
Commitment to Work and the Self-Perception of Disability

by Evan S. Schechter*

Population surveys of the disabled frequently show large numbers of persons who report work activity despite a simultaneous response indicating that they are severely disabled. Using multinomial logit analysis, this article examines the characteristics of persons who express such a commitment to work. The characteristics examined are sex, race, age, family size, education, marital status, health status, and length of work experience prior to onset of disability. The logit analysis allows us to see which of these variables predict work behavior. Data from the 1972 Survey of Disabled and Nondisabled Adults and the 1974 Followup Survey are used. Data are shown in cross section (1972 and 1974) and longitudinally (patterns of change from 1972 to 1974).

In 1972, the less severe the level of health problems, the higher the level of education, being male, and needing to help relatives financially were traits associated with the probability of working despite self-report of severe disability. Those who received funds from public income maintenance were not likely to have worked. Essentially, the same findings were obtained for 1974 cross sectionally and 1972-74 longitudinally.

Comparison was also made between those severely disabled persons who worked full time and those who worked part time, for both 1972 and 1974. Basically, age and severity of health condition were associated with the probability of working full time as opposed to part time, suggesting that it is a work/no work decision that is more likely to discriminate among the work commitments of the severely disabled than is the type of work schedule.

Considerable research has been done that documents the phenomenon of variable behavioral response to the symptoms of chronic illness. At base, there is a concern for the ways in which "... given symptoms may be differentially perceived, evaluated, and acted (or not acted) upon by different kinds of persons."¹ Some of this work focuses on detailing factors associated with differential rates of recovery in samples of persons who have either the same medical condition or who have had a specific medical treatment. Among the outcomes

considered in prior research under the notion of "illness response" have been the self-perception of the individual as being sick, reports of symptoms not confirmed by clinical tests, compliance with doctors' instruction and advice, and work adjustment following acute illness or surgery.² This article focuses instead on the variability in work response to what may be considered the same limits on physical and mental capacity.

Many researchers have pointed out that perception of

* Division of Disability Studies, Office of Research and Statistics, Office of Policy, Social Security Administration. The author wishes to thank Jesse M. Levy, also of the Division of Disability Studies, for his explanation of the properties of the logit procedure.

¹ David Mechanic, "The Concept of Illness Behavior," *Journal of Chronic Diseases*, February 1962, page 189.

² For example, see Milton S. Davis, "Variations in Patients' Compliance with Doctors' Advice," *American Journal of Public Health*, February 1968, pages 274-288; Milton S. Davis, "Variations in Patients' Compliance with Doctors' Orders," *Journal of Medical Education*, November 1966, pages 1037-1048; and Beryl Schulman, "Active Patient Orientation and Outcomes in Hypertensive Treatment," *Medical Care*, March 1979, pages 267-280.

health is an important determinant of physical recovery and work response. Garrity notes that "... perceptions of pathology extent in the ex-patient determined the basic outcome" of return to work.³ Brown and Rawlinson found that, "... clinical assessment of the patients' health did not predict morale as well as did the patients' self-assessment of their health."⁴ Individual definition is, by extension of the above considerations, at the core of the phenomenon of disability, where there is simultaneous consideration of symptom evaluation and the requirements of job attendance and performance.

The definitions that have been used customarily in disability research rely directly on self perception.⁵ As a result, disability can be reported regardless of medical condition and the kind or amount of functional limitation that results. Additionally, as in all other research in the area of work recovery, differences in activity requirements of the job are not usually taken into consideration.

An earlier report based on data from the 1972 survey indicated that 838,000 persons worked despite severe disability in 1972. Some 303,000 men and 87,000 women reported working full time despite the fact that they considered themselves to be severely disabled at the same time.⁶ Obviously, a person who considers himself severely disabled is quite likely to have palpable health problems. If these persons also report work activity, their behavior is analogous to those who exhibit strong positive work response immediately after surgery or despite acute but short-lived health trauma. Analysis of the characteristics of severely disabled persons who continue to work is directly relevant to the social security disability insurance program and related service programs for the disabled. Such analysis could target subgroups of the population where early intervention by means of rehabilitation and other support services might prevent subsequent deterioration and entry on the disability benefit rolls.

In this regard, the logit analysis presented here is more exploratory than definitive. That is, we can identify under conditions of rigorous statistical control what variables exert an independent effect on work behavior. However, the statistics used will not allow us to conclude: (1) which independent factor plays a large

role relative to the other predictors in keeping the disabled on the job and (2) what the increase in the probability of work would be for different values of the significant predictor variables.

