



**Disability Transfers, Self-Reported Health, and the Labor Force Attachment  
of Older Men: Evidence from the Historical Record**

John Bound; Timothy Waidmann

*The Quarterly Journal of Economics*, Vol. 107, No. 4 (Nov., 1992), 1393-1419.

Stable URL:

<http://links.jstor.org/sici?sici=0033-5533%28199211%29107%3A4%3C1393%3ADTSHAT%3E2.0.CO%3B2-U>

*The Quarterly Journal of Economics* is currently published by The MIT Press.

---

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/mitpress.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

---

JSTOR is an independent not-for-profit organization dedicated to creating and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# DISABILITY TRANSFERS, SELF-REPORTED HEALTH, AND THE LABOR FORCE ATTACHMENT OF OLDER MEN: EVIDENCE FROM THE HISTORICAL RECORD\*

JOHN BOUND AND TIMOTHY WAIDMANN

We use trends in self-reported disability to gauge the impact of the growth of disability transfer programs on the labor force attachment of older working-aged men. Our tabulations suggest that between 1949 and 1987, about half of the 4.9 percentage point drop in the labor force participation of men aged 45-54 and between one quarter and one third of the 19.9 point drop among men aged 55-64 represented a movement of men out of the labor force and onto the rolls of transfer programs targeted at the disabled. Since the expansion of transfer programs represents only one of the forces behind this movement, these figures represent upper bounds on the impact of such programs on work force attachment.

## I. INTRODUCTION

The period between the end of World War II and the mid-to-late 1970s in the United States was characterized by a dramatic expansion in the availability and generosity of programs specifically targeted at the disabled and a corresponding increase in their utilization by individuals. While some programs such as Workers Compensation and a variety of veterans' programs, predate the war, more general programs were not enacted into law until later. In 1950 Aid to the Permanently and Totally Disabled (APTD), a program for the indigent disabled, was introduced. In 1956 the Social Security Act was amended to include early retirement for those who could pass a medical screening. The Social Security Disability Insurance program (DI) began as a narrowly targeted program, but in 1960 individuals under the age of 50 were made eligible, and in 1965 the definition of disability was liberalized to allow those without permanent disabilities to qualify for benefits. Although there have been no major changes in the statutory

\*The authors wish to thank Robert Barsky, Charles Brown, Alan Garber, Arline Geronimus, Al Hermalin, Kevin Murphy, Walter Oi, Gary Solon, Lois Verbrugge, Barbara Wolfe, an anonymous referee, and participants at seminars at the Institute for Research on Poverty, the University of Chicago, the University of Michigan, the National Bureau of Economic Research, and the 1990 Annual Meetings of the Population Association of America for comments and suggestions. Thomas Maloney provided able research assistance, and Cynthia Housh provided helpful editorial assistance. This research was supported in part by the University of Michigan and a grant from the U. S. Department of Health and Human Services to the Institute for Research on Poverty. The opinions and conclusions expressed in this paper are those of the authors and do not necessarily reflect the opinions or policy of the sponsoring institutions.

TABLE I  
EXPENDITURES ON DISABILITY BENEFITS AS A PERCENT OF GNP

	1950	1955	1960	1965	1970	1975	1980	1985
Total public expenditures	0.87	0.83	1.01	1.07	1.19	1.57	1.64	1.50
Selected programs								
Social security disability insurance	—	—	0.11	0.22	0.30	0.53	0.57	0.46
Public sector disability insurance	0.07	0.08	0.10	0.11	0.13	0.17	0.20	0.17
Veterans' disability programs	0.58	0.49	0.49	0.43	0.39	0.35	0.32	0.27
Workers' compensation	0.13	0.13	0.15	0.15	0.16	0.20	0.27	0.32
Aid to the permanently and totally disabled/ Supplemental security income*	0.02	0.05	0.06	0.07	0.11	0.20	0.19	0.20

\*Supplemental Security Income replaced Aid to the Permanently and Totally Disabled in 1974.  
Source: *Social Security Bulletin, Annual Statistical Supplement*, various years.

definition of disability since 1965, it is clear that *de facto* standards continued to be liberalized through the next decade. During this same time period, benefit levels, especially for those with low earnings, were rising more rapidly than wages. Since the late 1970s, spurred partly by the potential insolvency of the DI trust fund and partly by the fears that many of those receiving DI were not disabled by the legal definition of the term, first the Social Security Administration and then the Congress in 1980 acted to tighten eligibility requirements. As a result of tighter standards, new awards as a fraction of the eligible population fell by roughly half between 1975 and 1988.<sup>1</sup>

With the increasing availability and generosity of disability benefits, the number of individuals receiving them rose sharply during the 1960s and 1970s. Tables I and II show that of the major programs, only veterans' disability programs have shown no marked postwar growth. As Table I indicates, total expenditures on disability programs as a fraction of GNP almost doubled, rising from 0.87 percent in 1950 to 1.64 percent in 1980. In addition to public programs for the disabled, coverage by employer-provided insurance has also increased [Hill, 1987]. Growth in expenditures

1. A description of the nature and interrelationships between various U. S. disability insurance programs can be found in Burkhauser and Haveman [1982]. A more thorough legal history of DI can be found in U. S. Senate, Committee on Finance [1982].

TABLE II  
NUMBER OF DISABILITY BENEFICIARIES (AS PERCENT OF PERSONS AGED 16-64)

	1950	1955	1960	1965	1970	1975	1980	1985
Selected programs								
Social security disability insurance	—	—	0.45	0.91	1.26	1.89	1.99	1.76
Public sector disability insurance	0.14	0.20	0.24	0.30	0.36	0.40	0.50	0.50
Veterans' disability programs	2.47	2.72	2.92	2.94	2.69	2.45	2.23	1.94
Aid to the permanently and totally disabled/ supplemental security income*†	0.17	0.35	0.46	0.58	0.81	1.02	1.04	1.10

\*Supplemental Security Income replaced Aid to the Permanently and Totally Disabled in 1974.

†From 1975 on we have excluded beneficiaries who also receive DI benefits.

Source: *Social Security Bulletin, Annual Statistical Supplement*, various years, and tabulations based on CPS (see Krueger [1989] for details).

was accompanied by concurrent growth in the number of beneficiaries. For example, Table II shows that the number of DI beneficiaries grew from just under one half a percent of the working aged population in 1960 to just under 2 percent in 1980. Beneficiaries of Aid to the Permanently and Totally Disabled (which, in 1974, was replaced by Supplemental Security Income) grew from 0.2 percent to 1 percent of the working aged population between 1950 and 1980.

During the 1960s and 1970s, while the fraction of individuals receiving disability insurance was rising, the proportion of older men out of the labor force more than doubled (see Table III). The coincident drop in the work force attachment of older men and rise in the fraction of this same group receiving DI benefits seems to suggest a causal connection in which the availability of generous disability benefits induced older men to leave the labor force in order to qualify for benefits [Gastwirth, 1972; Swisher, 1973; Parsons, 1980a]. The implication would seem to be that many of those receiving disability benefits are, in fact, capable of work.<sup>2</sup>

While the time series evidence on labor force participation and program growth is suggestive, it seems possible that the two trends are, in fact, independent—that DI has drawn from a population

2. For a critical review of the literature on the disincentive effects of disability insurance, see Bound [1989], Bound and Waidmann [1990], or Leonard [1986].

TABLE III  
 PERCENT OF MEN IN THE LABOR FORCE AND PERCENT OF MEN ON DISABILITY  
 INSURANCE, SELECTED AGES

Year	In labor force				On disability insurance			
	45-54	55-64	55-59	60-64	45-54	55-64	55-59	60-64
1950	95.8	86.9			0.0	0.0		
1955	96.4	87.9			0.0	0.0		
1960	95.7	86.8	91.6	81.1	0.8	3.5	2.4	4.7
1965	95.6	84.6	90.2	78.0	1.8	5.3	4.2	6.7
1970	94.3	83.0	89.5	75.0	2.5	7.1	5.3	9.3
1975	92.1	75.6	84.4	65.7	3.9	10.4	8.0	13.3
1980	91.2	72.1	81.9	61.0	4.2	11.3	8.6	14.1
1985	91.0	68.8	79.6	55.6	4.0	10.5	8.1	13.0

*Universe.* Civilian non-institutionalized population.

