
Recovery of Disabled Beneficiaries: A 1975 Followup Study of 1972 Allowances

by Ralph Treitel *

In recent years, the number of persons awarded disabled-worker benefits has rapidly increased, but no corresponding rise has occurred in the number leaving the rolls for recovery. A comparative analysis has been made of the demographic, disability, and benefit characteristics of a sample of disabled workers awarded benefits in 1972 who left the rolls for recovery and the characteristics of those who remained on the rolls. For most beneficiaries, recovery appeared unlikely. A large proportion of those awarded benefits were older middle-aged workers with chronic progressive diseases. About 7 in 10 were aged 50 or over at allowance; one-fifth had died by the end of 1975. Younger beneficiaries, those with more education, those disabled by injuries, and residents of Western States were most likely to recover. Persons with higher benefit amounts had a high rate of recovery, but this finding appeared to reflect the effects of their being younger and more skilled. The level of earnings replacement appeared to have little independent effect on recovery. Among workers with conditions most subject to medical improvement, however, those with high replacement rates were less likely to leave the rolls.

Since 1957, when cash disability benefits first became payable under the social security program, only a small proportion of the disabled-worker beneficiaries have left the rolls because they recovered their ability to work. Almost all beneficiaries have remained on the rolls until death or the automatic conversion of their benefits to retired-worker benefits at age 65. Essentially, the program has functioned as a total and permanent disability program for middle-aged workers with progressive diseases related to aging.

In the past decade, the number of new claimants has risen rapidly—from about 300,000 to more than 600,000 a year. During the same period, however, the number of persons leaving the rolls for recovery has remained at about 40,000 annually. The increase in the number of entrants and the absence of a corre-

sponding increase in the number of recoveries has raised concern that economic disincentives may be operating to inhibit recently disabled workers from making efforts to return to work after they begin drawing benefits.¹

This article presents information on demographic, economic, and disability characteristics related to recovery and continuing dependency. For a sample of the 413,000 disabled-worker beneficiaries in 1972, later benefit and earnings data through 1975 were obtained. The characteristics of those who had recovered by 1975 are compared with those who remained on the rolls to see if the amount of benefits played a major part in benefit dependency. The data source is the Continuous

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¹ See Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, **Public Hearings, Disability Insurance Program** (94 Cong., 2d sess.), 1976, page 23ff; Mordechai E. Lando and Aaron Krute, "Disability Insurance: Program Issues and Research," **Social Security Bulletin**, October 1976; and Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, **Disability Insurance Amendments of 1979**, H. R. 2054 (96th Cong., 1st sess.), March 1979.

Disability History Sample (CDHS) file,² which is based on program records.

“Recovery” refers here to the administrative decision of the Social Security Administration that the beneficiary has regained the capacity to engage in competitive employment and is therefore not entitled to further benefits. This decision may be based on evidence of medical improvement or the capacity to work demonstrated through a return to employment for substantial earnings for an extended period.

Administrative Procedures To Identify Recovered Persons

The major administrative devices used to identify persons whose conditions improve are:

- (1) Voluntary reports of subsequent recovery or return to work that are requested of disabled persons when they are awarded benefits.
- (2) A medical diary procedure, in which the cases of beneficiaries with those medical conditions most subject to improvement are scheduled for a later review and, if judged necessary, a special consultative medical examination.³
- (3) Notices of postentitlement earnings from employer reports of wages for tax purposes.
- (4) Reports from State vocational rehabilitation agencies on rehabilitated beneficiaries.⁴

Several other administrative devices are designed to encourage beneficiaries to return to competitive employment. A transitional benefit is paid for 3 months after the month in which recovery is determined to have occurred. In addition, a trial-work period of 9 not necessarily consecutive months, during which benefits continue to be paid, is provided for those whose medical condition does not substantially improve but who try to go back to work with a continuing severe medical impairment. Those who have the potential for rehabilitation are referred to a State vocational rehabilitation agency. For certain beneficiaries, the cost of such services to the rehabilitation agency may be reimbursed out of social security trust funds if it appears that the services may enable the person to regain competitive

² For a description of the data file and a discussion of the data limitations and sampling variance, see the technical note at the end of this article.

³ Ralph Treitel, *Identifying Disabled Workers Who May Return to Work* (Research and Statistics Note No. 5), Office of Research and Statistics, Social Security Administration, 1973.

⁴ Most benefit terminations result from voluntary reports of improvement, medical reexaminations, or earnings reports; only a few hundred recoveries result from rehabilitation reports. In 1978 the Social Security Administration began receiving annual rather than quarterly employer income reports, which will substantially reduce their usefulness in disability investigations.

work capacity.⁵ Persons deemed able to benefit from services provided by rehabilitation agencies may have their benefits stopped if they refuse to take part in a rehabilitation program. For disabled beneficiaries who recover but become disabled again, no waiting period after the new onset of disability is necessary before benefits may again be paid.

Not all administrative decisions that disabled persons have regained the ability to work necessarily result in the termination of benefits. When beneficiaries are notified of an administration decision to stop benefits because of recovery, a substantial proportion contests the decision and wins continuance of the benefit payment. In the past, more than one-fifth of all decisions have been contested, and more than one-third of these review requests have resulted in a continuance of benefits.⁶

Recovery Experience, 1956–77

In the early years of the disability insurance program, the eligibility requirements made it unlikely that many beneficiaries would ever be able to regain the ability to do sustained, competitive work. Disability benefits were payable only to workers aged 50 and over. The disabling condition must have kept the claimant from working for more than 6 months and be expected to continue indefinitely or result in death. Less than 1 percent of those awarded benefits later recovered and left the rolls in the first few years of the program (table 1).

Legislative amendments later extended benefits to workers who might be more likely to recover. In 1960 the removal of the restriction of benefits to persons aged 50 and over allowed younger workers to receive cash benefits. In 1965 the definition of disability was liberalized to include persons whose conditions might improve after 12 months rather than be expected to be permanent. In 1967, legislation reduced the number of quarters of coverage needed for disability insured status by workers under age 31. In 1972 the initial waiting period was reduced from 6 months to 5 months.

The overall program may be expected to continue to provide benefits mainly to older, permanently disabled workers because of the requirement that the disabled worker have a severe medical impairment that prevents any work for a year or longer. The legislative changes, however, have increased the proportion of entitled persons whose disability is less likely to be permanent. As a result, the proportion of disabled-worker beneficiaries

⁵ See Ralph Treitel, “Effect of Financing Disabled Beneficiary Rehabilitation,” *Social Security Bulletin*, November 1975, and Ralph Treitel, *Identifying Disabled Workers Who May Return to Work*, op. cit.

⁶ See Subcommittee on Social Security, op. cit., pages 30–31, and Ralph Treitel, *Appeal by Denied Disability Claimants* (Staff Paper No. 23), Office of Research and Statistics, Social Security Administration, 1976, page 34.

Table 1.—Number and percentage change for disabled-worker beneficiaries, by reason for change in benefit-payment status and recovery rate, 1960–77

Year	Number of beneficiaries (in thousands) ¹					Recovery rate per 1,000 beneficiaries on rolls ³	Percentage change				
	In force beginning of year	Awards	Benefit terminated ² for—				Total change in number of beneficiaries	Awards	Benefit terminated for—		
			Recovery	Death	Retirement				Recovery	Death	Retirement
1960	334	208	3	43	42	7.6	+35.6	+62.3	-.9	-13.2	-12.6
1961	455	280	3	61	51	5.6	+36.2	+61.5	-.7	-13.4	-11.2
1962	618	251	10	67	51	14.7	+19.9	+40.6	-1.6	-10.8	-8.3
1963	741	224	13	73	51	16.6	+11.6	+30.2	-1.8	-9.9	-6.9
1964	827	208	15	76	45	17.4	+8.7	+25.2	-1.9	-9.2	-5.4
1965	894	253	18	80	57	19.1	+11.0	+28.3	-2.0	-8.9	-6.4
1966	988	278	23	84	60	22.1	+11.2	+28.1	-2.3	-8.5	-6.1
1967	1,097	301	37	92	77	32.3	+8.6	+27.4	-3.4	-8.4	-7.0
1968	1,193	323	38	100	80	30.5	+8.8	+27.1	-3.2	-8.4	-6.7
1969	1,295	345	38	100	80	28.3	+8.1	+26.6	-2.9	-8.4	-7.2
1970	1,394	350	41	106	103	28.4	+7.2	+25.1	-2.9	-7.6	-7.4
1971	1,493	416	43	110	107	27.4	+10.4	+27.9	-2.9	-7.4	-7.2
1972	1,648	455	39	109	106	22.4	+12.2	+27.6	-2.4	-6.6	-6.4
1973	1,833	492	37	126	135	19.2	+10.5	+26.8	-2.0	-6.9	-7.4
1974	2,017	536	⁴ 38	135	143	17.9	+10.9	+26.6	-1.9	-6.7	-7.1
1975	2,237	592	⁴ 39	139	158	16.5	+11.5	+26.5	-1.7	-6.2	-7.1
1976	2,489	552	⁴ 40	137	173	15.5	+8.1	+22.2	-1.6	-5.5	-7.0
1977	2,670	569	⁴ 60	139	183	21.8	+7.0	+21.3	-2.2	-5.2	-6.9

¹ Program began in 1957. Data for 1959: 179,000 awards and 3,000 recoveries.

² Excludes small number of terminations for other reasons: less than 8,000 per year.

³ Ratio of those recovered to average of those on rolls at beginning and end of year.

⁴ Estimated by Office of Actuary.

dying or attaining retired-worker beneficiary status has dropped each year, and the recovery rate per 1,000 beneficiaries rose from less than 10 in 1960–61 to more than 30 by 1967. Nevertheless, in later years, the recovery rate has declined markedly. It fell from about 30 per 1,000 beneficiaries on the rolls in the period 1967–71 to about 15 per 1,000 in 1976.

Although the proportion of beneficiaries recovering has remained small and even dropped sharply, the number of persons coming on the disability rolls has continued to rise. New awards have represented one-fourth or more of the number of persons on the rolls in the preceding year.

After adjustment for both accretions and terminations because of recovery, death, and conversion to retired-worker benefits at age 65, this growth has resulted in an overall rise of about 10 percent in the rolls each year. The lack of an increase in recoveries corresponding to the growth in awards is puzzling since the rise in awards often has been attributed to entitlement of large numbers of persons who are less severely disabled than those formerly awarded benefits.

Cited as reasons for the entitlement of the less severely disabled are these factors: Liberalizations through legislation; constriction in labor-market work opportunities and the filing of more disability claims because of unemployment problems, particularly among older workers; outreach effects of the supplemental security income program for the needy disabled, blind, and aged, which began operating in 1974; greater administrative leniency in making initial awards; more lenient

review standards; and more claims filed because of the attractiveness of rising benefit levels.⁷

If many more persons with disabling conditions less severe and less than permanent are coming on the rolls as a result of these factors, one would expect that many more would recover and leave the rolls than ever before. According to program data on benefit terminations for recovery, this growth has not occurred, except for the large increase recorded in 1977.⁸

Extent of Recovery for 1972 Allowances

Few of the 413,000 disabled workers in the study population who were awarded benefits in 1972 left the rolls because of recovery: Five years after coming on the rolls, only about 7 percent had done so, as shown in table 2. Approximately 42 percent were continuing to receive disabled-worker benefits. The main reason for benefit termination was death or attainment of age

⁷ Francisco Bayo, Stephen Goss, and Samuel Weissman, **Experience of Disabled-Worker Benefits Under OASDI, 1972–76** (Actuarial Study No. 75), Office of the Actuary, Social Security Administration, June 1978; Charles M. Croner and Lawrence D. Haber, **Declining Mortality Among Disabled Worker Beneficiaries** (Research and Statistics Note No. 13), Office of Research and Statistics, Social Security Administration, 1974; and Mordechai E. Lando and Aaron Krute, *op. cit.*

⁸ Caseload totals for recoveries in 1974–77 are estimated. For years after 1973, accurate recovery totals are difficult to obtain because of changed termination codes caused by recent program developments. See Francisco Bayo et al., *op. cit.*, table 5.

