

# Workplace Accommodations for People with Disabilities: National Health Interview Survey Disability Supplement, 1994–1995

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*Journal of Occupational and Environmental Medicine (JOEM)*. 2003;45:517–525 · DOI: 10.1097/01.jom.0000063623.37065.b4

## Abstract

As American workers age, workers with impairments and functional limitations make up a larger percentage of our workforce. This investigation presents data from the National Health Interview Survey Disability Supplement 1994–1995 (NHIS-D) describing the nature of workplace accommodations in the American workforce and factors associated with the provision of such accommodations. Of a nationally representative sample of workers aged 18 to 69 years with a wide range of impairments, 12% reported receiving workplace accommodations. Males (odds ratio [OR] 0.64; 95% confidence interval [CI] 0.53–0.78) and Southerners (OR 0.57; 95% CI 0.47–0.70) were less likely than others to receive workplace accommodations. Those with mental health conditions were less likely than others to receive accommodations (OR 0.56; 95% CI 0.44–0.70). College graduates (OR 1.53; 95% CI 1.22–1.91), older workers, full-time workers (OR 3.99; 95% CI 2.63–3.87), and the self-employed (OR 1.76; 95% CI 1.28–2.41) were more likely than others to receive accommodations.

## Introduction

Over the next decades, the proportion of American workers with disabilities is expected to increase for several reasons, including the aging of the American workforce and the impact of policy changes in health care and welfare reform. The Bureau of Labor Statistics data suggest that the average age of workers will increase as baby boomers who were born between 1946 and 1964 reach their 50s and 60s. The median age of American workers increased from 35 in 1978 to 39 in 2000 and is expected to reach age 41 by 2010. Fullerton and Toossi suggest that, from 2000 to 2010, the number of American workers aged 55 and older will increase by 47%.

The National Health Interview Survey (NHIS) (1994) suggests that with age the percentage of workers with disabilities will increase. Among workers 18 to 28 years of age, 3.4% work with disabilities; among those 50 to 59 years of age, 8.4%; and among those 60 to 69 years of age, 13.6%. Thus, the aging workforce will include more people working with disabilities.

In addition to the demographic pressure from the aging baby boomers, the Americans with Disabilities Act (ADA) was expected to increase the number of qualified workers with disabilities in the American workforce. Recent findings are mixed in this regard. The ADA provides that employers with 15 or more employees must make “reasonable” accommodations for “qualified”

workers with disabilities to participate in the workforce. The ADA's accommodation requirement mandates that an employer provide benefits to, or take steps in response to, the needs of particular qualified individuals so they are able to perform essential job functions.

Other recent policy innovations are aimed at diminishing economic barriers that prevent persons with disabilities from working. For example, the Ticket to Work and Work Incentives Act of 1999 (TWWIA) makes affordable health care coverage available to qualifying individuals with disabilities. Also, the Workforce Investment Act of 1998 (WIA) establishes "one stop" employment and job training centers to provide accessible services and supports for all workers, including those with disabilities.

Recent empirical work suggests that a broad spectrum of workers with disabilities are at increased risk for occupational injuries, found in both cross-sectional and prospective cohort studies. As workers with impairments and functional limitations make up a larger percentage of our workforce, occupational injuries are likely to increase unless employers provide effective workplace accommodations that lower the risk of injury. However, there is little national data on the prevalence and nature of workplace accommodations. This investigation presents data from the NHIS Disability Supplement 1994–1995 (NHIS-D) describing the nature of workplace accommodations in the American workforce and factors associated with the provision of such accommodations.

## Methods

### The Cohort

Our study population derives from the NHIS-D. The NHIS is an annual survey of the health status of Americans, carried out by the Census Bureau under contract from the National Center for Health Statistics. From 1994 to 1995, in addition to the regular core questions, the Census Bureau administered two more detailed surveys (the Disability Follow-Back Surveys) to obtain more information on the health and social status of Americans with disabilities.

Eligibility for the Disability Follow-Back Survey was determined by a positive response to any of nearly 200 screening questions. The Disability Follow-Back Surveys collected self-reported information regarding need for assistance with key activities, difficulties with activities of daily living (ADLs), instrumental activities of daily living (IADLs), and functional limitations. Additionally, a broad range of medical, social, and employment information was collected.