*Sources.* *Employment and Earnings, Social Security Bulletin Annual Statistical Supplement*, various years.

that would otherwise have been out of work or that those leaving the labor force did not end up on DI. Previous research on the impact of disability insurance on the work force attachment of older men [Leonard, 1979; Parsons 1980a, 1980b; Haveman and Wolfe, 1984; Slade, 1984; Haveman, de Jong, and Wolfe, 1991] has for the most part been cross sectional, using the strategy of comparing the labor force participation rates of those with high replacement rates (those whose potential disability benefits would replace a relatively large fraction of their pre-disability earnings) with those with low replacement rates. The problem with this strategy is that it is difficult to identify any exogenous cross-sectional variation in the replacement ratio [Bound 1989, 1991]. Moreover, it seems entirely possible that the changing availability of disability benefits was at least as important a determinant of behavior as was the changing generosity of benefits.

In this paper we use available historical information on the fraction of older working-aged men (45-64 years old) identifying themselves as unable to work to help answer the question of whether those currently receiving disability benefits would work if benefits were not available. The historical record from the period before, during, and after the major growth in disability programs provides largely unexploited evidence on the impact of this growth.<sup>3</sup>

3. Earlier, more rudimentary discussions of the historical record on the fraction of men identified as disabled can be found in Baily [1987] and Bound [1989].

The basic idea behind the use of the historical record can be explained very simply. If those currently receiving disability benefits are truly incapable of gainful employment, we should expect to find that during the 1950s and 1960s, before the major growth in disability insurance programs, a sizable number of men were both reporting themselves disabled and either out of work or not regularly employed. On the other hand, if many of those currently receiving disability benefits are perfectly able to work, we would expect to find many of their counterparts in earlier periods working, and thus, we should find many fewer men reporting themselves disabled and out of work in the period before the expansion of the various disability programs.

Using data from the National Health Interview Survey (NHIS), we find that the proportion of men identifying themselves as disabled remained approximately constant during the 1950s and 1960s, rose rapidly during the 1970s, and then leveled off in the 1980s. Comparing these trends with trends in labor force participation, we find that starting in 1970, changes in the proportion of 45–54 year old men identified as disabled closely mirror changes in the proportion of this age group out of the labor force. For men 55 and above the drop in participation is substantially greater than the rise in proportion of men identified as disabled. This evidence suggests to us that for 45–54 year old men but not for those 55 and above, a major part of the drop in labor force participation that occurred during the 1970s was associated with the movement of men onto the disability rolls.

The evidence clearly suggests that the movement of older men in relatively poor health out of the labor force and onto disability rolls—a phenomenon that we shall refer to as the earlier accommodation of health limitations—can account for a large fraction of the drop in the work force attachment of these men that occurred during the 1970s. It is much more difficult to gauge the extent to which this earlier accommodation of health limitations can be causally attributed to the (exogenous) growth in the availability of disability insurance programs as opposed to other forces (e.g., a drop in the demand for older, less skilled workers in poor health) that may have been at work during the 1970s. For this reason, these figures represent upper bounds on the causal impact of the expansion of disability insurance programs on the work force attachment of older men.

The next section describes and presents the data we use to study the historical record. In Section III we examine the extent to

which trends in health statistics reflect actual changes in health rather than the earlier accommodation of health limitations. Section IV explores the causal factors behind early accommodation, while in Section V we show what fraction of the decline in participation can be attributed to early accommodation. Finally, Section VI provides interpretations of our results and conclusions that might be drawn from this research.

## II. TRENDS IN THE PREVALENCE OF DISABILITY

The longest historical record identifying the disabled comes from the National Health Interview Survey (NHIS), which has been conducted continuously since 1957 (a different portion of the sample is interviewed every two weeks) [National Center for Health Statistics, 1975, 1985].<sup>4</sup> Each year a large number of households representing over 100,000 individuals are surveyed. Respondents are asked both whether any individuals in the household suffer from any of a variety of specific conditions and whether their health limits or prevents them from working. Information is also collected on the labor market activities of household members.<sup>5</sup> The NHIS has several shortcomings. The survey instrument was redesigned in 1969 and then again in 1982. This limits our ability to make comparisons that straddle regimes [Wilson and Drury, 1984]. Within-regime changes in survey administration also have some potential for influencing results. In particular, the National Center for Health Statistics (NCHS) has been making an effort to avoid proxy respondents in recent years. To the extent that proxy respondents are less likely to report an individual as disabled than is the person himself, this trend in the use of proxy respondents could account for some of the apparent rise in the number of individuals identified as disabled in periods

4. Although other sources are available for studying the historical record, for our purposes these are the most appropriate for several reasons. First, although in 1970 and 1980 the Census asked questions about disability, and tabulations based on those data give results very similar to those obtained with NHIS, the NHIS provides data on an annual rather than decennial basis. Second, while the CPS can be used in several ways to measure the prevalence of disability, none precisely captures the concept of *self-reported* disability that we hypothesize is related to changes in public income maintenance. Third, while the Social Security Administration has conducted three detailed surveys of the disabled, they are infrequent, not completely comparable with one another, and their sample sizes are smaller than NHIS. For a more detailed presentation of these data, see Bound and Waidmann [1989].

5. For a more complete description of these data, see Bound and Waidmann [1990].

between design changes, e.g., 1969–1981. Our calculations, however, suggest that this effect is relatively small.<sup>6</sup>

Table IV presents the NHIS numbers beginning in 1957 and for the later period, during which we have complete data; Figure I graphically summarizes these trends. Only published data are available prior to 1969, and these are only available in two- and three-year aggregations. Furthermore, since NCHS publications are not entirely consistent across years, some cells in Table IV are blank. Sample sizes for the 45–64 year old group and estimated standard errors for one year (1983) are included to give the reader a notion of the accuracy of the reported proportions. What emerges from this survey is a period of almost no growth in the prevalence of severe disability between 1957 and 1968, a period of considerable growth in the early-to-mid seventies and a period of leveling off in the late seventies and eighties. It is of some interest to note that the 1970s growth was concentrated most heavily in low-skill, low-education groups.<sup>7</sup> The jump that occurs between 1967 and 1969 is most likely a consequence of the change in the survey instrument that was phased in over this period of time.<sup>8</sup>

Additional data suggest that during the 1950s and 1960s, the fraction of older working-aged men identifying themselves as unable to work remained approximately constant. The Current Population Survey of September 1949 asked respondents the following two questions. "First of all, I would like to check persons (in this household) who aren't able to do their regular work or other duties today because of illness or disability"; and "Is there anyone else (in the household) under 65 years old with a physical or mental condition that allows him to work only occasionally or not at all?" While micro-data from this survey are not available, results were reported in a set of tables published in the *Social Security*

6. Work done by Kovar and Wright [1973] suggests that an individual is 40 percent more likely to report he is disabled than is a proxy answering for him. While this difference is substantial, the rate of self-response among 45–64 year old men only increased from 43 percent in 1970 to 49 percent in 1980. This rise could account for a 2 percent increase in the proportion of these individuals reported as severely disabled, while the actual change in this proportion was on the order of 40 percent (7.4 to 11 percent).

7. We estimated average annual increases in the fraction severely disabled between 1970 and 1981 and found that college graduates had smaller annual increases (0.07 percentage points per year) than high school dropouts (0.82 percentage points), high school graduates (0.484 percentage points), and those with some college (0.30 percentage points).

8. Work done at NCHS suggests that these changes increased both the total number of individuals identified as disabled and the fraction of the disabled classified as severely disabled. See National Center for Health Statistics [1972] and Wilson and Drury [1984].



