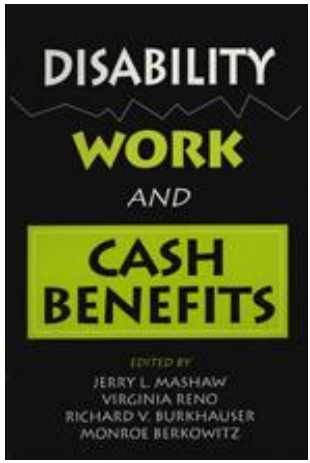
Employment and Economic Well-Being Following the Onset of a Disability:
The Role for Public Policy



Richard V. Burkhauser
Syracuse University

Mary C. Daly
Syracuse University

Chapter 3 (pp. 59-101) in:
Disability, Work and Cash Benefits
Jerry L. Mashaw, Virginia Reno, Richard V. Burkhauser, and
Monroe Berkowitz, eds.
Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1996
DOI: 10.17848/9780585301563.ch3

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The Role for Public Policy

Richard V. Burkhauser
Mary C. Daly
Syracuse University

Work in the marketplace is the principal source of income in all modern societies, and, for people of working age, it is the key to financial independence.[1] For this reason, a critical objective of those interested in the economic independence of people with disabilities is their full access to and participation in market work. The Americans with Disabilities Act of 1990 (ADA) is the most recent example of federal legislation aimed at ensuring that this goal is achieved. Title I of the ADA requires employers to make reasonable accommodations for workers with disabilities unless this would cause undue hardship to the operation of business. One of the hopes underlying the ADA is that accommodation at the onset of a health impairment will delay job exit and subsequent movement onto the disability rolls. Yet, before the ADA was enacted and even now, in 1996, little is known about the labor force experiences of people with disabilities and how they and their employers respond when a health condition begins to affect work.

Most studies of the work experience of people with disabilities have concentrated on the "official" disability transfer population and have thus restricted the analysis to individuals who, at the present time, are either not working or are working less than full-time. While this is a reasonable approach for evaluating how public policy might return such people to full-time work, for those interested in a broader menu of public policy initiatives, it is important to recognize that the transition onto the disability transfer rolls may neither be swift nor certain for the majority of those with disabilities. To see the role that employment plays in the lives of people with disabilities and to begin to understand the paths that people take following the onset of a health condition, we must look at the entire population with disabilities, including those

who are full-time workers. To do otherwise would be to ignore the "successful" work outcomes that policies such as the ADA seek to promote. In addition, we must expand our analysis across time and observe the changes in work and economic well-being that follow the onset of a health condition. Since the vast majority of those with disabilities are not born with them, understanding the transition into disability and the changes in well-being and work that it entails is critical to developing successful and supportive public policies.[2]

In this paper, we first look at the broad population with disabilities, including those working full-time and part-time who are not currently receiving government transfers, and compare their labor force activities and economic well-being to those without disabilities in 1988 and 1989, the years just prior to the passage of the ADA. We then focus on the transition into disability for men and women who became disabled at some time between 1970 and 1988. We trace their economic well-being and work experience over the years before and after the onset of their disability. We use our multiperiod data to see, among other things, how long after the disability begins a person first stops working, receives disability transfers, or recovers. We conclude with a discussion of the importance of accommodations on job retention and of the policies that might encourage additional accommodation and employment for people with disabilities.

Defining the Population with Disabilities

The ADA defines disability as a physical or mental impairment that substantially limits one or more major life activities, a record of such an impairment, or being regarded as having such an impairment.[3] This definition of disability is much broader than the widely accepted measure developed by Nagi (1965, 1969, 1991).

The Nagi measure, the dominant one in the literature, distinguishes among three states of diminished health. The first state describes the existence of a pathology, the presence of a physical or mental malfunction and/or the interruption of normal process. The second level, an impairment, combines a pathology with functional requirements—physiological, anatomical, or mental loss or abnormality that limits a

person's capacity and level of function. The final state, disability, is then defined as an inability or limitation in performing roles and tasks that are socially expected. For men and, increasingly, for women of working age, market work is a socially expected role.

What is most controversial about Nagi's definition is the relative importance of pathology and environment in determining how a given pathology results in an impairment that then leads to disability. Less controversial is the recognition that the definition gives to "disability" as a dynamic process in which individual pathology and the socioeconomic environment interact. This measure of "disability" is more limited than the ADA measure in that it ignores the broader "population with disabilities" that has successfully integrated into society as well as those who are not integrated because of perceptions concerning an impairment that does not exist.

In our analysis, we want to examine the changes that follow the onset of health-related impairments. To do so, we must expand the Nagi definition to one more in line with the broader ADA concept by including the portion of the population with disabilities that is successfully integrated into the workforce.

An Empirical Estimate of the Working-Age Population with Disabilities

In most surveys of income and employment, the data available on health are self-reported and are couched in terms of work limitations. The problems inherent in these types of data are well documented (see Parsons 1980, 1982; Bazzoli 1985; Bound 1991). Still, researchers have shown these measures to be highly correlated with more objective assessments of health (see Bound 1991 and Stern 1989) and, as discussed more fully in the appendix, we believe such data are capable of identifying people with serious pathologies.

In the Panel Study of Income Dynamics (PSID), which we use in this paper, the population with disabilities is defined by a survey question that asks respondents, "Do you have any physical or nervous condition that limits the type or the amount of work that you can do?" By including in our sample only those individuals who report a limitation

for two consecutive years, we eliminate from our analysis those individuals whose health limitations are short term. In this way, the analysis is restricted to the population with long-term impairments. In the appendix, we provide a comparison of this measure of disability and of more objective health and functional measures asked of PSID respondents in the 1986 Health Supplement.

Throughout this paper, we rely on data from the PSID to examine the population with disabilities and the patterns of individuals with transitions into and out of a state of disability. Although the PSID is not commonly used for studies of disability, its long history and consistently asked core questionnaire make it a useful data source for studying the employment behavior, transfer receipt, and economic well-being of individuals before and after a spell of disability. Since 1968, the PSID has interviewed annually a representative sample of some 5,000 families. At least one member of each family was either part of the original families interviewed in 1968 or born to a member of one of these families. In this paper, we use data from the 1989 PSID response-nonresponse file to represent the noninstitutionalized U.S. population of household heads and their spouses.[4] For a more complete discussion of these data, see Hill (1992).

To place the population with disabilities that we will use in our analysis in the context of those described with other data sets, in table 1 we report the prevalence of disability within age and gender groups in the United States in studies using data from the PSID, the Current Population Survey (CPS), and the Survey of Income and Program Participation (SIPP). All three data sets have a self-reported health question that can be used as a disability marker. In addition to this question, the SIPP has self-reported questions relating to function. These questions are also reported in table 1.

Using the PSID and our two-year definition of disability, we estimate the disability prevalence for men and women of prime working age (25 to 61 years old) and for older men and women (62 years old and over).[5] We find that 9.2 percent of working-age males and 10.6 percent of working-age females have a disability. These rates lie between estimates based on the CPS and SIPP data. Using 1990 CPS data, we find that 8.1 percent of working-age men and 7.8 percent of working-age women have a disability. In contrast, McNeil (1993), using the 1991 SIPP, finds higher prevalence rates of 11.7 and 11.6 percent for

Table 1. Cross-Sectional Estimates of the Population with Disabilities across Data Sources

Data	Year	Survey questions	Population	Percent of population with disabilities
PSID[a]	1989	Do you have any nervous or physical condition that limits the type or the amount of work you can do? (Must have responded yes in both 1988 and 1989.)	Aged 25 to 61 Men Women Aged 62 and over Men Women	 9.2 10.6 23.0 38.1
CPS[b]	1990	Do you have a health problem or disability which prevents you from working or which limits the kind or the amount of work you can do? or Main reason did not work in 1989 was ill or disabled; or Current activity reason not looking for work ill or disabled.	Aged 25 to 61 Men Women	 8.1 7.8
SIPP[c]	1990	Do you have a physical, mental, or other health condition which limits the kind or amount of work you can do?	Aged 21 to 64 Men Women	 11.7 11.6
		Do you have difficulty with one or more ADLs or IADLs, or have a learning disability, Alzheimers/dementia, an emotional condition, or use a wheelchair?[d]	Aged 65 and over Men Women	 50.9 56.0
		Severely disabled are the subset of yes respondents to the question above who are unable to perform one or more of the ADL or IADL activities.[d]	Aged 65 and over Men Women	 29.1 37.4

a Panel Study of Income Dynamics (PSID)

b. Current Population Survey (CPS).

c Survey of Income and Program Participation (SIPP) as reported in McNeil (1993).

d. Activities of Daily Living (ADLs) include tasks such as walking, eating, and bathing, Instrumental Activities of Daily Living (IADLs) include tasks such as shopping and working.

men and women, respectively, aged 21 to 64.[6] Unlike the PSID or CPS survey question, the SIPP explicitly includes mental health as a work-limiting condition, as can be seen in table 1. This more explicit question might explain why the population captured by the SIPP is larger.

