Workforce Participation by Persons with Disabilities: The National Health Interview Survey Disability Supplement, 1994-5

Running title: Workforce participation by persons with disabilities.

Craig Zwerling, MD, PhD, MPH, Paul S. Whitten, MA, Nancy L. Sprince, MD, MPH, Charles S. Davis, PhD, Robert B. Wallace, MD, MS, Peter D. Blanck, JD, PhD, Steven G. Heeringa, PhD.

Corresponding author: Craig Zwerling, MD, PhD, MPH. The University of Iowa, College of Public Health, 100 Oakdale Campus, #126 IREH, Iowa City, Iowa, 52242-5000.

Abstract

Using the National Health Interview Survey Disability Supplement of 1994-95, we examined the factors associated with employment among Americans with disabilities. Persons with disabilities who were more educated were more likely to be working. Married males were more likely to work than unmarried males (OR 1.58). Blacks were less likely to work than whites (OR 0.56). Persons with disabilities related to cardiovascular disease (OR 0.23) musculoskeletal disease (OR 0.37) and respiratory disease (OR 0.23) were less likely to work than other Americans with disabilities. Among persons with psychiatric disorders, there was considerable variety in the propensity to work. Persons with schizophrenia (OR 0.24) and paranoid delusional disorder (OR 0.34) were markedly less likely to work; persons with bipolar disorder (OR 0.60) and major depression (OR 0.69) were also less likely to work. Lastly, persons with self-reported alcohol abuse (OR 1.30) were more likely to work and persons with self-reported drug abuse (OR 0.93) were not less likely to work than others in our study population of Americans with disabilities.

In the decades to come, workers with disabilities likely will represent an increasing portion of the American workforce. This change in the workforce will be driven by many factors, among them: the aging of American workers and the impact of anti-discrimination laws, such as the Americans with Disabilities Act (ADA)[1] of 1990, and the impact of policy changes in the area of health care and welfare reform (e.g., The Workforce Investment Act of 1998 and the Ticket to Work and Work Incentives Improvement Act of 1999)[2]

Particularly, over the next ten years, the labor force will age significantly as the baby boomers -- born between 1946 and 1964 -- reach their 50's and 60's. The Bureau of Labor Statistics data suggest that the median age of the workforce increased from 35 years in 1978 to 39 in 1998 and is expected to reach 41 by 2008 [3, 4]. From 1998 to 2008, the number of workers aged 55 years and older is expected to grow by 48%.[3]

It is well documented that the incidence of disability increases with age[5, 6]. Data from the National Health Interview Survey (NHIS-1994) confirm that the percentage of workers with work-limiting disabilities increases with age: from only 3.4% among workers 18-28 years of age, to 8.4% among workers 50-59 years of age, and to 13.6% among workers 60-69 years of age. Thus, the aging of the workforce will be associated with increases in the number of people with disabilities in our workplaces.

In addition to the aging of the workforce, the implementation of the ADA was expected to increase the number of qualified workers with disabilities in the workforce[1]. Enacted in 1990, the ADA requires that employers with 15 or more employees make "reasonable" accommodations to allow qualified workers with disabilities to participate in the workforce[7]. Although there are limited data to monitor the impact of this law, the studies to date suggest mixed results from ADA implementation with regard to increases in the labor force participation of qualified workers with disabilities and of the retention in the workforce of older workers with disabilities.

Recent policy innovations have been aimed at diminishing the economic barriers to work for disabled persons who want to work and who are capable of working. Thus, the Ticket to Work and Work Incentives Improvement Act of 1999 expands the availability of health care coverage for individuals with disabilities in several ways, such as allowing disabled people with incomes over 250% of poverty level to "buy into" Medicaid health insurance programs if they are otherwise eligible for SSI. With similar goals of employment in mind, the Workforce Investment Act of 1998 established "one stop" employment and job training centers that provide accessible services to all individuals, including those with disabilities.[2]

Increasingly, worker demographics and law and policy changes require occupational health professionals to evaluate the fitness for duty of workers with

disabilities. They are asked to determine individual work capacity and the nature of accommodations that would enable a job applicant or worker to enter or remain in the workforce. Yet, there is relatively little information in the literature describing Americans with disabilities in the workforce.