Our study population included those who reported a variety of impairments and functional limitations. We included those who had difficulty with ADLs (bathing, dressing, eating, getting in or out of bed or chair, or using the toilet); difficulty with IADLs (preparing own meals, shopping for personal items, using telephone, doing heavy work around the house, or doing light work around the house); functional limitations (lifting 10 pounds, walking up 10 steps, walking a quarter mile, standing for 20 minutes, bending down from a standing position, reaching over the head, using the fingers to grasp or handle something, or holding a pen or pencil); difficulty seeing; difficulty hearing; reported mental health or cognitive diagnoses (Down's Syndrome, mental retardation, schizophrenia, delusional disorders, bipolar disorder, major depression, severe personality disorder, alcohol abuse, drug abuse, other mental or emotional conditions); or reported the use of a cane, crutches, walker, wheelchair, or scooter.

Of the 25,805 participating respondents to the Disability Follow-Back Surveys, 47% (12,151) met at least one of the 31 inclusion criteria and were between 18 and 69 years old at the time of the survey. In this investigation, we report on the 41% (4,937) of these respondents who were working at a job or business at the time of the survey. They constitute a representative sample of working

Americans with impairments and functional limitations. Those who were not employed were not included in the study.

## Variables

The outcome variables of interest are derived from questions in section D of the Disability Follow-Back Surveys that asked the respondent: "In order to work would you need any of these special features at your worksite, regardless of whether or not you actually have them?" The respondents are then asked: "Do you have [feature] at work?" The questionnaire offers the respondent the 17 specific accommodations listed in Table 1.

Our primary dichotomous outcome variable compares respondents who report receiving any accommodation to those who report receiving no accommodation. No employment records were available to validate these self-reports. We also do not know whether any of the reported accommodations would be required by the ADA.

Potential predictors of the provision of accommodation were considered in three categories. First, we considered background variables related to the worker: age, race, ethnicity, sex, education, income, region of residence, and urban/nonurban (>100,000 population). Second, we considered job-related variables: number of hours worked, self-employment status, and standard occupational and industrial codes associated with the worker's employment. Third, we considered individual health and impairment variables. These included a self-rating of general health, duration of limitation, and self-reported difficulties with IADLs, ADLs, or functional limitations.

To assess the severity of impairments, two measures of severity are reported in the literature. The first measure, constructed by Kasper et al, grouped functional limitations into four "domains" consisting of difficulties in the upper extremities, mobility or exercise tolerance, higher functioning, and basic self-care. The number of domains affected can be used to estimate the severity of the functional limitation. The second measure, constructed by Loprest, Rupp, and Sandell, created a seven-point scale to represent the degree of difficulty within four categories of functions: basic functions, sedentary work functions, physical work functions, and very physical work functions. We developed a parallel five-point scale to reflect presence and severity of work function limitations.

Medical conditions primarily causing difficulty with the ADL were categorized as cardiovascular, musculoskeletal, respiratory, sensory, and other conditions based upon diagnostic codes (see Baldwin). We included three subsets of the musculoskeletal conditions: those of the back or spine, the upper extremities, and the lower extremities. Mental health and cognitive conditions included schizophrenia, paranoid delusional disorder, bipolar disorder, major depression, severe personality disorder, alcohol abuse, drug abuse, and other mental or emotional disorders.

## Analysis

We compared those who self-reported receiving workplace accommodations to those who did not. First, we examined the bivariate associations between our predictive variables and the provision of accommodations. Second, we constructed a logistic regression model including those variables related to worker demography and jobs that were associated ( $P < .05$ ) with the provision of accommodations. This base model allowed us to assess the relative importance of these variables in predicting the availability of accommodations. Third, we added each of the variables describing limitations and health conditions individually to the base model to assess their relationship with workplace accommodation after controlling for key variables concerning the workers and their job.

The NHIS is a multistage, stratified, clustered sample weighted to represent the number of noninstitutionalized adults in the United States. To account for the complex structure of this sample, we used SUDAAN software to estimate standard errors and corresponding confidence intervals for odds ratios.