Measurement and Methodology

Much of the literature on vocational adjustment after ill health focuses on essentially psychological measures of coping, dependency, passivity, morale, and so on. The emphasis is on describing the personality traits that can be brought to bear on work-response decisions. But other determinants of work behavior having to do specifically with work experience have not received much emphasis in these studies. Data on these factors are provided in the 1972 Survey of Disabled and Nondisabled Adults and its 1974 national followup survey.⁷

The discussion in this article is restricted to persons who, according to the survey definition, characterized themselves as being severely disabled. For purposes of analysis, they are categorized in three groups: Severely disabled/not working; severely disabled/working full time; severely disabled/working part time. The substantive thrust of this article is to describe the differences (if any) in background characteristics of persons in these three groups. Those persons who report work activity despite their indication that they should not be able to work are considered to possess the strongest commitment to work. Therefore, factors associated with this commitment are those examined. An important feature of this report is the ability to assess the effects of background factors on work response controlling for overall functional capacity—a combination of measures of health condition, dependency, and physical activity.⁸

The data presented in subsequent sections are the results of multinomial logit analysis.⁹ The results are expressed as the effect of an independent variable on the probability of being in one of the three groups described above. This effect of the predictor is a net effect when all other predictors are held constant. Standard errors generated for each coefficient allow for the determination of statistical significance. The logit procedure allows for the simultaneous consideration of dichotomous, ordinal, and interval scales in a single prediction equation. The main conceptual concern is

³ Thomas F. Garrity, "Vocational Adjustment After First Myocardial Infarction," *Social Science and Medicine*, September 1973, page 714.

⁴ Julia S. Brown and Mary Rawlinson, "The Morale of Patients Following Open-Heart Surgery," *Journal of Health and Social Behavior*, June 1976, page 142.

⁵ Lawrence D. Haber, "The Epidemiology of Disability II: The Measurement of Functional Capacity Limitations," *Social Security Survey of the Disabled: 1966* (Report No. 10), July 1970, Office of Research and Statistics, Social Security Administration. (Copies of reports from the 1966 survey are only available from depository libraries.)

⁶ Evan S. Schechter, "Employment and Work Adjustments of the Disabled: 1972 Survey of Disabled and Nondisabled Adults" (Report No. 3), *Social Security Bulletin*, July 1977, pages 3-15.

⁷ For details on sample design, methodology, and noninterview, see the technical note at the end of this article.

⁸ This is accomplished by use of a functional capacity index. For a detailed discussion of the development of the index, see Sandra Duchnok, *A Measure of Functional Capacity* (Working Paper No. 4), Office of Research and Statistics, Office of Policy, Social Security Administration, March 1979.

⁹ For a standard presentation of logistic analyses, see Marc Nerlove and S. James Press, *Univariate and Multivariate Log-Linear and Logistic Models*, Rand Corporation, December 1973.

with the nonzero probabilities associated with the predictors. Weighted data were not used because research on the behavior of coefficients in multivariate techniques, in general, has shown that consistent efficient estimates for a population based on sample data are obtained for unweighted data.¹⁰ The 1972-74 data set allowed for the analysis of three groups: Persons severely disabled in 1972, persons severely disabled in 1974, and persons severely disabled in 1972 who also reported severe disability in 1974.

The vector of predictor variables derived from the survey questionnaires included demographic factors that previous research had shown to be positively associated with work status: Sex, age, marital status, race, and education.¹¹ A measure of work experience was also included: the length of time the person was employed prior to the onset of disability. Several measures of the respondent's social responsibilities were incorporated in the prediction equations. It was presumed that the larger the size of the person's family, the greater would be the pressure to be working in order to provide for their subsistence. By similar reasoning, indications that the respondent either felt the need to help support relatives outside the household or indicated receipt of financial help from relatives outside the household were believed to impinge on the decision to work despite experiencing severe disability.

For this sort of analysis to be properly comprehensive, economic variables such as amount of family income, earnings of working spouse, net worth, and receipt of income from one or more income-maintenance programs should be included in the vector of predictors. All other things being equal, higher income probably lowers the likelihood of working. Unfortunately, only two economic variables could be included in the vector of predictors: (1) an indicator of a spouse's working as a direct consequence of the onset of the disabled person's limitation and (2) a measure of whether the disabled person received any funds at all from public income-maintenance programs. This limiting to two economic variables resulted because the reports of income and net worth from the 1972 and 1974 questionnaires contained levels of nonresponse that ranged from 20 percent to 40 percent for the sample identified in this analysis. At this level of nonresponse, the usual imputation procedure is not proper.

In multinomial logit analyses, all independent variables are entered in the prediction equation. Those

¹⁰ For a general discussion on the application of case weights in statistical techniques that apply to survey data, see Gary G. Koch, Daniel Freeman, and Jean L. Freeman, "Strategies in the Multivariate Analyses of Data from Complex Surveys," *International Statistical Review*, April 1975, pages 59-78.

¹¹ Evan S. Schechter, "Work Experience of the Disabled, 1972 and 1974," *1974 Followup of Disabled and Nondisabled Adults* (Report No. 2), Office of Research and Statistics, Office of Policy, Social Security Administration, December 1979.

variables that are not continuous have their codings described in the tables. As the concern here is with those coefficients that are significantly different from zero, only those coefficients that are at least twice their standard errors in absolute value will be discussed.