In this investigation, we present data from the National Health Interview Survey Disability Supplement of 1994 and 1995 on those factors that are associated with self-reported workforce participation among Americans with disabilities, focusing specifically on the role of the conditions causing the disability.

Methods

The study population

We derive our study population from the National Health Interview Survey (NHIS), an annual survey of the health status of Americans conducted by the Census Bureau under contract to the National Center for Health Statistics. In 1994 and 1995, in addition to the core survey (NHIS), a second questionnaire was used to collect information on impairments and disability. Alongside the core questionnaire, census workers administered the Phase I disability questionnaire to collect basic information regarding health conditions and limitations to serve as a screen to determine eligibility for the Phase II disability supplement, the disability follow-back survey (DFS), which was administered six to eight months later.

The specific inclusion criteria for the DFS for adults included nearly 200 screening questions (flags) relating to the respondents' impairments and disabilities. The DFS collected detailed information regarding housing and long-term care services, transportation, social activity, work history and employment, vocational rehabilitation services, use of assistive devices and technologies, health insurance, need for assistance with key activities, need for other services, self direction, family structure, relationships and living arrangements, specific health conditions and impairments, and availability of community services.

Our study population consists of respondents to the Phase I disability supplement that had at least one of the following functional limitations or diagnoses (expected to last at least 12 months):

1. some difficulty with activities of daily living (bathing, dressing, eating, getting in or out of bed or chair, and using the toilet);
2. some difficulty with instrumental activities of daily living (preparing own meals, shopping for personal items, using the phone, doing heavy work around the house, and doing light work around the house);
3. functional limitations (lifting 10 pounds, walking 10 steps, walking a quarter mile, standing for two hours, bending down from a standing position, reaching up over the head, using the fingers to grasp or handle something, and holding a pen or pencil);

4. difficulty seeing even with glasses; difficulty hearing even with a hearing aid; mental health diagnoses (Down Syndrome, mental retardation, schizophrenia, delusional disorder, bipolar disorder, major depression, severe personality disorder, alcohol abuse, drug abuse, other mental or emotional disorders), and/or;
5. the use of a cane, crutches, walker, wheelchair or scooter to get around.

Analyses were conducted on all members of the study population who responded to the Phase II questionnaire, who were 18 to 69 years old at that time, and who met at least one of the 31 inclusion criteria. Of the 25,805 participating respondents to the Phase II questionnaires over the two years, 12,151 were included in the present study.

Variables

The outcome variable we used was question 16 of the DFS: "Do you *now* work at a job or business?" This question was asked in a face-to-face interview. Positive responses were followed up by a series of questions about the nature of their job. Responses to these follow-up questions assured the interviewer that the subject understood question 16. However, no employment records were available to validate this question. Subjects missing responses to this question were excluded

from the study population resulting in a final sample size of 11,130. Of these, 4937 (44.4%) replied "yes" to this question.

We identified two categories of potential predictors of work. First, we considered demographic variables having a strong prior probability of association with workforce participation: age, race, ethnicity, sex, marital status and education. Second, we considered other potential predictors of workforce participation related to difficulties with activities of daily living as well as functional limitations. We also included type of disability condition in broad categories (e.g. psychiatric, orthopedic, cardiovascular, musculoskeletal, respiratory, sensory).