Table 2.—Number and percentage distribution of workers with disability allowances in 1972, by months after entitlement to benefit and reason for change in benefit status, 1972-77

Reason for change in benefit status ¹	Months after entitlement to benefit ²				
	12	24	36	48	60 or more ³
Total number	412, 661	412, 661	412, 661	412, 661	412, 661
Total percent.....	100.0	100.0	100.0	100.0	100.0
Recovery ⁴	1.6	4.7	6.0	6.5	7.2
Still recovered.....	1.6	4.4	5.3	5.5	5.5
Later relapse ⁵	(⁶)	.2	.6	1.0	1.3
Later died.....	(⁶)	(⁶)	(⁶)	(⁶)	.1
Later retired.....	(⁶)	(⁶)	(⁶)	(⁶)	.2
Retirement ⁷.....	.8	3.1	9.9	14.5	24.7
Still retired.....	.7	2.8	9.4	13.2	20.8
Later died.....	(⁶)	.2	.5	1.3	3.9
Death ⁸	7.6	12.7	16.6	20.1	26.9
While on disability rolls.....	7.6	12.5	16.1	18.8	22.9
After recovery ⁷	(⁶)	(⁶)	(⁶)	(⁶)	.1
After retirement ⁸	(⁶)	.2	.5	.5	3.9
Continued on disability rolls.....	86.8	76.3	64.4	65.4	41.6
Other, unknown.....					.9

¹ Based on data in master beneficiary record.

² Months after entitlement to benefits (5 months after established month of onset of disability). For persons with multiple benefit periods, entitlement date was the date closest to the 1972 award decision.

³ As of March 1978.

⁴ Administrative decision to terminate benefit because of medical

improvement or return to work.

⁵ Some relapses not identified here if followed by later recovery, death, or retirement.

⁶ Less than 0.05 percent.

⁷ Attainment of age 65.

⁸ Based on survivor claims.

65. About 27 percent had died, and 25 percent had begun to receive retired-worker benefits by March 1978. The severity of the definition of disability—which requires evidence of a medical condition expected to prevent all work—may explain why so many persons died within a few years of receiving their disability award. Moreover, as the following section on demographic data shows, the large majority of disabled workers awarded benefits were of advanced middle age—another factor helping to explain the large proportion of beneficiaries that dies or is transferred to the retirement rolls within a few years of award.

Some of those persons on the rolls at the end of 1977 had recovered after entitlement to benefits but returned to the rolls with a recurrence of their disabling condition. Although those with relapses after recovery represented a small proportion of the entire study population—about 1 percent 5 years after award—they constituted a substantial proportion of all those who recovered. At the end of 3 years, about 10 percent of those who recovered had returned to the disability rolls. At the end of 5 years, about 18 percent had returned to the rolls.

The data on relapses include only those who returned to the rolls after periods of recovery. A small number of individuals, not identified by these data, might have recovered from their disabilities but returned to the rolls and, at some later point, recovered again, died, or shifted to retired-worker beneficiary status at age 65.

The proportion of persons first awarded benefits in 1972 who recovered (6-7 percent) is substantially higher than the corresponding proportion (2 percent) for all disabled-worker beneficiaries on the rolls at the beginning of the year, as shown in table 1. This difference is explained by the fact that a substantial proportion of the total beneficiary population consists of older workers who have been disabled for many years. A greater proportion of recoveries may be expected for those who have recently been awarded benefits than for the longer-term disabled. About 5 percent of those awarded benefits in 1972 had recovered by the end of 2 years; at the end of 5 years the proportion was only two percentage points higher (table 2).

Characteristics Related to Recovery

To examine what demographic, disability, and benefit characteristics distinguished those who left the rolls from those who stayed on them, comparative recovery statistics on these characteristics were obtained. These data are presented in tables 3, 4, and 6.⁹

⁹ For more information on the work performed by recovered disabled-worker beneficiaries and how many returned to former employees, see Barbara Levenson and Jerome Green, "Return to Work After Severe Disability," *Journal of Chronic Diseases*, February 1965, pages 167-180. For information on demographic characteristics of the recovered beneficiaries with relapses, see Jack Schmulowitz, "Recovery and Benefit Termination: Program Experiences of Disabled-Worker Beneficiaries," *Social Security Bulletin*, June 1973.

In addition to the recovery data for the entire study population, a recovery statistic called "survivors recovery" has been calculated for the 259,000 working-age

adults who neither died nor reached age 65 by the end of a particular period. By the end of 1975, 8.4 percent of the survivors had recovered from their disabilities,

Chart 1.—Relation of variables to recovery by 1975 for working-age survivors with disability allowances in 1972

Variable	Recovery experience and characteristics of survivors ¹		Independent statistical effect on recovery found in logit analysis ²
Associated with difference in recovery rate			
	Higher Recovery Rate	Lower Recovery Rate	
Age.....	Younger. 23 percent under age 40 recovered.	Older. 4 percent or less of those aged 50 or over recovered.	Significant difference (<i>t</i> = 17.37).
Sex.....	Male. 10 percent of the men recovered.	Female. 6 percent of the women recovered.	Significant difference (<i>t</i> = 4.20).
Number of dependent children.....	With more dependents. 14 percent with 3 or more children recovered. (The recovered were younger workers, with no difference by marital status.)	With fewer dependents. 6 percent with no dependents recovered. (Many of the recovered were the oldest workers.)	Significant difference (<i>t</i> = 3.62).
Primary diagnosis.....	With injuries, infective diseases, and mental illness. Recovery rates: Fractures, 33 percent; disc displacement, 16 percent; tuberculosis, 34 percent; schizophrenia, 8 percent; statutory blindness, 10 percent.	With chronic diseases related to aging. Recovery rates: Heart disease or osteoarthritis, 3 percent; emphysema, less than 1 percent; neoplasms, 1 percent.	Significant difference (<i>t</i> = 11.57).
Education.....	With more schooling. 9 percent with more than high school recovered.	With less schooling. 4 percent with less than 9 years of school recovered.	Significant difference (<i>t</i> = 4.86).
Mobility.....	In treatment facility at time of application. 9 percent in a hospital or institution recovered.	With no limitation on ambulation. 5 percent recovered.	Significant difference (<i>t</i> = 3.35).
SSA region.....	In Western State. Recovery rates: San Francisco or Seattle region, 8 percent.	In Southern or Eastern State. Recovery rates: Atlanta, New York, and Philadelphia regions, 5 percent; Puerto Rico, 2 percent; Florida, Arkansas, Virginia, and West Virginia, 4 percent.	Significant difference (<i>t</i> = 3.88).
Predisability earnings..	Higher earnings. 10 percent of those with annual earnings of \$6,000 or more recovered.	Lower earnings. 6 percent of those with little earnings before onset of disability recovered.	Significant difference (<i>t</i> = 7.36).
Level of benefit.....	Higher amount. 10 percent with benefits of \$300 or more recovered, but in logit analysis, with other variables controlled, higher benefits produced lower recovery rate.	Lower amount. 5 percent with benefits less than \$250 recovered.	Significant difference (<i>t</i> = 3.48).
Earnings replacement..	Higher replacement. 10 percent of those with replacement of 100 percent or more recovered, but in logit analysis, with other variables controlled, higher replacement produced lower recovery rate.	Lower replacement. 7 percent of those with 25-74 percent replacement recovered.	Significant difference (<i>t</i> = 4.94).
Not associated with differences in recovery rates			
Marital status.....	Among married or single workers, 8 percent recovered.		No significant difference (<i>t</i> = 0.10).
Race.....	Among black or white workers, 8 percent recovered.		No significant difference (<i>t</i> = 0.14).
Occupation.....	In small group with white-collar positions (professional, technical, and managerial) 12 percent recovered; 6-9 percent of the blue-collar workers recovered. In logit analysis, little differences in recovery rates found among most occupational categories and no statistically significant differences by occupation.		No significant difference (<i>t</i> = 1.09).

¹ Based on recovery rates in cross tabulations in tables 3, 4, 6, and 7.

² According to *t* ratios (in parentheses). See discussion and table V in technical note for derivation of these measures.

compared with 6.0 percent of all the disabled workers whose benefits were awarded in 1972.

The cross tabulations in those tables reveal the overall relationship between the various demographic, disability, and benefit characteristics and recovery. A special "logit" analysis was also performed on a subsample of records of the surviving workers to determine the independent effects of these characteristics. Essentially, this analysis reveals the existence of a statistical relationship between each independent variable and the dependent variable (recovery) when all other variables are held constant. The results for each variable are summarized in chart 1 and presented in detail in the technical note.

Demographic Characteristics

The demographic characteristics of the disabled workers at the time they were awarded benefits help to explain why so few recovered from their disabilities. They are often older middle-aged workers with limited vocational qualifications.

Thus, a substantial proportion were older middle-aged workers at the time they were awarded benefits: 70 percent were aged 50 and over. Many had limited education and little skilled-work experience. Approximately 40 percent had no more than an elementary education. About 85 percent had done clerical, agricultural, sales, or blue-collar work before the onset of disability.

On the other hand, to qualify for benefits, they had to have been in the labor force for many years. More than 70 percent of the disabled workers were men—not surprising in view of their greater labor-force involvement. (To be eligible for benefits, a disabled worker generally needs earnings from employment covered under the social security program in 5 of the preceding 10 years.)

The demographic characteristics that most clearly distinguished those who left the rolls from those who stayed on the rolls were younger age, male sex, higher education, dependent children, higher predisability earnings, and residence in the West (table 3). According to the logit analysis, each of these variables was independently associated with greater recovery.

Among the demographic factors that affect recovery, age appeared to be one of the most important. Among those who were under age 40 when they were awarded benefits, about 20 percent recovered from their disabilities, compared with 1–3 percent of those aged 50 and over. Older workers may be expected to have the more progressive chronic conditions related to aging; the younger disabled have more conditions that improve. Since age itself is considered a debilitating factor in the disability determination process, many older workers awarded disability benefits might have provided

evidence of less severe medical conditions than younger claimants. The data show, however, that few of the older middle-aged workers left the rolls for recovery. Essentially, the program appears to function as an early retirement program for older middle-aged persons with severe medical impairments.

About 20 percent of the workers aged 50 and over left the disability rolls because of death in the first 3 years of the study period, compared with about 9 percent of the workers under age 40. When these deaths and retirement-age conversions are excluded from the examination of recovery experience, however, the same striking difference between younger and older survivors is apparent. About 23 percent of the survivors under age 40 recovered from their disabilities, compared with 5 percent of those aged 50 and over. Thus, it appears that even when the most serious cases are excluded, older age is related to almost permanent disability status.

When the recovery experience of the surviving men and women of working age in 1975 is examined, a somewhat greater recovery rate is found for men (10 percent) than for women (6 percent). Men may find more reemployment opportunities available. They may also find more social incentives to return to work than is the case for women.