Persons With Severe Disability in 1972

For those persons who reported severe disability in 1972, two dichotomous dependent variables were considered with the same vector of predictors (tables 1 and 2). In table 1, the probability of working either full time or part time as compared with the probability of not working is presented. As expected, the lower the level of functional capacity, the greater the probability that the disabled person would not work. That is, a higher index score is negatively associated with the probability of working. Men were more likely than women to report working. Whites were no more likely to report working than blacks.

Examination of the effect of education required the use of a series of dummy variables. Only in the comparison between high school graduates and those persons who reported no formal education was the fact of high school education directly associated with the probability of working.

However, it was possible to assess the overall effect of years of schooling on the probability of working. The values of the logit coefficients are determined by an estimation procedure that solves for values of parameters for each variable in the equation so as to arrive at a set of coefficients that maximize the observed pattern of the dependent variable. For each equation estimated, there is a maximum value associated with the likelihood function. In order to look at the overall effect of education on the probability of working, the model was estimated with and without the inclusion of the education dummies; then any significance in the difference in the log likelihood function for the two equations was determined. The statistic (having a chi square distribution with the number of degrees of freedom equalling the number of dummy variables) is twice the log of the ratio of the maximized likelihood value for the equation with dummy variables to the maximized likelihood value for the equation without dummy variables. A significance level is associated with the statistic, given the number of predictors in the two equations. It can therefore be determined if the difference in the two likelihood estimates is significant, thereby reflecting the explanatory effect of the omitted variable. The difference of 19.62 with 5 degrees of freedom resulting from this procedure was significant at the 0.05 level.

The amount of prior work experience was also related to the probability of working while severely disabled. Persons who had worked in some job for 4 years or more were more likely to work than the reference group

Table 1.—Logit analysis of work behavior of the 1972 severely disabled: Comparison of persons who reported work with those who reported no work

Independent variable	1972 disability and work status			
	Mean		Severely disabled and working (1); severely disabled and not working (0)	
	Working	Not working	Coefficient	Standard error
Sex: Men (1); women (0).....	0.63	0.42	¹ 0.9588	0.1062
Race: White (1); black (0).....	.86	.84	-.0665	.1408
Age.....	52	54	-.0083	.0053
Size of family.....	3.1	2.9	.0128	.0290
Economic requirements:				
Help to support relatives outside household: Yes (1); no (0).....	.074	.041	1.4714	.1924
Receiving help from relatives outside household: Yes (1); no (0).....	.026	.042	-.3616	.2957
Length of time employed before onset of disability (in years):				
1 or less (0); 2-3 (1).....	.13	.14	.1801	.1602
1 or less (0); 4-10 (1).....	.24	.19	1.6378	.1356
1 or less (0); more than 10 (1).....	.33	.24	1.7159	.1380
Functional capacity index:				
No functional limitation (0) to severe functional limitation (10).....	6.0	7.1	-1.2094	-.0229
Education:				
None (1); high school graduate (0).....	.011	.046	-1.3537	.4380
1-7 years (1); high school graduate (0).....	.270	.030	-.1794	.1399
8 years (1); high school graduate (0).....	.160	.166	-.0399	.1561
9-11 years (1); high school graduate (0).....	.201	.207	-.1423	.1449
College attendance (1); high school graduate (0).....	.123	.076	.2385	.1741
Spouse increased work after onset of disability: Yes (1); no (0).....	.129	.093	-.0436	.1516
Marital status: Married (1); not married (0).....	.70	.63	.1914	.1173
Receipt of income from public income maintenance: Yes (1); no (0).....	.35	.35	-1.1427	.1074
Constant.....	.....	.....	-0.9035	.....
Number of cases.....	537	4,963	.....	.....
Log likelihood for full model (18 degrees of freedom).....	.....	.....	.....	3,103.54
Likelihood ratio test for length of employment (3 degrees of freedom).....	.....	.....	.....	35.64 (p < .001)
Likelihood ratio test for education (5 degrees of freedom).....	.....	.....	.....	19.62 (p < .001)

¹ Significant at 0.05 level or lower.

of persons with less than 1 year of experience. This finding provides further evidence that strong ties to work prior to onset, independent of age, predictably affect work response to disability.

The overall effect of the set of dummies for work experience was also significant. The value of 35.64 for the log likelihood test with 3 degrees of freedom was significant. Data on the mechanisms that account for the linkage between work experience and working despite disablement are not available, but among the explanatory possibilities are union efforts to secure, rehire, or arrange for rehabilitation; commitments felt by former employers to rehire persons with experience in their firm; confidence by the disabled worker that he can do the work abetted by familiarity with the job; efforts by former coworkers to influence the disabled's return; and/or the employer's acceptance of the return.

The existence of demands on the disabled person to shoulder additional financial responsibility was also associated with the probability of working. This finding suggests that it is important to pose questions about the social pressures that impinge upon work commitments. Work in the sociology of the family would bear directly upon this issue.

The data in table 1 also indicate a finding that was anticipated. The coefficient for the public income maintenance variable shows that receipt of income-maintenance benefits is associated with a decreased likelihood of working while severely disabled, controlling for all of the other independent variables examined in this study.

