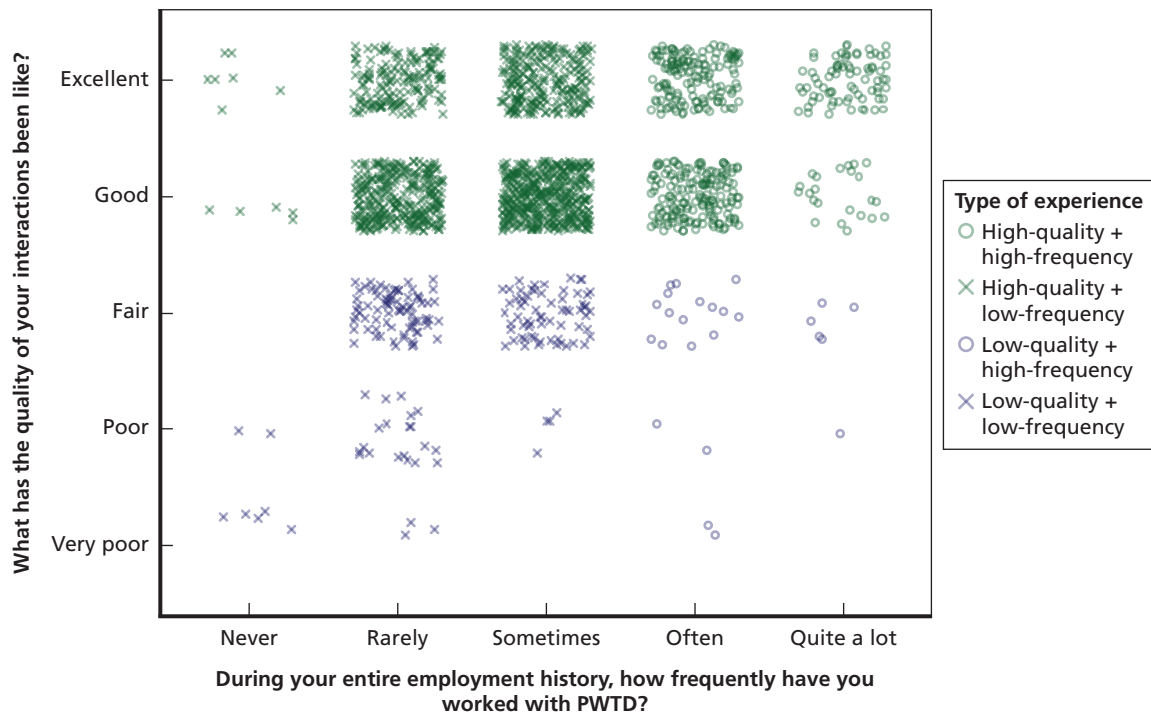orting low-frequency group interaction. Respondents who indicated that they had worked with PWTD more frequently were more likely to rate their interactions as high quality.[5]

Figure 10.13
Frequency of Working with PWTD Versus Quality of Interactions

SOURCE: Authors' calculations from survey data.
NOTE: The figure shows responses for 1,711 employees who responded and did not enter "not applicable" for either question. Scatterplot points with identical values are randomly spread out so that all are visible.
RAND *RR2297-10.13*

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[5]   The survey also asked respondents how frequently they work on tasks or projects with current coworkers who have targeted disabilities, and to rate the quality of interactions with *current coworkers* with targeted disabilities. The patterns in these responses are very similar to those of Figures 10.13 and 10.14, except that respondents generally reported lower frequency of interactions, with higher numbers of "not applicable" and "never" responses on the frequency question.

Among all the variables we examined, the quality of past interactions with PWTD related most strongly to responses regarding perceptions of PWTD (shown in Figure 10.14).[6] Regardless of frequency of interaction, employees who reported high-quality past interactions with PWTD reported much more-positive perceptions of this group. For example, 75 percent of respondents in the high-quality + high-frequency group noted perceptions that PWTD were very or extremely skillful, compared with only 19 percent of those in the low-quality + low-frequency group. This figure further indicates that more-frequent low-quality interactions are associated with reports of more-negative perceptions regarding PWTD (although there were only a small number of respondents in the high-frequency + low-quality category; see Figure 10.13). More-frequent high-quality interactions were associated with more-positive perceptions.

Summary of Evidence on Potential Policy Tools

Taken together, survey results suggest that accountability, training, and positive contact may promote DoD employment of PWTD—that is, they appear to be correlated with more-positive perceptions of PWTD. Of these three areas, positive contact appears to relate most strongly to positive perceptions of PWTD. To the degree that policymakers can ensure that managers set the conditions for positive interactions between employees with targeted disabilities and other employees, such efforts could improve perceptions of PWTD. The weak relationship between training and perceptions suggests that quality and quantity of training should improve if policymakers seek to influence perceptions of PWTD through education.