TABLE IV  
NHIS TRENDS IN SELF-REPORTED DISABILITY BY AGE, 1957-1987: PERCENT OF  
MALES UNABLE OR LIMITED IN THE ABILITY TO PERFORM MAJOR ACTIVITY

Year	Severely disabled				Disabled				N
	45-64	45-54	55-59	60-64	45-64	45-54	55-59	60-64	
1957-1958	4.2	—	—	—	16.6	—	—	—	—
1959-1961	4.4	—	—	—	14.8	—	—	—	—
1961-1963	4.4	—	—	—	15.9	—	—	—	—
1965-1966	4.4	—	—	—	15.8	—	—	—	—
1967	—	—	—	—	16.5	—	—	—	—
1968	—	—	—	—	17.3	—	—	—	—
1969	7.2	4.6	8.1	13.6	17.6	13.9	18.9	26.3	12,772
1970	7.4	4.4	8.4	15.0	17.0	12.0	19.5	28.5	11,358
1971	7.6	4.7	8.6	14.7	17.5	13.3	19.0	27.6	13,096
1972	7.6	4.9	8.8	13.6	17.8	13.5	20.0	27.0	13,059
1973	8.6	5.3	8.7	17.7	19.0	14.1	20.4	31.3	11,791
1974	9.4	5.7	10.8	17.6	19.9	14.4	23.4	30.4	11,458
1975	9.4	5.5	11.9	16.9	19.1	13.5	23.5	28.6	11,416
1976	9.9	6.3	11.1	18.0	20.0	14.9	22.6	30.4	11,036
1977	10.7	6.4	11.7	20.4	20.1	13.6	23.0	33.2	10,872
1978	10.1	5.7	11.8	19.1	19.7	14.1	22.0	31.2	10,567
1979	10.8	6.0	12.7	20.2	19.9	14.1	22.4	31.0	10,506
1980	10.9	6.8	12.7	18.9	20.2	14.0	23.1	31.9	9,725
1981	11.5	6.8	13.0	20.2	20.5	14.5	23.3	30.9	10,273
1982	11.7	6.6	13.8	20.6	19.5	13.4	22.7	31.0	9,750
1983	10.9	6.5	12.7	18.6	19.2	13.4	21.4	29.2	9,812
1984	10.8	6.4	11.7	18.9	18.4	13.0	19.7	28.3	9,640
1985	10.9	6.6	12.9	18.1	18.3	12.4	21.3	28.0	8,260
1986	10.6	6.3	11.8	18.6	18.2	12.5	20.7	28.0	5,578
1987	10.3	6.6	11.0	17.7	17.0	12.3	18.0	26.6	10,929
$\hat{\sigma}_{1983}$	0.41	0.47	0.84	1.06	0.54	0.67	1.13	1.23	—

Note. "Severely disabled" refers to those unable to perform major activity, while "Disabled" refers to those limited in the ability to perform or unable to perform major activity. Estimated standard errors that take account of complex survey design are reported for 1983. These are about 30 percent larger than we would expect under simple random sampling.

Source. Data for the entire age group 45-64 were obtained from tables in NCHS publications. Data for five- and ten-year age groups are from the authors' tabulations of NHIS micro-data tapes.

*Bulletin* [Moore and Sanders, 1950]. According to these data, in 1949, 3.7 percent of men aged 45-54 and 8.0 percent of those aged 55-64 reported that they were unable to work because of their health and had been unable to do so for at least six months. Eliminating those whose work limitation has lasted less than six months from those counted as severely disabled, the 1969 NHIS shows 4 percent of men aged 45-54 and 9.6 percent of those aged

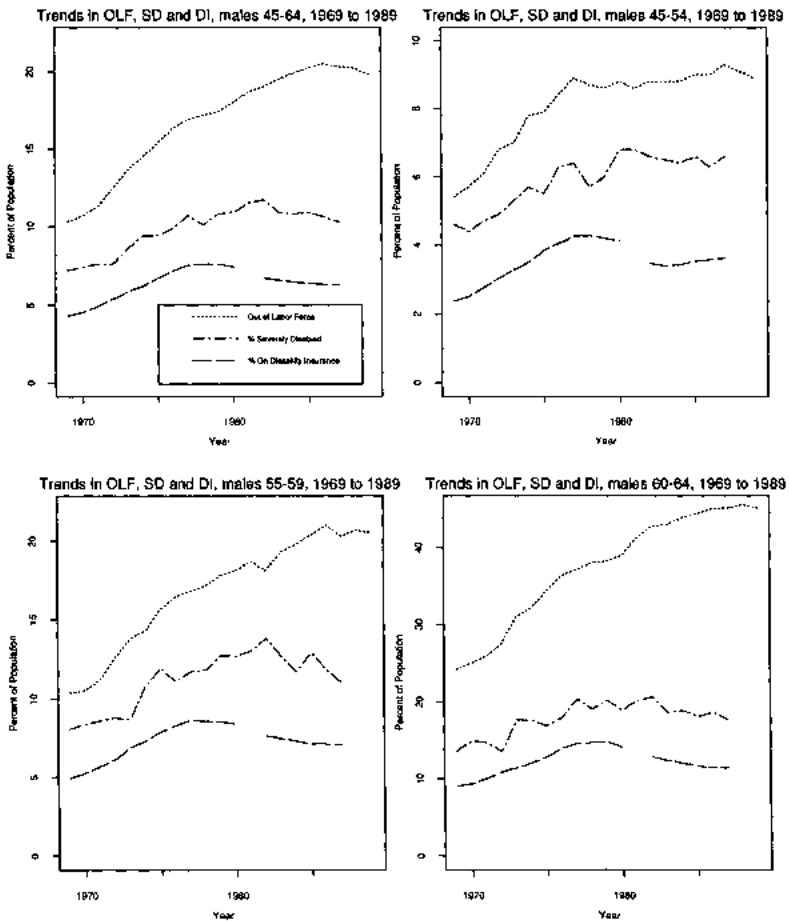


FIGURE I

Sources. National Health Interview Surveys, Social Security Administration and Bureau of Labor Statistics

55-64 unable to work. We thus observe a two-decade growth of 0.3 percentage points for the younger group and 1.6 percentage points for the older one.

It is of some interest to note that the increases in self-reported disability that occurred during the 1970s were associated with increases in the (self-reported) prevalence of specific chronic conditions. Research using the NHIS data has found very clear trends both in terms of the specific conditions associated with work

limitations [Colvez and Blanchet, 1981; Verbrugge, 1984] and in terms of overall prevalence rates for the major disabling conditions [Verbrugge, 1984].<sup>9</sup> During the 1970s arthritis, other musculoskeletal conditions, diseases of the heart, hypertension, cerebrovascular diseases, diabetes, and emphysema all increased in prevalence among 45–64 year old men. More recent data show a leveling off of these trends during the 1980s.<sup>10</sup>

### III. COULD HEALTH HAVE DETERIORATED IN THE NON-INSTITUTIONALIZED POPULATION?

The data present a clear picture of increasing prevalence of self-reported disability and a concurrent rise in the proportion of men reporting specific chronic conditions during the 1970s. However, it does not seem plausible that actual health has deteriorated such that it has limited men's ability to work. Medical advances and changes in personal health habits should have improved the health of the population while changes in the nature of the workplace presumably have made it less taxing.<sup>11</sup> If anything, these developments would indicate a trend opposite to what is observed. While it is plausible that worsening environmental conditions might work in the direction of deteriorating health, they have seemingly little connection to circulatory and musculoskeletal conditions that were associated with most of the growth in disability.

In the absence of a true deterioration in health, there seem to be four plausible explanations for the trends in self-reported health. First, the earlier diagnosis of pre-existing conditions would be likely to lead a higher fraction of individuals in the NHIS to report the presence of specific chronic conditions and perhaps health limitations on their ability to work.<sup>12</sup> Earlier diagnosis, in turn, may be a result of several factors: the increased awareness of

9. The Health Interview Survey asks about specific conditions in two separate places. Those who are identified as having a work limitation are asked what condition or conditions are responsible for the limitation. In addition, individuals are asked whether they suffer from any on a list of specific conditions.

10. There exists a large literature on health trends. For an intelligent discussion of relevant issues, see Verbrugge [1984]. For a discussion of recent trends see Bound and Waidmann [1991].

11. The workplace has changed both because of more stringent OSHA regulation during this period and the altered industrial and occupational mix. Baily [1987] provides a discussion of this issue.