Analysis

We first examined the bivariate associations between predictors and the dependent variable. For age, we set out five categories: 18-30 years, 31 to 40, 41 to 50, 51 to 60, and over 60, selecting the 41 to 50 group as the reference. We compared males to females, black or other race to white, Hispanic ethnicity to non-Hispanic, and married to unmarried. Education was considered in four groups: less than high school, high school graduate, some college, college graduate or more. Self-reported health status was classified as excellent or good compared to fair or poor. The specific activities of daily living (ADLs) or instrumental activities of daily living (IADLs) included: any difficulty walking a

quarter-mile, sitting two hours, lifting or carrying 25 pounds, lifting 10 pounds, walking 10 steps without resting, standing two hours, bending down from standing position, reaching overhead, reaching out as if to shake hands, using fingers to grasp, bathing, dressing, eating, getting in or out of bed, or difficulty managing money. These were classified as "yes" if the respondent expected the condition to last for twelve months or longer and "no" if otherwise.

The medical conditions causing difficulty with the activities of daily living were categorized as cardiovascular, musculoskeletal, respiratory, sensory, mental health conditions, and other conditions based upon diagnostic codes[8]. Additionally, we subdivided musculoskeletal conditions into three categories: problems with back, spine or neck; upper extremities; and lower extremities. The categories were classified as "yes" if the diagnostic code included any of the subcategories and "no" if it did not. Indications of mental health conditions were collected from the Phase I questionnaire and included self-reported schizophrenia, paranoid delusional disorder, bipolar disorder, major depression, severe personality disorder, alcohol abuse, drug abuse, and other mental or emotional disorders.

In the second step of the analysis, we fit a base logistic regression model to predict workplace participation using the demographic variables: age (continuous), race, Hispanic ethnic status, sex, marital status and education.

Based on suggestions in the previous literature[9], we considered possible interactions between age and marital status, as well as between sex and marital status.

In the third step of the analysis, we added to the base logistic regression model the additional variables from step one individually to assess the relationship with work status after controlling for demographics.

Since the NHIS-D is a multi-stage, stratified, clustered sample, weighted to represent the number of adults in the United States, we used SUDAAN[10] software to take account of the structure of the survey in estimating standard errors and corresponding confidence intervals for odds ratios.

Results

Table 1 presents the results of the unadjusted bivariate analysis including the unweighted number of respondents within each risk factor, as well as the number and percentage employed. The odds ratios, and confidence intervals reflect the weighted stratified analysis.

Among our study population, younger respondents are more likely to be working than older respondents, males more likely than females, and whites more likely than blacks. Hispanics were less likely to be working than non-Hispanics.

Likelihood of employment increases with educational level. Married respondents were more likely to be employed than unmarried respondents. Additionally, respondents rating their health as excellent or good are 2.3 times more likely to be working. Serious sensory problems significantly reduce the likelihood of working more so for vision than for hearing.

A wide variety of functional limitations are associated with a decreased likelihood of employment as are a wide range of physical conditions such as cardiovascular disease and musculoskeletal disorders. Among the mental health conditions, there is more variation. Persons with schizophrenia and delusional disorders are less likely to be employed than others. But persons with bipolar disease, major depression, and severe personality disorder are as likely as others in the study populations to be employed. Finally, in the bivariate analysis, persons with self-reported alcohol abuse or drug abuse are more likely than others in the study population to be employed.

Table 2 presents the odds ratios and 95% confidence intervals for the adjusted multiple logistic regression model containing the demographic indicators. The logistic regression model suggests a somewhat different picture from the bivariate analysis, as it controls for the effects of other variables in the model. As before, younger people are more likely to work. However, when taking into account the other demographic variables, males are no more likely to work than females.

Blacks are still about half as likely to work as whites. Education is strongly associated with workforce participation. College graduates are more than four times more likely to work than those who did not graduate from high school. Married males were more likely to work than unmarried males, but married females were no more likely to work than unmarried females. There was a statistically significant interaction between age and marital status, but the magnitude of the interaction was too small to be of practical consequence and is not presented here.