Views of Respondents on Barriers and Remedies

Thus far, the presented results have focused on respondent perceptions of PWTD. We also asked respondents for their views of the barriers to employment for PWTD, as well as their assessments of how different policies might reduce barriers. The barriers and solutions assessed spanned a wide range of topics that have been the focus of promoting employment in the federal government for PWTD in recent years (Table 10.1). In particular, we were interested in respondent views of how much these barriers might affect persons with disabilities and whether responses point to any priorities for particular solutions.

Figure 10.15 displays respondents' views of the barriers for PWTD, grouping "extreme," "strong," and "moderate" as negative responses. For no barrier did a majority of respondents claim that there was at least a moderate effect on PWTD. Even for the item with the largest percentage of negative responses (limited supervisor knowledge of which accommodations to make, shown as the top bar), 55 percent of respondents indicated that it was either a minimal barrier or not a barrier at all to employment of PWTD.

The greatest perceived barriers involved either a lack of information (e.g., limited information available on how to enhance employment of PWTD) or characteristics of PWTD (e.g., lack of requisite skills). By contrast, attitudinal barriers, such as reluctance to hire PWTD or

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[6]   When we included an indicator for having high-quality past interactions in regressions modeling warmth and competence alongside standardized average responses for goal communication, accountability, program familiarity, recent formal training, and the number of topics that members of their office had been trained on, the coefficient for the high-quality indicator was more than three times the next-most-influential factor.

Figure 10.14
Frequency and Quality of Past Interactions Versus Warmth (Top Panel) and Competence (Bottom Panel) Perceptions

How trustworthy are PWTD in your component/agency?
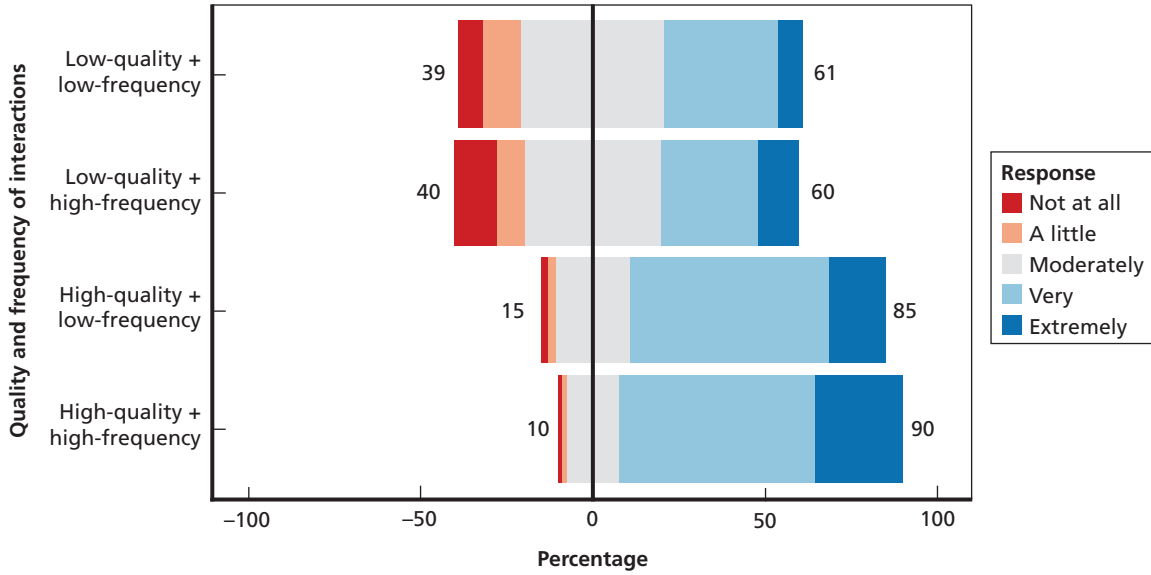
How skillful are PWTD in your component/agency?
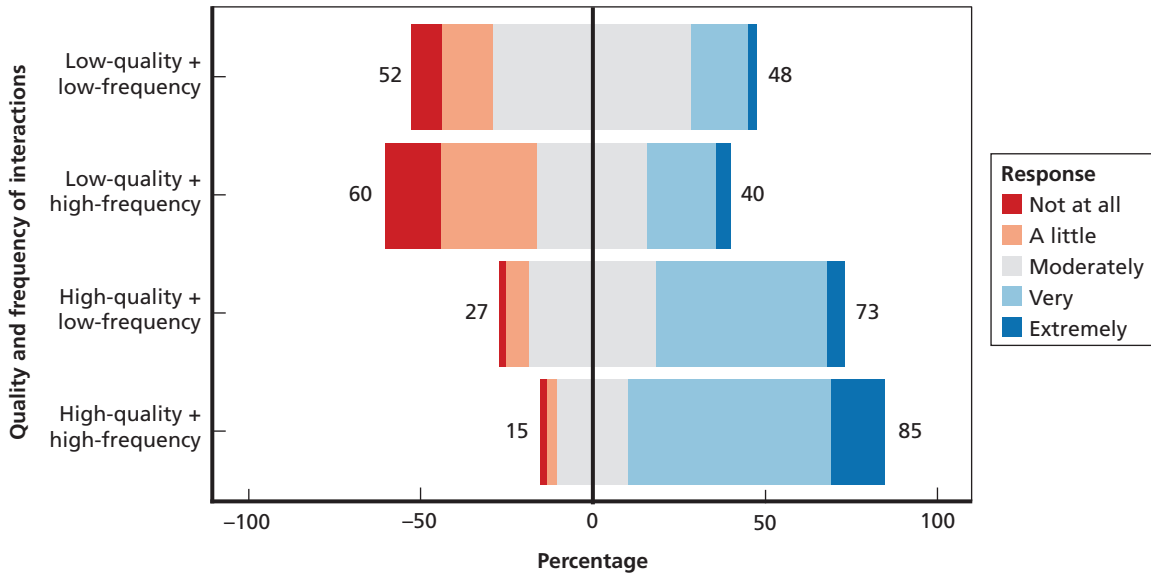
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,711 respondents who answered all relevant items.
RAND *RR2297-10.14*