12. Earlier detection would seem a particularly plausible explanation for the apparent increasing prevalence of potentially silent conditions such as hypertension and diabetes.

the importance of early detection, the increased availability of medical care for some segments of the population, and advances in detection technology. Second, a combination of changes in attitudes toward work and beliefs about the impact of work on rehabilitation together with increases in the availability of various kinds of short-term and long-term disability insurance could have increased the fraction of men out of the work force and identifying themselves as unable to work. Third, improved survival could lead to a higher fraction of individuals suffering from disabling chronic conditions and thus to a higher fraction reporting health limitations [Fries, 1980; Shepard and Zeckhauser, 1980; Feldman, 1983]. Last, both Bureau of Labor Statistics (BLS) and NHIS statistics generally refer to the civilian, non-institutionalized population. Thus, the large-scale deinstitutionalization of the late 1960s and early 1970s could lead to a higher fraction of the non-institutionalized population suffering from potentially disabling mental illness.

The first two of these explanations represent mechanisms that might lead a higher fraction of men to identify themselves as disabled even when there was no change in the actual health or functional capacity of the population—what we have called the earlier accommodation of health limitations. The third and fourth represent compositional effects that could lead to an observed decline in the health of the non-institutionalized population. In what follows, we shall examine these latter two and quantify their potential effect on observed health statistics. We can attribute the remaining changes in self-reported health to early accommodation.<sup>13</sup>

Mortality rates for older men began to drop during the 1970s. We can calculate an upper bound on the impact of declining mortality on changes in the prevalence of disability by calculating the fraction of the population that would not have been alive if they had faced the mortality schedules of earlier cohorts. Suppose that all the “marginal” survivors, those who would not have been alive if they had been born into earlier cohorts, were disabled. Further suppose that disability rates did not change at all among the inframarginal survivors. Then the fraction of the population who are marginal survivors represents the net addition to the disabled population. Stated this way, it should be clear why this kind of calculation represents an upper bound for the impact of mortality declines on the fraction of the population disabled. Not all of the

13. For a fuller discussion of the issues raised here, see Verbrugge [1984]. Our analysis follows hers.

marginal survivors will be disabled, nor will disability rates stay constant among the population that would have survived regardless.

Using standard life-table methods, we calculated the fraction of the population in various years that was made up of marginal survivors and broke down mortality improvements into improvements in specific causes of death.<sup>14</sup> Our calculations indicate that if those aged 45–54 in 1980 had experienced their own mortality schedules until 1970 and then the schedules of the cohorts born ten years before them between 1970 and 1980, 0.66 percent of them would have been dead. Thus, up to 0.66 of the 2.4 percentage point increase in prevalence of severe disability (28 percent) that occurred over this decade can conceivably be explained by declines in mortality. For the 55–59 age group, 1.82 of the 4.3 percentage point rise in disability (42 percent) is potentially explained by mortality effects, and for the oldest group, 2.54 of the 3.9 percent increase (65 percent) might be explained. Our calculations also indicate that the 1970s trends in mortality continued into the 1980s, but that there was very little mortality improvement during the sixties. Investigating the changes in cause-specific mortality rates, we found that improvements in mortality due to circulatory conditions can account for around 50 percent of the excess survivorship of the seventies and even more during the early eighties.

Turning to the issue of deinstitutionalization, during the 1960s and 1970s, the fraction of the population institutionalized for mental illness declined dramatically. Between 1960 and 1980 the proportion of the 45–64 year old male population in mental hospitals dropped to about a fourth of its original size. To the extent that those who would previously have been in institutions are still unable to participate in the labor market, they will add to the numbers of non-institutionalized disabled. Since the surveys we use and BLS participation rates are based on the non-institutionalized civilian population, this compositional change might have contributed to the observed rise in self-reported disability and decline in labor force participation. However, the size of the institutionalized population was hardly large enough to contribute in any major way to trends in disability rates. Comparing the trends in the institutionalization of the mentally ill with trends in the proportion of men identified as severely disabled,

14. For a description of these calculations and a more detailed presentation of results, see Bound and Waidmann [1990].

Census estimates imply that the change in the institutionalized population between 1970 and 1980 could explain at most a 0.22 percentage point rise in the proportion of 45–54 year old men identified as disabled. 0.22 represents just less than 10 percent of the 2.4 percentage point change in the portion of men identified as disabled during the same period of time. For the older groups deinstitutionalization can explain even less of the rise in self-reported disability rates.

Of these two compositional explanations for the rise in the prevalence of self-reported disability among older men, the mortality effects are the only ones that may possibly explain a sizable portion of the observed change. However, several factors suggest that the actual effect of declining mortality on disability rates may be substantially lower than the upper bound we have calculated. First, mortality rates continue to decline into the 1980s even after disability rates level off. Second, the fact that much of the increased survivorship is due to declining cardiovascular risks gives force to the notion that many of the marginal survivors are able-bodied.<sup>15</sup> Thus, while we can attribute some changes in reported health statistics to compositional changes in the population, we are still left with much that can be described as earlier accommodation of health problems, a phenomenon which seems to be especially pronounced among the younger groups of the men in question.

#### IV. CAUSAL FACTORS

The systematic way in which self-reported disability varies with the extent of disability programs suggests a simple—if extreme—causal connection. According to this interpretation, the increases in both the availability and the generosity of benefits during the 1970s encouraged the earlier accommodation of health limitations, and the subsequent decreases in availability then discouraged this accommodation. Alternatives are possible, how-

15. In a review article Goldman and Cook [1984] estimate that more than half of the decline in ischemic heart disease mortality (the largest single component of circulatory system mortality) between 1968 and 1976 can be attributed to lifestyle changes—reduced cigarette smoking, weight reduction, and lower serum cholesterol levels—and 40 percent could be attributed to medical interventions, including both better treatment of chronic heart trouble, e.g., improvements in the control of hypertension, and the increased success of emergency medical intervention. Thus, it seems quite natural to imagine that many of these *marginal* survivors would be able-bodied. Further, it would seem likely that both the lifestyle changes and the better treatment of chronic heart trouble could be expected to improve the health of many who would have been alive regardless.

ever, in explaining the earlier accommodation of health limitations that occurred in the 1970s. In particular, a combination of changes in attitudes toward health and changes in medical practice may well have led to the earlier diagnosis of pre-existing conditions and in turn might have encouraged men to leave the labor force and apply for disability benefits. Alternatively, earlier accommodation might reflect more general changes in the work force attachment of older working-aged men, occurring perhaps because of changes in attitudes toward work or because of changes in the demand for older, less-skilled workers.<sup>16</sup> In this case changes in self-reported disability status would reflect a rationalization of changes in labor force status.

Even if the original impetus for labor force withdrawal came from something other than changes in the availability of disability benefits, it would not be too surprising if it were those in relatively poor health or those who were the most likely to qualify for disability benefits who showed the most responsiveness. For example, perhaps the shocks to the economy that occurred during the 1970s displaced many older workers, and those in poor health might have been the least capable of replacing their old jobs. Faced with relatively poor job prospects, but the possibility of generous early retirement benefits, such men might have been willing to try to qualify for DI.

There is, in fact, some indication that increases in the availability of disability benefits were not the only forces driving trends in early accommodation during the 1970s. First, the fraction of men identifying themselves as unable to work increased during the 1970s even among men over the age of 65, men for whom DI would be irrelevant. While the percentage increase was larger for the younger group—60 percent from 7.2 percent to 11.5 percent for 45 to 64 year old men compared with 18 percent from 26.1 percent to 30.7 percent for men 65 and older<sup>17</sup>—suggesting factors at work

16. That the demand for less skilled workers has declined is suggested by the dramatic drop in the relative wages of the less well educated that occurred during the 1980s and the drop in the relative wages of bottom deciles of the earnings distribution that has occurred during the 1970s and 1980s. Levy and Murnane [1991] review the voluminous literature that has documented these trends. Juhn [1990] and Welch and Murphy [1990] develop the implications of these trends for the work force attachment of men. In a different strand of literature Berkowitz, Johnson, and Murphy [1976]; Levitan and Taggart [1977]; Yelin, Nevit, and Epstein [1980]; and Yelin, Henke, and Epstein [1986] all argue that a drop in the demand for the functionally impaired is an important part of the explanation for the growth in disability programs that occurred during the 1960s and 1970s.