Data in table 2 compare those persons who considered themselves severely disabled but were nevertheless working full time with those severely disabled and working part time in 1972. The relationships shown in table 2 differ in several ways from those shown in table 1. Neither length of employment prior to onset of disability (a nonsignificant difference in log likelihood ratios of 2.707 with 3 degrees of freedom) nor level of education (a nonsignificant difference in log likelihood ratios of 5.58 with 5 degrees of freedom) affected the probability of working full time compared with the probability of working part time. On the other hand, being white or male did affect the probability of being in the group of persons who worked full time despite severe disability. Furthermore, aspects of the person's economic situation that were significant (table 1) that might be thought to impinge on time on the job did not

Table 2.—Logit analysis of work behavior of the 1972 severely disabled: Comparison of persons who reported full-time work with those who reported part-time work

Independent variable	1972 disability and work status			
	Mean		Coefficient	Standard error
	Working	Not working		
Sex: Men (1); women (0).....	0.79	0.59	1.0529	0.2670
Race: White (1); black (0).....	.89	.84	.2726	.3542
Age.....	50	52	1.0209	.0120
Size of family.....	3.4	3.1	-.0222	.0662
Economic requirements:				
Help to support relatives outside household: Yes (1); no (0).....	.094	.070	.5357	.4007
Receiving help from relatives outside household: Yes (1); no (0).....	.086	.030	-1.3704	1.1071
Length of time employed before onset of disability (in years):				
1 or less (0); 2-3 (1).....	.12	.13	-.0545	.3842
1 or less (0); 4-10 (1).....	.28	.24	.1806	.3015
1 or less (0); more than 10 (1).....	.29	.33	-.0900	.3133
Functional capacity index: No functional limitation (0) to severe functional limitation (10).....	5.6	6.1	1.1230	.0542
Education:				
None (1); high school graduate (0).....	0	.014	-5.0484	6.9195
1-7 years (1); high school graduate (0).....	.259	.269	-.0636	.3206
8 years (1); high school graduate (0).....	.173	.161	-.0947	.3495
9-11 years (1); high school graduate (0).....	.155	.213	-.4342	.3497
College attendance (1); high school graduate (0).....	.153	.112	.2629	.3684
Spouse increased work after onset of disability: Yes (1); no (0).....	.181	.115	.2705	.3053
Marital status: Married (1); not married (0).....	.77	.69	.3338	.2877
Receipt of income from public income maintenance: Yes (1); no (0).....	.29	.36	-1.681	.2570
Constant.....	.....	.....	-0.6254	.....
Number of cases.....	116	427	.....	.....
Log likelihood for full model (18 degrees of freedom).....	.....	.....	.....	519.020
Likelihood ratio test for length of employment (3 degrees of freedom).....	.....	.....	.....	2.707 (p = .44)
Likelihood ratio test for education (5 degrees of freedom).....	.....	.....	.....	5.58 (p = .35)

¹ Significant at 0.05 level or lower.

discriminate between the likelihood of being in one work schedule group as opposed to the other.

What significance may be attached to the fact that the predictors of age, education, and work experience that are normally associated with work/no work decisions among the disabled were not associated with the probability of working full time? It seems that the decision to engage in work at all is much more likely to discriminate among disabled persons than is a full-time/part-time decision. This may be due to the fact that several fundamental points of adjustment—arranging transportation, commitment to a fixed schedule, undertaking a period of training/retraining, arranging medical treatment to accommodate work schedules—are involved and require the same effort in planning for either full-time or part-time work.

Persons With Severe Disability in 1974

The analysis done for the severely disabled in 1972 was repeated for a similar group in 1974. The results, reported in table 3, showed essentially the same relationships uncovered in 1972. Sex, age, and length of time employed before the onset of disability (the factor assumed to reflect the individual's ease in filling-

in upon return to work) were all significantly related to the probability of working. Race and enrollment in public income-maintenance programs were again significantly related to the probability of *not* working. The requirement of supporting relatives outside the household continued to affect work commitment for the severely disabled. In contrast to the findings for 1972, married persons had a higher probability of working in 1974 than did unmarried persons.

Fewer differences in 1974 (table 4) than in 1972 (table 2) existed between severely disabled persons who worked full time and those who worked part time. Factors not significant in the 1974 cross-section equation were sex, race, and level of functional capacity. The length of time employed prior to onset of disability was positively associated with the probability of working full time in 1974 (likelihood ratio test = 16.50, $p < 0.001$) but not in 1972.