## Results

Our cohort consisted of 4,937 Americans working with self-reported impairments and/or functional limitations. They ranged from 18 to 69 years of age with a mean age of 43.0. Forty-eight percent were men; 88% were white; 43% had at least some college education; 49% had a family income of \$35,000 or more. Hence, this subsample is generally comprised of white men and women who tended to be educated and with family incomes above poverty levels.

Table 1 describes the proportion of our study population who report needing any of 17 specific accommodations and the proportion who report receiving these accommodations. Of the 4,937 individuals in our study population, a relatively small proportion (16%) reported needing any of the 17 accommodations. Likewise, a small proportion (12%) reported receiving at least one accommodation. However, the majority (78%) of those who reported needing an accommodation received it from their employers.

The most common accommodations received included accessible parking or accessible transportation (4.2%); an elevator (3.1%); a workstation specifically designed for your use (3.1%); handrails or ramps (2.2%); and reduced or part-time hours (2.1%).

**Table 1.** Percent of Workers with Disabilities Who Report Needing and Receiving Specific Accommodations Among the National Health Interview Survey–Disability Supplement, 1994–1995 (n = 4,937)

| Nature of Accommodation  | % Reporting Needing | % Reporting Receiving |
|--|---------------------|-----------------------|
| 1. Handrails or ramps  | 3.5                 | 2.2                   |
| 2. Accessible parking, accessible transportation                                     | 6.1                 | 4.2                   |
| 3. An elevator   | 4.9                 | 3.1                   |
| 4. An elevator designed for persons with special needs                               | 0.9                 | 0.3                   |
| 5. A workstation specifically adapted for your use                                   | 5.1                 | 3.1                   |
| 6. A restroom designed for persons with special needs                                | 2.5                 | 1.6                   |
| 7. An automatic door   | 1.6                 | 0.6                   |
| 8. A voice synthesizer, telecommunications device, or other technical device         | 0.7                 | 0.5                   |
| 9. Braille, enlarged print, special lighting or audio                                | 0.4                 | 0.2                   |
| 10. A reader, oral or sign language interpreter                                      | 0.2                 | 0.1                   |
| 11. A job coach to help train you and supervise your work                            | 0.6                 | 0.6                   |
| 12. A personal assistant to help you with job-related activities                     | 1.1                 | 0.7                   |
| 13. Special pens or pencils, chairs, office supplies                                 | 1.3                 | 0.7                   |
| 14. Job redesign, modifications of difficult job duties or slowing the pace of tasks | 2.1                 | 1.3                   |
| 15. Reduced work hours to allow for more breaks or rest periods                      | 2.3                 | 1.4                   |

|   |             |             |
|---|-------------|-------------|
| 16. Reduced or part-time hours                      | 2.8         | 2.1         |
| 17. Some other equipment, help, or work arrangement | 3.2         | 1.9         |
| <b>At least one of the above 17</b>                 | <b>15.6</b> | <b>12.2</b> |

Table 2 summarizes the bivariate associations between our set of predictors and self-reported provision of workplace accommodation. Both younger workers (aged 40 years and younger) and older workers (aged 51 years and older) were significantly less likely to report the provision of accommodations than workers aged 41 to 50 years. Males report significantly fewer accommodations than females. There was no statistically significant difference among racial groups or among those of Hispanic ethnicity.

Those with at least some college education report increased provision of accommodation. Compared to workers in the Northeast region, those in the South reported fewer accommodations. Those living in urban areas reported more accommodations than those in nonurban areas. Full-time workers are significantly more likely to report a workplace accommodation.

Reported difficulty with any of the ADLs, functional limitations, or IADLs is associated with an increased self-reported availability of accommodation. Using either Kaspar's or Loprest's measures of severity of limitation, we observe a clear dose-response effect: the more severe the limitation, the more likely receiving an accommodation is reported. Those reporting physical limitations of longer duration (dating from 1990 or earlier) are more likely to have accommodations than those recently limited. Those with severe hearing problems are significantly less likely to report an accommodation. Workers with mental health disabilities are almost one half less likely to receive accommodations than workers with other disabilities.