Our prevalence rate calculations for those aged 62 and older are also based on the single PSID work-limit question. Thus, we would expect our estimates of disability among those aged 62 and older to be lower than those from the SIPP, where more general questions about health and functional status are asked. Among men aged 62 and over, we estimate that 23 percent have a disability. McNeil (1993), using a broader health- and function-limitation question in the SIPP, estimates a 50.9 percent prevalence rate among men aged 65 and over, of whom 29.1 percent are "severely" disabled. Our estimate seems to correspond to McNeil's severe measure. The same pattern holds for women.

Although estimates of the size of this population fluctuate across data sets, the PSID seems to capture a population with disabilities between those defined by the CPS and SIPP data. These results suggest that the PSID is a reasonable source of data for studying the effects of disability on working-age adults.

The Importance of Employment to the Working-Age Population with Disabilities

A Cross-Sectional View

To understand the impact of employment policies on the diverse population with disabilities, it is important to see how successfully people of working age with disabilities are integrated into the labor force. Table 2 uses data from the 1989 PSID response-nonresponse file to measure labor force participation and public disability or retirement transfer receipt of people with disabilities prior to the passage of the ADA. Past studies of the "disabled" population have concentrated on that part of the population with disabilities receiving Social Security benefits or working less than full-time because of a health-related impairment. (See, for example, Haveman and Wolfe 1990; Burkhauser, Haveman, and Wolfe 1993.) Table 2 shows that, in 1988, this definition

would have excluded over a third of the male population with disabilities, who both worked full-time and received no disability-related transfers [43.0 * (1-.159)] and more than one-sixth of the female population. It is only among the older population, where full-time work among people with disabilities is rare, that such limited definitions capture the majority of people with disabilities.

While full-time work remains less common among the working-age population with disabilities than it is among those without disabilities using our broader definition, we still find that it is an extremely important activity that belies the notion that people with disabilities do not work. Among working-age men with disabilities, two of every three worked in the labor market, and 43 percent worked full-time in 1988. Even among the men with disabilities who worked part-time, there was a major commitment to work. The average hours worked by men with disabilities employed part time was over 1,000 per year. Only 38 percent of men with disabilities received a disability transfer payment. The patterns are similar for women. In 1988, more than one-half of women with disabilities worked. Comparing those with and without disabilities, table 2 verifies that people with disabilities worked less, but it also shows that, even prior to the passage of the ADA, a majority of both men and women (aged 25 to 61) with disabilities worked at least part time and a large fraction worked full time.

However, this finding does not suggest that pathologies cannot result in serious employment limitations or that health never prevents work. Approximately one-third of working-age men and almost one-half of working-age women with a disability had no labor earnings in 1988. Among this subgroup of the population with disabilities, nearly 70 percent of men and 43 percent of women received a disability transfer payment in that year.

In table 3, we look more closely at the differences in economic well-being and work between the populations with and without disabilities. Since we are interested in examining the relative position of those with disabilities within the context of public policy, we measure economic status both in the absence of government taxes and transfers (before government income) and in their presence (after government income).[7] We compute household income by combining all sources available to the household. To account for differences in family size, we apply the equivalence scale weighting factor contained in the U.S. Bureau of the

Table 2. Labor Force Participation and Transfer Receipt among People with and without Disabilities in 1988

	Aged 25 to 61				Aged 62 and above			
	Men		Women		Men		Women	
	With disabilities[a]	Without disabilities	With disabilities[a]	Without disabilities	With disabilities[a]	Without disabilities	With disabilities[a]	Without disabilities
Total population[b]	4,778,859	46,999,206	6,491,730	54,845,708	4,686,946	9,084,164	7,735,634	12,572,785
Percent of total population:	9.2	90.8	10.6	89.4	34.0	66.0	38.1	61.9
Percent receiving public disability or retirement transfers[c]	38.0	2.9	25.8	4.4	95.4	79.0	95.7	87.1
Percent working	65.0	97.5	52.1	80.5	13.4	38.1	5.4	21.1
Labor force activity.								
Percent engaged in full-time work[d]	43.0	83.6	18.7	42.5	3.5	19.1	1.5	4.5
Average hours	2,263	2,398	2,224	2,195	2,583	2,334	2,323	2,069
Percent receiving public disability or retirement transfers[c]	15.9	2.5	8.7	3.3	37.5	25.8	41.6	27.0
Percent engaged in part-time work[e]	22.0	13.9	33.4	38.0	9.9	19.0	3.9	16.7
Average hours	1,094	1,267	1,025	1,141	727	870	768	896
Percent receiving public disability or retirement transfers[c]	33.6	4.5	11.1	4.7	88.7	84.9	79.0	70.2
Percent not working[f]	35.0	2.5	47.9	19.5	86.6	61.9	94.6	78.8

Percent receiving public disability or retirement transfers[c]	68.0	9.2	42 8	6 4	98.5	93.6	97.2	94.1

SOURCE: 1989 response-nonresponse file of the Panel Study of Income Dynamics (PSID) Sample is weighted to reflect population values.

a. People who reported a physical or nervous condition that limits the type of work or the amount of work they could do in both 1988 and 1989

b Population is limited to those aged 25 and older who were either household heads or spouses and were so in both the 1988 and 1989 PSID surveys

c. Public transfers include Social Security Disability Insurance, Supplemental Security Income, Veterans Disability Benefits, Workers' Compensation, and Social Security Retirement Insurance

d. People who worked at least 1,820 hours in 1988 (35 hours per week)

e People who worked at least 52 hours but no more than 1,820 hours in 1988.

f People who worked less than 52 hours in 1988.

Table 3. Economic Well-Being and Employment of Working-Age Men and Women with and without Disabilities

	Men[a]			Women[a]		
	With disabilities[b]	Without disabilities	Ratio	With disabilities[b]	Without disabilities	Ratio
Percent working positive hours[c]	65.0	97.5	0.67	52.1	80.5	0.65
Median labor earnings[d]	11,513	32,237	0.36	576	12,664	0.05
Median before government income[a]	20,307	31,635	0.64	18,786	27,600	0.68
Median after government income[e]	20,343	27,069	0.75	18,705	24,102	0.78
Income-to-needs ratio of median person[f]	2.93	3.90	0.75	2.70	3.48	0.78
Number of observations	366	3,524		433	4,111	

SOURCE 1989 response-nonresponse file of the Panel Study of Income Dynamics (PSID). Sample is weighted to reflect population values.

a. Population is limited to those aged 25 to 61 who were either household heads or spouses in 1988 and 1989

b. People who reported a physical or nervous condition that limits the type of work or the amount of work they could do in both 1988 and 1989.

c People who worked at least 52 hours in 1988.

d Median labor earnings includes zero earnings Earnings are in 1991 dollars

e. Before and after government incomes are adjusted for household size using the equivalence scale implied by the U.S. poverty line. Income is in 1991 dollars See appendix table 1 for the weights by household size.

f. The income-to-needs ratio is computed as equivalence-weighted postgovernment household income divided by the 1991 one-person poverty threshold of $6,932

Census poverty measures to each individual household income (see appendix table 1 for the weighting factors). Labor earnings include all income from labor market sources, including primary and secondary jobs, professional practices, and bonus income.[8]

As reported previously, in table 3 we find that both men and women with disabilities work less than those without disabilities but that work, nonetheless, is still very common. Both working-age men and women with disabilities were about two-thirds as likely to have been employed in 1988 as their counterparts without disabilities. Because men with disabilities are less likely to have a job, and more likely to be employed part-time when working, the median working-age male with a disability in the United States received only 36 percent of the labor earnings of his able-bodied counterpart. The median working-age woman with a disability had an even smaller ratio, 5 percent. Hence, other private sources of income, as well as government taxes and transfers, have a substantial gap to fill in order to assure that the household economic well-being of those with disabilities does not fall below that of their counterparts without disabilities.