Finally, Table 3 describes the association between predictors and employment status after controlling for age, sex, race, ethnicity, marital status and education. Those who reported good to excellent health were more than three times as likely to work as those who reported fair or poor health. Each of the functional limitations were associated with non-working status. Similarly, each of the physical conditions causing difficulties with activities of daily living were associated with non-working status. The association with cardiovascular (OR 0.23) and respiratory (OR 0.23) conditions was especially strong. Among the mental health conditions, there was more variation. Schizophrenia (OR 0.24) and paranoid/delusional disorders (OR 0.34) were most strongly associated with not working. After controlling for the variables in the base model, bipolar disorder (OR 0.60), major depression (OR 0.59), and severe personality disorder (OR 0.57)

were associated with not working, but not as strongly as schizophrenia and delusional disorders. Self-reported alcohol and drug abuse did not limit workplace participation in our study population. In fact, persons reporting alcohol abuse were somewhat (OR 1.30) more likely to be employed than the rest of our study population.

Discussion

Using a nationally representative study population of people with self-reported disabilities, we have described demographic and medical factors associated with the workforce participation of persons with disabilities.

We found that blacks with disabilities were about half as likely to be employed as whites with disabilities, even after controlling for the effect of education (Table 2). Previously, using data on older workers from the Health and Retirement study,[11, 12] other researchers have found that blacks tend to leave the labor force earlier than whites, but that this difference was largely explained by differences in health. We examined our base model after adding the self-reported health variable. Blacks with disabilities continued to be about half (OR 0.65, 95% CI 0.54-0.77) as likely to work as whites with disabilities. Without controlling for health status, this odds ratio was 0.56 (0.47-0.66). Thus, although health status may account for some of the difference in employment between blacks and

whites, most of the difference persists. Wray[13] also found that "being African American … predicted being a past versus current worker." This finding might reflect overt racial discrimination, but also may result from uncontrolled confounding by more subtle, social, economic or attitudinal factors.

Baldwin[8] emphasized that workplace participation among Americans with disabilities varied significantly depending on the conditions causing those disabilities. Our findings support that conclusion. We show that cardiovascular, respiratory, and sensory disabilities have the strongest impact on workforce participation, a 50% reduction in workforce participation compared to the entire study population. Our study was large enough to compare persons with different types of musculoskeletal impairments: those of the spine, back and neck; those of the upper extremities; those of the lower extremities; and others. We found no significant differences in the impact of different types of musculoskeletal disabilities. Baldwin[8] had reported that those with mental health conditions were subject to "the greatest discrimination in employment". Our findings were more heterogeneous. We found that persons with schizophrenia and paranoid disorders were least likely to participate in the workforce (ORs 0.24 and 0.34, respectively). However, persons with bipolar disorder, major depression, and severe personality disorder were somewhat more likely to participate in the workforce (ORs 0.60, 0.69, and 0.57, respectively). Persons with self-reported drug abuse were about as

likely to participate in the workforce as our entire study population (OR 0.93) and persons with self-reported alcohol abuse were somewhat more likely (OR 1.30) to participate in the workforce.

Part of the difference between our results on the impact of mental health conditions and Baldwin's may be attributed to differences in how we defined our population. A variety of disability measures could be used to define our study population including work disabilities, functional limitations, and health conditions and impairments [1]. Survey researchers usually define work disabilities by questions such as "Do you have any impairment or health problem that limits your ability to work?" We chose not to use this question to define our study population because our main outcome variable was workforce participation. Instead, we defined our study population using functional limitations, health conditions, and impairments, which could be defined independently from the workforce participation outcomes. This decision derived from the Institute of Medicine's conceptual model distinguishing impairments and functional limitations, which characterize individuals, from disabilities, which characterize the interaction of the individuals with the demands of their environment.[14] Baldwin chose to use work disabilities to define her study population. It is possible that those with less severe mental health conditions do not identify them

as disabilities that impact their ability to work. Such a reporting bias could explain the difference between Baldwin's results and ours.

In interpreting these data, we must consider their limitations. Specifically, all the data analyzed were based on the subjects' self-reports. There were no medical records to confirm the presence of medical conditions, nor were there any physical examinations to measure functional limitations. Thus, reporting bias is a serious concern. Similarly, there were no employment records to confirm the self-reported work status, but this question has strong face validity. In addition, other researchers might have chosen different sets of functional limitations and health conditions to define the study participants.