17. These are the raw percentages. While we worried that part of what might be driving the figures for the older group was the aging of the over-65 population, standardizing on age made no difference.

for the younger group that were not operative for the older one, the parallel nature of the changes suggests that there must also have been forces at work that were common across the two age groups. Second, at least for the older of the groups we have considered—those 55–64—the drop in participation rates even among those identified as able-bodied accelerated during the 1970s at the same time that the fraction identifying themselves as disabled began to rise. BLS figures show that the labor force participation rates among 55–64 year old men dropped 4.9 percentage points between 1955 and 1970, while dropping 10.9 percentage points from 1970 to 1980 (see Table III). Our tabulations using the National Health Interview Surveys show that, for 55–64 year old men identified as able-bodied, participation dropped 7.5 percentage points from 93.3 percent to 85.8 percent between 1970 and 1980. Thus, the average annual percentage point drop in participation among the able-bodied during the 1970s was more than twice as high as the average annual percentage point drop for *all* groups during the 1950s and 1960s.

To the extent that there was geographic variation in the factors that might have affected the labor force attachment of older men, as we might expect there to be for demand factors, we can use this variation to help distinguish the effect of these factors from the effect of disability transfers on earlier accommodation. The NHIS has neither large enough sample sizes nor sufficient geographic detail to make this type of comparison, but both the 1970 and the 1980 censuses contained questions identifying the disabled,<sup>18</sup> and the fraction of 45–64 year old men identified as disabled in the censuses and the National Health Interview Surveys are quite similar.<sup>19</sup>

18. The 1970 Census asked of 5 percent of the population, "Does . . . have a health or physical condition which limits the kind or amount of work he can do at a job? Does his health or physical condition keep him from holding any job at all? How long has he been limited in his ability to work?" The 1980 Census asked "Does . . . have a physical, mental or other condition which has lasted six months or more which a) limits the kind or amount of work this person can do at a job? b) prevents this person from working at a job?"

19. The 1970 Census shows 19 percent with some work disability (compared with 17 percent in the 1970 NHIS) and 7.2 percent with severe work disabilities (compared with 7.4 percent in the NHIS) [U. S. Bureau of the Census, 1973]. Our tabulations of the 1980 Census show 17.8 percent with some kind of work disability, while 9.8 percent are shown as unable to work at all. These numbers are lower than those shown by the 1980 NHIS, but this is largely a function of the fact that those identified as disabled in the 1980 Census had to have suffered from a condition that had lasted at least six months and that those who were identified as severely disabled but in the labor force were reclassified as partially disabled. When adjustments are made to the NHIS to make results as comparable as possible with the 1980 Census definitions, the NHIS shows results very similar to those shown by the Census. Using the 1980 Census definitions, the NHIS shows 19.3 percent classified as disabled and 9.3 percent as unable to work.



Using the micro data from the census, we calculated for each state the fraction of civilian, non-institutionalized 45–64 year old men falling into three mutually exclusive and exhaustive categories: (1) those in the labor force ( $LF$ ), (2) those out of the labor force and severely disabled ( $OLF_d$ ), and (3) those out of the labor force but not severely disabled ( $OLF_n$ ). The change between 1970 and 1980 in the log-odds of being severely disabled compared with being in the labor force,  $d\ln(OLF_d/LF)$ , was then contrasted with the change in the log-odds of being out of the labor force but not severely disabled,  $d\ln(OLF_n/LF)$ . The population weighted correlation across states in these two changes was 0.44. Both changes are measured subject to sampling error, and correcting for the resulting bias raises the estimated cross-state correlation to 0.56.<sup>20</sup>

This reasonably large correlation certainly suggests that some of the forces that were inducing the able-bodied to leave the labor force were also inducing those with health limitations to do so. To get a notion of how important these common factors might be for explaining the rise in self-reported disability, we regressed the change in the log-odds of being disabled on the change in the log-odds of being out of the labor force, but not disabled. The coefficient on  $d\ln(OLF_n/LF)$  was 0.39 (0.11). Adjusting for sampling error in these variables, we get an estimated coefficient of 0.42. This coefficient implies that had there been no change in the odds of being able-bodied but out of the labor force; the change in the odds of being severely disabled would have been 40 percent lower than it was. In other words, these estimates suggest that if the availability of disability benefits had increased in the way they did, and if the other forces at work lowering the participation rates of older men had not been operative, we would have seen an earlier accommodation of health limitations that was 40 percent smaller than the one we actually observed.<sup>21</sup>

The evidence we have considered so far suggests that not all of the earlier accommodation of health limitations can be attributed to the rise in the availability of disability benefits. At the same time, another piece of evidence suggests that the increases in the availability of benefits *do* play an important causal role. Alternative

20. The changes are measured with error, biasing the estimated correlation downwards, but the errors across the two changes are positively correlated, biasing the estimated correlation upwards. While the two biases to some extent cancel, the errors in variables bias is more important.

21. Since not all of such forces could be expected to exhibit much geographic variation, it is plausible that this 40 percent represents a lower bound on the impact of such other forces.

explanations that hold that more men left the labor force either because demand for older workers was falling or because attitudes toward retirement were changing imply that those leaving the labor force and applying for disability benefits in the 1970s were more marginally disabled than their counterparts in earlier decades. Without adjustment in the availability of benefits to accommodate the increase in the number of applicants, we would have seen acceptance rates drop. In fact, between 1965 and 1975, applications as a fraction of the insured population rose more than 50 percent from 1 percent to 1.54 percent per year. Over the same period of time the fraction of applicants qualifying for benefits remained virtually constant, dropping from 47.6 percent in 1965 to 46.1 percent in 1975. Thus, during the expansion, changes in the *de facto* standards used by disability examiners seemed to mirror changes in the standards used by potential applicants, i.e., increasing "demand" for benefits was accommodated by increasing availability. It seems clear, therefore, that not all of the increase in application rates was due to changes in demand for benefits.<sup>22</sup>

#### V. EARLIER ACCOMMODATION AND LABOR FORCE ATTACHMENT

Finally, we would like to know the extent to which earlier accommodation can account for the postwar decline in the labor force attachment of 45-64 year old men. For ease of exposition we shall assume that all changes in self-reported disability represent some form of earlier accommodation. To the extent that this is not true, our computations should be interpreted as telling us the extent to which the combination of forces behind the rise in self-reported disability can account for the decline in work force attachment.

If we assume that early accommodation involves leaving the labor force and declaring oneself unable to work, then the impact of early accommodation on the labor force participation rate is just the change in the fraction of the population reporting themselves unable to work. Recall that using the 1949 Current Population Survey and the 1969 NHIS,<sup>23</sup> we found that during the fifties and sixties, the proportion of men 45-54 identified as having been

22. Since 1975 the tightening of standards has been matched by a drop in the number of individuals applying for DI benefits. Between 1975 and 1985 applications as a fraction of insured population dropped 33 percent from 1.54 percent to 1.03 percent per year.

23. To be consistent with the CPS definition of disability, we recalculated the 1969 proportions so that they include only those disabled for six months or more.

unable to work because of their health rose from 3.7 percent to 4 percent, while the proportion of men 55-64 similarly identified increased from 8 percent to 9.6 percent. Thus, as is summarized in the first column of Table V, for 45-54 year old men, earlier accommodation of health problems reduced the labor force participation rate by three tenths of one percentage point. For those 55-64, these forces reduced the participation rate by 1.6 percentage points. Between 1949 and 1969 the labor force participation rate for men aged 45-54 declined from 95.6 percent to 94.6 percent, a drop of one percentage point, while the rate for 55-64 year old men declined from 87.5 percent to 83.4 percent, a drop of 4.1 points [U.S. Department of Labor, 1989]. Therefore, the proportions of these drops that would seem to be explainable by the phenomenon of early accommodation are 0.30 for the younger group and 0.39 for the older group.