As can be seen in row 3, the before government household-size-adjusted income of both men and women with disabilities was about two-thirds that of their counterparts without disabilities.[9] This shows that, prior to accounting for government policy, other sources of household income have made up a large part of the initial gap caused by differences in labor earnings. Government policy then narrows the remaining income gap. When taxes are removed and government transfers included, the gap narrows to around 25 percent.[10] These findings suggest that, on average, the economic well-being of working-age men and women with disabilities in the United States is substantially improved by other private sources of household income as well as by government tax and transfer policies but that the large difference in labor earnings between those with and without disabilities is not fully offset.[11]

A Multiperiod View

The previous tables show substantial differences between the labor earnings and economic well-being of working-age people with and without disabilities in 1988. However, such cross-sectional analysis

may not accurately portray the impact that a disability has on individuals. First, cross-sectional analysis cannot distinguish between differences caused by the onset of a work-limiting health condition and differences that may have existed prior to onset. From the perspective of policy makers, this distinction is important. Economic disparities that exist prior to the onset of a disability may not be eliminated by disability-based programs. In addition, cross-sectional "snapshots" of the population with disabilities reveal little about the transition to disability, the opportunities for intervention, or the time frame during which individual economic well-being declines. Finally, as Bane and Ellwood (1986) have shown, cross-sectional data oversample "long-stayers." Thus, any cross section of people with disabilities will have a disproportionate percentage of individuals whose disability occurred long ago. If work and economic well-being deteriorate as a spell of disability lengthens, then cross-sectional samples may overstate the impact that disability initially has on economic well-being.[12]

In table 4, we try to address these points by providing a multiperiod view of disability. We use the 1970-to-1989 waves of the PSID to follow the life course of men and women with an onset of disability after their 25th but before their 61st birthday. The onset of disability is captured by requiring individuals to have two periods of no reported disability followed by at least two periods of disability. Applying these criteria over 20 years of PSID data, we collected a sample of 725 men and 303 women.[13] Each of these men and women experienced the onset of a disability between 1970 and 1988. Some members of our sample experienced multiple spells of disability over the 20 years. However, since we are trying to capture experiences following the first occurrence of a disability, we excluded subsequent spells from our analysis.[14] We use this longitudinal sample to examine the labor market activity and economic well-being of individuals prior to, during, and after disability onset. By examining these transitions, we hope to get a more accurate picture of the impact that the initial onset of disability has on work and on individual and family economic well-being.

As table 4 shows, two years prior to the onset of their health-related work limitation, 90.4 percent of men and 67.3 percent of women worked. In subsequent rows, we see that, after the onset of the disability, there is a decline in work. As was true in table 3, labor earnings are more seriously affected. For men, median labor earnings fall from

Table 4. Economic Changes Following the Onset of a Disability among Working-Age Men and Women in the United States, 1970-1989

Onset of disability	Men[a,b]				Women[a,b]			
	Percent working positive hours	Median labor earnings[c]	Equivalent median 1991 dollars[d]		Percent working positive hours	Median labor earnings[c]	Equivalent median 1991 dollars[d]	
			Before government income	After government income			Before governmen t income	After government income
Two years prior	90.4	21,215	17,347	16,224	67.3	5,063	18,247	16,842
One year prior	90.8	21,543	18,381	16,812	68.0	6,582	19,921	17,370
Year of disability event	87.2	18,760	16,434	16,160	70 0	5,995	19,827	17,923
One year after	72.3	13,220	14,567	15,739	63.6	3,277	18,446	17,859
Two years after	68.2	11,798	13,930	15,406	57.6	1,699	20,251	18,537
Median percentage changes from								
One year prior to one year after disability		-24.0	-9.7	-2.6		-41.0	1.7	5 0
One year prior to two years after disability		-31.0	-12.1	-3.7		-61.7	5.5	7.6

SOURCE: 1989 response-nonresponse file of the Panel Study of Income Dynamics (PSID)

a. The sample is based upon data from the 1970-1989 waves of the PSID The sample includes household heads and spouses who reported two consecutive periods of no disability followed by two consecutive periods of disability, who were between the ages of 25 and 61 at onset A period of disability is one in which the respondent reported that a physical or nervous condition limits the type of work or the amount of work that he/she can do.

b. The sample size for men in the first four periods is 725 It is 677 in the fifth period (two years after onset). The sample size for women in the first four periods is 303 It is 236 in the fifth period (two years after onset). The sample size is smaller for women because the PSID did not ask about spouses' disability status until 1981

c. Median labor earnings includes zero earnings Earnings are in 1991 dollars

d. Before and after government incomes are adjusted for household size using the equivalence scale implied by the U S poverty line. See appendix table 1 for the weights by household size. Income-to-needs ratios can be computed by dividing equivalent median income by the 1991 one-person poverty threshold of $6,932

$21,543 the year before onset to $13,220 the year following onset. Among women, median labor earnings fall from $6,582 one year prior to onset to $3,277 one year after onset. The final two rows of table 3 show the median percentage change in labor earnings and family income between one year prior and one and two years after the onset of disability. The median change in labor earnings for men is a decline of 24 percent one year after onset and 31 percent two years after onset. For women, the median drops are even larger. However, while employment falls following the onset of a disability, the median man or woman experiences a much smaller drop in labor earnings than is implied by the cross-sectional results in table 3.

Moreover, the drops in labor earnings that are observed after onset do not carry over to household income. We find median real household-size-adjusted income does not fall by the same amount as labor earnings for either men or women immediately following the onset of a disability. This is true for both before and after government income. For men, before government income drops from $18,381 one year before onset to $14,567 one year after onset.[15] For women, the values are $19,921 and $18,446, respectively. After government income, changes are even smaller. When we look at the median percentage change, which describes the change in income for the median individual, we find that among men, before government income falls by 9.7 percent and after government income falls by 2.6 percent during the period one year before and one year after onset. Over this time, the median percentage change for women is positive, with an increase in before government income of 1.7 percent and an increase in after government income of 5 percent. These results suggest that the picture cast by cross-sectional data, one in which individuals and their families face precipitous declines in economic well-being following the onset of a disability, do not represent the short-term consequences of disability for the typical individual.

In table 5, we use our longitudinal PSID sample to further examine the pattern of work and economic well-being of men and women following the onset of a disability. We report the cumulative "risk" of occurrence of certain events after the start of a disability.[16] Since our findings were not significantly different when we segmented our sample by gender, we combine men and women and separate the sample by age at disability onset.

Table 5. Cumulative Occurrence of Economic Consequences Following the Onset of a Disability

Years since onset of a disability	Stop working[a]		Return to work[a]		Fall into poverty[b]		Economic recovery[c]		Recovery from disability[d]		Receive transfers[e]	
	Age		Age		Age		Age		Age		Age	
	25-50	51-61	25-50	51-61	25-50	51-61	25-50	51-61	25-50	51-61	25-50	51-61
1	0.15	0.24	0 28	0.14	0.08	0.08	0 46	0.46	f	f	0.14	0.19
	(0.013)	(0 023)	(0.025)	(0.021)	(0.019)	(0.012)	(0 016)	(0 022)			(0.016)	(0.021)
2	0.26	0.35	0.46	0.19	0.13	0.13	0.63	0.57	0.02	0.01	0.22	0 29
	(0.016)	(0 026)	(0.029)	(0.025)	(0.012)	(0.016)	(0.016)	(0.022)	(0.005)	(0 003)	(0.019)	(0.024)
3	0.32	0.42	0 52	0.22	0.17	0.17	0 72	0 64	0.04	0.02	0.30	0.40
	(0.017)	(0.027)	(0.030)	(0.027)	(0.013)	(0.018)	(0.016)	(0 023)	(0.007)	(0.006)	(0.022)	(0.027)
4	0.38	0.49	0.58	0.24	0 20	0.20	0.77	0.69	0.13	0.07	0.36	0.53
	(0.019)	(0.028)	(0.031)	(0.028)	(0 015)	(0.019)	(0.016)	(0.023)	(0.013)	(0 012)	(0.024)	(0.029)
5	0.44	0 53	0.61	0.28	0.22	0.22	0.84	0.75	0.13	0 07	0.45	0.70
	(0.019)	(0.028)	(0.032)	(0 031)	(0 016)	(0.020)	(0.016)	(0 024)	(0 013)	(0.013)	(0.027)	(0 029)
Median years to outcome	5+	5	3	5+	5+	5+	2	2	5+	5+	5+	4

SOURCE. Panel Study of Income Dynamics (PSID)

NOTE Values represent the probability that an outcome has occurred by time *t*. Values in parentheses are standard errors assuming simple random sampling. Sample is based upon data from the 1970-1989 waves of the PSID. Sample includes household heads and spouses who reported two consecutive periods of no disability followed by two consecutive periods of disability and who were between the ages of 25 and 61 at onset. A period of disability is one in which the respondent reported that a physical or nervous condition limits the type of work or the amount of work that he/she can do.

a Excludes individuals who were not working one year before onset. Stop working means not working for one full year.

b. Poverty calculated using the U S. poverty thresholds and the official income definition

c Includes individuals who experience no loss of income at the onset of a disability.

d Recovery occurs when a respondent reports that he/she does not have a physical or nervous condition that limits work.

e Excludes individuals who receive transfers in the year before onset. Transfers include Social Security Disability Insurance, Supplemental Security Income, Veterans Disability Benefits, Workers' Compensation, and Social Security Retirement Insurance.

f Not applicable.