Table 10.1
Barriers and Related Solutions Rated by Respondents

Barrier	Related Solution
Cost of purchasing accommodations for PWTD	Centralized funding, other than the CAP, for reasonable accommodations
Cost of implementing accommodations for PWTD	Centralized funding, other than the CAP, for reasonable accommodations
Limited supervisor knowledge of which accommodations to make	Training on DoD resources available to assist with the accommodation process
Limited supervisor accountability for employment of PWTD	Visible top management commitment
Limited supervisor accountability for employment of PWTD	Increased accountability for supervisors to enhance employment of PWTD
Lack of agency or component oversight over employment of PWTD	Greater oversight from component or agency
Negative attitudes or stereotypes toward PWTD	Change in coworker or supervisor attitudes toward PWTD
Employer reluctance to hire PWTD	Greater recognition of offices that hired PWTD
Lack of requisite skills among PWTD	Skills training for PWTD
Lack of related experience among PWTD	Mentoring for PWTD
Lack of interest among PWTD to work in your office	Increased outreach to and recruitment of PWTD
Lack of self-reporting on their disability status among PWTD	Increased frequency with which employees are asked to provide information on disability status
Additional effort of supervising PWTD	N/A
Limited information available on how to enhance employment of PWTD	N/A

NOTE: N/A = not applicable. The survey asked respondents to rate barriers on a 5-point scale from "not a barrier" to "extreme barrier." Once all barriers were evaluated, respondents rated all solutions on a scale of "not at all effective" to "extremely effective."

negative attitudes, were perceived as moderate to extreme barriers by the smallest percentage of respondents. For example, 23 percent of respondents indicated that negative attitudes and stereotypes toward PWTD were at least a moderate barrier, while 77 percent thought that these problems were either minimal or not a barrier.

Most respondents thought that all potential solutions except increased reporting of disability status would be at least moderately effective in reducing barriers to employment for PWTD (Figure 10.16; note that the middle category, "moderately effective," is now grouped with the positive responses). Employee views of the effectiveness of potential solutions closely mirror their assessments of the barriers. Whereas the greatest perceived barriers to employment of PWTD involved limited information and limited skills or experience, the top solutions to promote employment of PWTD involved directly helping PWTD (e.g., skills training and mentoring) and providing additional information (e.g., training on accommodation resources). At the same time, visible top management commitment was the solution receiving the highest percentage of "extremely effective" responses, suggesting that respondents still viewed top-level emphasis as valuable to promoting employment of PWTD.