**Table 2.** Bivariate Associations Between Predictors and Workplace Accommodations Among Persons with Impairments in the National Health Interview Survey–Disability Supplement 1994–1995

| Predictor  | No. With Risk Factor (Unweighted) | n   | %    | OR   | 95% CI    |
|--|-----------------------------------|-----|------|------|-----------|
| <b>Variables related to the worker — Age (years)</b> |                                   |     |      |      |           |
| 30 or less   | 765                               | 62  | 8.1  | 0.46 | 0.34–0.63 |
| 31–40  | 1,242                             | 149 | 12.0 | 0.78 | 0.62–0.99 |
| 41–50 (ref)  | 1,451                             | 210 | 14.5 | 1.00 | —         |
| 51–60  | 1,012                             | 133 | 13.1 | 0.84 | 0.65–1.08 |
| 60+  | 467                               | 48  | 10.3 | 0.66 | 0.46–0.95 |
| Male   | 2,366                             | 213 | 9.0  | 0.55 | 0.45–0.67 |
| <b>Race</b>  |                                   |     |      |      |           |
| White (ref)  | 4,325                             | 516 | 11.9 | 1.00 | —         |
| Black  | 447                               | 54  | 12.1 | 0.96 | 0.67–1.38 |
| Other race   | 165                               | 32  | 19.4 | 1.54 | 0.94–2.51 |
| Hispanic ethnicity                                   | 465                               | 46  | 9.9  | 0.74 | 0.53–1.03 |
| <b>Education</b>                                     |                                   |     |      |      |           |
| Less than HS (ref)                                   | 873                               | 69  | 7.9  | 1.00 | —         |

|  |       |     |      |       |             |
|--|-------|-----|------|-------|-------------|
| HS graduate  | 1,925 | 205 | 10.7 | 1.26  | 0.93–1.70   |
| Some college   | 1,142 | 156 | 13.7 | 1.56  | 1.11–2.19   |
| College grad or more   | 997   | 172 | 17.3 | 2.29  | 1.67–3.14   |
| <b>Residence region</b>  |       |     |      |       |             |
| Northeast (ref)  | 798   | 112 | 14.0 | 1.00  | —           |
| Midwest  | 1,313 | 171 | 13.0 | 1.22  | 0.97–1.54   |
| South  | 1,644 | 151 | 9.2  | 0.59  | 0.47–0.75   |
| West   | 1,182 | 168 | 14.2 | 1.23  | 0.98–1.53   |
| Urban (pop. >100,000)  | 3,705 | 479 | 12.9 | 1.29  | 1.01–1.66   |
| Income >\$35,000   | 2,401 | 303 | 12.6 | 1.08  | 0.89–1.30   |
| <b>Variables related to work — Standard occupational codes</b> |       |     |      |       |             |
| Executive professional (ref)                                   | 1,156 | 183 | 15.8 | 1.00  | —           |
| Sales  | 414   | 39  | 9.4  | 0.56  | 0.39–0.80   |
| Administrative support   | 664   | 123 | 18.5 | 1.80  | 1.44–2.24   |
| Service occupations  | 786   | 81  | 10.3 | 0.62  | 0.47–0.82   |
| Farming  | 94    | 10  | 10.6 | 0.76  | 0.38–1.54   |
| Mechanics/Construction   | 464   | 20  | 4.3  | 0.23  | 0.14–0.38   |
| Machine operators  | 345   | 26  | 7.5  | 0.47  | 0.31–0.70   |
| Transport handlers   | 383   | 25  | 6.5  | 0.34  | 0.22–0.53   |
| Laborers   | 631   | 95  | 15.1 | 0.96  | 0.73–1.26   |
| <b>Standard Industrial Codes</b>                               |       |     |      |       |             |
| Agriculture/mining/construction                                | 247   | 15  | 6.1  | 0.37  | 0.21–0.64   |
| Manufacturing (ref)  | 748   | 53  | 7.1  | 1.00  | —           |
| Transport/public utilities                                     | 301   | 23  | 7.6  | 0.48  | 0.31–0.74   |
| Retail/wholesale trade   | 814   | 63  | 7.7  | 0.47  | 0.35–0.62   |
| Insurance/real estate  | 245   | 41  | 16.7 | 1.54  | 1.10–2.14   |
| Personal services  | 472   | 68  | 14.4 | 1.23  | 0.97–1.57   |
| Professional service   | 1,112 | 182 | 16.4 | 1.52  | 1.25–1.84   |
| Public administration  | 257   | 52  | 20.2 | 1.60  | 1.16–2.21   |
| Self-employed  | 415   | 55  | 13.3 | 0.46  | 0.30–0.71   |
| Works full time  | 884   | 219 | 24.8 | 2.96  | 2.45–3.56   |
| <b>Variables related to health/impairments</b>                 |       |     |      |       |             |
| Health excellent/good  | 3,653 | 391 | 10.7 | 0.64  | 0.52–0.78   |
| Impairment began after 1990                                    | 642   | 97  | 15.1 | 0.52  | 0.40–0.67   |
| <b>Measures of impairment severity — Kasper's measure</b>      |       |     |      |       |             |
| 0 Domains (ref)  | 2,850 | 128 | 4.5  | 1.00  | —           |
| 1 Domain   | 1,153 | 163 | 14.1 | 3.49  | 2.64–4.62   |
| 2 Domains  | 672   | 183 | 27.2 | 8.24  | 6.12–11.11  |
| 3 Domains  | 214   | 97  | 45.3 | 17.04 | 12.09–24.02 |