In the first two data columns of table 5, we track the subsequent employment history of men and women who were employed in the year before the onset of their disability. We disaggregate our sample by the age of individuals when they first experienced their disability. Our younger group was aged 25 to 50 at onset. Our older group was aged 51 to 61. The values in columns 1 and 2 show how many years elapse before members of these age groups first experience an entire year of not working following onset of a disability.[17] (As in our other tables, our definition of not working includes anyone working fewer than 52 hours per year.) In the first year following the onset of a disability, 15 percent of people between the ages of 25 and 50 have experienced a year of not working. In our older sample, this holds true for nearly one-quarter. After two years, 26 percent of our younger sample and 35 percent of our older sample have experienced a year of not working. At the end of five years, nearly 45 percent of younger workers and over 50 percent of older workers have had a year of no work since the onset of disability.

Such findings suggest that the onset of a disability does have a substantial impact on subsequent employment. For older workers, the risk of experiencing a year of not working is significantly higher than for younger workers. The median or typical older person in our sample will have experienced at least one year of not working five years after the onset of his or her disability. For younger workers, however, the median person has maintained yearly employment over the entire five years.

While 44 percent of younger workers have not worked for at least one year in the five years following disability onset, some of these workers may have returned to work. Columns 3 and 4 of data in table 5 show the share of those in our sample who stop working for at least one year and return to work. Among younger workers who stop work for one year after onset, more than one-quarter return to work the next year, and nearly one-half return to work after two years. The pattern is very different among older workers. Only about one-quarter have ever returned to work five years following their initial employment stoppage. While the median younger person who leaves work for at least one year following a disability has returned to market work three years later, the median older worker is still not working five years later and

may have moved permanently onto the disability or retirement transfer rolls.

The patterns in the first four data columns of table 5 suggest that the majority of workers maintain a link to the labor force for several years after a disability begins. In the next section, we will speculate on the effectiveness of public policies aimed at extending the period of work following the onset of a disability.

The consequences of the onset of a disability on economic well-being are measured in the next two columns, which report the number of years following a disability before younger and older individuals fall into poverty, excluding those who were in poverty the year before onset. Although poverty experience increases over time, less than one-quarter of the population ever experiences it. Only about 8 percent of the populations of older and younger workers fall into poverty in the first year following disability onset. Moreover, fewer than one in four do so after five years. The drops in employment traced out in columns 1 and 2 do not translate into poverty for the majority of individuals who experience a disability. Still, five years following onset of a disability, about one-quarter of our population has had at least one year of poverty.

Table 5 shows that a substantial proportion of people experience a work reduction and/or poverty spell at some point following the onset of a disability even though the median experience with respect to income loss (as reported in table 4) following onset is relatively modest. Columns 7 and 8 in table 5 suggest an explanation for these small changes in median income. Fully 46 percent of our sample of younger and older workers have at least as much income in the year following the onset of a disability as they had in the year prior to the disability. By the second year following onset, more than one-half have experienced a year of household income at least as high as in the year before onset of their disabilities. Five years after onset, nearly 85 percent of younger workers and 75 percent of older workers have had a year of household income better than or equal to their pre-onset income.

To sort out part of the heterogeneous patterns of income and work following the onset of a disability, we look at two other trends for this population. The first is recovery from disability. Since our definition requires individuals to report having a health condition that affects their ability to work for two consecutive years, no one recovers in the

first year following onset of a disability. However, recovery is possible thereafter. Subsequent recovery can explain only a small part of the experience of economic recovery reported in the previous columns. Only 2 percent of our younger sample and 1 percent of our older sample recover in the second year following onset. After five years, only 13 percent of our younger sample and 7 percent of our older sample have experienced a recovery year.

A more important reason for economic recovery is the growth in the receipt of government transfer payments. In the first year following onset, 14 percent of our younger sample and 19 percent of our older sample begin to receive disability or retirement transfers. This closely matches the share of our samples who stop working in that first year after onset. After five years, 45 percent of our younger sample and 70 percent of our older sample are receiving transfers. Because at onset a large number of our older population is within five years of age 62, the earliest age for Social Security retirement benefits, undoubtedly many of the older transfer recipients are receiving early retirement rather than disability payments.

Table 5 shows that patterns of work stoppage, poverty, and transfer receipt following the onset of a disability are relatively complex. The vast majority of people with disabilities do not stop working immediately following the onset of a disability. A majority of younger workers and almost one-half of older workers are continuously employed during the five years following onset. The transition onto government transfer programs is also not instantaneous. Less than 20 percent of people with disabilities receive such transfers one year after onset, and a majority of younger workers do not do so even after five years. However, the great majority of older workers who experience the onset of a disability are receiving either retirement or disability transfers five years later.

Once one has a disability, it is relatively rare to experience a health recovery. Only about 13 percent of younger workers and 7 percent of older workers have done so after five years. Somewhat surprisingly, while it is normal for people to continue working for several years following the onset of a disability, it is also common for younger individuals to return to work after a year of not working. In contrast, only a

minority of older people return to work after not working for at least one year.

Economic well-being is even more complex. The vast majority of people who experience a disability are able to match or improve their economic well-being in the year before onset at least once over the first five years following onset: the majority do so after two years. However, some individuals also experience substantial drops in economic well-being at some time following onset, with over 20 percent falling into poverty for at least one year of the five-year period.

All of this suggests that the time period between onset of a health condition and either exit from the labor market or admittance onto the disability or retirement rolls is longer than first imagined. What is less clear is whether the time between these events is completely health driven or whether it can be influenced by employee and employer actions and, even more importantly from a policy perspective, by government actions.

Consequently, in order to address these questions, we shift our focus in the next section from an analysis of work and economic well-being to an evaluation of the existing research on the impact of the ADA. To assess the impact that this legislation might have on the population with disabilities, we combine data from the Health and Retirement Survey (HRS) regarding the pre-ADA prevalence of employer accommodations with research on the influence of accommodation on post-onset employment duration.

Maintaining People with Disabilities in the Workforce

In the previous section, we report that the onset of a disability is synonymous neither with a long absence from the workforce (at least one year) nor, at least for younger workers, with permanent withdrawal from work following an absence. In this section, we review the evidence on what prolongs duration on the job and then suggest ways government policy may affect employment. As was the case in our other sections, all of the experiences reported here occurred prior to the passage of the ADA.

When a pathology begins to affect one's ability to work, important job-related decisions must be made by both the worker and his or her employer. These decisions may also be influenced by government policies. The relative rewards of continued work versus applying for transfer benefits will be considered by the worker. In like manner, an employer's willingness to accommodate the worker will be influenced by the social institutions and legal mandates within which the firm must operate.This is not to suggest that all workers can or will transform themselves into candidates for disability transfer benefits. However, those with some work limitation who are having difficulty with their current job or who are no longer working will be influenced by the relative rewards provided by the disability or retirement transfer system in deciding whether to try to remain in the labor force or to apply for such benefits.

We are also not suggesting that all those with disabilities can continue to work. Some have work limitations so severe that continued employment is impossible and a movement onto the transfer rolls is inevitable. However, for others who experience a pathology that affects their ability to work, the length of time they stay on the job depends on the social institutions that are in place as well as on their specific condition. It is this subset of the population with disabilities that public policy can influence. Pro-work measures such as accommodation or rehabilitation can affect an individual's ability and desire to continue working, as opposed to becoming additions to the disability benefit or welfare systems.

The Americans with Disabilities Act of 1990

In the spirit of the civil rights legislation of the 1960s, the ADA attempts to provide people with disabilities the same access to employment as people without disabilities, thus extending protection from employment discrimination to those with disabilities. Title I of the ADA requires employers to make reasonable accommodations to workers with disabilities unless this would cause an undue hardship on the operation of business. On July 26, 1992, all employers of 25 or more workers were subject to its rules. On July 26, 1994, the standards of antidiscrimination were extended to all employers of 15 or more workers. However, when considering the actual influence of this Act on

the work of people with disabilities, it is important to recognize when the law is most likely to be used and by whom.