Persons with a high school or college education were more likely to leave the rolls and return to work (7–9 percent) than those with only an elementary school education (4 percent). Similarly, those with professional, technical, or administrative positions before the onset of disability had a higher recovery rate (10 percent) than did those with blue-collar jobs (5–6 percent). Presumably, the better-educated could engage in less physically demanding work after becoming disabled than those with more limited work qualifications. When all other variables were held constant, however, the logit analysis revealed no independent relationship between occupation and recovery. An independent relationship between higher predisability earnings and recovery appeared to exist, but few workers with higher earnings recovered. Whether one had higher or lower predisability earnings in the 5 years before benefits were awarded, the likelihood of recovery was about the same: Whether earnings were less than \$7,000 a year or \$7,000 and over, about 6 percent recovered.

It is surprising that there were not greater differences in the recovery rate by socioeconomic and demographic characteristics. Workers with characteristics such as male sex, white race, and the highest predisability earnings who undergo rehabilitation efforts generally have easier access to employment opportunities.¹⁰ It is possible that those with the highest predisability

¹⁰ See Ralph Treitel, *Social Security Bulletin*, *op. cit.*

Table 3.—Number of workers with disability allowances in 1972, percentage distribution by reason for change in benefit status at end of 1975, and percent of survivors recovered in 1975, by demographic and employment characteristics

Characteristic	Total		Percentage distribution, by reason for change in benefit status ¹					Percent of survivors recovered ²	
	Number	Percent	Total	Continued on disability rolls	Benefit terminated for—				
					Recovery ²	Retirement	Death		Other ³
Total	412,662	100.0	100.0	64.9	6.0	9.1	17.4	2.5	8.4
Sex:									
Men	297,770	72.1	100.0	62.6	6.6	9.4	18.4	2.8	9.6
Women	114,892	27.8	100.0	70.8	4.2	8.4	14.7	1.7	5.6
Age in 1972:									
Under 40	54,290	13.1	100.0	67.8	20.2	0	9.0	2.9	22.7
40-49	69,651	16.8	100.0	71.0	9.8	0	16.2	2.8	12.1
50-59	179,143	43.4	100.0	74.4	3.2	1	19.6	2.5	4.1
60-61	56,719	13.7	100.0	74.9	1.4	.7	20.6	2.2	1.8
62-64	52,859	12.8	100.0	0	.8	80.6	16.4	1.9	(⁴)
Race:									
White	352,233	85.3	100.0	64.4	6.0	9.5	17.4	2.6	8.5
Black	56,112	13.5	100.0	68.0	5.5	6.8	17.5	1.8	7.5
Other	4,317	1.0	100.0	66.4	7.7	8.6	14.5	2.6	10.4
Number of dependent children:									
None	248,286	60.1	100.0	61.7	4.1	13.0	18.6	2.4	6.2
1	48,997	11.8	100.0	65.5	6.7	4.0	19.6	3.0	9.1
2	30,057	7.2	100.0	66.1	9.7	2.0	18.0	4.0	12.7
3	17,123	4.1	100.0	68.1	11.0	1.8	16.2	2.7	13.9
4	9,880	2.3	100.0	70.4	11.3	1.4	13.6	3.1	13.8
5 or more	9,681	2.3	100.0	69.0	11.0	.9	14.6	4.1	13.8
Unknown	48,638	11.7	100.0	75.6	8.6	4.7	10.0	.8	10.2
Marital status:									
Married	277,914	67.3	100.0	63.2	5.4	9.8	18.5	2.9	7.8
Single	92,905	22.5	100.0	64.9	6.3	9.0	17.6	2.0	8.8
Unknown	41,843	10.1	100.0	75.9	9.1	4.4	9.7	.7	10.7
Education (in years):									
None	5,111	1.2	100.0	71.8	2.3	10.5	14.3	.9	3.2
1-8	162,537	39.3	100.0	66.4	3.5	11.4	16.3	2.1	5.1
9-12	194,414	47.1	100.0	64.3	7.4	7.3	18.1	2.7	10.3
13 or more	36,823	8.9	100.0	58.8	9.4	8.9	19.7	3.0	13.8
Other	13,777	3.3	100.0	68.5	6.1	7.6	15.2	2.3	8.2
Region of residence: ⁵									
Boston	21,804	5.2	100.0	61.8	6.7	9.9	18.6	2.7	9.8
New York	56,059	13.5	100.0	66.6	5.3	8.7	17.0	2.2	7.4
Philadelphia	45,202	10.9	100.0	63.6	5.0	9.8	19.2	2.2	7.3
Atlanta	75,095	18.1	100.0	68.0	4.6	7.3	17.1	2.8	6.3
Chicago	80,343	19.4	100.0	62.9	6.1	9.8	18.4	2.6	8.8
Dallas	39,895	9.6	100.0	67.1	6.0	8.0	16.2	2.5	8.2
Kansas	19,703	4.7	100.0	63.6	5.9	10.1	17.8	2.3	8.5
Denver	8,487	2.0	100.0	63.1	7.4	10.0	16.6	2.7	10.5
San Francisco	51,540	12.4	100.0	63.6	8.3	10.2	15.7	2.1	11.5
Seattle	13,760	3.3	100.0	62.6	7.9	10.7	15.9	2.7	11.2
Other	774	.1	100.0	76.3	2.4	.9	19.6	.6	3.1
Occupation: ⁶									
Professional	40,852	9.8	100.0	63.0	9.6	7.7	16.9	2.9	13.2
Managerial	19,491	4.7	100.0	57.8	4.8	13.2	21.5	2.4	7.7
Clerical	31,483	7.6	100.0	66.5	5.1	8.5	17.6	2.0	7.1
Sales	19,774	4.7	100.0	63.9	4.8	9.9	18.9	2.4	7.0
Service	59,570	14.4	100.0	68.0	3.8	9.8	16.5	1.7	5.4
Farm	18,615	4.5	100.0	64.2	4.5	12.5	16.4	2.1	6.6
Processing	12,948	3.1	100.0	66.4	4.5	9.9	16.9	2.1	6.3
Machine trades	37,486	9.0	100.0	64.4	6.0	9.4	17.3	2.6	8.6
Bench work	24,365	5.9	100.0	70.5	5.1	7.9	14.2	2.1	6.8
Structural	52,306	12.6	100.0	63.0	6.7	10.1	17.3	2.7	9.6
Other	66,337	16.0	100.0	66.0	5.9	8.2	17.3	2.4	8.2
Unknown	29,435	7.1	100.0	61.4	8.7	5.4	19.6	4.6	12.5
Predisability earnings, 1967-71: ⁷									
None	11,871	2.8	100.0	81.6	1.1	6.7	10.3	.1	1.3
Less than \$1,000	42,273	10.2	100.0	74.6	4.6	5.8	13.9	1.0	5.8
1,000-1,999	51,686	12.5	100.0	70.7	5.8	7.3	14.7	1.3	7.5
2,000-2,999	52,092	12.6	100.0	68.7	6.4	7.9	15.1	1.7	8.6
3,000-3,999	50,714	12.2	100.0	65.1	6.3	.8	17.2	2.3	8.9
4,000-4,999	45,202	10.9	100.0	63.1	6.6	9.0	18.4	2.7	9.4
5,000-5,999	41,827	10.1	100.0	61.3	6.1	10.1	19.1	3.1	9.0
6,000-6,999	44,026	10.6	100.0	59.6	6.8	11.0	10.2	3.3	10.3
7,000 or more	72,971	17.6	100.0	55.9	6.1	12.1	12.1	4.2	9.9

¹ Benefit status based on reason for termination or continuance on disability rolls. Not distinguished in the study files are the many who (1) may have died after leaving the rolls for recovery or retirement or (2) have been counted as continuing on the disability rolls but may have had a period of recovery with subsequent return to the rolls.

² Benefit terminated for medical improvement or return to work.

³ Not known—residence no longer known, for example, or no record of benefit after allowance.

⁴ Beneficiaries in this group had retired, died, or recovered by end of 1975.

⁵ Based on beneficiary's address at time of award, by Social Security

Administration region.

⁶ Based on classifications in the Dictionary of Occupational Titles (U.S. Department of Labor, Manpower Administration), 3d ed., 1965. "Professional" includes technical workers, teachers, and administrative managers; "manager" refers here mainly to line managers; "farm" includes some fishery and forestry and related occupations; and "other" includes transportation, mining, utilities, and recreation.

⁷ Average annual taxable earnings in 1967-71. Excludes earnings above taxable maximum or in employment not covered by the Social Security Act.

status positions came on the rolls with more severe impairments than those who had been employed in more physically arduous work.

The logit analyses show a greater recovery rate for workers with a larger number of dependent children. The cross-tabular data indicate considerably higher recovery rates for the small group of persons with several children (10–11 percent) than for those with no children (4 percent). This difference appears, however, to be related largely to the fact that the small number with children under age 18 were younger workers, rather than to some incentive effect of family composition on recovery. As revealed in the tabulation that follows, where recovery experience of workers under

Dependent children and marital status	Number	Percent recovered
Total	80,685	17.3
Number of dependent children:		
None	27,373	17.3
1	10,705	16.6
2	12,170	16.4
3	8,540	16.1
4	5,185	17.2
5 or more	5,140	16.3
Unknown	11,672	20.6
Marital status:		
Married	45,708	16.7
Single	24,775	16.8
Unknown	10,202	21.5

age 45 is examined separately, the markedly greater recovery rate for those with many dependents is no longer in evidence. The recovery experience was also similar for married and single workers under age 45, as the figures above and chart 1 show.

Disability Characteristics

The large majority of disabled workers appear to have been awarded benefits because of chronic conditions related to aging (table 4). About 30 percent had circulatory diseases such as heart conditions. Many others had musculoskeletal disorders such as rheumatoid arthritis. Few persons with progressive conditions related to aging recovered from their disabilities. The proportion was only about 1–3 percent among those with arthritis, ischemic heart disease, emphysema, or diabetes. Many of those who were awarded benefits on account of chronic progressive diseases related to aging had died within the 3-year period, including the majority of those with lung cancer.

Among the working-age survivors in 1975, the disabling conditions related to a higher recovery were those more subject to medical improvement. These conditions included infective and parasitic diseases, mainly tuberculosis (42 percent recovered); traumatic injuries, such as fractures (38 percent); and back disorders re-

lated to disc displacement (18 percent). Workers with claims allowed for a mental disorder such as schizophrenia had a higher rate of recovery (9 percent) than those awarded benefits because they had many other chronic diseases of aging. Mental illness, however, was not subject to a substantially higher rate of recovery than were all other conditions.

The effects of older age in producing chronic conditions for which medical improvement is not likely are highlighted in table 5. The table contrasts recovery experience for surviving disabled-worker beneficiaries who were under age 45 when benefits were awarded with the recovery experience of workers aged 45 and over. Excluded from the data are records of disabled-worker beneficiaries who died or attained age 65 by the end of 1975.

About 36 percent of the workers aged 45 and over had circulatory conditions such as heart disease, 20 percent had musculoskeletal conditions (including 10 percent with rheumatoid arthritis or osteoarthritis), and 8 percent had respiratory conditions such as emphysema. In contrast, about 26 percent of the disabled persons under age 45 had mental disorders such as schizophrenia and 18 percent had injuries such as fractures. These conditions are subject to medical improvement. Only 13 percent of the younger disabled persons had circulatory disorders; only 2 percent had arthritis or osteoarthritis as primary disabling conditions.

Within nearly all diagnostic categories, a substantially greater proportion of younger than of older workers recovered from their disabilities by the end of 1975. This tendency extended even to younger workers with progressive chronic conditions such as osteoarthritis (18 percent) and heart disease (7 percent). Among those workers who were both under age 45 and had conditions most subject to medical improvement, more than half recovered and left the rolls when tuberculosis or fractures were the primary disabling conditions. More than a third of the workers recovered when back impairment related to disc problems was the primary disabling condition.