|   |       |     |      |       |             |
|---|-------|-----|------|-------|-------------|
| 4 Domains   | 48    | 31  | 64.6 | 44.70 | 22.73–87.93 |
| <b>Loprest's measure</b>  |       |     |      |       |             |
| Class 1 (ref)   | 2,623 | 107 | 4.1  | 1.00  | —           |
| Class 2   | 869   | 91  | 10.5 | 2.75  | 2.01–3.78   |
| Class 3   | 428   | 88  | 20.6 | 6.02  | 4.23–8.56   |
| Class 4   | 598   | 179 | 29.9 | 9.80  | 7.33–13.10  |
| Class 5   | 419   | 137 | 32.7 | 11.18 | 8.07–15.47  |
| 1+ medications taken  | 2,798 | 456 | 16.3 | 2.86  | 2.34–3.50   |
| Severe hearing problem  | 429   | 29  | 6.8  | 0.51  | 0.32–0.81   |
| Severe vision problem   | 267   | 33  | 12.4 | 1.00  | 0.64–1.55   |
| <b>Main conditions causing impairments (Baldwin diagnostic codes)</b> |       |     |      |       |             |
| Cardiovascular  | 82    | 27  | 32.9 | 3.37  | 2.06–5.51   |
| Overall musculoskeletal   | 660   | 204 | 30.9 | 4.26  | 3.42–5.32   |
| Musculoskeletal/back/spine/neck                                       | 132   | 42  | 31.8 | 3.67  | 2.40–5.61   |
| Upper extremities   | 40    | 20  | 50.0 | 5.80  | 2.92–11.51  |
| Lower extremities   | 215   | 58  | 27.0 | 2.90  | 2.02–4.16   |
| Other musculoskeletal   | 269   | 94  | 34.9 | 4.27  | 3.15–5.78   |
| Respiratory   | 54    | 19  | 35.2 | 3.86  | 2.06–7.24   |
| Sensory   | 11    | 7   | 63.6 | 14.39 | 3.86–53.68  |
| Other condition   | 561   | 243 | 43.3 | 8.84  | 7.12–10.97  |
| <b>Mental Health Conditions (Phase I)</b>                             |       |     |      |       |             |
| Overall mental health   | 1,311 | 99  | 7.6  | 0.54  | 0.44–0.66   |
| Schizophrenia   | 40    | 7   | 17.5 | 1.83  | 0.63–5.30   |
| Paranoid/delusional disorder  | 56    | 4   | 7.1  | 0.60  | 0.21–1.72   |
| Bipolar disorder  | 196   | 15  | 7.7  | 0.70  | 0.39–1.26   |
| Major depression  | 698   | 60  | 8.6  | 0.62  | 0.45–0.85   |
| Severe personality disorder   | 181   | 18  | 9.9  | 0.68  | 0.41–1.14   |
| Alcohol abuse   | 296   | 11  | 3.7  | 0.30  | 0.15–0.59   |
| Drug abuse  | 114   | 4   | 3.5  | 0.34  | 0.12–0.93   |
| Other mental/emotional  | 192   | 19  | 9.9  | 0.77  | 0.46–1.29   |

OR = odds ratio; CI = confidence interval; ref = reference category. Odds ratios and 95% CIs reflect complex sample design of the NHIS and were estimated using SUDAAN software; n values are unweighted.