TABLE V  
PREDICTED AND ACTUAL CHANGES IN LABOR FORCE PARTICIPATION RATE: A  
COMPARISON OF METHODS AND AGE GROUPS

Years/ ages	Method 1			Method 2			Method 3		
	$\Delta LFP$		Pct. of actual	$\Delta LFP$		Pct. of actual	$\Delta LFP$		Pct. of actual
	Pred.	Actual		Pred.	Actual		Pred.	Actual	
1949-1969									
45-54	-0.3	-1.0	30	*	*	*	*	*	*
55-64	-1.6	-4.1	39	*	*	*	*	*	*
1969-1981									
45-54	-2.2	-3.2	69	-2.3	-3.1	74	-2.7	-3.1	86
55-64	-5.8	-12.8	45	-5.5	-13.6	41	-7.1	-13.6	52
55-59	-4.9	-8.3	59	-5.1	-9.2	55	-6.1	-9.2	66
60-64	-6.6	-17.1	39	-5.7	-18.2	31	-8.0	-18.2	44
1982-1987									
45-54	0.0	-0.5	0	0.2	0.8	24	0.2	0.8	24
55-64	2.7	-2.6	-104	2.1	-1.5	-139	1.5	-1.5	-98
55-59	2.8	-2.2	-127	2.8	0.1	2750	2.3	0.1	2340
60-64	2.9	-2.3	-126	1.7	-2.6	-65	0.9	-2.6	-35
1949-1987									
45-54	-2.3	-4.9	39	*	*	*	*	*	*
55-64	-5.3	-19.9	27	*	*	*	*	*	*

Note. Method 1 uses BLS estimates of labor force participation and " $\Delta LFP$  Predicted" equals the increase in percent severely disabled. Method 2 uses NHIS estimates of both labor force participation and health status and predicts the change as  $\sum_j (w_j^t - w_j^0) LFP_j^0 + (\Delta LFP_{nd}) w_{nd}^0$ , where  $w_j^t$  is the proportion of the relevant population classified by disability status  $j$  in time  $t$ , and  $LFP_j^0$  is the labor force participation rate of those with disability status  $j$  in time  $t$ . Method 3 also uses NHIS estimates of labor force participation, and " $\Delta LFP$  Predicted" equals  $LFP^1 - LFP^0 - (\Delta LFP_{nd}) w_{nd}^0$ .

Turning to the period 1969–1981, the NHIS figures in Table IV indicate that the proportion of men 45–54 reporting themselves unable to work increased from 4.6 percent to 6.8 percent, while labor force participation, as reported by BLS, declined from 94.6 to 91.4 percent.<sup>24</sup> For the youngest group, then, early accommodation might explain 2.2 of the 3.2 point decline in labor force participation (69 percent). For the group aged 55–59, we can explain 4.9 of the 8.3 point drop (59 percent), and for the oldest group, we can explain 6.6 of the 17.1 point drop (39 percent).

During the most recent period, 1982–1987, there was little program growth and little or even negative growth in self-reported disability. Table IV shows that during these years, the proportion of men reporting themselves unable to work fluctuated around 6.6 percent for the youngest age group, decreased from 13.8 to 11 percent for the middle group, and decreased from 20.6 to 17.7 percent for the oldest group. During the same period of time, labor force participation rates continued to drop but, at least for the youngest age group, at a much slower rate than they had during the 1970s. The Bureau of Labor Statistics reports that for the 45–54 age group participation declined slightly from 91.2 percent to 90.7 percent. For the 55–59 group the rate dropped from 81.9 to 79.7 percent, and for the 60–64 group the rate dropped from 57.2 to 54.9 percent of the population. This information is summarized graphically in Figure I. Combining the results from the three time periods can give us some notion of the impact of earlier accommodation on the labor force participation of older men since World War II. Adding together the predicted changes in labor force participation for the periods 1949–1969, 1969–1981, and 1981–1987, we find that between 1949 and 1987, an earlier accommodation explanation can account for a 2.3 percentage point drop in labor force participation for 45–54 year old men and a 5.3 point drop for 55–64 year old men. Thus, for the entire post-World War II period, our calculations suggest that earlier accommodation can account for perhaps 39 percent of the 4.9 percentage point drop in labor force participation of those aged 45–54 and 27 percent of the 19.9 point drop among those aged 55–64.

For years when micro-data are available, it is possible to refine

24. For several reasons we analyze the 1970s separately from the rest of the postwar era. The 1970s were marked by relatively large changes in the proportion of men reporting themselves as disabled, while the fifties, sixties, and eighties were periods of little increase in self-reported disability. In addition, the survey changes of 1968/1969 and 1982 and the increased detail available in the data after 1969 make this separation a natural one.

the assumptions made above and examine the sensitivity of our results to the specific assumptions made. For example, in the above calculations we assumed that those reclassifying themselves as disabled are also leaving the labor force. While it is true that most of those men identified as severely disabled are also out of the labor force, and most of those identified as able-bodied are in the labor force, the two partitions are not equivalent. Rather than assuming that all of those newly classified as disabled would have worked before programs like DI existed, another natural assumption would be that those who reclassify themselves from able-bodied to severely disabled were in the labor force with the same probability as the average able-bodied individual. Similarly, we might assume that the partially disabled who reclassify themselves as severely disabled worked with the same probability as the average partially disabled individual. Another problem with the calculations above is that they assume constant labor force participation rates among those who do not reclassify themselves. We know, however, that for men aged 45–64 participation among the disabled dropped during the 1970s from 15.9 percent in 1969 to 5.8 percent in 1981 for the severely disabled and from 93 percent to 84.4 percent for the partially disabled. A plausible assumption, therefore, is that the severely disabled who worked previously but then left the labor force did so as a form of earlier accommodation to their known health problems.

To make the measurements implied by these assumptions, we use the micro-data available from the NHIS to do cross tabulations of labor force status and disability status. Using these data, we can decompose the 1969–1981 and 1982–1987 changes in labor force participation,  $\Delta LFP$ , into changes in disability status,  $w_j$ , holding constant disability specific participation rates, changes in these participation rates,  $LFP_j$ , holding constant disability status and an interaction between rates and composition. Thus, we can write

$$\begin{aligned} \Delta LFP = & \sum_j (w_j^{t_1} - w_j^{t_0}) LFP_j^{t_0} + \sum_j (LFP_j^{t_1} - LFP_j^{t_0}) w_j^{t_0} \\ & + \sum_j (LFP_j^{t_1} - LFP_j^{t_0})(w_j^{t_1} - w_j^{t_0}). \end{aligned}$$

We can now measure the contributions of each component to the decline in labor force participation and, based on the assumptions described above, produce estimates of the extent of earlier accommodation of health problems. Table VI presents the components of

TABLE VI  
COMPONENTS OF CHANGE IN MALE LABOR FORCE PARTICIPATION, 1969-1981

	45-54	55-59	60-64
$LFP^{81} - LFP^{69}$	-3.08	-9.15	-18.20
$\sum_j (w_j^{81} - w_j^{69}) LFP_j^{69}$	-1.75	-4.17	-4.67
$(\Delta w_{sd}) LFP_{sd}^{69}$	0.45	0.32	0.19
$(\Delta w_{pd}) LFP_{pd}^{69}$	-1.62	-0.43	-1.41
$(\Delta w_{nd}) LFP_{nd}^{69}$	-0.58	-4.07	-3.45
$\sum_j (LFP_j^{81} - LFP_j^{69}) w_j^{69}$	-1.09	-4.98	-13.53
$(\Delta LFP_{sd}) w_{sd}^{69}$	-0.54	-0.88	-1.02
$(\Delta LFP_{pd}) w_{pd}^{69}$	-0.12	-1.02	-2.34
$(\Delta LFP_{nd}) w_{nd}^{69}$	-0.43	-3.08	-10.17
$\sum_j \Delta LFP_j \Delta w_j$	-0.23	-0.32	0.52
$\Delta LFP_{sd} \Delta w_{sd}$	-0.26	-0.53	-0.49
$\Delta LFP_{pd} \Delta w_{pd}$	0.02	0.05	0.38
$\Delta LFP_{nd} \Delta w_{nd}$	0.00	0.17	0.63

Note. *sd*, *pd*, and *nd* indicate severely, partially, and not disabled, respectively.  $w_j^t$  is the proportion of the relevant population classified by disability status  $j$  in time  $t$ , and  $LFP_j^t$  is the labor force participation rate (calculated from the National Health Interview Survey data) of those with disability status  $j$  in time  $t$ . This table decomposes the change in labor force participation between 1969 and 1981 for each age group. The three types of terms are (1) changes in disability status holding constant labor force status,  $(\Delta w_j) LFP_j^{69}$ , (2) changes in labor force status holding constant disability status,  $(\Delta LFP_j) w_j^{69}$ , and (3) interactions between the two changes,  $\Delta LFP_j \Delta w_j$ .