Persons who were in institutions or hospitals at the time they applied for benefits had a slightly higher rate of recovery than did ambulatory individuals. Almost all the beneficiaries were ambulatory at the time of application since they tended to have chronic systemic diseases rather than injuries to particular organs of movement. The few individuals in institutions, who experienced a somewhat higher rate of recovery, presumably included some who had conditions such as tuberculosis for which improvement was expected but were awarded benefits because they were expected to be unable to work for a year or more before returning to the labor force.

When benefits are awarded, a review is made of the

prognosis for recovery and the tendency for certain conditions to be followed by medical improvement. As a program device for identifying possible recovery, a medical review is scheduled for those workers who may have medical recovery within the next year or so. A far higher proportion of those scheduled for the followup procedure actually did recover (19 percent). This finding suggests that the screening for the procedure was a useful predictive device. The data file only identifies those scheduled for review, however; it does not indicate how many persons were actually screened through an administrative review and had their benefits terminated as a result of this procedure.

Levels of Benefit Payments

The point has been made that, for some beneficiaries with recovery potential, benefit payments may be serving as a disincentive to make efforts to return to work. In conjunction with the large number of disabled workers coming on the rolls, the low recovery rate has raised questions¹¹ about the structural aspects of the pro-

¹¹ See Subcommittee on Social Security, Committee on Ways and Means, U.S. House of Representatives, **H. R. 8076: Disability Insurance Amendments of 1977** (Committee Print, 95th Congress, 1st Session), July 12, 1977, page 7; Mordechai E. Lando and Aaron Krute, *op. cit.*; and Francisco Bayo et al., *op. cit.*

Table 4.—Number of workers with disability allowances in 1972, percentage distribution by reason for change in benefit status at end of 1975, and percent of survivors recovered in 1975, by disability characteristics

Characteristic	ICDA code ¹	Total		Percent distribution, by reason for change in benefit status ²						Percent of survivors recovered ³
		Number	Percent	Total	Continued on disability rolls	Benefit terminated for—				
						Recovery ³	Retirement	Death	Other ⁴	
Total		412,661	100.0	100.0	64.9	6.0	9.1	17.4	2.5	8.4
Diagnostic group:										
Infective and parasitic	001-136	7,709	1.8	100.0	58.5	21.0	6.0	11.5	2.8	26.4
Neoplasms	140-239	43,705	10.5	100.0	25.6	1.4	3.9	57.3	11.6	5.2
Endocrine and metabolic	240-279	14,931	3.6	100.0	69.4	2.1	9.9	17.9	.6	2.9
Mental disorders	290-315	41,959	10.1	100.0	82.6	6.2	3.6	6.7	.6	7.0
Nervous System	330-389	16,920	4.1	100.0	78.5	3.6	6.7	9.6	1.4	4.4
Eye and ear	370-398	5,113	1.2	100.0	76.5	3.3	14.3	4.9	.8	4.1
Circulatory system	390-468	130,057	31.5	100.0	65.6	2.6	12.2	17.5	1.9	3.8
Respiratory system	470-529	28,753	6.9	100.0	66.5	.8	14.0	17.8	.8	1.1
Digestive system	530-587	12,124	2.9	100.0	59.4	6.5	7.2	24.9	1.8	9.9
Genitourinary	590-637	4,015	.9	100.0	58.6	6.0	7.7	24.9	2.7	9.2
Musculoskeletal system	720-749	69,839	16.9	100.0	74.7	8.2	10.2	5.8	.8	9.9
Traumatic injuries	800-999	30,913	7.4	100.0	61.5	25.2	6.3	5.2	1.6	29.0
Other		6,533	1.5	100.0	71.3	8.3	5.5	12.9	1.7	10.5
Unknown		81	(⁵)	100.0	46.9	25.9	14.8	3.7	8.6	35.5
Primary diagnosis:										
Pulmonary tuberculosis	011	3,937	.9	100.0	46.2	33.6	4.4	12.6	3.0	42.1
Lung cancer	162	9,414	2.2	100.0	17.1	.6	2.2	62.0	18.0	3.5
Diabetes	250	10,152	2.4	100.0	66.9	1.5	10.3	20.5	.6	2.2
Schizophrenia	295	16,510	4.0	100.0	3.6	8.4	1.1	1.1	.4	8.9
Neuroses	300	7,934	1.9	100.0	83.4	6.1	5.2	4.4	.7	6.8
Retardation	315	2,588	.6	100.0	90.8	3.2	.9	3.9	.9	3.4
Multiple sclerosis	340	2,755	.6	100.0	90.8	1.4	1.3	4.9	1.4	1.5
Ischemic heart disease	412	94,121	20.3	100.0	65.4	2.6	11.9	17.8	2.0	3.9
Acute cerebrovascular	436	8,433	2.0	100.0	65.2	1.1	15.9	16.4	1.2	1.7
Arteriosclerosis	440	4,140	1.0	100.0	62.2	1.3	15.6	18.9	1.7	2.1
Emphysema	492	14,710	3.5	100.0	65.4	.4	15.0	18.3	.7	.6
Arthritis	712	10,014	2.4	100.0	80.2	2.2	8.4	8.4	.7	2.6
Osteoarthritis	713	21,686	5.2	100.0	73.2	2.6	17.5	5.9	.5	3.5
Disc displacement	725	17,260	4.1	100.0	74.4	15.8	5.1	3.4	1.1	17.5
Fractures	823-829	18,086	4.3	100.0	54.4	33.1	6.6	3.9	1.8	37.8
Statutory blindness ⁶		249	(⁵)	100.0	72.6	9.6	6.0	11.6	0.	11.7
Other		176,788	42.8	100.0	61.9	4.9	8.1	21.8	3.0	7.3
Unknown		3,869	.9	100.0	73.8	10.9	4.7	8.7	1.6	12.9
Mobility status at application:										
Institutionalized		17,170	4.1	100.0	62.8	10.7	3.4	19.1	3.8	14.5
Hospitalized		16,207	3.9	100.0	48.2	7.3	4.6	31.6	8.1	13.2
Bed		8,326	2.0	100.0	4.2	5.2	6.7	35.5	10.1	11.0
Chairbound		3,647	.8	100.0	62.9	5.2	8.4	19.8	3.4	7.7
Housebound		7,507	1.8	100.0	51.2	5.6	8.7	28.9	5.4	9.9
Needs help		62,617	15.1	100.0	64.2	8.4	8.6	16.0	2.6	11.6
No limitations		286,784	69.4	100.0	66.8	5.1	10.0	16.1	1.7	7.1
Other, unknown		10,404	2.5	100.0	74.3	5.4	5.1	12.9	2.1	6.8
Medical reexaminations:⁷										
Not diaried		337,958	81.8	100.0	63.6	3.0	11.0	19.5	2.6	4.6
Diaried		74,704	18.1	100.0	70.5	19.1	.7	7.8	1.8	21.3

¹ Where code is shown, based on **International Classification of Diseases, Adapted**, 8th revision, 1967.

² Benefit status in 1975 based on reason for termination or continuance on disability rolls.

³ Benefit terminated for medical improvement or return to work.

⁴ Not known—residence no longer known, for example, or no record of benefit payment after allowance.

⁵ Less than 1 percent.

⁶ Based on social security definition of statutory blindness.

⁷ Administrative decision to follow up on medical status based on prognosis and disabling condition at time of allowance. For description of diary procedure, see Research and Statistics Note No. 3 (Social Security Administration, Office of Research and Statistics), 1973.

Table 5.—Number and percentage distribution of workers with disability allowances in 1972 and percent recovered in 1975, by diagnostic group, primary diagnosis, and age group

Diagnostic group and primary diagnosis ¹	Age group			
	Percentage distribution		Percent recovered	
	Under 45	45 and over	Under 45	45 and over
Total number ²	69,713	222,968	20.1	4.8
Total percent	100.0	100.0	.....	.....
Infective and parasitic	3.1	7.1	43.0	16.9
Pulmonary tuberculosis	1.7	.8	62.8	29.0
Neoplasms	3.1	4.3	9.4	4.3
Endocrine and metabolic	2.3	4.0	6.2	2.3
Mental disorders	25.7	8.6	10.0	4.1
Schizophrenia	14.7	2.4	11.0	4.9
Nervous system	7.9	3.7	7.0	2.7
Eye and ear	1.0	1.4	10.8	2.6
Circulatory system	12.5	35.8	7.9	3.3
Heart	6.5	23.6	7.2	3.6
Respiratory system	1.8	8.1	4.0	.9
Emphysema .....	.5	4.1	1.3	.6
Digestive system	2.3	2.8	18.6	7.6
Genitourinary	1.3	.7	12.6	7.3
Musculoskeletal system	17.4	20.5	29.4	4.7
Arthritis	1.9	3.0	6.4	1.9
Osteoarthritis .....	.9	7.0	18.0	2.8
Disc displacement	7.5	4.6	35.8	8.2
Injuries	18.3	6.2	41.5	17.6
Fractures	10.9	3.6	53.4	23.4
Other	2.5	1.5	20.7	5.1

¹ Based on ICDA (see table 4, footnote 1).

² Workers who recovered or remained on disability rolls at end of 1975. Excludes those dropped from disability rolls for death or attainment of age 65 or had their benefits terminated for other reasons.

gram such as the benefit formula, provision of auxiliary benefits, and the maximum benefit payable.

The median benefit paid to disabled workers at the end of 1975 was a little more than \$200 a month. About three-fourths were receiving \$100–\$300 a month. A substantial number of records—about 10 percent—contained no benefit amount. The incomplete records included those of some persons who may have died before actually becoming entitled to benefits.

The benefits reported in tables 6 and 7 include payments for both the disabled worker and dependents, mainly children under age 18. Workers with the highest predisability covered earnings are paid the highest benefit amounts, but the weighted benefit formula and the provision of minimum benefits permit a higher earnings-replacement rate for those with the lowest earnings.

If a simple disincentive effect in high benefit levels leads to greater benefit dependency, it might be expected that those with the highest benefits would have the lowest recovery experience. The data in this study, however, show higher recovery rates for those with the highest benefits. About 10 percent of all disabled workers with family benefits of \$300 or more recovered,

compared with only about 5 percent of those with benefits less than \$250 a month.

To examine more closely why persons with benefits at the higher levels have higher recovery rates than other beneficiaries, data were obtained on the characteristics of working-age survivors with higher benefits (\$300 a month or more) and on the characteristics of those with lower benefits. Table 7 shows that, of the disabled workers with monthly benefits of \$300 or more, nearly all were men (94 percent). Most of them had dependent children, and many were much younger than the workers with lower benefit amounts: 56 percent of the workers with higher benefits were under age 50, compared with about 30 percent of those with lower benefits. About 50 percent of the workers with higher benefits had annual predisability earnings of \$6,000 or more, compared with about 20 percent of those with benefits of less than \$300 a month.

Thus, it appears clear that many of those with the highest benefit levels had a higher recovery potential in terms of younger age higher occupational status before the onset of disability. Little difference was apparent in the recovery experience of those with higher and lower benefit levels and the same age or number of dependent children.

Among persons with higher predisability earnings, the presence of higher benefit levels was related to greater recovery experience. Nearly 14 percent of those with annual predisability earnings of \$7,000 or more recovered from their disabilities when benefits were \$300 or more a month, compared with about 7 percent when benefits were less than \$300.