Persons With Severe Disability in Both Years

Because the data base provided figures for the same group of persons at two points in time, it was possible to use logit analysis to predict reported change in work

Table 3.—Logit analysis of work behavior of the 1974 severely disabled: Comparison of persons who reported work with those who reported no work

Independent variable	1974 disability and work status			
	Mean		Severely disabled and working (1); severely disabled and not working (0)	
	Working	Not working	Coefficient	Standard error
Sex: Men (1); women (0).....	0.64	0.42	¹ 0.9586	0.1049
Race: White (1); black (0).....	.83	.84	-.0407	.1342
Age.....	51	54	-.0094	.0051
Size of family.....	3.2	2.9	.0166	.0278
Economic requirements: Help to support relatives outside household: Yes (1); no (0).....	.086	.037	1.7980	.1831
Length of time employed before onset of disability (in years): 1 or less (0); 2-3 (1).....	.14	.13	.1949	.1525
1 or less (0); 4-10 (1).....	.19	.18	1.2962	.1375
1 or less (0); more than 10 (1).....	.27	.23	1.3868	.1343
Functional capacity index: No functional limitation (0) to severe functional limitation (10).....	5.8	7.0	-1.2453	.0239
Education: None (1); high school graduate (0).....	.019	.043	-1.7042	.3524
1-7 years (1); high school graduate (0).....	.275	.302	-.0633	.1401
8 years (1); high school graduate (0).....	.163	.160	.0533	.1579
9-11 years (1); high school graduate (0).....	.220	.210	.0418	.1435
College attendance (1); high school graduate (0).....	.100	.076	.0582	.1848
Spouse increased work after onset of disability: Yes (1); no (0).....	.11	.09	-.0371	.1576
Marital status: Married (1); not married (0).....	.69	.61	1.2770	.1132
Receipt of income from public income maintenance: Yes (1); no (0).....	.41	.64	-1.9748	.1072
Constant.....	.....	.....	0.5389	.....
Number of cases.....	540	4,784	.....	.....
Log likelihood for full model (18 degrees of freedom).....	.....	.....	.....	3,098.551
Likelihood ratio test for length of employment (3 degrees of freedom).....	.....	.....	.....	9.421 (p = .02)
Likelihood ratio test for education (5 degrees of freedom).....	.....	.....	.....	6.117 (p = .30)

¹ Significant at 0.05 level or lower.

from 1972 to 1974 for those people who were disabled in both years. For each set of columns in table 5, the coefficients are interpreted as bearing a relationship to the probability of being in the indicated work status group compared with not reporting work activity for either time period. To conform to the longitudinal features of the prediction equation, three of the independent variables were also measured in terms of change over time: Level of functional capacity, receipt of income from public income-maintenance programs, and support of relatives outside the immediate family.

Comparing those who worked in both years with those who reported no work in either year (first three columns) shows that being male was more likely to be associated with work activity. Controlling for all other factors and comparing persons with less than 1 year on the job with those having more than 4 years of work shows that more pre-disability work experience was related to post-disability work activity. As one would expect, persons whose health status improved (showing a negative value for the functional capacity index change variable) had a greater probability of working at both times than of not working in either 1972 or 1974.

The association between receipt of assistance from public income-maintenance programs and work status

that was obtained in cross section (tables 1 and 3) was also present in the comparison of groups with work activity measured longitudinally (table 5). Those who received public income-maintenance payments either in both years or in 1974 only were more likely not to have worked in both 1972 and 1974. In contrast, those who reported a necessity to provide financial help to relatives were more likely to have reported working in both 1972 and 1974 than to have not worked at all. Because of this consistent result cross sectionally and longitudinally, it seems reasonable to assume that this component of economic necessity acts as an incentive for those with severe chronic health problems to ignore them or attempt to manage with these difficulties and to continue working.

The patterns of association for membership in a group that reported working in either year, compared with those who did not report any work at all, are the same. If the severely disabled person was male, he was more likely to have worked at some job in either 1972 or 1974 than not to have worked at all. Married persons were also more likely to have done some work in 1972 or 1974 than to have not worked at all.

For persons whose health deteriorated from 1972 to 1974, as measured by a higher index score in 1974 than in 1972, the probability of working in 1974 was also

Table 4.—Logit analysis of work behavior of the 1974 severely disabled: Comparison of persons who reported full-time work with those who reported part-time work

Independent variable	1974 disability and work status			
	Mean		Severely disabled and working full time (1); severely disabled and working part time (0)	
	Working	Not working	Coefficient	Standard error
Sex: Men (1); women (0).....	0.73	0.62	0.4022	0.2601
Race: White (1); black (0).....	.84	.83	.0741	.3153
Age.....	49	51	-.0075	.0119
Size of family.....	3.4	3.2	-.0242	.0626
Economic requirements:				
Help to support relatives outside household: Yes (1); no (0).....	.108	.079	.4639	.3775
Length of time employed before onset of disability (in years):				
1 or less (0); 2-3 (1).....	.090	.147	-.4615	.3960
1 or less (0); 4-10 (1).....	.243	.180	.3478	.3003
1 or less (0); more than 10 (1).....	.261	.277	-.1042	.3006
Functional capacity index: No functional limitation (0) to severe functional limitation (10).....	5.5	5.8	-.1057	.0591
Education:				
None (1); high school graduate (0).....	.027	.016	.6687	.7778
1-7 years (1); high school graduate (0).....	.243	.284	-.3734	.3325
8 years (1); high school graduate (0).....	.162	.163	-.2125	.3639
9-11 years (1); high school graduate (0).....	.216	.221	-.1824	.3251
College attendance (1); high school graduate (0).....	.081	.105	-.5311	.4388
Spouse increased work after onset of disability; Yes (1); no (0).....	.162	.102	.3241	.3351
Marital status: Married (1); not married (0).....	.75	.68	.2941	.2777
Receipt of income from public income maintenance: Yes (1); no (0).....	.24	.45	1-.8684	.2684
Constant.....	.....	.....	-0.4137	.....
Number of cases.....	111	429	.....	.....
Log likelihood for full model (17 degrees of freedom).....	.....	.....	.....	513.831
Likelihood ratio test for length of employment (3 degrees of freedom).....	.....	.....	.....	16.50 (p. < .001)
Likelihood ratio test for education (5 degrees of freedom).....	.....	.....	.....	3.53 (p. = .62)

