

Dispelling the Myths about Work Disability

Marjorie L. Baldwin
Department of Economics
East Carolina University

William G. Johnson
School of Health Administration and Policy
and Department of Economics
Arizona State University

Prepared for the 1998 IRRA Research Volume
New Approaches to Disability in the Workplace

February 1, 2001

Introduction

Work disability is a costly problem in the U.S. In 1988, for example, the costs of work disability included \$22 billion in SSDI payments, \$11 billion in SSI payments to the blind and disabled, \$19 billion in Medicaid expenditures, and \$27 billion (1987) in workers' compensation payments (EBRI 1990).

Passage of the *Americans with Disabilities Act of 1990* (ADA) heightened public awareness of the problems encountered by persons with disabilities and their desire to participate more fully in society. Yet the stereotypes that have evolved in the years since the Act was passed have perpetuated misconceptions of the disabled population and their ability to work. The stylized drawing of a person in a wheelchair that has come to symbolize the ADA does not, for example, represent the typical disabled person. A woman with chronic low back pain or a man with cardiovascular disease are more typical examples.

At the same time, the current trend toward retrenchment in all public assistance programs has generated concerns about rapidly rising expenditures for health care and income supplements for disabled persons. There is increasing pressure to move less severely disabled recipients off the disability rolls and into paid employment. Yet closer examination shows that these efforts may also be based on misconceptions. Most recipients whose benefits are canceled remain unemployed and rely on other sources of income for support (Yelin 1992).

This chapter describes what we know about disability and the workplace. The chapter is organized around four principles that contradict common misconceptions of disability and work. Those principles are:

- 1) The most frequent types of disabilities are not those that are caused by birth defects or traumatic accidents. Instead they are musculoskeletal conditions, such as arthritis, or cardiovascular conditions, typically caused by chronic degenerative processes that increase as persons age. Among younger age groups, mental illness is the most prevalent disabling condition.
- 2) Most workers with disabilities were not disabled as children and were not, therefore, subject to discrimination in education or to labor market discrimination at the time of entry into the labor market.
- 3) The ability of a disabled person to work does not depend solely on the nature of his impairment and the quality of medical care received. Many other factors, including characteristics of the worker and his usual job, attitudes of employers, labor market conditions, and the availability of workplace accommodations, are important determinants of employment outcomes for disabled workers.
- 4) There are large wage differentials between disabled and nondisabled workers that are not entirely explained by health-related differences in productivity. Although productivity differentials are one important factor explaining the wage differentials, employer discrimination also contributes to the low wage rates of workers with disabilities.

The chapter begins by defining key terms. In the four sections that follow we present evidence in support of each of the principles above. A concluding section discusses policy implications from this new view of disability and work.

Definitions

Disability is a measure of limitations in activities, such as working or keeping house, rather than an attribute, such as gender or race. To understand the meaning of the term "disability" it is important to distinguish it from two other terms, "impairments" and "functional limitations," that are often used synonymously but have different meanings.

An *impairment* is a "physiological or anatomical loss or other abnormality." An impairment may or may not cause a *functional limitation*, that is, a restriction of sensory,

mental or physical capacities. A *disability* occurs when a functional limitation restricts the ability to perform normal daily activities such as working or attending school.¹

Consider, for example, a worker with an impairment, such as epilepsy. The impairment causes a functional limitation, namely, the inability to walk and perform physical tasks during severe seizures. If seizures are not controlled through medication, and restrict the worker's ability to perform his usual job, he has a work disability (Chirikos and Nestel 1984). If seizures are almost completely controlled, which is fairly typical, the functional limitation need not create a work disability, but the worker may still be subject to discrimination.

According to the economists' definition, economic *discrimination* occurs when two groups of workers with equal average productivity have different average wages or opportunities for employment. Discrimination in employment can be expressed as refusals to hire, job terminations in response to reductions in the demand for labor, or refusals to rehire workers after they are absent because of an illness or injury. Wage discrimination is expressed as differences in the average wages of two groups of workers that are unrelated to differences in average productivity, or to characteristics of the jobs in which they are employed.

We are concerned with persons whose impairments limit their ability to perform some kinds of work. Although they are work disabled, most persons with disabilities are able to perform some types of work and may, in fact, be as productive as nondisabled persons in certain types of jobs. Their productivity is determined by the usual human capital variables, and by interactions between the functional limitations imposed by impairments, and the physical and mental demands of their jobs. If, for example, the

limitation applies to a function that is not required by the jobs for which they are otherwise qualified, the individual is not work disabled.

The next section provides evidence on the distribution of impairments among the disabled population, showing that the most common disabling health conditions impose few, if any, limitations in most jobs.

Distribution of Impairments

Contrary to the stereotypes promulgated by the ADA, the most common disabling health conditions are not paralysis or blindness, but chronic degenerative conditions such as arthritis, back problems, and heart disease. Such conditions often develop after a person reaches middle age, has completed his education and job training, and accumulated a number of years of work experience. Evidence that the most common causes of work disability are chronic health conditions often associated with aging comes from such diverse sources as results of national survey data, discrimination complaints filed with the Equal Employment Opportunity Commission (EEOC), and statistics compiled on work-related injuries.