Nonetheless, this description of self-reported workforce participation among persons with disabilities has at least two strengths. First, it derives from a nationally representative sample of Americans aged 18 to 69 years. Second, study population members responded to a wide variety of questions concerning their disabilities and health conditions. This report extends the work of Baldwin[8] with a larger study population of Americans with disabilities. It further provides occupational health professionals with a more in-depth understanding of disabled Americans they likely will encounter in the workplace. In addition, the present findings may help occupational health professionals develop and assess accommodations designed to insure the safety of those workers with disabilities in

the workplace, and to expand the opportunities available to qualified persons with disabilities who are not yet employed.

Table 1—Bivariate associations between predictors and workforce participation among persons with impairments in the National Health Interview Survey-Disability Supplement, 1994-5.

Predictor	Number with risk factor (Unweighted)	Number with risk factor employed (%)	OR (95% CI)
Age			
18-30	1207	765 (63.4)	1.48 (1.26-1.74)
31-40	2057	1242 (60.4)	1.24 (1.08-1.43)
41-50 (reference category)	2600	1451 (55.8)	1.00
51-60	2534	1012 (39.9)	0.54 (0.48-0.61)
60+	2732	467 (17.1)	0.16 (0.14-0.19)
Sex			
Male	5017	2366 (47.2)	1.21 (1.11-1.31)
Female	6113	2571 (42.1)	1.00
Race			
White (reference category)	9196	4325 (47.0)	1.00
Black	1608	447 (27.8)	0.48 (0.42-0.55)
Other	326	165 (50.6)	1.29 (0.97-1.70)

Ethnicity			
Hispanic	1170	465 (39.7)	0.82 (0.70-0.95)
Non-Hispanic (reference category)	9960	4472 (44.9)	1.00
Education			
Less than high school (reference category)	3282	873 (26.6)	1.00
High school graduate	4185	1925 (46.0)	2.27 (2.06-2.51)
Some college	2112	1142 (54.1)	3.12 (2.73-3.55)
College graduate or more	1551	997 (64.3)	4.77 (4.13-5.52)
Marital status			
Married	6008	2729 (45.4)	1.04 (0.96-1.13)
Unmarried (reference category)	5122	2208 (43.1)	1.00
Health			
Excellent or good vs. fair or poor	6114	3653 (59.8)	4.33 (3.96-4.73)
Serious hearing problem	809	429 (53.0)	0.87 (0.74-1.04)
Serious vision problem	628	267 (42.5)	0.57 (0.47-0.69)
Difficulty with IADL/ADL			
Walking quarter mile	4257	949 (22.3)	0.20 (0.18-0.22)
Sitting 2 hours	2839	800 (28.2)	0.38 (0.34-0.42)

Lifting/carrying 25 lbs.	4710	1193 (25.3)	0.23 (0.21-0.26)
Lifting 10 lbs.	2285	430 (18.8)	0.22 (0.20-0.25)
Walking 10 steps	3381	631 (18.7)	0.17 (0.16-0.19)
Standing 2 hours	4962	1268 (25.6)	0.22 (0.20-0.24)
Bending down from standing position	5144	1504 (29.2)	0.30 (0.27-0.33)
Reaching above head	2458	575 (23.4)	0.30 (0.26-0.34)
Reaching outward	550	114 (20.7)	0.30 (0.24-0.38)
Using fingers to grasp	1977	501 (25.3)	0.36 (0.32-0.41)
Bathing	1411	209 (14.8)	0.18 (0.15-0.22)
Dressing	1300	230 (17.7)	0.24 (0.20-0.28)
Eating	331	55 (16.6)	0.25 (0.18-0.35)
Getting in/out of bed	2010	458 (22.8)	0.30 (0.26-0.34)
Walking	3448	748 (21.7)	0.22 (0.20-0.25)
Managing money	516	105 (20.4)	0.32 (0.25-0.41)