It is unlikely that any of the 3.9 million persons receiving disability benefits or the 3.3 million blind or disabled adults under age 65 receiving Supplemental Security Income (SSI) benefits in December 1994 will return to work (U.S. Social Security Administration 1995). Despite some efforts to encourage reentry into the labor market, by extending the eligibility period for Medicaid and Medicare benefits and allowing labor earnings during a transitionary period before ineligibility occurs, only a tiny percentage of those who go into these programs ever return to the workforce.[18]

The same is likely to be the case for those who have applied for disability insurance or welfare programs and have been denied entrance. The legal process to official disability can be lengthy. Both those who succeed and those who fail to gain entrance to the disability rolls have already traveled a long road. To be eligible for benefits, a worker must not have performed any "substantial gainful activity" for at least five months and must be expected not to do so for at least a year. However, lack of work for five months or more is only the beginning of the process.

A combination of reductions in disability determination staff, from 13,302 in 1986 to 11,168 in 1991, and the growth in applications fueled by the recession of the early 1990s increased the time needed to process claims, from 64 days in 1989 to 91 days in April 1992. Access time has been estimated at 213 days, as of fiscal year 1993 (Beedon 1993). This is only the first step in the elimination process, and it does not include delays in a final determination attributable to appeals. Before all potential appeals are exhausted, the ultimate eligibility outcome for those who are denied benefits at every step can take several years to unfold. Of course, reapplication is then possible.

For individuals with disabilities who are not employed throughout this process, a return to work may be quite unlikely, even if they are ultimately rejected by the system (see Parsons 1991 for a fuller discussion). Hence, deciding to remain on the job after a health condition first affects performance may bear little resemblance to the decision to work of those who have long since left the job they held when their work impairment began. For those who have already left employment, it will be difficult to return even with the ADA. The hope provided by

the ADA is that intervention at the point when a health condition starts to affect job performance will delay job exit, as well as application for disability benefits. Thus, the ADA will actively reduce transfer dependency, not so much by increasing exits from the disability rolls, but by reducing the risk at any moment that the onset of a pathology will lead to job loss and entrance onto the disability rolls.

Does Accommodation Prolong Work?

Since the initial effective date for the employment provisions of the ADA was July 26, 1992, it is far too early to determine the law's influence on accommodation. However, an important new data set begun in 1992 provides a glimpse of how workers with disabilities in that year were accommodated when their health condition first affected their ability to work.

Tables 6 and 7 use data from the HRS to show the pattern of disability onset and accommodation experience of a random sample of men and women aged 51 to 61 in 1992. The population of people with disabilities, as before, is based on self-reported work-limitation questions. As is the case with the PSID, the HRS asks respondents, "Do you have any impairment or health problem that limits the kind or amount of paid work you can do?" Because in 1995 only one wave of data was available to researchers, we are unable to apply our cross-sectional rule, two consecutive years of reported disability, to distinguish short-term from long-term health problems. Our alternative approach is to exclude "short-term" health problems by not including respondents who report that their disability just began. Thus, our sample of people with disabilities from the HRS includes all individuals who answer yes to the work-limits question and report retrospectively that the onset of disability was at least one year ago. Using this definition, we have a sample of 2,076 individuals with disabilities, consisting of 947 men and 1,129 women. Most importantly, while all of these individuals had a health condition that affected their ability to work in 1992, the onset of their impairments and their employers' responses to them predate the implementation of the ADA.

As previously noted, the ADA is likely to be of greater benefit to those individuals employed at the onset of their impairment. However, as the data in table 6 show, this includes most people with disabilities.

Nearly 70 percent of the men and women in the HRS with a disability in 1992 report that their impairment began during their work life. Moreover, as the results in table 2 show, the majority of working-age people with disabilities remain in the labor market and do not receive disability transfers. These percentages suggest that, for a large fraction of people with disabilities, the ADA may be able to extend work life and to delay entry onto disability rolls.

Table 6. The Timing of the Onset of Work-Limiting Health Impairments

	Total	Men	Women
Number of observations	2,076	947	1,129
Onset of impairment		(percentage)	
Before work life	12.3	9.5	14.6
During work life	68.4	81.0	57.7
After work life	8.2	4.5	11.3
Never worked	11.1	5.0	16.4
Total	100.0	100.0	100.0

SOURCE: Beta Release of the Health and Retirement Survey (HRS) 1992 Sample is weighted to reflect population values

NOTE. Includes persons in the HRS sample born between January 1, 1931, and December 31, 1941, who reported that they are currently impaired and have been so for at least one year.

In table 7, we examine the incidence of accommodation prior to the implementation of the ADA among individuals who were employed at the onset of their impairment.[19] In this pre-ADA sample, about one person in five was accommodated by his or her employer at the time health first began affecting the individual's ability to work. Better-educated workers were significantly more likely to be accommodated than less well-educated workers. Somewhat surprisingly, older workers were more likely to be accommodated than younger workers (34.9 percent versus 19.3 percent). However, no significant differences are observed by gender or firm size.

Direct employer accommodation most frequently came in the form of a change in job duties or schedule and someone to help, but varied by firm size and, to a lesser extent, by gender and education. Accommodated workers in small firms (fewer than 15 employees) were more likely to receive changes in schedule and shorter work days and less

Table 7. Incidence of Employer Accommodation Following the Onset of a Health Impairment

		Gender		Age at onset		Education		Firm size		
	Total	Men	Women	Younger than 50	50 and older	High school dropout	High school graduate	1 to 14	15 to 499	500 and over
Number of observations	1,209	659	550	993	216	431	778	232	112	865
Percent accommodated	22.2	22 1	22.4	19.3**	34.9**	18.2**	24.1**	21 8	22.6	22 3
Percent of those accommodated by type of policy:										
Someone to help	38 4	37.5	39.4	37.8	39.7	46 6**	35 4	39 9	44.6	37 1
Shorter work day	31 2	30.9	31.5	30.5	32 8	26 7	32 8	45.8**	27.0	27 7
Change in schedule	33 6	31.8	35.8	32.5	36.2	32.5	34 0	53 6**	29.7	28.6
More breaks	38.5	39 2	37.7	38.0	39.7	31.6	41 0	48 4	45.9	34.8
Special transportation	4.9	4 7	5.1	5.1	4.3	5 8	4 5	5 2	0.0	5.4
Different job duties	46.5	51 9*	40.0	46.8	45.7	50 0	45 2	32 7**	58.1	48.7*
Training or new skills	12.7	10.4*	15.5	13.3	11.2	14.6	12.0	9.2	13.5	13.6
Special equipment	11.7	13.2	9.9	9.7	16.4	15.0	10.5	6.5*	8.1	13.6
Assistance with tasks	5.6	6.6	4.5	4.4	8.6	6.8	5.2	7.8	8.1	4.7
Emotional support	2 1	1.4	2.8	1.5	3.4	1.0	2.4	2.6	0.0	2.2
Medical care	6 3	7.8	4.5	7.5**	3.4	4.4	7.0	6.5	1.4	6.9
Medical leave	2 2	1 0	3.7	1.8	3.0	1.0	2.6	1.0	8.1	1.8
Time off	4.1	3 8	4.5	4.4	3.4	1.9	4.9	2.6	8.1	4.0
Parking	1.5	0 0*	3.4	1.5	1.7	0.0	2.1	0.0	0.0	2.2

SOURCE Beta Release of the Health and Retirement Survey (1992) Sample is weighted to reflect population values.

NOTE Sample includes all persons aged 51 to 61 in 1992 currently impaired and impaired while employed by someone other than themselves.

*Statistically significant at the .05 level.

**Statistically significant at the .10 level

likely to receive different job duties. Workers with less than a high school education were more frequently provided with someone to help them than were those with at least a high school degree. Finally, men were more likely than women to get different job duties following an impairment but were less likely to receive training or new skills. Other forms of accommodation, such as special equipment or special transportation, were less likely to be provided to any group or in any setting.

In other research, Burkhauser, Butler, and Kim (1995) used data from the 1978 Survey of Disability and Work to investigate the extent to which individuals continued with their employer following the onset of a health condition that limited their ability to work. The authors found that 30 percent of men with disabilities in 1978 had been accommodated by employers subsequent to the development of a work-limiting health condition. By simulating the results of their hazard model for an otherwise average worker who was accommodated, the researchers estimated that the worker would continue on the job another 7.5 years. For the same worker who was not accommodated, they estimated a continued tenure of 2.6 years. Table 8, which comes from Burkhauser, Butler, and Kim (1995), shows the simulated distribution of employment exits that their hazard model predicts for men after the development of health conditions. For those without accommodation, the prediction is for 76.7 percent to exit within three years. In contrast, it takes more than nine years before three-quarters of those with accommodation leave their employer. The results from these two pre-ADA samples suggest that employers do make accommodations for their employees and that this accommodation does prolong work life following the onset of a health condition.