National Survey Data

Information on the distribution of disabling health conditions among the general population comes from two national surveys: the 1983-85 National Health Interview Survey (NHIS) and the 1984 panel of the Survey of Income and Program Participation (SIPP).ⁱⁱ Although other national surveys, such as the CPS, include information on disability, the NHIS and SIPP are the only national surveys with sufficient information to

compute prevalence rates for different health conditions. Both surveys collect data from household samples representative of the noninstitutionalized civilian population of the U.S.ⁱⁱⁱ

In both surveys persons are defined as “work-disabled” if they respond that a health condition or impairment limits the amount or kind of work they can do.^{iv} The information on disability is self-reported and subject to the biases and misinterpretations inherent in such questions. Nevertheless, Stern (1989) has shown that self-reports yield reasonably accurate estimates of work disability.

Figure 1 shows the distribution of conditions reported to be the main cause of work limitation among those persons who report a work disability (GAO 1993). According to both surveys, musculoskeletal conditions are the most common causes of work disability, followed by cardiovascular and circulatory conditions.^v Both categories consist of chronic health conditions that often develop in middle age or later. Musculoskeletal conditions include arthritis, back or spine problems, amputation, or missing extremities. Cardiovascular and circulatory conditions include heart disease, hypertension, and stroke. Together these conditions account for 57 to 62 percent of the total population with work disabilities.

The single most common disabling health condition is back pain. It also represents the largest injury category of workers’ compensation cases, and the bulk of employment discrimination complaints processed by the EEOC since the ADA was passed.

Work-related Injuries

In 1992, 3.3 million disabling injuries occurred at the workplace, of these 8,500 were fatalities (NSC 1993). Work-related injuries represented 19 percent of all disabling injuries and 10 percent of accidental deaths in 1992 (NSC 1993). The total costs of work-related injuries, including medical care costs, indemnity payments, and lost work time, were \$116 billion, or 2 percent of GDP (NSC 1993).^{vi}

Back injuries occur more often than any other single type of injury or illness.^{vii} In 1992, back pain represented 24 percent of work-related injuries and 31 percent of workers' compensation costs, because the average cost of a back injury was 38 percent higher than the average cost of other work-related injuries (NSC 1993).

While back claims consistently represent the largest single type of work-related injury, the greatest percentage increase in workers' compensation claims in recent years has been for mental impairments. Between 1982 and 1993, mental disorders increased from 10 to 25 percent of claims (Welch 1996). The increase is especially large among younger workers (Kaye, *et.al.* 1996).

Complaints Filed with the EEOC

Responsibility for enforcement of the employment provisions of the ADA rests with the Equal Employment Opportunity Commission. Between July 1992 and June 1997 the agency received approximately 82,000 disability-related complaints, that resulted in monetary settlements exceeding \$150 million (EEOC 1997). Figure 2 summarizes the distribution of complaints, through May 1994, across impairment categories (West 1994). Approximately one-fifth of the complaints are filed by persons with back pain.

Neurological and mental impairments each account for slightly more than 10 percent of total complaints, all other individual categories represent 6 percent or less of the total.

The ADA was passed because of the efforts of disability rights advocates, who have traditionally represented persons with relatively severe conditions, such as cerebral palsy, hearing and visual impairments, and mental retardation, and coalitions that adopted the civil rights model used so effectively by African-Americans during the 1960s. Neither the objectives of the ADA nor its implementation are directed toward the largest group of persons with disabilities, namely older, less severely disabled persons, with conditions that first occurred during middle age. The large number of complaints from persons who are not members of the groups traditionally represented by disability rights advocates has raised concerns regarding the population the ADA was designed to help. Some claim that "the ADA does not appear to be making a difference for persons who are not currently working, and may make it even harder for those with significant disabilities to find employment," while others are worried that the ADA will be "trivialized" (West 1994).

Although most disabling health conditions are less severe than the stereotypical example of a person in a wheelchair, persons with disabilities face considerable hardships in the labor market. The following section provides some evidence on the relative employment and earnings of disabled and nondisabled workers.

Employment Statistics

According to the CPS, 8.6 percent of the U.S. population were work disabled in 1988 (Bennefield and McNeil 1989: Table E). The CPS is a general survey that places no special emphasis on health and disability questions. Work disability status is measured on

the basis of screening questions asked of a single household respondent.^{viii} As a result, CPS estimates tend to underestimate the prevalence of work disability in the population relative to other sources such as the SIPP (Bennefield and McNeil 1989). The statistics reported below should be interpreted with this in mind.

As shown in Figures 3 and 4, the employment rates and earnings of workers with disabilities are substantially lower than the employment rates and earnings of nondisabled workers. In 1988, only 23 percent of men with work disabilities were employed full-time (Figure 3), compared to 75 percent of nondisabled men (Bennefield and McNeil 1989: Table 4). Employment rates for women with disabilities were even lower: 13 percent of disabled women worked full-time compared to 47 percent of nondisabled women. The data suggest that the low employment rates for disabled workers are not strictly voluntary, the unemployment rates for disabled men and women are more than double the unemployment rates for their nondisabled counterparts (14% vs. 6% for men and 15% vs. 5% for women) (Bennefield and McNeil 1989: Table 4).

Among those disabled workers who are employed, average earnings are considerably lower than average earnings for nondisabled workers. The disabled-nondisabled earnings ratio was 64 percent for men and 62 percent for women in 1987, decreasing from 77 percent and 69 percent respectively in 1980 (Bennefield and McNeil 1989: Table D). The earnings differential is partly explained by differences between disabled and nondisabled workers in the number of hours worked. Among full-time year-round workers (Figure 4), the disabled-nondisabled earnings ratios increase to 81 percent for men and 84 percent for women (Bennefield and McNeil 1989: Table D).