Conditions Causing ADL Difficulty			
Cardiovascular	794	82 (10.3)	0.13 (0.10-0.17)
Overall musculoskeletal	2642	660 (25.0)	0.32 (0.28-0.36)
Back/spine/neck	473	132 (27.9)	0.44 (0.36-0.55)
Upper extremities	152	40 (26.3)	0.49 (0.32-0.75)
Lower extremities	805	215 (26.7)	0.43 (0.36-0.52)
Other musculoskeletal	1248	269 (21.6)	0.30 (0.25-0.35)
Respiratory	446	54 (12.1)	0.15 (0.11-0.20)
Sensory	115	11 (9.6)	0.12 (0.06-0.24)
Other conditions	2803	561 (20.0)	0.22 (0.20-0.25)
Any functional limitations	6860	2225 (32.4)	0.23 (0.21-0.26)
Mental Health Conditions *			
Overall mental health	2664	1311 (49.2)	1.31 (1.17-1.45)
Schizophrenia	195	40 (20.5)	0.31 (0.21-0.47)
Paranoid/delusional disorder	221	56 (25.3)	0.46 (0.33-0.63)
Bipolar disorder	444	196 (44.1)	0.96 (0.77-1.18)
Major depression	1502	698 (46.5)	1.11 (0.98-1.25)
Severe personality disorder	412	181 (43.9)	1.02 (0.82-1.27)
Alcohol abuse	506	296 (58.5)	1.81 (1.45-2.26)
Drug abuse	197	114 (57.9)	1.76 (1.29-2.39)

Other mental/emotional	414	192 (46.4)	1.08 (0.87-1.33)
Hospital/psychiatric	200	42 (21.0)	0.39 (0.26-0.58)

Note: OR = odds ratio; CI= confidence interval

*Variables from Phase I Questionnaire

Table 2. Base logistic regression model of workforce participation among a study population with impairments in the National Health Interview Survey-Disability Supplement, 1994-5.

Predictors	Association with Workforce Participation OR (95% CI)
Age	
Age in years (continuous)	0.95 (0.94-0.95)
Sex	
Female	1.00
Male	0.97 (0.84-1.12)
Race	
White	1.00
Black	0.56 (0.47-0.66)
Other race	1.03 (0.79-1.34)
Ethnicity	
Non-Hispanic	1.00
Hispanic	0.87 (0.74-1.02)
Education	
Less than high school	1.00
High school graduate	1.96 (1.76-2.19)

Some college	2.49 (2.16-2.86)
College graduate or more	4.56 (3.90-5.32)
Marital status	
Unmarried males	1.00
Married males	1.58 (1.37-1.83)
Unmarried females	1.00
Married females	0.93 (0.82-1.06)

Note: OR = odds ratio; CI = confidence interval

Table 3. Associations of predictors with employment status after controlling for age, sex, race, ethnic status, education, and marital status among persons with impairments in the National Health Interview Survey-Disability Supplement, 1994-5.

Predictors	OR (95% CI)
Health	
Excellent or good vs. fair or poor	3.11 (2.82-3.42)
Serious hearing problem	1.02 (0.84-1.23)
Serious vision problem	0.63 (0.51-0.77)
Difficulty with IADL/ADL	
Walking quarter mile	0.26 (0.23-0.29)
Sitting 2 hours	0.42 (0.37-0.46)
Lifting/carrying 25 lbs.	0.30 (0.28-0.34)
Lifting 10 lbs.	0.27 (0.24-0.31)
Walking 10 steps	0.24 (0.21-0.27)
Standing 2 hours	0.28 (0.25-0.30)
Bending down from standing position	0.40 (0.36-0.44)
Reaching above head	0.37 (0.33-0.43)
Reaching outward	0.33 (0.25-0.42)
Using fingers to grasp	0.44 (0.39-0.50)
Bathing	0.21 (0.18-0.26)
Dressing	0.25 (0.21-0.29)
Eating	0.26 (0.18-0.38)