The descriptive data on benefit levels do not reveal an effect of benefit disincentives leading to dependency, at least in terms of the simple contrast between higher and lower benefit levels. Such an effect, however, may be masked by the fact that benefit provisions result in higher benefits for the younger workers. For many of the workers with the highest predisability earnings, the highest benefits may be far below the earnings they had before the onset of disability. Thus, the disincentives of the benefit levels may be apparent only for those with the highest earnings-replacement rates.

Some of the concern about the high replacement of earnings has put in question the need for providing auxiliary benefits for dependents in families of younger disabled workers.¹² The sum of the workers' and dependents' benefits may sometimes result in replacement levels approaching or exceeding the level of past wages. Such high benefit levels could act as an incentive to continuing dependency. A substantial proportion of

¹² An actuarial consultant to the Subcommittee on Social Security has stated that excessive benefits may encourage malingering and discourage recovery. See H.R. 8076, op cit., page 8.

Table 6.—Number of workers with disability allowances in 1972, percentage distribution by reason for change in benefit status at end of 1975, and percent of survivors recovered in 1975, by benefit and earnings characteristics

Characteristic	Total		Percentage distribution, by reason for change in benefit status ¹						Percent of survivors recovered ²
	Number	Percent	Total	Continued on disability rolls	Benefit terminated for—				
					Recovery ²	Retirement	Death	Other ³	
Total	412,661	100.0	100.0	64.9	6.0	9.1	17.4	2.9	8.4
Monthly benefit: ⁴									
Less than \$100	22,891	5.5	100.0	73.7	5.7	7.6	12.1	.6	7.2
100-149	58,285	14.1	100.0	71.3	4.0	9.9	14.4	.3	5.3
150-199	73,498	17.8	100.0	67.9	5.0	10.9	15.6	.3	6.9
200-249	85,057	20.6	100.0	65.6	4.7	12.8	16.2	.4	6.7
250-299	57,312	13.8	100.0	66.7	5.9	11.3	15.4	.5	8.2
300-349	16,420	3.9	100.0	67.4	9.7	7.5	14.5	.7	12.6
350-399	19,738	4.7	100.0	66.8	8.4	7.7	16.2	.7	11.1
400-449	10,274	2.4	100.0	70.6	10.6	3.1	13.7	1.8	13.0
450 or more	27,821	6.7	100.0	70.6	11.1	2.5	13.9	1.7	13.5
Unknown	41,366	10.0	100.0	34.6	5.8	2.2	37.8	19.4	14.5
Earnings replacement (percent): ⁵									
Less than 25	3,526	.8	100.0	68.4	16.8	1.9	9.5	3.2	19.7
25-49	93,132	22.5	100.0	60.9	4.8	16.0	17.5	.6	7.4
50-74	98,473	23.8	100.0	66.5	5.2	11.3	16.2	.5	7.3
75-99	66,509	16.1	100.0	70.7	7.3	6.5	14.6	.7	9.4
100-124	29,506	7.1	100.0	71.0	8.3	6.5	13.3	.7	10.5
125-149	17,041	4.1	100.0	74.5	8.4	4.8	11.6	.6	10.1
150-174	11,471	2.7	100.0	76.2	7.2	4.5	11.4	.4	8.6
175-199	7,986	1.9	100.0	74.4	7.7	5.3	11.8	.5	9.4
200 or more	35,461	8.5	100.0	76.8	4.4	5.2	12.9	.4	5.5
Unknown or no benefits or earnings	49,557	12.0	100.0	41.5	5.1	3.3	33.7	16.2	10.9
Recent earnings, 1974:									
None	362,604	87.8	100.0	67.3	1.3	9.6	19.3	2.2	1.9
Less than \$1,000	17,143	4.1	100.0	74.4	10.2	8.2	5.8	1.2	12.0
1,000-1,999	6,054	1.4	100.0	63.5	20.3	10.2	3.6	2.2	24.2
2,000-2,999	4,001	.9	100.0	48.1	37.0	7.7	2.4	4.6	43.5
3,000-3,999	2,667	.6	100.0	38.0	51.8	2.5	2.3	5.1	57.6
4,000-4,999	2,687	.6	100.0	32.1	59.8	1.6	1.5	4.8	65.0
5,000-5,999	2,392	.5	100.0	22.8	69.0	1.9	.7	5.3	75.1
6,000-6,999	2,271	.5	100.0	23.0	64.1	3.0	.7	8.9	73.5
7,000-7,999	2,015	.4	100.0	18.6	70.0	1.0	1.4	8.7	78.9
8,000-8,999	1,650	.3	100.0	12.6	79.0	.6	.8	6.7	86.2
9,000-9,999	1,481	.3	100.0	15.4	71.5	.1	1.0	11.8	82.2
10,000-10,999	1,485	.3	100.0	16.2	74.2	1.3	0.	8.1	82.0
11,000 or more	6,212	1.5	100.0	18.4	71.8	1.4	1.0	7.1	79.5

¹ Benefit status in 1975 based on reason for termination or continuance on disability rolls.

² Benefit terminated for medical improvement or return to work.

³ Not known—residence no longer known, for example, or no record of benefit payment after allowance.

⁴ Benefits paid at end of 1972 to worker and dependents, if any. Benefit for 1972 not available for 74,331 workers (including 25 percent

of the recovered and 12 percent of those continuing on disability rolls) amounts at end of 1971, 1973, or 1974 were substituted.

⁵ Ratio of annual amount of benefits to predisability average earnings in 1967-71 (data for "monthly benefits" times 12 to "predisability earnings"). Actual earnings and benefit amounts used without discounting to render values equivalent to real dollars at any one point in time.

disabled-worker beneficiaries have incomes below the poverty level, however.¹³

The replacement rate in this study relates total family benefits to average predisability earnings. The benefits described are those initially awarded to disabled workers and their entitled dependents in 1972 or 1973. Average earnings shown represent taxable earnings in covered employment in the period 1967-71. No adjustment has been made for changes in the real value of dollar amounts in the years under consideration or for earnings above the taxable maximums. The replacement rate given here may therefore exaggerate the actual replacement of earnings by benefits. The median replacement rate for those with known benefit amounts,

according to the study records, was about 75 percent of previous covered earnings.

Subgroups of disabled-worker beneficiaries varied little in the proportion of persons who recovered from their disabilities according to earnings-replacement level (table 7). About 7-10 percent of the surviving adults recovered whether the earnings-replacement rate was less than 75 percent or higher.

Among the small group of surviving adults with an earnings-replacement rate of less than 25 percent, a far higher proportion of recoveries occurred (20 percent). Among the group with the highest earnings-replacement rate, a somewhat smaller proportion of persons recovered (6 percent). For some persons in these groups, it appears possible that benefits may have had a disincentive effect on recovery. An independent effect of earnings replacement on recovery was also found in the logit analysis, as shown in chart 1 and table V. Thus,

¹³ Michael Hooker and Aaron Krute, "Disabled-Worker Beneficiaries Under OASDI: Comparison With Severely Disabled PA Recipients," *Social Security Bulletin*, August 1977.

when the effect of other variables was statistically controlled, those persons with higher replacement rates had a lower recovery rate, as the negative coefficient indicates.

To examine more closely whether those with higher replacement rates had special characteristics that inhibit recovery, data were obtained that compare the characteristics of those with higher and lower replacement rates (table 6). As might be expected, persons with the highest replacement rates tended to be those who had lower predisability earnings: About 3 in 4 had average annual earnings of less than \$4,000 in the preceding 5 years, compared with about 2 in 4 for all workers awarded benefits. Such persons also included many with the highest benefits: About 15 percent re-

ceived \$450 or more a month. They were more likely to be younger and to have dependents and thus to receive auxiliary benefits than were those with lower replacement rates.

Among the younger workers, a relationship of benefits to recovery according to earnings-replacement level was apparent. Twenty percent of the survivors under age 40 with higher replacement rates recovered from their disabilities; the proportion was about 32 percent when the replacement rate was less than 75 percent (table 7). A similar effect appears for those with dependent children and for those with injuries such as fractures and disc displacements. Thus, although the overall recovery proportions seem alike for those with high and low earnings-replacement rates, receipt of

Table 7.—Number and percentage distribution of workers with disability allowances in 1972 and percent of survivors recovered in 1975, by demographic, disability, and benefit characteristics and family benefit amount and percent of earnings replacement

Characteristic	Percentage distribution					Percent of survivors recovered ⁴				
	Total working-age adults ¹	Benefit amount ²		Earnings replacement (percent) ³		Total working-age adults	Benefit amount		Earnings replacement (percent)	
		\$300 or more	Less than \$300	75 or more	Less than 75		\$300 or more	Less than \$300	75 or more	Less than 75
Total number.....	292,696	58,622	234,074	134,476	158,220					
Total percent.....	100.0	100.0	100.0	100.0	100.0	8.4	12.6	7.3	8.8	8.1
Sex:										
Men.....	70.5	93.5	64.7	70.7	70.3	9.6	12.5	8.5	10.0	9.3
Women.....	29.4	6.4	35.2	29.2	29.6	5.6	14.3	5.2	5.9	5.4
Age in 1972: ⁵										
Under 40.....	16.3	27.0	13.6	27.1	7.1	22.7	24.5	21.9	19.8	32.4
40-49.....	19.2	29.2	16.7	22.1	16.7	12.1	13.6	11.5	9.4	15.3
50-59.....	47.5	35.5	50.5	39.4	54.4	4.1	4.9	3.9	3.0	4.8
60-61.....	14.8	7.5	16.6	10.4	18.4	1.8	2.2	1.8	1.0	2.2
Race:										
White.....	84.7	87.9	83.9	81.6	87.4	8.5	12.8	7.4	9.0	8.1
Black.....	14.1	11.0	14.8	17.0	11.6	7.5	11.4	6.8	7.5	7.5
Other.....	1.0	1.0	1.1	1.3	.9	10.4	10.8	10.3	9.5	11.6
Number of dependent children:										
None.....	55.8	9.6	67.4	40.2	69.1	6.2	11.2	6.0	7.3	5.7
1.....	12.2	27.6	8.4	15.5	9.4	9.1	10.2	8.3	8.2	10.4
2.....	7.7	22.0	4.2	12.2	4.0	12.7	13.1	12.3	11.1	17.0
3.....	4.6	12.9	2.5	7.3	2.3	13.9	13.7	14.3	11.2	21.2
4.....	2.7	7.6	1.5	4.3	1.3	13.8	14.7	12.8	10.0	24.2
5 or more.....	2.6	6.4	1.7	4.1	1.3	13.8	15.5	12.2	11.9	18.8
Unknown.....	14.0	13.7	14.0	16.0	12.2	10.2	14.5	9.6	9.3	12.4
Marital status:										
Married.....	65.2	79.4	61.6	60.6	69.1	7.8	12.0	6.5	7.9	7.8
Single.....	22.6	7.8	26.3	25.0	20.5	8.8	15.2	8.3	10.5	7.1
Unknown.....	12.1	12.6	12.0	14.3	10.3	10.7	15.0	9.6	9.3	12.4
Education (in years):										
None.....	1.3	.5	1.4	1.5	1.1	3.2	3.0	3.2	1.4	5.2
1-8.....	38.9	33.0	40.3	39.0	38.7	5.1	7.5	4.5	4.6	5.5
9-12.....	47.7	53.2	46.3	47.4	47.9	10.3	14.7	9.1	11.1	9.7
13 or more.....	8.5	11.1	7.9	8.2	8.8	13.8	18.0	12.3	16.9	11.3
Other, special.....	3.5	2.1	3.8	3.7	3.3	8.2	16.4	7.0	8.2	8.1
Occupation: ⁶										
Professional, technical.....	10.1	10.3	10.0	11.2	9.1	13.2	18.6	11.8	15.6	10.7
Managerial.....	4.1	5.3	3.8	3.4	4.8	7.7	11.2	6.5	8.8	7.1
Clerical.....	7.7	4.8	8.4	6.7	8.5	7.1	10.1	6.6	8.1	6.3
Sales.....	4.6	4.5	4.6	4.3	4.8	7.0	11.9	5.8	6.1	7.7
Service.....	14.6	7.6	16.3	17.1	12.5	5.4	11.0	4.7	5.6	5.1
Farm.....	4.3	1.8	5.0	5.9	3.0	6.6	13.4	6.0	5.0	9.3
Processing.....	3.1	4.0	2.9	2.7	3.4	6.3	9.6	5.2	7.3	5.6
Machine trades.....	9.0	11.6	8.3	7.4	10.3	8.6	12.1	7.3	9.0	8.3
Bench work.....	6.3	4.4	6.7	6.2	6.3	6.8	8.5	6.5	6.7	6.8
Structural.....	12.4	18.7	10.9	11.2	13.5	9.6	14.1	7.6	9.3	9.7
Other.....	16.3	19.3	15.5	15.9	16.6	8.2	10.8	7.4	7.2	9.0
Unknown.....	7.0	7.1	7.0	7.5	6.6	12.5	15.6	11.7	15.3	9.7

See footnotes at end of table.