The Power of Policy Intervention

Indications are that accommodation can extend employment for people with disabilities. The dimensions of this impact, however, must be put in perspective. The median age at onset of the health condition that limited work in the HRS sample in table 7 was 49. Age 62 is the earliest year of eligibility for Social Security benefits. Hence, even if accommodation nearly triples postdisability work life to 7.5 years, as reported by Burkhauser, Butler, and Kim (1995), this will not keep the

average person in the workforce until the Social Security early retirement age.

Table 8. Distribution of Expected Job Exits for the Average Male Worker with and without Accommodation

Years on the job following onset	With accommodation	Without accommodation
1	0.134	0.386
2	0.116	0.236
3	0.100	0.145
4	0.087	0.089
5	0.075	0.055
6	0.065	0.034
7	0.056	0.021
8	0.049	0.013
9	0.042	0.008
10	0.037	0.005
More than 10	0.239	0.008

SOURCE. Burkhauser, Butler, and Kim (1995)

In addition, for at least two reasons, the Burkhauser, Butler, and Kim results probably represent the upper limit of the effect of ADA-enforced accommodation. It is unlikely that, prior to the ADA, employers randomly chose whom they accommodated. In the absence of the ADA, a profit-maximizing firm would be more likely to assist those whose chance of success per dollar spent on accommodation was highest. If successful, the ADA, which requires accommodation unless it imposes an undue hardship on the employer, is anticipated to widen the scope of accommodation to workers with more significant conditions and lower expected success rates. (See Chirikos 1991 for a review of the literature on accommodation prior to the passage of the ADA.)

A second, and potentially more important, concern is whether the law will, in fact, increase accommodation significantly from its previous levels. In 1992, 1.3 million people applied for Social Security Disability Insurance (DI) benefits, and 0.6 million benefits were awarded. In that same year, the adult population on the Blind and Disabled SSI program increased by 344,000 or 9.4 percent. In the first 13 months of the ADA's existence, July 1992 to August 1993, 14,334 charges were filed with the Equal Employment Opportunity Commission (EEOC). While those numbers do not provide a systematic comparison of the relative importance of the ADA, their orders of magnitude suggest that more than the ADA will be needed to keep people with disabilities on the job.

Conclusions and Policy Considerations

Applying the fuller ADA-based definition, which includes people with health impairments and functional limitations regardless of their labor market activity or disability benefit receipt, we find that a majority of men and women of working age with disabilities are employed. In 1988, over 40 percent of these men and nearly 20 percent of these women worked full-time. More men with disabilities worked full-time than received disability transfers.

Furthermore, analyses using cross-sectional data tend to understate the successful integration into the labor market of people with disabilities. Cross-sectional analyses are limited to comparisons of those with and without disabilities at a given moment in time. Using multiperiod data for those individuals who first experience a disability after age 25, we find much smaller average declines in economic well-being or in employment than simple cross-sectional comparisons would imply. Our findings suggest that, even before the passage of the ADA, the majority of working-age people first experiencing disabilities were able to stay in the labor force for four years without a long spell of not working (not working for an entire calendar year). The transition onto disability transfer rolls was also of about this same duration, at least for younger persons. More importantly, even among those who experi-

enced a full year of not working following the onset of a disability, a majority were able to return to work.

Such findings suggest that, for the majority of people who experience a disability, work continues for a significant period thereafter. One possible avenue for reducing the disability transfer rolls in the long run may be to put more resources into keeping people with disabilities in the labor force rather than into returning those already on the disability rolls to work. This suggests shifting to policies that attack the employment problem before individuals begin to receive disability transfers.

The ADA is an important example of this focus. It will most likely be used to ensure the accommodation of people with disabilities in the workforce at the time of disability onset. As we have seen, however, accommodation existed before the passage of the ADA, and it is unclear how successful this legislation will be in increasing accommodation.

The policy options sketched below are not meant to represent a specific legislative agenda but to provide a sample of the kind of creative pro-work changes in government policy that would increase the likelihood of employment for people with disabilities. Some proposals are marginal, while others are radical. Unlike the ADA, all would directly affect the government budget, but each is likely to affect employment at least as much as the ADA.

Direct Government Subsidies for Accommodation

Prior to passage of the ADA, section 190 of the Internal Revenue Code permitted businesses to deduct up to $35,000 for expenses incurred in removing physical barriers to access by handicapped and elderly individuals. In a revenue-neutral move following passage of the ADA, section 190 deductions were reduced to a maximum of $15,000, but an "access credit" was permitted, which enables small businesses to claim a credit against taxes for one-half of their first $10,000 of eligible costs of complying with the ADA. This extremely modest credit was expected to result in an annual revenue loss to the Treasury of less than $10 million. (See Schaffer 1991 for a fuller discussion.) This is a trivial government expenditure when compared to transfer payments or even to current rehabilitation programs. A more controversial strategy

for increasing accommodation would be for the United States to follow the example of European countries where employers who provide accommodation and training to workers with handicaps receive generous government-funded reimbursements. Making government, rather than employers, primarily responsible for financing the costs of accommodation would shift public policy from the stick of ADA mandates to the carrot of accommodation tax credits.

The Earned Income Tax Credit

Expansion of the Earned Income Tax Credit (EITC) was the single most important piece of welfare legislation passed in the first years of the Clinton administration. It effectively raised the hourly pay of a minimum wage earner with two children in 1996 from $4.25 per hour to $5.95 per hour. (See Burkhauser, Couch, and Glenn forthcoming for a more detailed treatment.) Expanding EITC eligibility to people with disabilities who live in low-income households would increase their reward for work. This would target government funding to those with disabilities and poor job skills, whose current productivity in the private sector is not great enough to command wages sufficient for their families to reach a minimum living standard.

Education and Job Training

The EITC is an effective method of providing low-wage workers who live in or near poverty with greater income until they acquire the education, skills, and training to earn higher wages on their own. For those with disabilities and low job skills who are capable of work, transfer payments tied to wages offer a pro-work alternative to SSI. In the longer run, however, the road to higher wages for people with disabilities and low job skills is the same as for those without disabilities but with poor job skills. In developing new job and welfare programs, policy makers must recognize that most people with disabilities are capable of work and should have the same access to job programs and the same responsibility to leave the welfare rolls as other Americans.

Rehabilitation

More substantive changes would shift current U.S. disability policy from one primarily driven by transfers to one with a return to work as the primary goal. An example of such change would be to require all DI or SSI applicants to go through a temporary benefit phase in which they were evaluated for rehabilitation, as is done in Sweden and Germany. Linking rehabilitation to federal disability transfer programs is especially important given the drop in age and the changing mix of conditions of new beneficiaries.

It is beyond the scope of this paper to specify the optimal mix of policies and programs to best integrate people with disabilities into society. What this paper does recognize is that the goals of economic independence and full participation in market employment are significant and that accommodation will extend the work life of those with disabilities. It is far from clear if the mere passage of the ADA will ensure the achievement of these important social goals. It is more likely that some mix of pro-work policies will prove necessary to supplement current approaches.

Appendix

Equivalence Weights

Appendix table 1 lists the equivalence weights used in our estimations of the relative economic well-being of people with and without disabilities. These weights are derived from the official U.S. Department of Commerce poverty thresholds for families of different sizes.

Appendix Table 1. U.S. Equivalence Weights for Adjusting Household Income

Household size	Weight
Single person	1.00
Couple	1.29
Couple plus child	1.55
Couple plus two children	1.95
Couple plus three children	2.29
Couple plus four children	2.57
Couple plus five children	2.88
Couple plus six children	3.16
Couple plus seven children	3.87

NOTE. The equivalence weights for the United States are derived from the Bureau of the Census poverty thresholds, U.S. Department of Commerce (1991).

Spell Lengths From a Cross-Sectional Draw

As Bane and Ellwood (1986) point out, cross-sectional draws from a population will oversample individuals in the midst of longer spells. In appendix table 2, we show the proportion of individuals captured in our 1989 cross-sectional estimates whose spell of disability began in 1988, 18.7 percent for men and 31.6 percent for women, and the percentage whose spells began at some earlier point in time. More than 80 percent of men and about 70 percent of women in the cross-sectional sample had spells of disability that began earlier than 1988. Overall, about 40 percent of the men and 30 percent of the women in our cross-sectional sample reported spells of disability of more than five years. The average spell length for persons in this sample is 6.6 years for men

and 4.8 years for women. If the patterns of work and economic well-being change over the course of a disability spell, cross-sectional estimates will not accurately portray the experiences of the average individual after the onset of a disability.