¹ Significant at 0.05 level or lower.

lower. Conversely and as might be expected, improvement in health status for this group increased the probability of working in 1974, compared with those who did not work at all. The data in the third set of columns in table 5 also show that worsening health status was associated with the probability of stopping work in 1974.

As far as receipt of public income-maintenance payments is concerned, receipt of benefits in both 1972 and 1974 was associated with the probability of being in the group that continued to report no work activity. The stoppage of public income-maintenance funds in 1974 after receipt in 1972 was not related to the probability of not working in 1974 compared with not working at either time. If one wished to posit that the fact of enrollment in income-maintenance programs served as a disincentive to working, significant coefficients should have been obtained for (1) receipt of public income in 1972 only and no work in 1972/work in 1974 and (2) receipt of public income in 1974 only and work in 1972/no work in 1974. Because these associations did not appear, there is no evidence from these data at least, that public income-maintenance programs act as a disincentive to working among the severely disabled.

Conclusion

Both the longitudinal and cross-sectional logit analyses have served to document two points about the phenomenon of disability. The first is that differential work responses exist at given levels of disablement. This is consistent with the observation of persistent varying behavioral responses to chronic health difficulties found by other investigators as reported in the first section of this article.

The second point is that when the effects of all the predictor variables considered were controlled, several proved to be systematically associated with the probability of being in given work-response groupings. These factors were sex, age, need to provide financial help to others, length of predisability work experience, and level of functional capacity. By virtue of utilizing logit procedures, one can say that each of these variables has an effect on choosing to work while being severely disabled that is independent of the effect of all other factors that were considered.

The major substantive conclusion that emerges is that factors that reflect work experience are central in the work response to disability. Techniques that allow for

Table 5.—Logit analysis of 1972-74 work behavior of 1972-74 severely disabled: Comparison of work status patterns with those who reported no work in either 1972 or 1974

Independent variable	Work status in 1972 and 1974									
	Working in 1972, working in 1974(1); not working in 1972, not working in 1974(0)			Not working in 1972, working in 1974(1); not working in 1972, not working in 1974(0)			Working in 1972, not working in 1974(1); not working in 1972, not working in 1974(0)			Not working in 1972, not working in 1974
	Mean	Coefficient	Standard error	Mean	Coefficient	Standard error	Mean	Coefficient	Standard error	Mean
Sex: Men (1); women (0).....	0.70	¹ 1.2599	0.2175	0.55	¹ 0.7110	0.1897	0.62	¹ 0.9226	0.1779	0.42
Race: White (1); black (0).....	.83	.0827	.2597	.84	.1196	.2420	.83	.0381	.2211	.82
Age.....	53	.0008	.0105	50	-.0242	.0084	54	.0082	.0090	54
Length of time employed before onset of disability (in years):										
1 or less (0); 2-3 (1).....	.12	.2215	.3347	.19	.3116	.2549	.11	.0638	.2780	.13
1 or less (0); 4-10 (1).....	.27	¹ .7343	.2684	.16	-.0979	.2676	.23	.3429	.2274	.20
1 or less (0); more than 10 years (1).....	.34	¹ .6492	.2744	.22	-.0175	.2634	.33	.4591	.2441	.25
Functional capacity index, 1974 minus functional capacity index, 1972.....	-.26	¹ -.7164	.0497	-.65	¹ -.1637	.0454	.52	¹ .1425	.0412	-.02
Spouse increased work after onset of disability:										
Yes (1); no (0).....	.14	.0548	.2850	.10	-.3301	.3111	.10	-.2675	.2760	.10
Marital status: Married (1); not married (0).....	.70	.2112	.2236	.69	¹ .5267	.2079	.71	¹ .4265	.1895	.61
Receipt of income from public income maintenance:										
Received in 1972 and 1974 (1); did not receive (0).....	.39	¹ -1.1442	.2315	.41	¹ -.8758	.2093	.35	¹ -1.3093	.2057	.58
Received in 1974 only (1); did not receive (0).....	.12	¹ -.7523	.3221	.09	-.7464	.3919	.22	.0883	.2267	.10
Received in 1972 only (1); did not receive (0).....	.03	-.9459	.6111	.04	-.3862	.4814	.02	-1.1520	.6052	.03
Economic requirements:										
Helped to support relatives in 1972 and 1974(1); did not help (0).....	.03	¹ 1.2397	.6271	.01	.5418	.7446	.02	.7172	.6269	.01
Helped to support relatives in 1972 only (1); did not help (0).....	.08	¹ 1.2218	.3589	.05	.6936	.4127	.01	-.9779	.7297	.03
Helped to support relatives in 1974 only (1); did not help (0).....	.07	¹ .8565	.3913	.04	.3259	.4376	.05	.4942	.3657	.03
Number of cases.....	120			136			167			3,591