**Table 3.** Base Logistic Regression Model of Workplace Accommodation Among a Study Population with Impairments from the National Health Interview Survey–Disability Supplement 1994–1995

| Variable                 | Odds Ratio | 95% CI      |
|--------------------------|------------|-------------|
| Age (continuous)         | 1.01       | (1.00–1.01) |
| Male                     | 0.64       | (0.53–0.78) |
| College graduate or more | 1.53       | (1.22–1.91) |

|                               |      |             |
|-------------------------------|------|-------------|
| Region south                  | 0.57 | (0.47–0.70) |
| Executive professionals (ref) | 1.00 | —           |
| Sales                         | 0.60 | (0.41–0.88) |
| Admin. support                | 1.35 | (1.02–1.78) |
| Service occupations           | 0.79 | (0.58–1.07) |
| Farming                       | 0.66 | (0.31–1.40) |
| Mechanics/Construction        | 0.33 | (0.20–0.55) |
| Machine operators             | 0.63 | (0.40–0.97) |
| Transport handlers            | 0.52 | (0.33–0.84) |
| Laborers                      | 1.30 | (0.97–1.75) |
| Self employed                 | 1.76 | (1.28–2.41) |
| Works full time               | 3.19 | (2.63–3.87) |

Hosmer–Lemeshow goodness-of-fit test *P* value = .70, indicating adequate model fit.

**Table 4.** Associations of Predictors with Workplace Accommodations after Controlling for Age, Race, Sex, Education, Region of Residence, Occupation, Self-Employment, and Part-Time Employment Among Persons with Impairments in the National Health Interview Survey–Disability Supplement 1994–1995

| Variable Entered After Base Model                                       | OR    | 95% CI        |
|---|-------|---------------|
| Urban residence (population >100,000)                                   | 1.14  | (0.91–1.42)   |
| Income greater than \$35,000  | 0.90  | (0.75–1.09)   |
| Health excellent/good   | 0.72  | (0.59–0.88)   |
| Impairment began after 1990   | 0.49  | (0.37–0.64)   |
| <b>Measures of impairment severity — Kasper’s Measure</b>               |       |               |
| 0 Domains (ref)   | 1.00  | —             |
| 1 Domain  | 2.93  | (2.25–3.81)   |
| 2 Domains   | 6.07  | (4.58–8.04)   |
| 3 Domains   | 13.07 | (9.11–18.75)  |
| 4 Domains   | 38.36 | (19.02–77.35) |
| <b>Loprest’s Measure</b>  |       |               |
| Class 1 (ref)   | 1.00  | —             |
| Class 2   | 2.01  | (1.47–2.76)   |
| Class 3   | 4.69  | (3.30–6.67)   |
| Class 4   | 7.67  | (5.64–10.43)  |
| Class 5   | 10.21 | (7.33–14.23)  |
| One or more medications taken   | 2.24  | (1.81–2.77)   |
| Severe hearing problem  | 0.61  | (0.43–0.87)   |
| Severe vision problem   | 1.21  | (0.85–1.73)   |
| <b>Main conditions causing impairments (Baldwin’s diagnostic codes)</b> |       |               |
| Cardiovascular  | 2.94  | (1.75–4.93)   |