Men and women with disabilities are at a clear disadvantage in the labor market. A common misconception is that the labor market problems reflect disadvantages encountered early in life during periods of education and job training, but for most persons with disabilities this is not the case. In the next section we consider the experience of disability over the life cycle.

Onset of Disability

The population of persons with disabilities can be divided into two distinct subgroups based on time of onset of disability: persons who are disabled during childhood, and persons who are disabled after completing their education.^{ix} The two groups encounter different problems in the workplace and require different programs and policies to improve their employment outcomes.

Persons Disabled as Children

The group most often represented in debates about disability and work are persons with conditions, such as blindness, cerebral palsy, deafness, and mental retardation, that begin during childhood or before the end of the usual period of formal education. Such persons experience discrimination in education and upon entry into the labor market. Indeed, personal accounts of childhood experiences by persons with disabilities and representations in literature and the news media document the intensity of prejudice and hostility towards children and young adults with certain types of disabling conditions (Biklen 1987, Rousso 1984).

Individual examples of success notwithstanding, the process of maturing in a hostile and restricted environment imposes limitations on opportunities and on an individual's view of the world that are difficult to escape. The impact of discrimination on schooling, socialization, access to employment and the process of "growing up disabled" parallels the experiences of African- Americans and other minorities in general even if the specifics differ.

The goals of this segment of the disabled population are to achieve legislative guarantees of their civil rights similar to the legislation that protects the rights of other minority groups. Specifically, they seek the opportunity to realize fully their potential as active participants in society and to guarantee the same opportunity to disabled children in the future. The ADA was enacted primarily to promote the goals of this segment of the disabled population and, in fact, they are the ones we most often envision when we consider the problem of disability and work. They do not, however, represent the majority of persons with disabilities.

Persons Disabled as Adults

As the statistics presented above demonstrate, the larger segment of the disabled population consists of persons with impairments that originated with illnesses or injuries occurring during adulthood, most often in middle age.^x Such persons are not segregated in school nor limited in their educational opportunities by disability-related discrimination, neither do they face discriminatory obstacles to employment on entry to the labor force or during their pre-onset work experience.

Consider, for example, a 55-year-old worker with a high school education and long work history, who is displaced from his job because of an episode of back pain. The profile is not uncharacteristic of the segment of the disabled population who are disabled as adults but is very different from the profile of persons who become disabled as children. The employment problem most often encountered by persons who are disabled as adults is obtaining the right to return to work after an illness or injury displaces them from their job, sometimes after a relatively lengthy work absence to recover from the acute effects of their conditions.

Burkhauser and Daly (1996) describe the post-onset labor market outcomes of the group who transitions into disability as adults. After the onset of disability there is a decline in average work hours and labor earnings. Within five years after onset nearly 50 percent of persons have experienced at least one year of not working. Among younger persons (below age 50), three-fifths of those who are out of work one year are able to return to work after the spell of absence, but among older persons (age 51 to 61) less than one-third return.

The Burkhauser-Daly results emphasize the heterogeneous nature of the disability experience. Within five years after onset: one in five persons with disability have experienced a spell in which family income is below the poverty line; one in two have received transfer payments for disability; but one in ten have recovered from their disability. Thus, for persons with chronic health conditions that begin in adulthood, the work disability problem is more subtle and complex than is usually perceived.

The Return to Work Myth

A common misconception, for example, is that the first return to work after a health-related work absence marks the end of the problem of work disability. The return to work measure has been used for many years by vocational rehabilitation agencies and is an increasingly popular measure of the effectiveness of medical care. Several recent studies, however, indicate that the return to work approach can substantially misrepresent returns to stable employment for workers with permanent impairments.

The studies examine post-injury employment patterns among samples of Ontario workers' compensation claimants with permanent partial impairments resulting from work-related injuries (Butler, Johnson, and Baldwin 1995; Johnson, Baldwin and Butler 1996). Four distinct post-injury employment patterns are identified: (1)The first return to work is successful (*i.e.* the worker remains in the job until the time of interview 3-15 years later, or leaves the job for reasons unrelated to his health condition); (2)The first return to work is unsuccessful (*i.e.* the worker leaves the job for reasons related to his health condition); (3)The worker experiences multiple episodes of work and work absence, ending in a successful return to work; (4)The worker experiences multiple episodes of work and work absence, ending in an unsuccessful return to work. Figure 5 shows the distribution of all claimants, and the subset with back injuries, across the four employment patterns.

If we only considered first returns to work, we would conclude that 85 percent of workers in the all-injury group recovered from their injuries because they returned to work. In fact, almost 60 percent of those who returned to work had one or more subsequent injury-related work absences. Forty percent of workers who initially returned

to work were not employed at the time of interview because of the effects of their injuries, demonstrating that work disability is a persistent problem in four cases out of ten.

Focusing on the subset of workers with back injuries, the error of using first return to work as a measure of the end of work disability is even more apparent. Two-thirds of workers with back injuries who returned to work had subsequent injury-related work absences, and nearly half the workers who initially returned to work were not employed at the time of interview for reasons related to their injury.