¹ Significant at 0.05 level or lower.

assessing the relative impact of work-related predictors and other factors on work response would help to refine the idea of the importance to be attached to work-experience variables that describe economic and motivational statuses. Extension of the investigation to the issue of how previous work experience affects work decisions among those with chronic ill health will involve hypotheses and data on the relation between the individual and various physical, task, and social aspects of the work site. Such development could serve to focus policy interests on the importance of trying to maintain or reestablish the link between the disabled person and familiar work/employer contexts.

Logistic Model

In addressing the problems associated with standard regression procedures and dichotomous variables, statisticians have developed modified, multiple regression approaches for analyzing dichotomous data. Such approaches are less dependent on the distributional assumptions of the standard regression procedures but, at the same time, yield interpretations similar to traditional regression models. One such modified, multiple regression approach is logit analysis that uses a maximum likelihood estimation procedure instead of

least squares.¹² In logit analysis the probability of an event is related to the independent variables, X through the relation

$$P = \frac{e^{X'\beta}}{1 + e^{X'\beta}}$$

where: P is the probability of becoming disabled given X;
 X is a vector of independent variables, the first of which is the constant 1; and
 β is a vector of coefficients to be estimated.

Technical Note

The Social Security Administration (SSA) is responsible for collecting and analyzing data on the disabled to provide information for use in administering the disability insurance program. In carrying out this

¹² For a comprehensive description of logistic analyses, see Marc Nerlove and S. James Press, *op. cit.*; Isabel V. Sawhill, Gerald E. Peabody, Carola A. Jones, and Steven B. Caldwell, *Income Transfers and Family Structure*, The Urban Institute, September 1975; and Leo A. Goodman, *Analyzing Qualitative/Categorical Data, Log-Linear Models and Latent-Structure Analysis*, Addison-Wesley Publishing Co., London, 1978.

responsibility, SSA conducted a survey in 1972, using the 5-percent sample from the 1970 Decennial Census to identify both disabled and nondisabled adults. The 1972 survey was designed primarily to update earlier estimates of the extent and severity of disability in the population derived from the earlier Social Security survey of the disabled in 1966.

With the 1972 survey providing baseline information on disability status, income and income sources, work adjustment, and other social and economic characteristics of the population, followup interviews were conducted in 1974 to examine changes over the 2-year period. The changes in the disability and economic status of the working-age population were examined and related to entitlement under the disability insurance program and supplemental security income (SSI) disability provisions.

The 1974 survey provides information on the following:

- changes in the prevalence and extent of disability in the working-age population by demographic, social, economic, and occupational characteristics between 1972 and 1974;
- improvement in health status of the disabled;
- the nature of adaptation to recent impairment and disability, such as work adjustments, rehabilitation, dependency, and changes in family relationships and participation;
- functional limitations and mental health ratings;
- use of medical care and rehabilitation services; and
- knowledge of and extent of participation in all public income-maintenance programs to determine patterns and interrelationships which reflect the policy and procedures of the SSA disability program provisions.

Study Design

The data were collected and processed by the Bureau of the Census. Survey estimates for 1972 are based on a sample of 18,000 interviewed persons selected from the 1970 5-percent census sample. Of the 18,000 persons interviewed, 11,700 were disabled in April 1970; 5,000 were nondisabled but some had health impairments; and 1,300 were recently disabled persons interviewed in 1971. In addition to the above sample of interviewed persons, there were 2,850 noninterviews. Thus the rate of response for the survey—based on 18,000 interviewed persons out of 20,850 eligible for interview—was 86 percent.

In 1974, data were collected in personal interviews from the 16,030 persons who were previously interviewed in 1972 and were still living in 1974. At the time of the 1974 survey, about 7,600 persons identified themselves as disabled and 8,400 as nondisabled. The

additional 1,890 persons were classified as noninterviews for the following reasons:

1972 status	Total	Inter-views	Interview status in 1974				Total
			Death	Noninterviews			
				Institu-tionalized	Re-fused	Other	
Total.....	17,997	16,030	598	96	700	573	1,967
Disabled.....	8,633	7,591	470	77	264	231	1,042
Nondisabled.....	9,364	8,439	128	19	436	342	925

The rate of response in the 1974 survey was 90 percent. In general, the 1972 sample was a stratified multistage cluster design comprised of 357 sampling areas including every county and some independent cities in the United States. The disabled persons were selected from all 357 strata, and the nondisabled and recently disabled groups were chosen from a special subset of 105 strata. The sample was designed to represent the noninstitutionalized civilian population of the United States aged 18–64 as of April 1970.