Figure 10.15
Respondent Perceptions of Barriers to Employment for PWTD

To what extent do you perceive that each of the following currently poses a barrier to employment for PWTD?
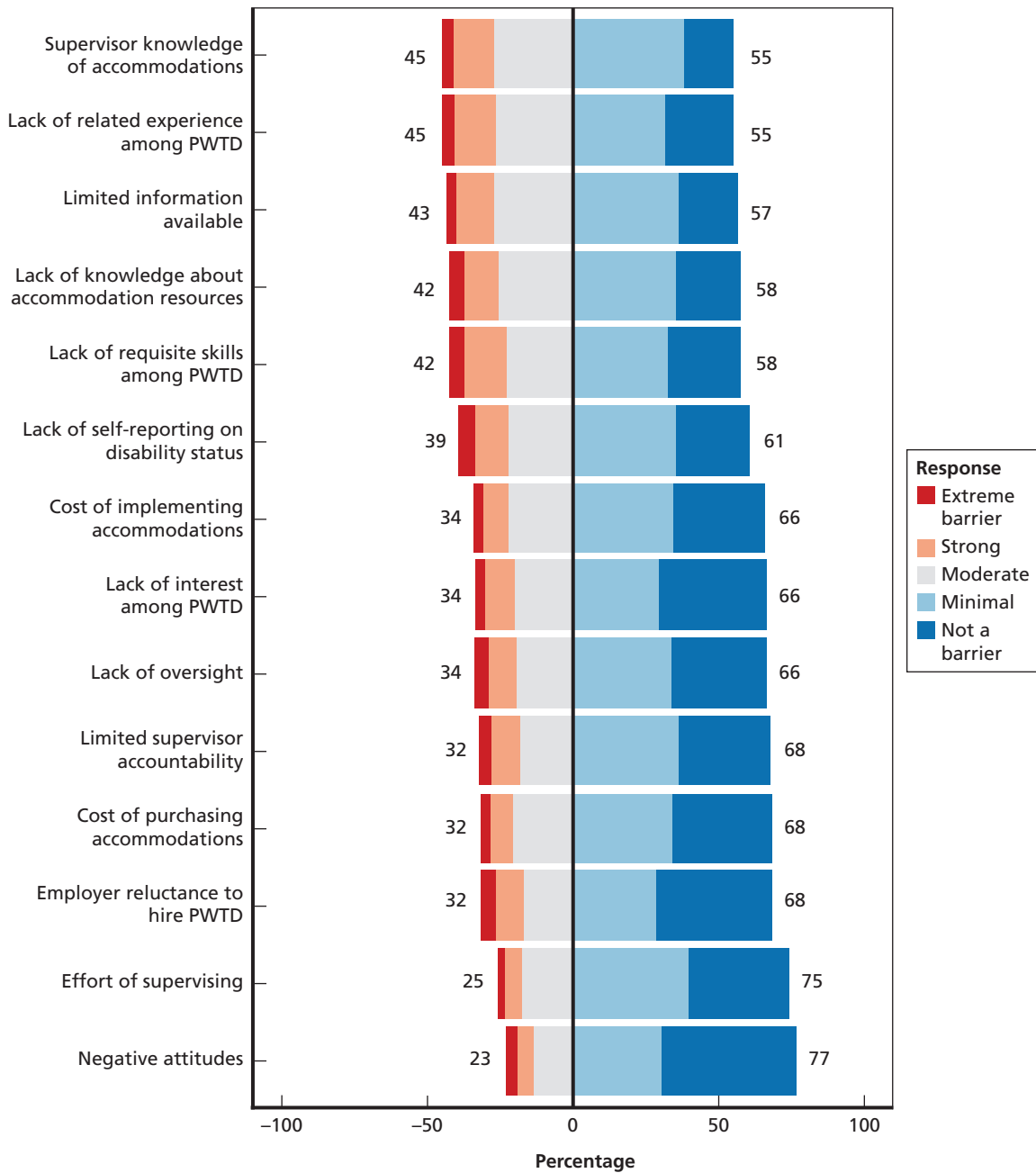
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,433 respondents who answered all relevant items and did not rate all barriers equally.
RAND *RR2297-10.15*

Figure 10.16
Respondent Perceptions of the Effectiveness of Efforts to Reduce Barriers to Employment for PWTD

How effective do you think each of the following would be in reducing barriers to PWTD employment?
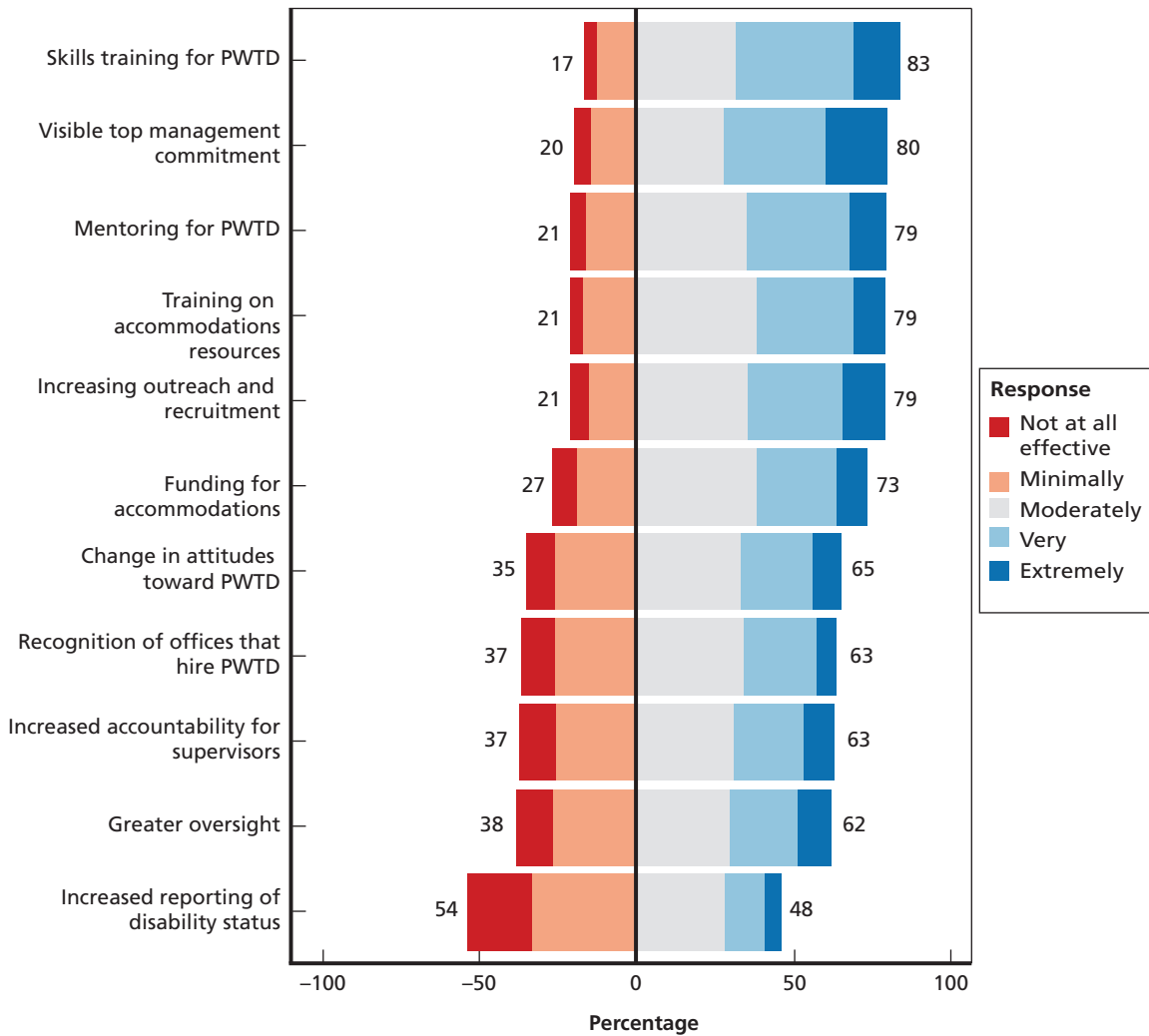
SOURCE: Authors' calculations from survey data.
NOTE: The figure shows a total of 1,396 respondents who answered all relevant items and did not rate all items equally.
RAND *RR2297-10.16*