The persistent employment problems of workers with chronic health conditions suggest that the goals of this segment of the disabled population are likely to differ from the goals of those disabled as children. Those disabled later in life are likely to be focused more on economic objectives than civil rights. The most important objectives will be: access to jobs, rights to return to a job after health-related work absences, job accommodations to facilitate returns to work and, when returns to work are not feasible, adequate compensatory incomes.

Clearly, access to employment is a key to economic security for persons with disabilities. Most disabled persons are able to perform some type of work and have employment histories prior to the onset of disability. In some cases the functional limitations associated with an impairment preclude a worker from returning to his former job, but in many cases factors other than health and functional limitations intervene to restrict employment opportunities. In the next section we identify those factors that have been shown to be important determinants of employment outcomes for workers with disabilities.

Determinants of Employment Outcomes

Health status is one of the most important predictors of labor force participation decisions. Stern (1989) includes measures of health status and functional limitations in an employment model and reports that both are strong, significant predictors of negative outcomes. Diamond and Hausman (1984) estimate a standard labor force participation model with measures of health status and find that poor health has a larger negative effect on labor force participation than any other single variable in the model. Nevertheless, in all but the most severe cases of disability, health status alone does not preclude employment.

Other factors, such as economic incentives and shifts in labor demand, have been shown to be significant determinants of employment among workers with disabilities (Johnson, Baldwin and Butler 1996; Butler, Johnson and Baldwin 1995). Some workers may choose not to work even when they are physically able to do so, because of the disincentive effects of disability benefit payments. Other workers who want to work may be forced to re-negotiate employment contracts with former employers or to seek new jobs under conditions that have changed since they became disabled (Butler, Johnson and Baldwin 1995). Employers may have hired replacement workers or reduced their demand for labor during a worker's absence. Such factors combine with the residual effects of functional limitations to determine employment outcomes for disabled workers (Johnson, Baldwin and Butler 1996; Butler, Johnson and Baldwin 1995).

Much of the evidence on determinants of employment for workers with disabilities comes from studies of the return to work decisions of workers' compensation

claimants (*e.g.* Fenn 1981; Curington 1994; Johnson 1983; Butler and Worrall 1985; Johnson and Ondrich 1990; Johnson, Butler and Baldwin 1995). Introduced in the early 1900's, workers' compensation laws provide guaranteed compensation for workers who experience job-related injuries, whether or not the injury was caused by employer negligence. In exchange for guaranteed compensation, workers forfeit the right to sue employers and must rely on workers' compensation benefits to pay medical expenses and replace lost wages. Workers' compensation programs provide first-dollar coverage for health care, a practice that has disappeared from other forms of health insurance, and indemnity payments, approximately two-thirds of the pre-injury wage, until an injured worker returns to work. Studies of return to work among workers' compensation recipients consistently find that indemnity payments create strong work disincentives, and that other socioeconomic factors also have a significant influence on the decision to return to work.

The studies focus on first return to work and do not adequately describe the long-term effects of disability.^{xi} The research does, however, identify important determinants of return to work that may also have long-term effects:

Demographic Characteristics

- 1) *Gender*: men are more likely to return to work than women.
- 2) *Age*: the probability of return to work decreases with age.
- 3) *Race*: African-Americans are less likely to return to work than white-Americans
- 4) *Marital status*: married men (unmarried women) are more likely to return to work than unmarried men (married women).

Human Capital Characteristics

- 1) *Education*: the probability of return to work increases with education.

2) *Experience*: the probability of return to work increases with work experience prior to injury.

Economic Incentives

1) *Wages*: the higher the expected wage, the higher the probability of return to work.

2) *Replacement rate*: the probability of return to work decreases as the ratio of indemnity benefits to pre-injury wages increases. Estimates of the benefit elasticity, however, are inconsistent across studies.

To our knowledge, the only research on employment outcomes after the first return to work are studies using a unique data set, sponsored by the Workers' Compensation Board of Ontario Canada, that collected information on the post-injury employment and earnings of 11,000 workers with permanent partial impairments (Butler, Johnson, and Baldwin 1995; Hyatt 1996; Johnson, Baldwin and Butler 1996). The Hyatt study examines the impact of workers' compensation benefits and expected earnings on employment status at the point of maximum medical improvement. Consistent with the studies of first returns to work, he reports that higher benefits are associated with lower probabilities of post-injury employment, while higher expected earnings increase the probability of post-injury employment.

The other studies identify specific post-injury employment patterns after the first return to work (as described above), and analyze factors that determine which pattern an injured worker will experience. Many of the characteristics that influence first return to work are also found to be important determinants of post-return employment stability (*e.g.* age, education, gender).

Job accommodations, which have only been examined for workers with a first return to work, are important determinants of long-term employment. In particular, workers who receive reduced hours, light workloads, or modified equipment are less

likely to experience multiple spells of injury-related work absence than other workers (Butler, Johnson, and Baldwin 1995). Burkhauser, Butler and Kim (1995) estimate that workplace accommodations extend the average duration of employment for disabled workers by nearly five years. Gunderson and Hyatt (1996), however, show that some injured workers pay for their job accommodations in the form of lower wages.

The workers' compensation research dispels the notion that health status alone determines employment outcomes for workers with disabilities. Characteristics of the disabled worker, economic factors, and characteristics of the work environment are all important determinants of the degree of work disability associated with an impairment. There remains the important question of the extent to which employer discrimination limits the wages and employment opportunities of workers with disabilities. That issue is addressed in the following section.