Getting in/out of bed	0.34 (0.30-0.39)
Walking	0.27 (0.24-0.30)
Managing money	0.27 (0.20-0.35)
Conditions Causing ADL Difficulty	
Cardiovascular	0.23 (0.17-0.30)
Overall musculoskeletal	0.39 (0.34-0.45)
Back/spine/neck	0.45 (0.36-0.57)
Upper extremities	0.54 (0.33-0.90)
Lower extremities	0.50 (0.40-0.61)
Other musculoskeletal	0.44 (0.37-0.53)
Respiratory	0.23 (0.17-0.32)
Sensory	0.16 (0.08-0.33)
Other conditions	0.27 (0.24-0.31)
Any functional limitations	0.32 (0.29-0.36)
Mental Health Conditions *	
Overall mental health	0.77 (0.68-0.87)
Schizophrenia	0.24 (0.16-0.37)
Paranoid/delusional disorder	0.34 (0.24-0.48)
Bipolar disorder	0.60 (0.48-0.75)
Major depression	0.69 (0.60-0.80)
Severe personality disorder	0.57 (0.45-0.73)
Alcohol abuse	1.30 (1.02-1.64)
Drug abuse	0.93 (0.66-1.29)

Other mental/emotional	0.69 (0.54-0.87)
Hospital/psychiatric	0.25 (0.17-0.37)

Note: OR = odds ratio; CI = confidence interval

* Variables from Phase I Questionnaire

[1] Schwochau S, Blanck PD. The economics of the Americans with Disabilities Act, Part III: does the ADA disable the disabled? Berkeley Journal of Employment and Labor Law. 2000;21(1): 271-313.

[2] Blanck PD, Schartz HA. Employment policy and the ADA: research questions and challenges, in emerging workforce issues: W.I.A., Ticket to Work, and Transition. R. McConnell (ed.), Switzer Seminar Monograph Series. 2001;1-10.

[3] Fullerton HN, Jr. Labor force projections to 2008; steady growth and changing composition. Monthly Labor Review. 1999; 122(11):19-32.

[4] Percell PJ. Older workers; employment and retirement trends. Monthly Labor Review. 2000; 123(10):19-30.

[5] Kraus LE, Stoddard S. Chart book on work disability in the United States. Washington, DC: US National Center on Disability and Rehabilitation Research, 1991.

[6] Blanck, PD. Civil War pensions and disability. Ohio State Law Journal. 2001; 62(1):109-249.

[7] Blanck, PD. (ed.) Employment, disability, and the Americans with Disabilities Act: issues in law, public policy, and research. Northwestern University Press. 2000.

[8] Baldwin ML. The effects of impairments on employment and wages: estimates from the 1984 and 1990 SIPP. Behavioral Sciences and the Law. 1999; 17(1):7-27.

[9] Loprest P, Rupp K, Sandell SH. Gender, disabilities, and employment in the health and retirement study. J Human Resources. 1995; 30(5):S293-S318.

[10] Shah BV, Barnwell BG, Bieler GS. SUDAAN user's manual: software for analysis of correlated data: release 6.40. Research Triangle Park (NC): Research Triangle Institute. 1992.

[11] Bound J, Schoenbaum M, Waidmann T. Race and education differences in disability status and labor force attachment in the health and retirement study. J Human Resources. 1995; 30(5):S227-S267.

[12] Bound J, Schoenbaum M, Waidmann T. Race differences in labor force attachment and disability status. Gerontologist. 1996; 36(3):311-321.

[13] Wray LA. The role of ethnicity in the disability and work experience of preretirement-age Americans. Gerontologist. 1996; 36(3):287-298.

[14] Brandt EN and Pope AM. Enabling America: assessing the role of rehabilitation science and engineering. Washington DC: National Academy Press, 1997. p 67-74.