Summary

This chapter summarizes key results from a thorough investigation of the views of supervisors, hiring managers, and employment recruiters who could play a significant role in reducing barriers to employment for PWTD. The results suggest that incivility toward PWTD is uncommon in DoD, but they also establish a link between attitudes or perceptions and negative behaviors toward employees with targeted disabilities. The results show that policy tools to influence perceptions, such as goal communication and education, are related to reported perceptions of PWTD. However, the strongest predictor of reported positive perceptions toward PWTD is the quality of past interactions with PWTD. Finally, respondents did not show a strong consensus on the impact of specific barriers, but they generally viewed attitudinal barriers as the least impactful.

Conclusion and Recommendations

In this report, we considered potential barriers to the employment of PWTD in the DoD civilian workforce. We first examined representation levels of PWTD in this workforce, noting that different definitions of disability appear to influence representation levels seen across national data sets. This hinders comparison of federal workforce representation levels with those seen in U.S. national data sets. Therefore, the EEOC has established a 2-percent representation goal for PWTD in federal civilian workforces. Our analyses demonstrated that DoD did not meet this representation goal during the years for which we have data (2008–2013). In addition, DoD had a lower representation of PWTD than the non-DoD federal workforce, and this difference in representation was not explained by workforce characteristics. However, for all persons with disabilities—not only those with targeted disabilities—levels of representation in DoD met or exceeded those in the non-DoD federal workforce, which appeared to be because of relatively high levels of DoD employment of veterans with disabilities.

When we assessed trends within the DoD civilian workforce, we found that PWTD in DoD enter at a lower rate than they separate, are promoted at lower rates than other persons in high-promoting occupations, and are more represented in lower grades and less represented in higher grades. Further examination of potential barriers to representation of PWTD in our analyses of job applicant data suggested that representation of PWTD in the DoD applicant pool is probably lower than the federal goal and the representation of such persons decreases throughout the hiring process.

Interviews with DoD representatives highlighted challenges to the employment of PWTD, including limited opportunities in certain occupations, issues with reasonable accommodations, and a lack of awareness about relevant hiring authorities among hiring managers. During additional interviews, university representatives noted that students with disabilities lack confidence about obtaining employment and that students are not aware of DoD civilian job opportunities. These comments suggest potential contributors to the relatively low representation levels of PWTD in our analyses of applicant data.

Finally, our survey of DoD civilian hiring managers and supervisors provided additional information regarding their knowledge and perceptions of the employment of PWTD, including employment barriers and avenues to addressing these barriers. Overall, respondents perceived that incivility toward PWTD is uncommon in DoD. However, only 17 percent of respondents correctly indicated that the employment goal for PWTD was 2 percent, supporting interview comments regarding limited awareness among hiring managers. Communication of goals for the employment of PWTD, accountability among employees for creating a positive work environment for PWTD, and a higher frequency of high-quality interactions with PWTD were associated with more-positive perceptions of this group. Although respon-

dents did not show a strong consensus on the impact of specific barriers, limited knowledge and lack of information were perceived as stronger barriers than, for example, negative attitudes toward this group.