Employer Discrimination vs. Productivity Differentials

Workers with disabilities earn lower wages, on average, than nondisabled workers. This fact is undisputed, but there is considerable disagreement regarding the factors explaining the disabled-nondisabled wage differential. One view is that “of course” workers with disabilities earn less than nondisabled workers because the functional limitations associated with impairments make disabled workers less productive in the workplace. The opposite view is that functional limitations are irrelevant: with appropriate accommodations disabled workers can be as productive as nondisabled workers. Advocates of the first view contend that disabled-nondisabled wage differentials are completely explained by productivity differentials, while advocates of the second

view argue that wage differentials are completely explained by employer discrimination and unwillingness to provide suitable job accommodations.

Our research suggests that both views are based on misconceptions and half-truths. Advocates of the productivity explanation ignore the fact that most men and women with disabilities are physically able to work, and their functional limitations do not usually decrease their productivity in all types of work. Yet functional limitations can limit productivity in many jobs. Advocates of the discrimination explanation ignore the fact that accommodations can be costly, and wage differentials that reflect cost differentials do not represent discrimination in the economists' sense of the term. Yet there is considerable evidence that persons with disabilities are subject to prejudice and negative attitudes (Yuker 1987; Hahn 1987). Thus, it is likely that both employer discrimination and productivity differences contribute to the low wages of workers with disabilities (Baldwin and Johnson 1994). The challenge is to determine the relative importance of the two.

In a series of studies of labor market outcomes for disabled workers, we have applied the techniques economists use to study discrimination against blacks, women and other minorities in the labor market (Oaxaca 1973; Reimers 1983) to the problem of explaining disabled-nondisabled wage differentials. The studies control for the effects of functional limitations on worker productivity by including summary measures of functional limitations as explanatory variables in the wage equation. Although the limitations variables control for differences in a number of physical and sensory limitations they do not adequately capture correlations between the limiting effects of

impairments and the requirements of a particular job.^{xii} The results should be viewed with this caveat in mind.

Table 1 summarizes the results of the wage discrimination studies (Baldwin and Johnson 1994, 1995, 1996).^{xiii} The results separate differences in employer wage offers to disabled and nondisabled workers into three parts: a part attributed to productivity differentials associated with functional limitations, a part attributed to productivity differentials associated with other factors (such as differences in education and work experience), and a part unexplained by measured productivity differentials and attributed to employer discrimination.^{xiv} The discriminatory or unexplained part of the wage differential also includes residual effects, that is, differences in wages attributed to differences in productivity that have not been adequately measured in the wage equations. The data for the discrimination studies do not, for example, include information on job accommodations. If workers pay part or all of the cost of job accommodations in the form of lower wages (Gunderson and Hyatt 1996), this may explain part of the disabled-nondisabled wage differential that is being attributed to discrimination. Because of the omitted variables problem, the unexplained component should be viewed as an upper bound estimate of discrimination, a flaw common to all studies of labor market discrimination using this technique.

Results of Discrimination Studies

With this in mind, note that the studies consider two groups of men with disabilities: men with impairments subject to more prejudice (MP), as measured by rankings of negative attitudes toward persons with disabilities (Yuker 1987; Tringo

1970), and men with impairments subject to less prejudice (LP). Impairments that evoke more prejudice include, for example, mental illness, paralysis, and epilepsy, while impairments that evoke less prejudice include diabetes, back problems, and arthritis. Some impairments subject to less prejudice can be severely disabling (such as arthritis), while other impairments subject to relatively strong prejudice are only mildly disabling. Epilepsy, for example, evokes strong negative attitudes despite the fact that in most cases seizures are completely controlled by medication and functional limitations are minimal.

The results from both 1984 and 1990 suggest that productivity differentials associated with functional limitations are an important factor contributing to the low wages of men with disabilities (Baldwin and Johnson 1994, 1996). In general, differences in functional limitations explain 20 to 30 percent of the disabled-nondisabled offer wage differential. Among workers subject to more prejudice, other factors (education and occupation) also contribute to the explained part of the wage differential. Among workers subject to less prejudice, the negative sign on the component explained by other factors implies that workers with disabilities would, in the absence of discrimination, earn more than nondisabled workers, primarily because the disabled group has more work experience.

The results show that for both LP and MP groups a large part of the disabled-nondisabled offer wage differential remains unexplained. The unexplained component is larger for LP men in percentage terms, but larger for MP men in absolute terms. Although the unexplained component must be viewed as an upper bound estimate of employer discrimination against men with disabilities, the results suggest that men with

disabilities are subject to discrimination in the labor market and that discrimination is greater against the group subject to more prejudice.

There are too few working women with disabilities in the SIPP samples to provide separate analyses for MP and LP groups. Results from the 1984 study comparing all women with disabilities to nondisabled women show that differences in functional limitations explain a smaller part (6 percent) of the disabled-nondisabled offer wage differential for women than for men (Baldwin and Johnson 1995). Employment rates for women with disabilities are, however, considerably lower than employment rates for men with disabilities (13% of disabled women are employed full-time compared to 23% of disabled men - Figure 3), suggesting that only the least limited women with disabilities are employed. Differences in other productivity-related characteristics, namely education, occupational distributions and part-time employment, explain about one-third of the offer wage differential for women. The unexplained component, 56 percent, is attributed to discrimination and residual effects.