|   |       |              |
|---|-------|--------------|
| Overall musculoskeletal                   | 3.45  | (2.78–4.28)  |
| Musculoskeletal/back/spine/neck           | 2.90  | (1.92–4.40)  |
| Upper extremities                         | 3.96  | (2.08–7.55)  |
| Lower extremities                         | 2.19  | (1.55–3.07)  |
| Other musculoskeletal                     | 3.27  | (2.42–4.41)  |
| Respiratory                               | 3.09  | (1.64–5.81)  |
| Sensory                                   | 16.09 | (4.13–62.63) |
| Other condition                           | 7.78  | (6.26–9.66)  |
| <b>Mental Health Conditions (Phase I)</b> |       |              |
| Overall mental health conditions          | 0.56  | (0.44–0.70)  |
| Schizophrenia                             | 2.26  | (1.01–5.09)  |
| Paranoid/delusional disorder              | 0.69  | (0.27–1.80)  |
| Bipolar disorder                          | 0.76  | (0.46–1.26)  |
| Major depression                          | 0.58  | (0.44–0.78)  |
| Severe personality disorder               | 0.81  | (0.48–1.36)  |
| Alcohol abuse                             | 0.50  | (0.28–0.89)  |
| Drug abuse                                | 0.58  | (0.24–1.40)  |
| Other mental/emotional disorders          | 0.77  | (0.47–1.26)  |

## Discussion

Using a nationally representative sample of working Americans, aged 18 to 69 years with a wide range of impairments, we found that only 12% reported receiving workplace accommodations. Males and Southerners were less likely than others to receive workplace accommodations. College graduates, older workers, full-time workers, and the self-employed were more likely to receive accommodations.

After controlling for demographic variables, we found that those with the most severe impairments (whether measured using Loprest's scale or Kaspar's domains) were most likely to receive accommodations. Those with a wide range of specific impairments were more likely to report being accommodated. However, those with several specific impairments or diagnoses were less likely to report being accommodated, including those with severe hearing problems, mental health problems, major depression, and alcohol abuse.

In defining our cohort, we relied on the Institute of Medicine's conceptual model that distinguishes functional limitations and impairments (characteristics of individuals) from disabilities (characteristics of the interactions of individuals with the demands of their environments). We defined our cohort broadly as including all those individuals with a variety of impairments and medical conditions.

There have been few nationally representative surveys of the prevalence of workplace accommodations. Using the Health and Retirement Study (HRS), Yelin et al found that among older workers (51 to 61 years) with musculoskeletal conditions, 17.9% received workplace accommodations. Daly and Bound found that among employees who remain with their employer after the onset of a health impairment, 29.2% of the men and 36.9% of the women received

workplace accommodations. The lower prevalence rate of accommodations in our cohort may be a consequence of our broader age range as well as the broader range of included medical conditions.

The negative association between severe hearing loss and accommodations is of particular interest because of our previous work showing a consistent association between hearing impairment and occupational injuries. The increased injury rates among the hearing impaired may be related to the relative lack of workplace accommodations for their impairments.

We also found that those with mental health conditions were about 50% less likely to receive accommodations than those with other disabilities. This difference could be explained by the stigma associated with mental health conditions, by the difficulty in designing accommodations for episodic mental illnesses, or by underreporting of accommodations for mental health impairments. Of the 17 questions in the Disability Follow-Back Survey on the nature of accommodations, only three are likely to identify accommodations for mental health conditions.

## Limitations

As mentioned, this study has a number of limitations. First, all the data on accommodations are based on employees' self-report and may be subject to recall bias. No employer records were available for verification. Second, similar concerns may be raised about the self-reported health data. No doctors' diagnoses were available. Third, the choice of impairments as inclusion criteria was particular to our study. Other researchers might have chosen different measures. Fourth, workers may have accommodated themselves by changing jobs or informally exchanging duties with fellow workers. This study cannot take into account such accommodations. Fifth, we have no information whether or not the employer was aware of the disabilities.

## Strengths

Despite limitations, this study has unique strengths. It is based on a large, representative sample of working Americans with impairments. In particular, it includes workers from age 18 to 69. Because of the cohort's size, we were able to examine a large number of potential predictors of workplace accommodations. The present investigation illustrates the need for further detailed investigations of the nature of workplace accommodations.

## Acknowledgment

Funded by the National Institute on Aging (5R01 AG 16829), with additional support from the National Center for Injury Prevention and Control (R49ICCR 703640). Also supported in part by funding to Peter Blanck from the US Department of Education, the National Institute on Disability and Rehabilitation Research (H133B980042-99, H133A011803, H133A021801); the Great Plains ADA and IT Center; and the University of Iowa College of Law Foundation.

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