the change in labor force participation between 1969 and 1981 as derived from the Health Interview Survey.<sup>25</sup>

In terms of our decomposition, the measure we describe above is equivalent to  $\sum_j (w_j^{81} - w_j^{69}) LFP_j^{69} + (\Delta LFP_{sd}) w_{sd}^{69}$ , where the first term contains the components due to changes in self-reported health status (holding labor force participation rates constant) and the second term represents the changes in labor force participation among the severely disabled. Table VI presents each term in our decomposition, and Table V summarizes this and alternative measures of the effect of early accommodation on labor force participation. A clear age pattern emerges from these numbers. Respectively, 74, 41, and 31 percent of the drops in participation rates during the 1970s are explained by some form of early accommodation under this set of assumptions. For the period 1982-1987, we observe a reversal of the 1970s pattern for all age groups indicating *later* accommodation of health limitations. For each age group this would have led to an increase in the labor force participation rate. For the youngest age group labor force participation actually did increase, but by more than the amount predicted

25. Results for the 1982-1987 period are available upon request.

by changes in health status. For the older groups later accommodation predicts increases in labor force participation, but other forces, working in the opposite direction, largely counteract this effect.

While the assumptions made to generate these estimates may be plausible, a variety of other assumptions is possible that would produce different estimates. However, whatever one believes about the other components of change in labor force participation, it is fairly clear that the decline in participation rates among the able-bodied that are not associated with changes in health status cannot be attributed to any of the phenomena we have termed early accommodation. Thus, attributing all components except  $(\Delta LFP_{nd})w_{nd}^0$  to earlier accommodation, we obtain an upper bound on the effect of this accommodation on labor force participation. By age group, then, the largest fractions of the decline in labor force participation during the 1970s that might be explained as early accommodation are 86, 66, and 44 percent, respectively. For the 1982–1987 period the numbers produced by this bounding measure are quite similar to those produced using the other measure. For each age group the changing participation rates among the able-bodied accounts for much of the observed change in the overall participation rate. For those 55–59 the declining participation among the able-bodied almost completely offsets the effects of later accommodation, and for the oldest age group, able-bodied participation swamps any effect of changing health status.

While these calculations, summarized in Table V, show that the exact magnitude of the decline in labor force attachment accounted for by early accommodation varies with the assumptions made, qualitative conclusions are reasonably robust. We can account for most, but not all of the drop in participation of 45–54 year old men, a bit over half of the drop for 55–59 year old men, and relatively little of the drop for 60–64 year old men.

It is also interesting to examine the *changes* in the trends of labor force participation and self-reported disability. For example, during the 1950s and 1960s the labor force participation rate decreased by an average of 0.05 percentage points per year among 45–54 year old men, while during the 1970s the average annual decrease was 0.27 percentage points. The rate of self-reported disability for the same population was increasing by 0.02 percentage points per year during the 1950s and 1960s and by 0.18 percentage points annually during the 1970s. If we compare the changes in these two trends between the 1970s and the 1950s/1960s, we see that the decline in the participation rate accelerated

by 0.22 points, while the growth in self-reported disability accelerated by 0.17 points. Hence, the accelerated growth of self-reported disability during the 1970s can explain more than three fourths of the accelerated decline in labor force participation for those aged 45–54. For those aged 55–64 similar calculations suggest that changes in disability trends during the 1970s can explain slightly less than half of the changes in labor force participation trends during the 1970s.<sup>26</sup> Comparing 1980s trends with those in the 1970s, our calculations suggest that for both age groups, the deceleration (and even reversal) in the growth of self-reported disability more than accounts for the decelerated movement out of the labor force.<sup>27</sup>

## VI. DISCUSSION

The data we have presented suggest that a substantial fraction of the drop in the labor force participation of older working-aged men that occurred during the 1970s can be attributed to the earlier accommodation of health problems. The basis for our belief is that much of the observed change in labor force participation can be accounted for by changes in the fraction of men indicating that their health limits their ability to work. While these changes in self-reported disability can be accounted for by changes in the fraction suffering from documentable chronic health conditions, we do not believe that the actual health of the older working-aged population was deteriorating in any important way during this time period. We thus conclude that earlier accommodation does represent an accurate description of what was occurring.

The congruence between trends in self-reported disability and labor force attachment is strongest for the youngest age group we study, those aged 45–54. For this group early accommodation might explain up to 80 percent of the decline in labor force participation during the 1970s. For the oldest group, those aged 60–64, it can explain slightly more than one third of the decline of the 1970s. By way of comparison, during the 1950s and 1960s the

26. The annual decrease in the labor force participation rate for 55–64 year old men increased by 0.86 points in the 1970s, while the annual growth in self-reported disability increased by 0.40 points.

27. Annual growth in the rate of self-reported disability decreased by 0.18 percentage points among those aged 45–54 and decreased by 1.02 percentage points (the rate actually began decreasing) among those aged 55–64. The average annual decline in the labor force participation rate decreased by 0.17 percentage points for the younger group and by 0.55 points for the older group.



early accommodation hypothesis is capable of explaining only a third of the small decline in labor force attachment for each group. An explanation consistent with these observations is that during the early years of program expansion, new beneficiaries came from a population that was already out of the labor force, and already classifying themselves as disabled. Since 1970 public policy toward the disabled seems to have had a larger effect on the labor force response to health problems.

In terms of the ultimate causal forces involved in early accommodation, we suspect that the growth in the availability of disability benefits has played, at minimum, an important facilitating role. What plausibly are largely exogenous changes in the availability of benefits, liberalizations through the mid-1970s, and retrenchment since then, have been associated with changes in the fraction of working-aged men receiving benefits. Furthermore, during the 1970s and 1980s, though not before, the changes in the fraction receiving benefits seem to have closely mirrored changes in the number of men identified as disabled. Program statistics on the fraction of men applying for and being awarded benefits suggest that up through the mid-1970s changes in the supply of benefits was keeping pace with demand, while during the late 1970s and 1980s the supply was dropping more rapidly than demand.

However, a variety of considerations suggest to us that factors other than increases in the availability of disability benefits also played an important contributing role. Not only did the fraction of men identifying themselves as unable to work increase over this period, but the fraction identifying themselves as suffering from potentially disabling chronic conditions also rose. This suggests at least the possibility that the earlier diagnosis of preexisting conditions could have led some men to apply for disability benefits. Second, both across time and across states, changes in the fraction of able-bodied men out of the labor force mirrored, to some extent, changes in the fraction identifying themselves as unable to work, suggesting that common factors were at work and might explain some of these trends. Third, changes in the fraction of men aged 65 and older identifying themselves as disabled suggest that factors other than disability insurance must have been responsible for some of the rise in the prevalence of self-reported disability. For all these reasons, our estimates of the extent to which changes in the labor force attachment of older men represented earlier accommodation of health limitations should be considered an upper bound

on the causal impact of disability programs on their work force attachment.

Recent work has emphasized the role the drop in the demand for unskilled labor has played in the drop in the work force attachment of men [Juhn, 1990; Welch and Murphy, 1990]. Our tabulations are not inconsistent with there being an important role for such changes. They do suggest, however, that the impact of such changes on work force attachment will depend in important ways on the availability of alternative sources of income. While the drop in demand for the less skilled was, if anything, more dramatic during the 1980s than it was in the 1970s, the drop in labor force participation rates of men was less so. At least for older men, those 45 and above, our tabulations suggest that changes in the availability of transfer income play an important role in explaining this difference.

Finally, this paper also addresses an issue that has been largely ignored in the rest of the literature. There has been a tendency to equate the behavioral responses to the availability and generosity of disability benefits, i.e., changes in work force attachment, to malingering [Parsons 1980a, 1980b; Leonard 1986; Baily 1987; Yelin 1986, 1989]. According to this argument, being disabled implies being unable to work, and for those truly unable to work changes in the availability of disability benefits should have no impact on behavior. As a result, researchers who have been interested in defending disability insurance as sensible social policy have been forced into arguing that behavioral responses have been trivial, while taking solace in the fact that those receiving disability transfer income do, indeed, suffer from documentable chronic conditions. Others have taken evidence in favor of behavioral responses as evidence that many of those receiving disability benefits are perfectly capable of work: that the social costs of disability transfers have been high and the target efficiency low.