Statistical Discrimination

There is another possible explanation for the wage differentials between disabled and nondisabled workers in addition to the two extreme positions we have defined (discrimination based on prejudice, and productivity differentials resulting from functional limitations). When employers do not have sufficient information to assess the productivity of job applicants accurately, they may use the attributes of a group, defined by race, sex, or the presence of an impairment, as a proxy for information on the productivity of individual workers within the group (Phelps 1972). This so-called

statistical discrimination may be particularly important for workers with disabilities because the small size and heterogeneous nature of the disabled population suggest that employers will lack experience hiring from this group (Johnson 1986).

We are not aware of any studies that specifically test the hypothesis of statistical discrimination against workers with disabilities. However, in a study of the correlations between unexplained wage differentials and rankings of health conditions by severity of prejudice, we discovered the strongest correlations between wage differentials and employers' rankings of the employability of persons with particular health conditions (Baldwin and Johnson 1994b). This suggests that improving employer information on the productivity of workers with disabilities may be as important a policy goal as the enforcement of anti-discrimination laws.

Implications for Disability Policy

There are at least two groups within the population of persons with work disabilities that differ from one another in the problems they encounter in the labor market, the social costs associated with those problems, and the policies that may be required to overcome or compensate for disadvantages in the labor market.

The smaller group are persons with illnesses or injuries that occur at birth or early in life. Mental or emotional conditions, sensory, and mobility limitations are characteristic of this group. It is also the group likely to face the most severe prejudice and discrimination in the labor market. The individual costs of work disability for members of this group are higher than for other groups of workers with disabilities, but aggregate costs are relatively low because of low prevalence rates.

The larger group is composed of persons for whom the onset of a disabling illness or injury typically occurs in middle age. Characteristic conditions for this group include arthritis, cardiovascular disease, and a variety of musculoskeletal conditions, including back pain. It is among workers in this group that differences in age, experience, skills, and economic incentives have the strongest influence on employment rates and wages. Individual costs of work disability vary with the severity of the underlying conditions but are small relative to the group of more severely disabled persons who compose our first group. Aggregate costs are relatively high, however, because prevalence rates are high.

The research summarized in this article suggests that public policies designed to increase the employment rates and relative earnings of workers with disabilities should differ across the two groups according to the particular problems they encounter in the labor market. Those disabled as children are likely to be best served by enforcement of antidiscrimination policies to counteract the stigma associated with their impairments and to improve their access to quality education and entry-level jobs. Those disabled as adults need policies designed to protect their rights to return to work, ensure appropriate job accommodations, and maintain adequate incomes during periods of work absence.

The distinctions between the two groups are essential to understanding the nature of work disability. Simplistic portrayals of the problem of work disability as totally caused by discrimination obscure the problems of the large number of workers for whom discrimination is not the most serious problem, instead of tailoring policy to fit the different needs of the groups that make up the population of persons with work disabilities. The distinctions between the two groups also predict that the aging of the

“baby boomers” will create an enormous increase in the size of the population of persons with work disabilities.

The portrait of work disability cannot be painted as a single picture. It is, instead, a panel of pictures representing distinct groups that differ in the nature of disabling conditions, the magnitude of the costs associated with those conditions, and the extent to which labor market discrimination is an obstacle to economic independence.

References

- Baldwin, Marjorie L. and William G. Johnson. 1994a. "Labor Market Discrimination Against Men with Disabilities." *Journal of Human Resources*, Vol. 29, no. 1 (Winter), pp. 1-19.
- Baldwin, Marjorie L. and Johnson, William G. 1994b. "The Sources of Employment Discrimination: Prejudice or Poor Information?" In David M. Saunders, ed., *New Approaches to Employee Management*, Volume 2. Greenwich: JAI Press, pp. 163-180.
- Baldwin, Marjorie L. and William G. Johnson. 1995. "Labor Market Discrimination Against Women with Disabilities." *Industrial Relations*, Vol. 34, no. 4 (October), pp. 555-577.
- Baldwin, Marjorie L. and William G. Johnson. 1996. "Labor Market Discrimination Against Men with Disabilities in the Year of the ADA." Unpublished paper, East Carolina University.
- Bennefield, Robert L. and John M. McNeil. 1989. *Labor Force Status and Other Characteristics of Persons with a Work Disability: 1981 to 1988*. Current Population Reports, Special Studies, Series P-23, No. 160. Washington, DC: U.S. Department of Commerce, Bureau of the Census.
- Biklen, Douglas. 1987. "The Culture of Policy: Disability Images and Their Analogues in Public Policy." *Policy Studies Journal*, Vol. 15, no. 3 (March), pp. 515-536.
- Burkhauser, Richard V., J.S. Butler, and Yang Woo Kim. 1995. "The Importance of Employer Accommodation on the Job Duration of Workers with Disabilities: A Hazard Model Approach." *Labour Economics*, Vol. 3, no. 1 (June), pp. 109-130.
- Burkhauser, Richard V. and Mary C. Daly. 1996. "Employment and Economic Well-Being Following the Onset of a Disability." In Jerry L. Mashaw, *et.al.*, eds., *Disability, Work and Cash Benefits*. Kalamazoo, MI: W.E. Upjohn Institute, pp. 59-101.
- Butler, Richard J., William G. Johnson, and Marjorie L. Baldwin. 1995. "Managing Work Disability: Why First Return to Work is Not a Measure of Success." *Industrial and Labor Relations Review*, Vol. 48, no. 3 (April), pp. 452-469.
- Butler, Richard J. and John D. Worrall. 1985. "Work Injury Compensation and the Duration of Nonwork Spells." *Economic Journal*, Vol. 95, no. 379 (September), pp. 714-724.