Our assessments suggest several potential ways to assess and improve representation of PWTD in the DoD civilian workforce. Below, we offer several recommendations to guide these efforts. These recommendations are intended to combat potential barriers to promoting representation of PWTD in the DoD civilian workforce. Most of these involve specific areas DoD may address, such as improving outreach and recruiting, promoting education and accountability, and collecting better data. The final avenue we address, performing evaluation, is an overarching recommendation regarding DoD efforts. We include this recommendation because it is not yet clear what policies and actions will be most effective. Therefore, DoD needs to consider options in a systematic way.

Use Targeted Outreach to Increase Awareness of DoD Civilian Opportunities Among PWTD

Our interviews and analyses of job applicant data suggest that DoD can address low representation of PWTD in its civilian workforce through targeted outreach to increase awareness of its civilian work opportunities. For example, representation of PWTD in the DoD applicant pool is probably lower than the federal representation goal of 2 percent, and interviewees noted that students may not be aware of DoD civilian employment opportunities. Therefore, DoD should seek to increase its presence at universities for students with disabilities and other universities with large populations of such students. This increased presence should maximize face-to-face interactions with students with disabilities and should not be limited to participation in job fairs. It should also include connecting with students through hosting information sessions, engaging with academic departments, and connecting with relevant student groups. DoD should strive to include alumni, especially those with disabilities, in campus recruitment efforts to demonstrate its interest in students with disabilities and provide relatable role models for students.

DoD should also consider expanding the STAR program at more universities designed for students with disabilities. There are currently just four universities, including NTID, participating in the STAR program. DoD should hire STAR student representatives with disabilities to better connect with these student populations. This can not only raise awareness of and interest in DoD civilian careers but also opportunities for students with disabilities who often go on to permanent positions with the department. DoD could consider selecting STAR student representatives at these universities who are in academic fields that align with MCOs to increase the pipeline of PWTD both broadly and in MCOs where interviewees report that they currently have extremely limited representation. Even at universities not designed for students with disabilities, DoD should encourage STAR student representatives to engage with student disability programs and groups on campus to further raise awareness about DoD opportunities.

DoD can encourage more of its organizations to participate in site visit events, similar to those that NAVAIR organizes for Gallaudet students, for students with disabilities. DoD organizations near universities designed for students with disabilities or with large populations of such students and active student disability programs should reach out to these schools to

discuss the feasibility of and interest in site visits. These visits give students a better understanding of the DoD work environment and demonstrate that DoD is interested in hiring them.

More Effectively Leverage Vetted Talent Pools of Potential Job Candidates with Targeted Disabilities

Interviewees also highlighted promising avenues for better leveraging talent pools. Beyond campus presence and outreach, DoD can work to more effectively leverage vetted talent pools of potential job candidates with targeted disabilities. The WRP provides an opportunity for students with disabilities to learn about DoD careers. It also promotes interactions among DoD employees and individuals with disabilities. The WRP database includes students with disabilities who have been interviewed and evaluated prior to inclusion. This database represents a valuable resource of talented candidates but is primarily used for internships. DoD should consider ways to leverage the WRP database more regularly for permanent positions as well. Many students in the database will be graduating seniors and should be considered directly for permanent positions. DoD should also continue and expand efforts to offer opportunities for interns eligible for Schedule A appointment to apply for permanent positions. In 2016, ODMEO began efforts to further enhance the WRP program, including updating WRP's policy and procedures (ODMEO, 2017).

The OPM Shared List represents another resource for vetted Schedule A–eligible potential job candidates and includes a broader range of individuals beyond students and recent graduates. This broader range of age and experience levels is important for identifying more candidates qualified for positions beyond entry level and lower grades, where representation of PWTD is currently concentrated. DoD should explore options to increase the use and effectiveness of the OPM Shared List. It can work with OPM to explore whether certain database elements could be improved—for example, in how applicants are currently categorized by qualifications and skill sets. DoD could work with OPM to ensure that applicants are categorized in the most accurate and useful manner for hiring managers. DoD may also explore the feasibility of establishing a database similar to the OPM Shared List but just for DoD positions. This could give DoD more control over database updates and the types of skills candidates are recruited for. DoD could aim to align qualifications and skill sets with specific civilian occupations, and MCOs in particular. The OPM Shared List also offers a limited amount of customized recruiting on a first-come, first-served basis. DoD should take advantage of this customized recruiting where possible and consider separately contracting with Bender Consulting or a similar organization for customized, targeted recruiting aligned with DoD needs. If DoD chooses options to expand or modify OPM Shared List resources, it must communicate this to hiring managers across the department to ensure its increased use. DoD should consider how to make maximum use of such a list. This may include requiring that hiring managers interview at least one eligible candidate with targeted disabilities for a job (e.g., application of the Rooney Rule to targeted disabilities).[1]

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[1] The Rooney Rule was adopted by the National Football League (NFL) in 2002. The policy requires that the pool of candidates interviewed to fill a vacant head coaching position must include at least one underrepresented minority (Collins, 2007).