This dichotomy is a false one. The evidence we present does suggest that the increased availability of disability transfers during the 1970s played a role in inducing or at least facilitating older men to leave the labor force. However, the evidence also suggests that most of those who did so and began receiving disability transfers did suffer from potentially disabling conditions. Moreover, a high fraction of those identifying themselves as disabled receive either DI or SSI, and while there are legitimate questions about the validity of the medical screening required to qualify for such

benefits, it seems very unlikely that an individual would qualify without suffering from a disabling chronic condition. Under these circumstances, evaluating the appropriateness of the changes in the availability and generosity of disability benefits that occurred during the 1970s and 1980s becomes a much more difficult and complex task than simply estimating the magnitude of the behavioral response to the liberalization and subsequent retrenchment in these programs.

UNIVERSITY OF MICHIGAN AND NATIONAL BUREAU OF ECONOMIC RESEARCH  
UNIVERSITY OF MICHIGAN

#### REFERENCES

- Baily, Martin N., "Aging and the Ability to Work: Policy Issues and Recent Trends," *Work, Health and Income among the Elderly*, Gary Burtless, ed. (Washington, DC: The Brookings Institution, 1987).
- Berkowitz, Monroe, William G. Johnson, and E. H. Murphy, *Public Policy Toward Disability* (New York: Praeger, 1976).
- Bound, John, "The Health and Earnings of Rejected Disability Insurance Applicants," *American Economic Review*, LXXIX (1989), 482-503.
- Bound, John, and Timothy Waidmann, "Disability Transfers and the Labor Force Attachment of Older Men: Evidence from the Historical Record," Institute for Research on Poverty, Discussion Paper No. 899-89, 1989.
- Bound, John, and Timothy Waidmann, "Disability Transfers and the Labor Force Attachment of Older Men: Evidence from the Historical Record," National Bureau of Economic Research Working Paper No. 3437, 1990.
- Bound, John, and Timothy Waidmann, "Accounting for Trends in Self-Reported Disability," unpublished manuscript, 1991.
- Burkhauser, Richard V., Robert H. Haveman, *Disability and Work: The Economics of American Policy* (Baltimore, MD: Johns Hopkins University Press, 1982).
- Colvez, A., and M. Blanchet, "Disability Trends in the United States Population, 1966-76: Analysis of Reported Causes," *American Journal of Public Health*, LXXI (1981), 464-71.
- Feldman, Jacob J., "Work Ability of the Aged under Conditions of Improving Mortality," *Aging and Work*, VI (1983), 197-213.
- Fries, James F., "Aging, Natural Death, and the Compression of Morbidity," *New England Journal of Medicine*, CCCIII (1980), 130-35.
- Gastwirth, Joseph L., "On the Decline of Male Labor Force Participation," *Monthly Labor Review*, XCV (1972), 44-46.
- Goldman, Lee, and E. Francis Cook, "The Decline in Ischemic Heart Disease Mortality Rates," *Annals of Internal Medicine*, CI (1984), 825-36.
- Haveman, Robert H., Philip de Jong, and Barbara L. Wolfe, "Disability Transfers and the Work Decision of Older Men," *Quarterly Journal of Economics*, CVI (1991), 939-50.
- Haveman, Robert H., and Barbara L. Wolfe, "Disability Transfers and Early Retirement: A Causal Relationship?" *Journal of Public Economics*, XXIV (1984), 47-66.
- Hill, Diane B., "Employer-Sponsored Long-Term Disability Insurance," *Monthly Labor Review*, CX (1987), 16-22.
- Juhn, Chinhui, "The Decline of Male Labor Market Participation: The Role of Declining Market Opportunities," unpublished manuscript, July 1990.
- Kovar, M. G., and R. A. Wright, "An Experiment with Alternate Respondent Rules in the National Health Interview Survey," *1973 Social Statistics Section, Proceedings of the American Statistical Association* (1973) 311-16.

- Leonard, Jonathan S., "The Social Security Disability Insurance Program and Labor Force Participation," National Bureau of Economic Research, Working Paper No. 392, 1979.
- , "Disability System Incentives and Disincentives for the Disabled," *Disability and the Labor Market: Economic Problems, Policies and Programs*, Monroe Berkowitz and M. Anne Hill, eds. (Ithaca, NY: ILR Press, 1986).
- Levitan, S., and R. Taggart, *Jobs for the Disabled* (Baltimore, MD: Johns Hopkins University Press, 1977).
- Levy, Frank, and Richard J. Murnane, "Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations," unpublished manuscript, 1991.
- Moore, M. E., and B. S. Sanders, "Extent of Total Disability in the United States," *Social Security Bulletin*, XIII (1950), 7-14.
- National Center for Health Statistics, Geraldine A. Gleeson, "Interviewing Methods in the Health Interview Survey," *Vital and Health Statistics*, Series 2, No. 48 (1972).
- , "Health Interview Survey Procedure, 1957-1974," *Vital and Health Statistics*, Series 1, No. 11 (1975).
- , M. G. Kovar and G. S. Poe, "The National Health Interview Survey Design, 1973-84, and Procedures, 1975-83," *Vital and Health Statistics*, Series 1, No. 18 (1985).
- , "Current Estimates from the National Health Interview Survey: United States, 1969-1987," *Vital and Health Statistics*, Series 10, Nos. 63, 72, 79, 85, 95, 100, 115, 119, 126, 130, 136, 139, 141, 150, 154, 156, 160, 164 (various years).
- Parsons, Donald O., "The Decline of Male Labor Force Participation," *Journal of Political Economy*, LXXXVIII (1980a), 117-34.
- , "Racial Trends in Male Labor Force Participation," *American Economic Review*, LXX (1980b), 911-920.
- Shepard, D., and R. Zeckhauser, "Long-term Effects of Interventions to Improve Survival in Mixed Populations," *Journal of Chronic Diseases*, XXXIII (1980), 413-33.
- Slade, Frederic P., "Older Men: Disability Insurance and the Incentive to Work," *Industrial Relations*, XXIII (1984), 260-69.
- Swisher, Idella G., "The Disabled and the Decline in Men's Labor Force Participation," *Monthly Labor Review*, XCVI (1973), 53.
- U. S. Bureau of the Census, *Census of Population: 1970, SUBJECT REPORTS, Final Report PC(2)-6C, "Persons with Work Disability"* (Washington, DC: Government Printing Office, 1973).
- U. S. Department of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics*, Bulletin 2340 (Washington, DC: Government Printing Office, 1989).
- U. S. Senate, Committee on Finance, *Staff Data and Material on the Social Security Disability Insurance Program*, Committee Print 97-16 (Washington, DC: Government Printing Office, 1982).
- Verbrugge, Lois M., "Longer Life but Worsening Health? Trends in Health and the Mortality of Middle-aged and Older Persons," *Milbank Memorial Fund Quarterly/Health and Society*, LXII (1984), 475-519.
- Welch, Finis, and Kevin Murphy, "Wages and Participation in the 1980s." Paper presented at 1990 Meetings of the American Economic Association, 1990.
- Wilson, R. W., and T. F. Drury, "Interpreting Trends in Illness and Disability: Health Statistics and Health Status," *Annual Review of Public Health*, V (1984), 83-106.
- Yelin, Edward, "The Myth of Malingering: Why Individuals Withdraw from Work in the Presence of Illness," *Milbank Quarterly*, LXIV (1986), 622-49.
- , "Displaced Concern: The Social Context of the Work-disability Problem," *Milbank Quarterly*, LXVII (1989), 114-65.
- Yelin, Edward, M. Nevitt, and W. Epstein, "Toward an Epidemiology of Work Disability," *Milbank Memorial Fund Quarterly/Health and Society*, LVIII (1980), 386-415.
- Yelin, Edward, C. Henke, and W. Epstein, "Work Disability Among Persons with Musculoskeletal Conditions," *Arthritis and Rheumatism*, XXIX (1986), 1322-33.