Table 7.—Number and percentage distribution of workers with disability allowances in 1972 and percent of survivors recovered in 1975, by demographic, disability, and benefit characteristics and family benefit amount and percent of earnings replacement—Continued

Characteristic	Percentage distribution					Percent of survivors recovered ⁴				
	Total working-age adults ¹	Benefit amount ²		Earnings replacement (percent) ³		Total working-age adults	Benefit amount		Earnings replacement (percent)	
		\$300 or more	Less than \$300	75 or more	Less than 75		\$300 or more	Less than \$300	75 or more	Less than 75
Region of residence: ⁷	5.1	4.8	5.1	4.8	5.3	9.8	12.0	9.2	10.5	9.2
Boston	13.7	12.4	14.1	13.2	14.2	7.4	13.7	6.0	8.0	7.0
New York	10.6	11.2	10.4	9.9	11.1	7.3	11.2	6.3	8.3	6.7
Philadelphia	18.5	15.4	19.4	20.0	17.4	6.3	9.8	5.6	7.0	5.6
Atlanta	18.9	22.0	18.1	17.7	19.9	8.8	12.7	7.6	9.4	8.3
Chicago	9.9	10.4	9.8	10.8	9.1	8.2	12.2	7.1	7.8	8.6
Dallas	4.6	4.3	4.7	4.8	4.5	8.5	14.1	7.2	9.4	7.7
Kansas	2.0	2.2	2.0	2.3	1.8	10.5	13.7	9.6	10.3	10.7
Denver	12.6	13.2	12.5	12.4	12.8	11.5	14.2	10.8	11.0	11.9
San Francisco	3.3	3.4	3.2	3.3	3.2	11.2	19.7	9.0	11.4	11.1
Seattle	.2	.2	.2	.2	.1	3.1	7.8	2.0	2.7	3.5
Other										
Predisability earnings, 1967-71:	11.4	1.4	13.9	23.2	1.4	5.8	5.8	5.8	5.2	13.3
Less than \$1,000	13.5	3.0	16.1	25.6	3.2	7.5	9.2	7.5	7.0	11.2
1,000-1,999	13.3	6.0	15.2	17.4	9.9	8.6	11.1	8.3	9.1	7.8
2,000-2,999	12.4	9.4	13.1	9.9	14.4	8.9	13.6	8.0	12.0	7.0
3,000-3,999	10.7	13.5	10.0	6.6	14.2	9.4	13.8	8.0	13.5	7.8
4,000-4,999	9.6	16.2	8.0	5.6	13.0	9.0	11.6	7.7	11.7	8.0
5,000-5,999	10.0	18.9	7.7	5.2	14.0	10.3	12.2	9.1	11.1	10.0
6,000-6,999	15.4	30.8	11.6	6.1	23.4	9.9	13.8	7.2	13.7	9.0
7,000 or more	3.3	.5	4.0		6.2	1.3	4.0	1.2		1.3
Unknown										
Diagnostic group: ⁸	2.1	2.0	2.1	2.0	2.7	26.4	32.0	25.1	25.9	30.9
Infective and parasitic	4.0	2.9	4.3	2.9	17.2	5.2	10.5	4.3	7.3	1.3
Neoplasms	3.6	3.2	3.7	3.6	3.1	2.9	5.5	2.3	2.9	3.0
Endocrine and metabolic	12.7	10.4	13.3	12.4	15.6	7.0	8.7	6.6	6.9	8.0
Mental disorders	4.7	5.6	4.5	4.7	4.4	4.4	3.4	4.7	4.4	4.8
Nervous system	1.4	1.2	1.4	1.3	1.3	4.1	7.6	3.3	3.9	6.0
Eye and ear	30.3	31.1	30.1	31.0	21.7	3.8	6.1	3.2	3.7	4.9
Circulatory system	6.6	6.1	6.7	6.7	4.7	1.1	1.3	1.1	1.0	3.3
Respiratory system	2.7	2.6	2.7	2.6	4.0	9.9	14.6	8.8	10.4	6.1
Digestive system	.8	1.0	.8	.8	1.0	9.2	10.6	8.8	9.1	10.7
Genitourinary	19.8	19.1	19.9	20.3	13.2	9.9	16.8	8.2	9.3	19.6
Musculoskeletal system	9.1	12.5	8.3	9.2	8.4	29.0	34.6	26.9	27.6	46.7
Injuries	1.7	1.8	1.7	1.7	2.0	10.5	16.1	9.0	11.0	4.5
Other										
Primary diagnosis: ⁸										
Pulmonary tuberculosis	1.0	1.0	1.0	1.0	1.3	42.1	47.6	40.8	40.2	59.2
Lung cancer	.5	.2	.6	.2	4.2	3.5	11.8	2.6	7.0	1.0
Diabetes	2.3	2.2	2.3	2.4	1.9	2.2	4.2	1.7	2.2	1.7
Schizophrenia	5.3	4.3	5.6	5.0	8.7	8.9	10.0	8.7	9.2	6.8
Neuroses	2.4	2.3	2.4	2.4	1.9	6.8	7.7	6.6	6.6	9.6
Retardation	.8	.2	.9	.8	1.0	3.4	6.5	3.2	3.5	2.1
Multiple sclerosis	.8	1.4	.7	.8	.9	1.5	1.0	1.8	1.5	1.3
Ischemic heart disease	19.5	21.0	19.2	20.1	12.6	3.9	5.9	3.3	3.9	4.1
Acute cerebrovascular	1.9	1.7	1.9	1.9	1.5	1.7	2.8	1.5	1.8	1.1
Arteriosclerosis	.9	.8	.9	.9	.5	2.1	2.7	2.0	2.0	5.1
Emphysema	3.3	3.1	3.3	3.3	2.3	.6	.2	.8	.5	2.5
Rheumatoid arthritis	2.8	2.5	2.8	2.8	2.3	3.6	6.6	1.7	2.5	4.7
Osteoarthritis	5.6	3.7	6.0	5.8	3.2	3.5	5.0	3.2	3.3	7.1
Disc displacement	5.3	6.7	4.9	5.4	3.4	17.5	23.8	15.4	16.2	41.3
Fractures	5.4	7.3	4.9	5.4	5.1	37.8	43.9	35.5	36.4	55.0
Statutory blindness	0	0	0	0	0	11.7	0	12.9	11.2	20.0
Other	40.4	39.6	40.6	39.8	46.8	7.3	11.7	6.3	7.2	8.3

See footnotes at end of table.

benefits does appear to have an effect on some of the subgroups.

Variable Interaction

For most disabled workers whose claims were allowed because they are unable to work, recovery is not possible and program incentives to foster recovery are likely to have little effect. The cross-tabular data suggest that, because of their older age, the chronic nature

of diseases related to aging, and high mortality, few may have the physiological capacity to improve medically or return to work. Benefit amounts appear to have played only a small part in distinguishing those who left the rolls from those who did not.

To see more clearly what factors were related to recovery among subgroups of workers with greater and lesser rates of recovery and to determine the magnitude of any observable disincentive effect related to the benefit level, a variable interaction technique was employed:

Table 7.—Number and percentage distribution of workers with disability allowances in 1972 and percent of survivors recovered in 1975, by demographic, disability, and benefit characteristics and family benefit amount and percent of earnings replacement—Continued

Characteristic	Percentage distribution					Percent of survivors recovered ⁴				
	Total working-age adults ¹	Benefit amount ²		Earnings replacement (percent) ³		Total working-age adults	Benefit amount		Earnings replacement (percent)	
		\$300 or more	Less than \$300	75 or more	Less than 75		\$300 or more	Less than \$300	75 or more	Less than 75
Mobility status at application:										
Institutionalized.....	4.3	4.2	4.3	5.9	2.9	14.5	15.7	14.2	14.8	14.1
Hospitalized.....	3.0	4.5	2.7	3.2	2.9	13.2	17.2	11.5	16.0	10.5
Bed.....	1.3	1.4	1.3	1.3	1.3	11.0	15.7	9.7	13.8	8.8
Chairbound.....	.8	1.0	.8	.9	.7	7.7	12.4	6.2	10.1	5.2
Housebound.....	1.4	1.4	1.4	1.2	1.6	9.9	15.8	8.4	10.8	9.2
Needs help.....	15.5	15.7	15.5	14.6	16.3	11.6	18.9	9.8	12.5	11.0
No limitations.....	70.5	69.9	70.0	71.1	70.0	7.1	10.6	6.2	7.0	7.2
Other and unknown.....	2.8	1.6	3.1	1.5	3.9	6.8	14.4	5.8	10.2	5.7
Medical reexamination: ⁹										
Not diaried.....	77.1	68.0	79.3	72.6	80.8	4.6	6.6	4.2	4.4	4.7
Diaried.....	22.8	31.9	20.6	27.3	19.1	21.3	25.6	19.6	20.4	22.5
Monthly benefit: ²										
Less than \$100.....	6.2		7.7	8.1	4.5	7.2		7.2	4.4	11.4
100-149.....	15.0		18.7	19.3	11.3	5.3		5.3	5.0	5.6
150-199.....	18.3		22.9	18.8	17.9	6.9		6.9	7.6	6.3
200-249.....	20.4		25.5	14.8	25.2	6.7		6.7	8.7	5.7
250-299.....	14.2		17.7	7.2	20.1	8.2		8.2	11.1	7.3
300-349.....	4.3	21.6		6.4	2.5	12.6	12.6		10.4	17.1
350-399.....	5.0	25.3		5.7	4.5	11.1	11.1		12.0	10.2
400-449.....	2.8	14.2		5.1	.9	13.0	13.0		12.3	16.4
450 or more.....	7.7	38.7		14.3	2.1	13.5	13.5		13.3	14.9
Unknown.....	5.7		7.1		10.5	14.5		14.5		14.5
Earnings replacement (percent): ³										
Less than 25.....	1.0	0	1.2		1.9	19.7		19.7		19.7
25-49.....	20.9	1.1	25.9		38.7	7.4	25.5	7.2		7.4
50-74.....	24.1	25.7	23.7		44.7	7.3	13.2	5.7		7.3
75-99.....	17.7	42.3	11.5	38.6		9.4	11.7	7.3	9.4	
100-124.....	8.0	12.8	6.7	17.4		10.5	14.6	8.6	10.5	
125-149.....	4.8	6.2	4.4	10.5		10.1	15.0	8.4	10.1	
150-174.....	3.2	3.6	3.1	7.1		8.6	11.4	7.8	8.6	
175-199.....	2.2	2.2	2.2	4.8		9.4	13.0	8.5	9.4	
200 or more.....	9.8	5.2	10.9	21.4		5.5	9.2	5.0	5.5	
Unknown.....	7.9	.5	9.7		14.6	10.9	4.0	11.0		10.9
Recent earnings, 1974:										
None.....	85.1	80.1	86.3	84.0	85.9	1.9	2.2	1.8	2.3	1.6
Less than \$1,000.....	4.9	4.9	4.9	6.3	3.7	12.0	12.4	11.9	12.9	10.8
1,000-1,999.....	1.7	2.0	1.6	2.3	1.2	24.2	18.7	25.9	23.8	24.9
2,000-2,999.....	1.1	1.3	1.1	1.2	1.0	43.5	46.0	42.7	48.4	38.4
3,000-3,999.....	.8	.9	.7	.9	.7	57.6	56.0	58.1	62.7	51.9
4,000-4,999.....	.8	.9	.8	.8	.8	65.0	59.7	66.6	73.9	57.8
5,000-5,999.....	.7	1.1	.6	.7	.7	75.1	70.7	76.9	80.6	70.7
6,000-6,999.....	.6	.8	.6	.5	.7	73.5	68.5	75.2	81.6	68.2
7,000-7,999.....	.6	.8	.5	.5	.6	78.9	80.6	78.2	92.1	69.9
8,000-8,999.....	.5	.7	.4	.4	.6	86.2	86.9	85.8	92.3	82.7
9,000-9,999.....	.4	.8	.3	.3	.5	82.2	87.8	78.9	91.0	77.6
10,000-10,999.....	.4	.9	.3	.3	.5	82.0	89.0	76.8	90.0	78.1
11,000 or more.....	1.9	4.2	1.3	1.2	2.4	79.5	89.3	71.6	89.6	75.0