Appendix Table 2. Distribution of Spells among the Population with Disabilities Captured by the Cross-Sectional Definition from Table 2

	Population with disabilities[a]	
	Men	Women[b]
Number of observations	336	443
Spell length (years)	(percent)	
2	18.7	31.6
3 - 5	39.3	38.8
6 - 10	19.8	24.7
More than 10	22.2	4.9
Average spell length[c]	6.6	4.8

SOURCE. Panel Study of Income Dynamics

a Answered yes to the question, "Do you have a nervous or physical condition that limits the amount or type of work you can do?" in 1988 and 1989.

b The distribution of spell lengths for women is influenced by the fact that, prior to 1981, the PSID did not regularly ask health-related questions about spouses.

c The actual spell length may be longer since none of the spells we observed in 1989 are completed

Measuring Disability

In most surveys of income and employment, the data available on health come from a small set of questions that ask respondents to assess whether their health limits the kind or amount of work that they can perform. Other questions ask respondents to rate their health relative to others in their age group. Researchers have been suspicious of these measures for a number of reasons. First, self-evaluated health is a subjective measure that may not be comparable across respondents. Second, these indicators may not be independent of the observed variables one wants to explain, such as economic well-being, employment status, or family structure. Third, since social pressures make it

undesirable to retire before certain ages, reasonably healthy individuals who wish to exit the labor force prematurely may use poor health as their excuse (Parsons 1980, 1982; Bazzoli 1985). Finally, in the United States, federal disability transfer benefits are available only to those judged unable to perform any substantial gainful activity, so individuals with some health problems may have a financial incentive to identify themselves as incapable of work because of their health. Misclassification based on self-reported health can underestimate the true number of persons who suffer from a particular condition and overestimate the negative effects of health impairments on economic well-being. Such problems are exacerbated when these measures are used to track changes in the population with disabilities over time.

Although the problems inherent in disability measures based on self-evaluated health have led some researchers (Myers 1982, 1983) to conclude that no useful information can be gained from such data, objective measures of health, which are much less available, also suffer from inherent biases (Bound 1991). Moreover, as Bound and Waidman (1992) show, even when a clear relationship between changes in public policy and changes in disability prevalence rates is demonstrated, it does not imply that those who come under the disability classification are erroneously classified. The information available in most microdata sources does not allow us to determine the extent to which changes in pathology have contributed to changes in the prevalence of disability. However, it is possible to inform the debate about the relationship between health, employment, and public policy by consistently applying a definition of disability and by being cautious when interpreting the results.

In the PSID, the population with disabilities is defined using a survey question that asks respondents, "Do you have any physical or nervous condition that limits the type or the amount of work that you can do?" In our cross-sectional analysis, we eliminate individuals from our sample whose health limitations are short term by classifying as disabled only those people who report a limitation for two consecutive years. In our longitudinal analysis, where we are examining the effects of the onset of a disability, we define as having a disability only those individuals who report two consecutive years of no health-related work limitations followed by two consecutive years of such limitations.

To assess whether these measures of the population with disabilities accurately capture a group of people in poorer health or with more functional limitations than the remaining population, we use data from the 1986 PSID Health Supplement. Using these data, we compare the health and functional status of our sample of individuals with disabilities with the status of other groups in the population. The 1986 Health Supplement is the most recent detailed look at the health and functional status of respondents available in the PSID.

To evaluate our cross-sectional measure, we define four mutually exclusive groups: (1) individuals who report having no health-related work limitation in both 1985 and 1986; (2) individuals who report having a limitation in 1985 but not in 1986; (3) individuals who report having a limitation in 1986 but not in 1985; (4) individuals who report having a limitation in both 1985 and 1986 (our definition of a disability). We begin by comparing these groups over the set of health-related questions asked in the 1986 Health Supplement. The Supplement includes questions about current health status; current health compared to health two years ago; expected health in two years; functional limitations in activities such as walking and climbing, bending, lifting, and stooping, or driving a car; as well as questions about general health limitations and minor health problems. We then compare the labor force status and economic well-being of these four groups. Finally, we examine the responses to these questions for the subset of our cross section that would be included in our longitudinal definition: individuals who report a work-limiting condition in both 1985 and 1986 and who report no limitation in both 1983 and 1984 (group 5). If our disability measures are consistent, we should find group (4), those with a health-related work limitation in both 1985 and 1986, to be in poorer health and to have more functional limitations than any of the other cross-sectional groups. In addition, if our cross-sectional sample overrepresents those in the midst of a long spell of disability, then we should find group (5) to be better off than group (4).

In appendix table 3, we report the results of these comparisons separately for men and for women. In both cases, the findings are consistent with our expectations; those captured by our cross-sectional definition of disability (column 4) are in worse health than the remaining three cross-sectional groups. Moreover, a large fraction of the individuals classified as having a disability under our definition indicate that they are in relatively poor health and/or have some functional limitation. For example, 54.2 percent of men and 67 percent of women whom we defined as having a disability report that their health relative to others in their age group is fair or poor. In contrast, among those who have no health-related work disabilities in both 1985 and 1986, only 5.2 percent of men and 6 percent of women say that they are in fair or poor health relative to others. Looking at changes and expected changes in health over time, a similar pattern emerges. Among those we classify as having a disability, only one in ten men reported that his health improved between 1984 and 1986, and fewer that two in ten men expected their health to improve in the next two years.

The most dramatic differences among these four groups are in the measures of functional ability. More than one-half of men we classify as having a disability have difficulty in walking or climbing stairs and nearly two-thirds report difficulty in bending, lifting, or stooping. For women, the percentages are even

Appendix Table 3. Consistency of Multiperiod Measures of Disability with Other Measures of Disability

	Men				
Groups[a]	No limitation in either 1985 or 1986 (1)	Limitation in 1985, not in 1986 (2)	Limitation in 1986, not in 1985 (3)	Limitation in 1985, 1986 (4)	No limitation in 1983, 1984; disability in 1985, 1986 (5)
Number of observations	3,154	175	151	269	46
Health status compared to others your age:					
Excellent/very good	72.3	47.6	30.8	21.1	18.2
Good	22.4	28.2	22.6	24.8	29.5
Fair/poor	5.2	24.2	46.7	54.2	52.3
Health compared to two years ago:					
Better	14.9	17.1	17.1	10.4	0.0
Same	75.2	66.0	38.7	46.7	34.4
Worse	9.9	16.8	44.2	43.0	65.6
Expected health in two years:					
Better	18.2	20.0	30.8	17.4	33.9
Same	79.4	73.1	55.3	67.4	58.9
Worse	2.4	6.9	13.9	15.2	7.2
Limitations:					
Walking/climbing	2.8	23.9	30.2	54.4	45.7
Bending/lifting/stooping	4.4	33 1	47.6	61.7	59.2

(continued)

Appendix Table 3. (continued)

Groups[a]	Men				
	No limitation in either 1985 or 1986 (1)	Limitation in 1985, not in 1986 (2)	Limitation in 1986, not in 1985 (3)	Limitation in 1985, 1986 (4)	No limitation in 1983, 1984; disability in 1985, 1986 (5)
Driving a car	0.2	2.4	8.9	17.2	18.2
Traveling unassisted	0.1	0.0	4.2	10.1	4.8
Confined indoors	0.2	1.4	5.2	12.7	10.1
Confined chair/bed	0.0	0.0	5.5	11.9	4.8
Uncorrectable eye trouble	1.7	8.5	7.2	11.1	2.1
Minor health problems	12.8	24.9	23.4	43.2	14.0
Health limits physical activity	5.2	25.4	56.7	78.4	70.7
Outcomes:					
Labor force status					
Full-time	81.3	68.6	61.5	36.9	47.1
Part-time	16.3	24.2	27.1	26.6	30.7
No work	2.4	7 3	11.4	36 6	22.2
Economic well-being					
Median labor earnings	$33,544	$22,784	$22,658	$9,493	$15,569
Median before government income	$29,456	$24,785	$22,611	$18,949	$22,991
Median after government income	$25,406	$21,416	$19,332	$19,666	$19,666

Appendix Table 3. (continued)