Match with Social Security Records

To enhance the usefulness of survey data in analyses focused on program issues, the information obtained by interviews was combined with selected data available from the master beneficiary record (MBR) and the earnings records maintained by the Social Security Administration. Data from both the interviews and records were used to establish beneficiary status for tabulation purposes.

Definition of Disability

Disability is defined in this study as a limitation in the kind or amount of work (or housework) resulting from a chronic health condition or impairment lasting 3 months or longer. The disability classification is based on the extent of the individual's capacity for work, as reported by the respondent in a set of work-qualification questions. Data on employment and on functional capacities—such as mobility, activities of daily living, personal care needs, and functional activity limitations—were also collected to evaluate further the nature and severity of disability.

The severity of disability was classified by the extent of work limitations into the following categories:

Severely disabled. Unable to work altogether or unable to work regularly.

Occupationally disabled. Able to work regularly but

(Continued on page 37)

Table M-2.—Public income-maintenance programs: Hospital and medical care payments, 1940–81

[In millions]

Period	Total	OASDHI (health insurance) ¹			Other programs			
		Total	Hospital insurance ²	Medical insurance	Veterans	Temporary disability ³	Workers' compensation ⁴	Public assistance ⁵
1940	\$165	.....	.....	.....	\$70	.....	\$95	.....
1945	222	.....	.....	.....	97	.....	125	.....
1950	832	.....	.....	.....	573	\$7	200	\$52
1955	1,265	.....	.....	.....	688	20	325	232
1960	1,846	.....	.....	.....	848	41	435	522
1961	2,093	.....	.....	.....	899	46	460	688
1962	2,406	.....	.....	.....	940	46	495	925
1963	2,611	.....	.....	.....	971	50	525	1,065
1964	2,890	.....	.....	.....	1,019	51	565	1,255
1965	3,204	.....	.....	.....	1,072	52	600	1,480
1966	4,898	\$1,019	\$891	\$128	1,137	54	680	2,008
1967	9,554	4,549	3,353	1,197	1,328	53	750	2,873
1968	12,107	5,697	4,179	1,518	1,429	55	830	4,096
1969	13,837	6,603	4,739	1,865	1,573	59	920	4,681
1970	15,614	7,099	5,124	1,975	1,793	66	1,050	5,606
1971	18,109	7,868	5,751	2,117	2,087	71	1,130	6,953
1972	21,173	8,644	6,319	2,325	2,409	65	1,250	8,805
1973	23,732	9,584	7,057	2,526	2,681	69	1,480	9,919
1974	29,108	12,419	9,101	3,318	3,076	71	1,760	11,782
1975	35,803	15,591	11,318	4,273	3,551	74	2,030	14,555
1976	41,267	18,423	13,343	5,080	4,422	71	2,380	15,941
1977	47,179	21,826	15,743	6,038	4,465	74	2,680	18,179
1978	53,332	24,940	17,688	7,252	5,257	80	2,960	20,095
1979	(6)	29,297	20,590	8,708	5,399	65	3,530	(6)
1980	.....	33,708	23,073	10,635	6,122	.....	.....	(6)
1980								
January	.....	2,797	1,986	811	551	.....	.....	(6)
February	.....	2,672	1,819	853	486	.....	.....	(6)
March	.....	2,892	2,159	733	490	.....	.....	(6)
April	.....	2,929	2,078	851	508	.....	.....	(6)
May	.....	3,010	2,164	846	498	.....	.....	(6)
June	.....	2,891	2,050	841	492	.....	.....	(6)
July	.....	2,986	2,068	918	527	.....	.....	(6)
August	.....	2,925	1,997	928	479	.....	.....	(6)
September	.....	3,077	2,114	963	513	.....	.....	(6)
October	.....	3,230	2,238	992	548	.....	.....	(6)
November	.....	2,950	2,039	991	489	.....	.....	(6)
December	.....	3,346	2,357	989	542	.....	.....	(6)
1981								
January	.....	3,278	2,308	970	594	.....	.....	(6)

¹ Benefit expenditures from the Federal hospital insurance and supplementary medical insurance trust funds as reported by the U.S. Treasury.

² Excludes payments by Railroad Retirement Board for beneficiaries in Canadian hospitals.

³ Benefits in California and New York (from 1950), including payments under private plans. Monthly data not available.

⁴ Benefits under Federal workers' compensation laws and under State laws

paid by private insurance carriers, State funds, and self-insurers. Beginning 1959, includes data for Alaska and Hawaii. Monthly data not available.

⁵ Federal matching for medical vendor payments under public assistance began October 1950.

⁶ Data not available.

Source: U.S. Treasury and unpublished data from administrative agencies.

Work and Self-Perception of Disability

(Continued from page 30)

unable to do the same work as before the onset of disability or unable to work full time.

Secondary work limitations. Able to work full time, regularly, and at the same work but with limitations in the kind or amount of work they can perform;

persons with limitations in keeping house but not in income-producing work are included in this group.

Persons who are occupationally disabled or who have secondary work limitations are considered to be partially disabled.