¹ Number who recovered or remained on disability rolls at end of 1975. Excludes those dropped from rolls for death or attainment of age 65 or who had their benefits terminated for other reasons.

² Benefits paid at end of 1972 to worker and dependents, if any. See footnote 4, table 6.

³ Ratio of annual amount of benefits to predisability average earnings in 1967-71 (data for "monthly benefits" times 12 to "predisability earnings").

⁴ Benefit terminated for medical improvement or return to work.

⁵ Those aged 62-64 not shown because they all had retired, died, or recovered by end of 1975.

⁶ See footnote 6, table 3, for nature of classification according to Dictionary of Occupational Titles.

⁷ Social Security Administration administrative region.

⁸ See footnote 1, table 4, for derivation of diagnostic classification.

⁹ Administrative decision to review medical status.

the automatic interaction detector program.¹⁴ This exploratory technique is essentially a repeated analysis of variance, in which the importance of variables in accounting for the greatest variance, "between sum of squares" (BSS) and "total sum of squares" (TSS), is distinguished. (For additional information, see the discussion in the technical note.) This procedure makes

possible the construction of a profile of characteristics that most affected the recovery decision in the past, including interactions of variables among subgroups that may be masked by simple cross-classifications of the entire sample.

It should be made clear that this statistical technique is employed here in analyzing historical and descriptive data. The gross demographic, disability, and benefit characteristics are used to describe the population in terms of actual previous recovery experience. A com-

¹⁴ John A. Sonquist, Elizabeth Baker, and James N. Morgan, *Searching for Structure, AID III*, Institute for Social Research, University of Michigan, 1971.

Table 8.—Percent of recovery variance explained by demographic, disability, and benefit characteristics of workers with disability allowances in 1972

Characteristic	Survivors		Percent of recovery variance explained by characteristic ¹												
	Number	Percent recovered	Age ²	Sex	Race	Marital status	Number of dependents	Educational	Occupational	Previous earnings	Region of residence	Diagnostic group ²	Mobility status	Benefit amount	Earnings replacement ³
Total workers ⁴	259,435	7.3	4.6	0.4	0	0	0.5	0.9	0.6	0.4	0.2	5.4	1.0	0.7	0.3
Age split:															
Under 50.....	90,703	14.9	.....	.3	.1	.1	.1	.5	.5	.8	.3	5.6	.5	.3	.6
Diagnosis split: ⁵															
Injuries and infective and parasitic disorders.....	16,467	34.7	.....	0	.1	.1	.1	0	.6	.4	.3	0	.1	.1	.6
Earnings replacement (percent) split:															
Under 75.....	9,709	41.2	.....	0	0	.1	0	.2	.5	.2	.4	0	.1	.1	0
75 or more.....	6,758	25.4	.....	0	0	0	0	0	.1	.2	.1	0	.1	.1	.2
Musculoskeletal and digestive system.....	15,877	23.7	.....	.2	0	0	0	.1	.1	.2	.2	0	.2	.1	.3
Other.....	58,359	7.1	.....	0	0	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1
50 and over.....	168,732	3.2	.....	0	0	0	0	.1	.1	.1	0	.4	.2	.1	0

¹ Proportion of "total sum of squares" (TSS) of recovery outcome explained by "between sum of squares" (BSS) of best dichotomous split of classification of each variable, according to the automatic interaction detector program. See technical note for further explanation.

² First split forced by age, but diagnostic group produced the greatest variation in recovery among the total population.

³ Ratio of annual amount of benefits to predisability average earnings in 1967-71 (data for "monthly benefit amount" times 12 to "predisability earnings").

⁴ Further split by occupation of the 9,709 workers with replacement less than 75 percent would produce additional variation of 0.5 percent.

⁵ Workers with allowances in 1972 who recovered or remained on

rolls at end of 1975. Excludes workers with allowances who died or reached retirement age by 1975; also excludes those with benefit amount unknown.

⁶ Two successive splits among diagnostic combinations were made. The younger-worker group was first split into two groups: (1) injuries and infective and parasitic disorders and musculoskeletal disorders and (2) all other disorders; this split accounted for 5.4 percent of the variance. The younger group was split again by diagnosis into (1) injuries and infective and parasitic disorders and (2) musculoskeletal and digestive disorders; this split accounted for 0.6 percent of the variance.

plex interview or experimental study would be needed to differentiate the motivation and behavior among beneficiaries to discover whether the members of any group stayed on the rolls mainly because of the effect of benefit incentives. In lieu of such a complex detailed survey or experimental study, the statistical analysis used here was employed to find any apparent differences in terms of benefit levels and earnings replacement between those who recovered from their disabilities and those who stayed on the rolls. It is not possible to determine from these data the direct effect of receipt of benefits on incentives to remain on the rolls.

From the original sample of persons whose claims were allowed in 1972, a smaller sample was obtained for processing convenience. This sample consisted of all those who were in recovery status in 1975 and an equivalent number of persons randomly drawn from those who remained on the disability rolls. Not included were those who left the rolls for death or retirement.

A comparison of the explanatory power of the demographic, disability, and benefit variables was made for various subgroups. These variables included the demographic characteristics (sex, race, marital status, number of dependent children, education, occupation, previous earnings level, and Social Security Administration region); the disability characteristics (diagnostic group of the primary disabling condition and mobility at application); and the benefit characteristics (total amount

of disabled-worker and dependents' benefits and the extent to which benefits replaced earnings).

These variables were basically classified as shown in tables 3-6. As the focus of the analysis was on the effect of benefits, persons for whom the benefit amount was unknown were necessarily excluded. The measure of earnings replacement selected was the ratio of the total annual benefit amount initially awarded (in the numerator) to earnings in the highest year before the year of award in the period 1967-71 (in the denominator).

Table 8 reveals that the primary diagnosis explained more of the variance (5.4 percent of 17,681 TSS) than any other single variable for the total study population of 259,435 beneficiaries in recovery or benefit status at the end of 1975. The age variable explained the next highest proportion (4.6 percent). The remaining variables each explained a much smaller proportion (about 1 percent or less).

Since age had such a striking and consistent effect on recovery experience and appeared to underlie many other variable differences such as those for dependent family benefits and for various disabling conditions, age was selected as the classification for determining the first split. The sample was subdivided into disabled persons under age 50 (15 percent of whom recovered) and those aged 50 and over (only 3 percent of whom recovered).

Table 9.—Percent of recovery variance explained by demographic, disability, and benefit characteristics of lesser educated workers with disability allowances in 1972

Characteristic	Survivors		Percent of recovery variance explained by characteristic ¹												
	Number	Percent recovered	Age ²	Sex	Race	Marital status	Number of dependents	Educa-tion	Ocupa-tion	Pre-vious earnings	Re-gion of residence ³	Diag-nostic group ²	Mo-bility status ³	Benefit amount	Earn-ings re-place-ment ⁴
Total workers with less than 12 years education ⁵	172,875	5.6	4.0	0.3	0	0	0	0.5	0.4	0.3	0.1	5.3	0.8	0.5	0.4
Age split:															
Under 50.....	52,548	12.7		.3	.1	.3	.2	.4	.1	.8	.3	5.6	.4	.3	.5
Diagnosis split: ⁶															
Injuries and infective and parasitic disorders.....	8,980	32.6		0	.1	0	0	.1	0	.6	.5	.1	.2	.3	.2
Previous earnings:															
Highest ⁷	831	57.8		0	.1	.1	.1	.1	.1	.1	1.0	0	.1	.4	0
Lowest.....	8,149	30.0		0	0	.1	.1	.1	0	.1	.7	.1	.3	.1	.1
Musculoskeletal and digestive system.....	1,012	19.8		.4	0	.1	.1	.2	0	.3	.2	0	.1	.3	.5
Other.....	33,448	5.1		0	0	.1	.1	.1	0	.1	.1	.1	.1	.1	.1
50 and over.....	120,327	2.6		0	0	0	0	0	.1	.1	0	.6	.2	0	0
Diagnosis split: ⁶															
Injuries and infective and parasitic disorders.....	8,847	10.1		0	0	0	0	0	.1	.1	.1	0	.2	.1	0
Other.....	111,480	2.0		0	0	0	0	0	0	0	0	.1	.1	0	0

¹ Proportion of "total sum of squares" (TSS) of recovery outcome explained by "between sum of squares" (BSS) of best dichotomous split of classification of each variable, according to the automatic interaction detector program. See technical note for further explanation.

² First split forced by age, but diagnostic group produced the greatest variation in recovery among the total population.

³ Further splits by region and mobility status would produce variance of 0.05 percent.

⁴ Ratio of annual amount of benefits to predisability average earnings in 1967-71 (data for "monthly benefit amount" times 12 to "predisability earnings").

⁵ Workers with allowances in 1972 who recovered or remained on

rolls. Excludes those who died or reached retirement age by 1975; also excludes those with a high school education (12 years of school or more) and those with benefit amount unknown.

⁶ Two successive splits among diagnostic combinations were made; the final three groups are displayed. The younger-worker group was first split in two: (1) injuries and infective and parasitic disorders and musculoskeletal and digestive disorders and (2) all other disorders; the split accounted for 5.6 percent of the variance. The younger group was split again by diagnosis into (1) injuries and infective and parasitic disorders and (2) musculoskeletal and digestive disorders; this split accounted for 0.8 percent of the variance.

⁷ Highest year of earnings (\$8,000 or more) in 1967-71.