- Chirikos, Thomas and Gilbert Nestel. 1984. "Economic Determinants and Consequences of Self-Reported Work Disability." *Journal of Health Economics*, Vol.3, no.2 (August), pp. 61-69.
- Curington, William P. 1994. "Compensation for Permanent Impairment and the Duration of Work Absence: Evidence from Four Natural Experiments." *Journal of Human Resources* Vol. 29, no. 3 (Summer), pp. 888-910.
- Diamond, Peter A. and Jerry A. Hausman. 1984. "The Retirement and Unemployment Behavior of Older Men." In Henry Aaron and Gary Burtless, eds., *Retirement and Economic Behavior*. Washington: The Brookings Institution, pp. 97-134.
- EEOC. 1997. "Cumulative ADA Charge Data." Compiled by the Office of Program Operations from EEOC's Charge Data Systems National Data Base.
- Fenn, Paul. 1981. "Sickness Duration, Residual Disability and Income Replacement: An Empirical Analysis." *Economic Journal*, Vol. 91, no. 361 (March), pp. 158-173.
- GAO. 1993. *Vocational Rehabilitation: Evidence for Federal Program's Effectiveness Is Mixed*. (GAO/PEMD-93-19, August 27).
- Gunderson, Morley and Hyatt, Douglas. 1996. "Do Injured Workers Pay for Reasonable Accommodation?" *Industrial and Labor Relations Review*, Vol. 50, no. 1 (October), pp. 92-104.
- Hahn, Harlan. 1987. "Advertising the Acceptably Employable Image: Disability and Capitalism." *Policy Studies Journal*, Vol. 15, no. 3 (March), pp. 551-570.
- HHS. 1989. *Task 1: Population Profiles of Disability*. Washington, DC: Assistant Secretary for Planning and Evaluation, Department of Health and Human Services.
- Hyatt, Douglas E. 1996. "Work Disincentives of Workers' Compensation Permanent Partial Disability Benefits: Evidence for Canada." *Canadian Journal of Economics*, Vol. 29, no. 2 (May), pp. 289-308.
- Johnson, William G. 1983. "The Disincentive Effects of Workers' Compensation Insurance." In John D. Worrall, ed., *Safety and the Work Force: Incentives and Disincentives in Workers' Compensation Insurance*. Ithaca: Cornell University ILR Press, pp. 138-153.
- Johnson, William G. 1986. "The Rehabilitation Act and Discrimination Against Handicapped Workers." In Monroe Berkowitz and M. Anne Hill, eds., *Disability and the Labor Market*. Ithaca: Cornell University ILR Press, pp. 241-261.

- Johnson, William G. 1997. "The Future of Disability Policy: Benefit Payments or Civil Rights?" In William G. Johnson, ed., *The Americans with Disabilities Act: Social Contract of Special Privilege?* Special Issue of *The Annals of the American Academy of Political and Social Science*, Vol. 549 (January 1997), pp. 160-172.
- Johnson, William G. and Jan Ondrich. 1990. "The Duration of Post-Injury Absences From Work." *Review of Economics and Statistics*, Vol. 72, no. 4 (November), pp. 578-586.
- Johnson, William G., Marjorie L. Baldwin and Richard J. Butler. 1997. "Back Pain and Work Disability: The Need for a New Paradigm." Forthcoming, *Industrial Relations*.
- Johnson, William G., Richard J. Butler and Marjorie L. Baldwin. 1995. "First Spells of Work Absences Among Ontario Workers." In Terry Thomason and Richard P. Chaykowski, eds., *Research in Canadian Workers' Compensation*. Kingston, Ontario: Queens University IRC Press, pp. 72-84.
- Kaye, H. Stephen, Mitchell P. LaPlante, Dawn Carlson, and Barbara L. Wenger. 1996. "Trends in Disability Rates in the United States, 1970-1994." *Disability Statistics Abstract*, No. 17 (November).
- LaPlante, Mitchell P. 1988. *Data on Disability from the National Health Interview Survey, 1983-1985*. Washington, DC: National Institute on Disability and Rehabilitation Research.
- Nagi, Saad. 1969. *Disability and Rehabilitation: Legal, Clinical, and Self-Concepts and Measurement*. Columbus: Ohio State University Press.
- NSC. 1993. *Accident Facts*. Itaska, IL: National Safety Council.
- Oaxaca, Ronald L. 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review*, Vol.14, no. 3 (October), pp. 693-709.
- Piacentini, Joseph S. and Timothy J. Cerino. 1990. *EBRI Databook on Employee Benefits*. Washington, DC: Employee Benefit Research Institute.
- Phelps, Edmund S. 1972. "The Statistical Theory of Racism and Sexism." *American Economic Review*, Vol. 62, no. 4 (September), pp. 659-661.
- Reimers, Cordelia W. 1983. "Labor Market Discrimination Against Hispanic and Black Men." *Review of Economics and Statistics*, Vol. 65, no. 4 (November), pp. 570_579.