Better Educate Employers and Applicants About the Hiring Process for PWTD

During interviews, individuals reported confusion regarding disability status disclosure requirements for Schedule A hires and suggested that this may be resulting in underreporting of PWTD in the workforce. Survey results further suggested that DoD hiring managers and supervisors have limited knowledge and information regarding employment of PWTD, as these were believed to be some of the strongest barriers to employment of PWTD. To combat this, DoD should better inform managers of the SF-256 requirement for participation in the disability tracking program for Schedule A hires. DoD must ensure that managers are aware that, even if a Schedule A hire declines to self-identify disability status, the SF-256 must be completed using medical documentation needed for appointment. In some cases, it may be more appropriate for managers to have the agency's disability program manager obtain the disability code for Schedule A documentation to respect the privacy of the individual who declines to disclose. ODMEO may consider issuing relevant policy guidance to reinforce the need for compliance with this reporting requirement.

Additionally, interview findings revealed confusion and inconsistency across DoD agencies related to Schedule A candidates and the RPA process when hiring managers have a position to fill. DoD should consider standardizing its RPA process to ensure that qualified Schedule A candidates are automatically considered for a position. DoD could consider requiring hiring managers to provide an explanation, which could be assessed for validity, if they choose not to include Schedule A–eligible candidates as part of the process to fill a position.

Inform Supervisors and Managers About Disability Representation Goals and Hold Them Accountable for Meeting Those Goals

The views of the hiring managers and supervisors that we surveyed suggest that goal communication and leadership accountability are important in improving the representation of PWTD in DoD. Visible top-management commitment was among the highest-rated items for reducing barriers to employment of PWTD. Higher ratings of component goal communication were also associated with more-positive perceptions of PWTD. Yet respondents' perceptions of how familiar their fellow employees were with disability programs were mixed, and few respondents correctly identified 2 percent as DoD's goal for representation of PWTD.

To address disability representation goals, supervisors and managers must know what these goals are. Going forward, DoD should modify the information it provides to leadership regarding goals for disability representation. Specifically, the department should better educate those in leadership positions, including hiring managers and supervisors, on the goals for representation of PWTD and those with other disabilities in the federal government. DoD may do this by incorporating such information in relevant training and more frequently communicat-ing goals to leadership.

Knowing the goals does not ensure that leadership will know how to meet them. Survey responses suggested that better education regarding policies, procedures, and resources could help improve representation of PWTD in the DoD workforce. We found that higher levels of familiarity with disability programs were correlated with more-positive attitudes toward PWTD. However, most respondents indicated that employees in their offices were no more than minimally familiar with such key programs as Schedule A and the WRP. Respondents

also cited limited supervisor knowledge of accommodations and limited availability of information among the top barriers to employment of PWTD. Key DoD personnel may not be enhancing employment for PWTD because personnel are unfamiliar with available hiring resources.

Survey results also showed that respondents' past experiences with PWTD are associated with current perceptions regarding PWTD—a relationship that accords with previous theories on discrimination. This pattern underscores the need for DoD supervisors and managers to create the conditions for positive interactions between employees with targeted disabilities and their coworkers. Leadership efforts to ensure that employees with targeted disabilities are able to meaningfully contribute to the office's mission and goals and make positive contributions to team activities could help improve the attitudes of DoD employees. This would also support other federal initiatives in support of employing persons with disabilities (e.g., LEAD initiative; see Appendix A).

DoD should provide additional information on how leadership can reach representation goals. Information on how to attain these goals might also address the utility of consistently providing disability awareness and etiquette training. Such training might help establish a work environment where PWTD feel comfortable requesting needed accommodations and where they receive accommodations and related support in a regular and timely manner. DoD might provide this information by either creating new training or incorporating additional information into current training provided to employees. Our survey results suggest that these topics should be addressed at least annually, particularly among those employed at GS-11 to GS-15 levels.

In addition to increasing knowledge regarding employment goals and providing information on how to reach those goals, DoD should hold leadership accountable for reaching disability representation goals. This may include highlighting which components have and have not met the goals, providing incentives for meeting goals, and increasing oversight for components that do not.

Address Targeted Disability Disclosure, Particularly Among U.S. Veterans

Our analyses of workforce composition showed that, because of high levels of veterans with disabilities in DoD, levels of representation for all persons with disabilities—beyond only those with targeted disabilities—meet or exceed representation levels in the non-DoD federal workforce. Furthermore, available information on veteran disability status suggests that veterans may underreport targeted disabilities, which would be problematic in DoD's efforts to measure and address targeted disability representation in its civilian workforce. Specifically, statistics on targeted disabilities rely on employees to accurately report their disability status. If veterans with disabilities (i.e., veterans with at least a 30-percent disability rating) do not report to their hiring agency whether they have a targeted disability, or if similar underreporting exists in the nonveteran population, the true percentage of DoD employees with a targeted disability is higher than current statistics indicate.