Groups[a]	Women				
	No limitation in either 1985 or 1986 (1)	Limitation in 1985, not in 1986 (2)	Limitation in 1986, not in 1985 (3)	Limitation in 1985, 1986 (4)	No limitation in 1983, 1984; disability in 1985, 1986 (5)
Number of observations	3,472	304	186	339	70
Health status compared to others:					
Excellent/very good	62.8	28.1	34.4	10.4	24.9
Good	31.2	46.7	30.9	22.6	36.0
Fair/poor	6.0	25.2	34.8	67.0	39.2
Health compared to two years ago:					
Better	17.4	20.0	19.0	12.5	11.0
Same	74.9	61.1	52.9	36.4	40.5
Worse	7.7	18.9	28.1	51.1	48.5
Expected health in two years:					
Better	18.8	23.1	36.5	23.0	48.0
Same	79.4	71.3	53.5	56.4	44.0
Worse	1.8	5.6	10.0	20.6	8.0
Limitations:					
Walking/climbing	6.5	28.1	43.7	72.9	56.0
Bending/lifting/stooping	7.4	30.8	45.1	71.6	62.6
Driving a car	0.1	4.6	4.2	21.8	5.0
Traveling unassisted	0.1	1.3	3.0	17.6	1.3

(continued)

Appendix Table 3. (continued)

Groups[a]	Women				
	No limitation in either 1985 or 1986 (1)	Limitation in 1985, not in 1986 (2)	Limitation in 1986, not in 1985 (3)	Limitation in 1985, 1986 (4)	No limitation in 1983, 1984; disability in 1985, 1986 (5)
Confined indoors	0.3	0.9	1.8	15.7	0.7
Confined chair/bed	0.1	0.8	4.0	14.6	0.7
Uncorrectable eye trouble	1.8	5.1	5.2	13.0	7.7
Minor health problems	11.3	38.1	46.9	59.8	53.4
Health limits physical activity	9.2	26.9	47.6	66.1	44.8
Outcomes:					
Labor force status					
Full-time	39.7	25.4	31.0	14.0	22.4
Part-time	40.6	37.7	45.7	30.3	53.8
No work	19.7	36.9	23.3	55.8	23.7
Economic well-being					
Median labor earnings	$12,658	$3,797	$6,962	$0	$5,696
Median before government income	$27,117	$22,484	$24,043	$17,415	$21,891
Median after government	$23,514	$20,291	$22,616	$16,331	$19,106

SOURCE: 1989 response-nonresponse file of the Panel Study of Income Dynamics (PSID)

NOTE: Population is limited to those aged 25 to 61 in 1986 who were either household heads or spouses in both the 1985 and 1986 PSID surveys

a Group 1 Individuals who reported no health-related work limitations in both 1985 or 1986. Group 2 Individuals who reported a health-related work limitation in 1985 but not in 1986 Group 3 Individuals who reported a health-related work limitation in 1986 but not in 1985 Group 4: Individuals who reported a health-related work limitation in both 1985 and 1986. Group 5 Individuals who reported no health-related work limitation in 1983 and 1984 but reported such limitations in both 1985 and 1986

larger. For the population of individuals who report having no health-related work limitations in this time period, less than 5 percent report limitations in walking or climbing or in bending, lifting, or stooping. The same pattern of results holds for our other measures of functional status. About 20 percent of those we classify as having a disability have trouble driving a car, about 12 percent are confined to a chair or bed, and more than 10 percent need assistance in traveling. Among the remaining population, including those with shorter-term health-related work constraints, the percentages with functional limitations are significantly lower.

Finally, in column 5 of appendix table 3, we record the responses for individuals who satisfy our longitudinal definition. As expected, we find that in general these individuals are in worse health and have more functional limitations than groups (1), (2), and (3), but are in better health than those in group (4). In general, this pattern holds for the outcome measures of labor market activity and economic well-being. We expect group (5) people to be in worse health and to have more functional limitations than groups (1), (2), and (3) because, by 1986, those in column 5 have been in the state of disability longer than the other groups. We expect persons in the last column, because they have been in the state of disability for a shorter period, to be in better health and to have fewer functional limitations than group (4).

The results from these questions indicate that individuals who report having two years of consecutive health-related work limitations are in poorer health and are more likely to have functional limitations than either individuals who do not report work limitations or individuals who reported limitations only in 1986. Moreover, examining the labor force status and economic well-being of these individuals, we find that those with longer-term health-related work limitations are less likely to work and have lower median labor earnings and lower household income than do other groups. These patterns hold for both men and women. These findings support the idea that our two measures of disability, while not perfect, are able to identify, both in the cross section and dynamically, populations with substantial differences in health status and functional limitations.

NOTES

1. Because Social Security retirement benefits based on past wage earnings and employer pensions based on past service with a firm dominate the income of older people, it is also true that past work is the principal source of income for older Americans.

2 As we will discuss later, using data from the Health and Retirement Survey, we find that about 70 percent of the population of men and women aged 51 to 61 with a work-limiting health condition reported that it originated during their work life

3 LaPlante (1991) provides a useful discussion of various methods that can be used to estimate this population.

4. The PSID does not ask about the health of all household members. Hence, this sample will exclude adults aged 25 and over who live in a household in which they are neither a head nor a spouse It is likely that a disproportionate percentage of such people will have a work limitation

5 The choice of "working age" is somewhat arbitrary. We chose age 25 because that is generally the age when women and men have fully experienced the transition out of school and into the permanent workforce and have established their own household. We chose age 61 because it is the last year before eligibility for Social Security retirement benefits

6 Bennefield and McNeil (1989) report that estimates from the CPS are lower than estimates from both the SIPP and the National Health Interview Survey (HIS).

7 In developing our after government measure, we used the tax estimates supplied on the PSID public release file

8 To estimate labor earnings, we used the annual hours worked and annual labor market income variables provided in the PSID

9 After government income is based on actual income data from the PSID Before government income is a "counterfactual" concept, which makes the strong assumption that behavior does not change in the absence of government. This is clearly only an approximation of what would actually occur without government. Hence, our before government values are best thought of as a means of showing to whom current benefits go, given present government policy, rather than as a measure of what would actually occur in the absence of government To account for families of different sizes, family income was adjusted by using the equivalence scale in the official poverty measures

10. These results hold for the mean as well as for the median individual. Tables using mean values are available from the authors

11 Pre- and post-government income is adjusted for family size and reported in 1991 dollars To compute the income-to-needs ratio for the median person, one can simply divide median post-government household income by the 1992 one-person poverty threshold of $6,932. This would not alter the relative position of such persons in the income distribution and our ratio values (columns 4 and 7) would not change

12. For a fuller discussion of the differences between our cross-sectional and longitudinal samples, see the appendix, in which we show that the average spell duration in the disability state of our cross-sectional sample is quite long and that income and economic well-being are reduced for long-stayers

13. The sample size is smaller for women because the PSID did not ask about spouses' disability until 1981, therefore we only have nine years of data on disability for married women compared to almost twenty years of data for men

14. Our sample is a proxy for first occurrence. The PSID does not ask respondents about previous disabilities Therefore, we only have an individual's first spell of disability recorded in the survey. This may not be an individual's first spell over a lifetime, if an individual had a spell of disability prior to becoming a PSID respondent.

15 This represents a reduction in income-to-needs from 2.65 to 2 10, obtained by dividing the median values by the 1991 one-person poverty threshold of $6,932

16 The "event history" analysis in table 5 shows the cumulative share of the population that had experienced an event of not working for one year, returning to work after not working for one year, falling into poverty, experiencing a year of economic well-being as high or higher than in the year prior to onset, or of recovering from disability in each of the five years of our analysis. Note that this does not imply that these are all "absorbing" states. That is, for instance, while we show that 22 percent of the younger population experienced a drop into poverty after five years of onset,

some may have escaped poverty thereafter. Thus, this table *does not* report how many people are in poverty five years after onset

17 The results in table 5 were computed using the Kaplan-Meier method, which accounts for right-censored observations, or observations that have not experienced the event in question by the end of the survey period We report the values from the cumulative distribution function, which is simply the probability that a person experiences the outcome in question by time t Results were computed using the SAS life test procedure, Version 6 2.

18 Hennessey and Dykacz (1993) compared recovery termination rates (based on those who leave the program because they are judged able to engage in substantial gainful activity) of Social Security Disability Insurance beneficiaries entitled in 1972 and 1985 and found that, after four years, 7 7 percent of new beneficiaries in 1972 recovered while only 3 9 percent of new beneficiaries in 1985 recovered after four years. Bound (1989, 1991) showed that the prognosis is not much better for those who apply for Social Security Disability Insurance benefits but are rejected. Using data from the 1978 Survey of the Disabled, he found that fewer than 50 percent of rejected applicants in the 1970s were employed in 1978 and only about two-fifths of that 50 percent were working full-time.

19 To obtain this sample, we exclude all individuals who experienced the onset of their current impairment prior to or after work life, as well as those who never worked. In addition, we exclude all those individuals who were not employed or were self-employed when the impairment began. This leaves us with a sample of 1,209 Of these, 659 are men and 550 are women.

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