- Rousso, Harilyn. 1988. "Daughters with Disabilities: Defective Women or Minority Women?" In Michelle Fine and Adrienne Asch, eds., *Women with Disabilities*. Philadelphia: Temple University Press, pp.139-171.
- Stern, Steven. 1989. "Measuring the Effect of Disability on Labor Force Participation." *Journal of Human Resources*, Vol. 24, no. 3 (Summer), pp. 361-393.
- Tringo, John L. 1970. "The Hierarchy of Preferences toward Disability Groups." *Journal of Special Education*, Vol. 4, no. (Summer/Fall), pp. 295_306.
- U.S. Bureau of the Census. 1991. *Money Income of Households, Families, and Persons in the United States, 1990*. Series P-60, No. 174. Washington, DC: U.S. Government Printing Office.
- Welch, Edward M. 1996. "Disability Trends: More Mental Disabilities." *On Workers' Compensation*, Vol. 6, no. 5 (June), p. 88.
- West, Jane. 1994. *Federal Implementation of the Americans with Disabilities Act, 1991-94*. New York: Millbank Memorial Fund.
- WHO. 1980. *International Classification of Impairments, Disabilities and Handicaps*. Geneva: World Health Organization.
- Yelin, Edward H. 1992. *Disability and the Displaced Worker*. New Brunswick, NJ: Rutgers University Press.
- Yuker, Harold E. 1987. "The Disability Hierarchies: Comparative Reactions to Various Types of Physical and Mental Disabilities." Unpublished paper, Hofstra University.

ENDNOTES

-
- i Our definitions combine concepts from Nagi (1969) and the World Health Organization (WHO 1980).
- ii The information presented in this section comes from a GAO (1993) report on eligibility for vocational rehabilitation services, but was originally presented in two separate reports (LaPlante 1988, HHS 1989).
- iii The SIPP, administered by the Census Bureau, is a longitudinal survey designed to collect information on respondents' amounts and sources of income, and participation in various cash and noncash benefit programs. The 1984 panel consists of nine interviews with a sample of approximately 56,000 persons. The questions on disability were included in a supplemental survey administered during the third interview.
- The NHIS is administered by the National Center for Health Statistics and collects data on health and disability from a continuous weekly sampling of the target population. The data reported here are based on interviews with approximately 105,000 persons in each of the years 1983 and 1984, and 92,000 persons in 1985.
- iv The specific questions from the SIPP are: "Does your health or condition limit the kind or amount of work you can do?" "Does your health or condition prevent you from working at a job or business?" On the NHIS the corresponding questions are: "Are you limited in the kind or amount of work you can do because of any impairment or health problem?" "Does any impairment or health problem keep you from working at a job or business?" Persons who respond affirmatively are asked to identify the health condition that is the cause of their limitation.
- v These surveys are the best single source of information on disabling conditions but they do not distinguish between permanent and temporary disabilities. Thus, the estimates from any one year are a mix of temporary and permanent conditions.
- vi The costs include: lost wages and productivity (\$63 billion), medical costs (\$22 billion), administrative costs (\$15 billion), and costs to the employer, such as time lost by other workers or time to investigate the accident (\$10 billion), damage to motor vehicles (\$3 billion), and fire losses (\$3 billion) (NSC 1993).
- vii Because back pain affects eight out of ten Americans during their lifetimes, there is considerable uncertainty regarding the classification of back pain as an "injury" rather than the expression of a chronic degenerative disease process (Johnson, Baldwin and Butler 1996).
- viii A person is considered disabled if he or she satisfies at least one of the following criteria: identified by the questions, "Does anyone in this household have a health problem or disability which prevents them from working or which limits the kind or amount of work they can do?" or "Is there anyone in this household who ever retired or left a job for health reasons?"; did not work in the survey week because of long-term illness or disability; did not work in the survey year because of

-
- illness or disability; is under 65 and covered by Medicare or SSDI (Bennefield and McNeil 1989).
- ix Some of the material in this section appears in Johnson (1997).
- x With the exception of mental illness, incidence rates for the most prevalent disabling conditions, arthritis, cardiovascular disease, and chronic back pain, are relatively constant until middle age and increase sharply with age thereafter.
- xi This section is based on the summary presented in Johnson, Butler and Baldwin (1995).
- xii The limitations variables are constructed from self-reported data indicating: limits on endurance and strength, limits on carrying, climbing, and lifting, and limits on hearing, seeing, and speaking. Stern (1989) has shown that such self-reported data are reasonably accurate and exogenous measures of health.
- xiii The data come from the 1984 and 1990 panels of the Survey of Income and Program Participation (SIPP). The SIPP includes detailed information on employment, wages and earnings sources, as well as information on functional limitations and health conditions.
- xiv The difference in employer wage offers is estimated by correcting the log wage differential for sample selection bias, the bias that results because we cannot observe wage offers to nonworkers.

Table 1
Studies of Wage Discrimination Against Workers with Disabilities

Sample	Data	Results			
		Offer Wage Differential	% Functional Limitations	% Other Factors	% Discrimination
Men	1972 SSD	0.166	_39%	41%	98%
Men	1984 SIPP				
More Prejudice		0.332	30%	26%	44%
Less Prejudice		0.061	85%	_177%	193%
Men	1990 SIPP				
More prejudice		0.295	23%	2%	75%
Less prejudice		0.182	21%	_7%	86%
Women	1972 SSD	0.791	7%	17%	77%
Women	1984 SIPP	0.117	6%	38%	56%

SOURCE: SIPP, Wave III (1984, 1990); Social Security Survey of Disabled and Non-disabled Adults (1972).

NOTE: For complete decompositions refer to Baldwin and Johnson (1994, 1995, 1996).