Accurate information regarding targeted disability representation guides policy considerations. Therefore, DoD should evaluate whether employees and supervisors understand targeted disability disclosure processes. In addition, DoD should encourage employees to

report targeted disabilities by, for example, highlighting the utility of this information for the department.

Increase Understanding of the U.S. Population with Targeted Disabilities

This report shows that levels of targeted disability representation for both the DoD and the non-DoD federal workforce is less than the 2-percent federal goal. Representation of PWTD in DoD lags behind the non-DoD federal workforce, while DoD has higher representation of individuals in more-general disability categories. Less than 1 percent of DoD job applicants have targeted disabilities, and those applicants have lower referral and selection rates than applicants with no disabilities (although PWTD have access to paths to federal employment outside the traditional hiring process). This suggests that aspects of DoD recruiting and onboarding could contribute to the low level of targeted disability representation. However, without more data on these factors, it is unclear whether current efforts can raise the level of targeted disability representation in the DoD workforce.

The most significant limitation to understanding barriers to federal employment for PWTD is the lack of comparable, systematic knowledge on such persons in the U.S. labor force. For example, DoD recruiters seeking to increase the number of applicants with targeted disabilities have no knowledge of where PWTD are likely to live, whether they are actively seeking employment, their desired occupations, or their relevant education and work experience.

A cost-effective way to fill this gap would be to increase overlap in the disability surveys within DoD and the nationally representative surveys conducted by other government agencies, such as the U.S. Census Bureau or the U.S. Bureau of Labor Statistics. For example, DoD could survey its own workforce using disability questions that already exist in nationally representative surveys, such as the ACS or CPS. This information would allow for better general disability benchmarking against the CLF.

Alternatively, DoD could commission its own nationally representative survey to better understand the U.S. population with targeted disabilities. Using this approach, DoD could tailor questions to fill key information gaps, such as whether persons with targeted disabilities understand DoD opportunities and policies concerning accommodation. Given that current policy directs all federal agencies to become a model for employment of PWTD, DoD could petition survey administrators from other agencies to add an item to the CPS or ACS that either lists the federally targeted disabilities and asks respondents whether they have a targeted disability or asks which of the federally targeted disabilities, if any, that respondent has. Such an item would yield a wealth of information on the labor force characteristics of PWTD and would greatly improve DoD's ability to understand barriers to employment for such persons.

Evaluate DoD Efforts to Promote Employment of PWTD

We provide several actions that DoD can take to better promote employment of PWTD. When applying a new effort or modifying current efforts to address employment of PWTD, DoD should systematically evaluate these efforts. To do so, the office responsible for designing and implementing each effort would need to determine the core components of the effort

(such as resources, activities, outputs, and outcomes) and identify the concepts within these components that should be measured (see, for example, Helmus et al., 2017). The office would then need to evaluate the utility of current measures of these concepts and identify whether new measures might better capture them (Savitz, Matthews, and Weilant, 2017).

This evaluation process can be facilitated through the development of a logic model, which is a pictorial representation of the underlying theory and assumptions that motivate an effort. A logic model shows the connections among the goals of the effort, its activities, and the theory driving the effort (W. K. Kellogg Foundation, 2006). It clearly communicates an effort's plan and helps determine how to evaluate the effort. A logic model may help with the planning, implementation, and evaluation of disability efforts in DoD and its components. Overall, systematic evaluations can provide information regarding which elements within each effort are effective and which elements may need to be modified to better promote employment of PWTD. Without systematic evaluations, DoD will not be able to establish whether different efforts have effects or why these efforts are or are not achieving intended effects.

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Although a representative federal workforce is a strategic personnel priority in the U.S. Department of Defense (DoD), certain demographic groups have historically been underrepresented and may continue to face employment barriers. One such group includes persons with targeted disabilities (PWTD), who are the focus of this report. The federal workforce has a 2-percent representation goal for the employment of persons with specific disabilities or health conditions. Previous assessments have shown that DoD has not met the federal employment goal for PWTD.

To address this issue, RAND researchers sought to identify and address current employment barriers within DoD that PWTD may experience and recommend actions DoD can take to increase employment of PWTD in its civilian workforce. To do so, they analyzed personnel records and data on applicants and applications. They also interviewed representatives from colleges and universities, DoD and its components, and other federal agencies. Finally, they surveyed DoD hiring managers and supervisors on topics addressing the employment of PWTD.

The analyses demonstrated that DoD did not meet the 2-percent representation goal during the years for which we have data (2008–2013). In addition, DoD had a lower representation of PWTD than the non-DoD federal workforce, and this difference in PTWD representation was not explained by workforce characteristics. Interviewees indicated that students lack awareness of DoD civilian job opportunities. Survey results suggested that DoD employees tend to hold positive perceptions of PWTD. However, limited knowledge regarding disability employment goals, programs, and resources might be an employment barrier for PWTD.

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