For both younger and older workers, the primary disabling condition accounted for more of the variance than any of the other variables considered, as table 7 shows. For younger workers, the first split selected was for disabling conditions. The recovery rates were 20 percent or higher for those with injuries, musculoskeletal diseases, infective and parasitic diseases, and digestive disorders, but, for those with all other diagnoses, the recovery rate was only 7 percent (table 5). This grouping of diagnostic disorders seems to distinguish conditions most subject to medical improvement, such as fractures and disc disorders, from the more progressive conditions related to aging, such as arthritis and arteriosclerosis. The split into these diagnostic groups accounted for 5.6 percent of the total variance, compared with about 1 percent or less for the best split of any other variable, including benefit amount and earnings replacement.

The diagnostic group with the high recovery rates was split again according to diagnosis into (1) the highest recovery group—those with infective and parasitic disorders and injuries, 35 percent of whom recovered—and (2) the group whose recovery experience was not so high—those with musculoskeletal and digestive disorders, 24 percent of whom recovered (table 8). This

subsequent diagnostic split accounted for an additional 0.6 percent of the variance. For simplicity of presentation, the three remaining diagnostic groups are shown in table 9. As a result, three diagnostic groupings are left. When the effect of the benefit variables on recovery are compared for these subgroups of younger workers with the greatest capability for medical improvement (based on diagnostic conditions), the effects of the benefit amount as a potential disincentive to recovery may be more apparent.

The earnings-replacement variable accounts for more of the remaining variance in recovery than any other variable (0.6 percent of TSS). This effect is apparent when the characteristics of the 16,467 workers disabled because of infective and parasitic diseases and injuries are split into those with earnings replacement of less than 75 percent and those with greater replacement. About 40 percent of those with the lower rate of replacement recovered, compared with 25 percent of those with the higher rate. Thus, it appears that some workers with the highest benefit-replacement rate and the greatest potential for medical improvement may have exercised some control over their medical history to remain on the rolls.

A similar effect appears to have influenced those

having conditions with the next highest recovery potential—the group of 15,877 younger workers with musculoskeletal and digestive disorders. The difference in the recovery proportions, however, is not so pronounced as it is for the group with infective and parasitic disorders and injuries. As a consequence, although earnings replacement accounted for more of the variance in recovery than did any other variable, it did not explain a great deal of the overall variance (at least 0.5 percent).

None of the remaining diagnostic disorder variables examined differed substantially from the low overall recovery proportion for these variables (7 percent). An examination of the data for the group of workers aged 50 and over, which had a recovery proportion of only 3 percent, produced similar results. None of the demographic and disability variables resulted in marked interactions leading to sizable increases in recovery.

The effect of benefits as a disincentive to recovery may be greater among those with the least resources and fewest opportunities to return to substantial employment.¹⁵ Aside from capacity for medical improvement as indicated by age and diagnostic condition, education explained more of the variance in recovery rates than any of the other demographic and benefit characteristics (table 10). The greater recovery experience of persons with the highest education, shown in table 2, may reflect both the greater capacity of such persons to perform less physically demanding types of work and the greater availability of high-paying jobs upon recovery.

To determine if the effects of benefit levels were more pronounced among the less educated, an interaction analysis was made of the effects of the demographic and disability characteristics on the recovery experience of workers with less than 12 years of schooling (table 9). Among the 172,875 workers with this level of educational attainment, as with the total population of surviving workers, the characteristics of younger age and disabling conditions most subject to medical improvement were related to greater variance in recovery than any of the other demographic and disability characteristics, including benefits and earnings replacement.

For the group of workers with infective and parasitic diseases or injuries, previous earnings and region were the characteristics that accounted for the most variance in recovery rates. Thus, a small subgroup of these workers who had the highest predisability earnings (\$8,000 or more in at least 1 year from 1967 to 1971) had the highest proportion of recoveries (58 percent). The members of this group resemble those workers

Table 10.—Number of disabled workers under age 50 with disability allowances in 1972 and percent recovered in 1975, by percent of earnings replacement, education, and diagnostic group ¹

Characteristic	Earnings replacement (percent) for workers under age 50			
	Less than 75		75 or more	
	Number	Percent recovered	Number	Percent recovered
Total.....	55,353	17.4	35,350	11.0
Education (in years):				
Less than 12.....	31,653	15.0	20,875	9.1
Diagnostic group:				
Injuries and infective and parasitic dis- orders.....	5,631	36.0	3,349	26.8
Musculoskeletal and digestive system....	6,849	22.7	3,271	13.7
Other.....	19,173	6.1	14,275	3.8
12 or more.....	23,700	20.6	14,455	13.7

¹ Based on weighted subsample of those who had recovered by end of 1975 and on comparable subsample of those who continued on disability rolls.

with higher education, who were excluded from this particular analysis, in that they both apparently had higher socioeconomic status before becoming disabled and higher recovery rates afterward.

The classification of earnings replacement, although not substantial in terms of total variance, was related to variation in recovery experience for workers under age 50 with less than 12 years of education, as tables 9 and 10 indicate. It therefore appears that a somewhat higher proportion of younger workers with a lower earnings-replacement rate left the benefit rolls (17 percent) than did those with higher replacement rates (11 percent). The data show, however, that the difference was not more marked for the less educated than for high school graduates. In both cases, about 6 percent more beneficiaries recovered from their disabilities when the level of earnings replacement was low.

In summary, for most disabled-worker beneficiaries, the termination of benefits because of regained ability to work is unlikely since they suffer the debilitating effects of chronic conditions related to age and the severity of their medical problems often leads to death. For some of the younger beneficiaries with medical conditions such as fractures or tuberculosis that offer the greatest potential for improvement, a higher level of earnings replacement appears to result in a disincentive to recover.

Technical Note

The Continuous Disability History Sample (CDHS) was developed to study factors related to the allowance and denial of disability claims and to study continuing

¹⁵ Sydney H. Croog and Sol Levine, **The Heart Patient Recovers: Social and Psychological Factors**, Human Sciences Press, 1977.

disability issues after allowances.¹⁶ The sample also permits analysis of earnings losses related to disability and of employment before and after disability.

The CDHS file is based on the disability determination record, which shows the State agency's decision to allow or deny a claim. Selected statistical information from the determination form such as the age, sex, race, education, medical diagnosis, and predisability occupation of the applicant are coded from the determination, based on information in the application and supporting documents.

The file from the determination sample is matched with the Social Security Administration master beneficiary record for longitudinal information on subsequent benefit status and with the summary earnings record file for information on previous and subsequent earnings and quarters of coverage.

The study population for this recovery analysis consists of a sample of disabled-worker allowance decisions in 1972. The sampling rate for allowances of disabled-worker claims was stratified by State. For the most populous States—California, Illinois, Michigan, New York, Pennsylvania, and Texas—only 10 percent of the allowances were sampled. Larger samples (20–100 percent) of the allowances in the remaining States were taken. The entire sample consists of about one-fifth of all worker allowances in 1972.

Estimation Procedure

Since much of the data in the tables were obtained from a sample of the records, it was necessary to inflate the sample figures to produce estimates of the totals. The first step in the estimation procedure involved inflating the sample results by the reciprocals of the probabilities of selection. The next step was to use a ratio estimate for all sample cases (including the 100-percent strata) to make the estimated totals agree with previously published award totals. The ratio estimates for awards were prepared separately for each State.

Sampling Variability

Estimates based on samples can be expected to differ from figures that would have been obtained if the entire population had been measured. The particular sample selected for this study is one of many similar probability samples of the same size that might have been selected by chance under the same specifications. Each of the possible samples would yield somewhat different sets of results. The deviation of a sample estimate

Table I.—Approximate standard errors of estimated number, by characteristics of workers with disability allowances

Estimated number	Standard error
50.....	5
1,000.....	25
2,500.....	45
5,000.....	60
7,500.....	75
10,000.....	85
25,000.....	135
50,000.....	190
75,000.....	220
100,000.....	250
250,000.....	300

from the average for all possible sample estimates is called the sampling error. The standard error of an estimate is a measure of the variation among the estimates from the possible samples and thus is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples.

The standard error may be used to define confidence intervals or ranges that would have a specified probability of including the average result of all possible samples.

1. Approximately 68 percent of the intervals from one standard error below to one standard error above the derived estimate would include the average value of all possible samples.
2. Approximately 95 percent of the intervals from two standard errors below to two standard errors above the derived estimate would include the average value of all possible samples.
3. Approximately 99 percent of the intervals from two and one-half standard errors below to two and one-half standard errors above the derived estimate would include the average value of all possible samples.

Tables I–IV give the approximate standard errors for the estimated numbers and percentages of workers with disability allowances in 1972 with specified characteristics and for the weighted subsample drawn for multivariate analysis.

Suppose, for example, that the estimated number of workers disabled by ischemic heart disease is 69,100 and the standard error is 550. Then the 68-percent confidence interval for the estimated number of workers disabled by ischemic heart disease is from 68,550 to 69,650; the 95-percent confidence interval is 68,000–70,200; and the 99-percent confidence interval is 67,725–70,475.

The sampling variability for this article was calculated on the basis of a stratified random sample. It does not incorporate the effects of ratio estimates, which would usually reduce the sampling variability.

¹⁶ Office of Research and Statistics, Social Security Administration, *Continuous Disability History Sample Restricted Use Data File: Description and Documentation—January 1978, 1978.*

Table II.—Approximate standard errors of estimated percentage, by characteristics of workers with disability allowances

Size of base	Estimated percentages											
	1 or 99	2 or 98	5 or 95	8 or 92	10 or 90	15 or 85	20 or 80	25 or 75	30 or 70	35 or 65	40 or 60	50
50.....	1.2	1.8	2.7	3.4	3.8	4.5	5.0	5.4	5.7	6.0	6.1	6.3
1,000.....	.3	.4	.6	.8	.8	1.0	1.1	1.2	1.3	1.3	1.4	1.4
2,500.....	.2	.2	.4	.5	.5	.6	.7	.8	.8	.8	.9	.9
5,000.....	.1	.2	.3	.3	.4	.4	.5	.5	.6	.6	.6	.6
7,500.....	.1	.1	.2	.3	.3	.4	.4	.4	.5	.5	.5	.5
10,000.....	.1	.1	.2	.2	.2	.2	.4	.4	.4	.4	.4	.4
25,000.....	.1	.1	.1	.2	.2	.2	.2	.2	.3	.3	.3	.3
50,000.....	(¹)	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2
75,000.....	(¹)	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2
100,000.....	(¹)	(¹)	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
250,000.....	(¹)	(¹)	(¹)	.1	.1	.1	.1	.1	.1	.1	.1	.1

¹ Less than 0.05.

These estimates, however, provide an indication of the general order of magnitude of the sampling variability.

Nonsampling Variability

In addition to sampling errors, the estimates are subject to operational errors of collection, coding, and transcription. Collection errors include those created by problems in linking large separate data files. Such errors would also occur if a complete study were to be conducted under the same conditions. Explicit measures of their effects generally are not available. Many of the operational errors, however, were detected and corrected when the data were edited for reasonableness and consistency.

Since the benefit data are based on administrative payment records, the information on historical benefit status is not always complete. Ten percent of the records showed no benefit amounts and were excluded from the logit analysis of the effect of wage replacement.

The records containing unknown benefit amounts included many cases in which workers did not receive benefits or died after the disability decision was made. Of the weighted total of 41,365 decisions in 1972 for cases without a record of benefit amount, 6 percent of

the beneficiaries involved recovered by 1975, 35 percent were still on the rolls, 2 percent had retired, and 19 percent had never received benefits or had unknown benefit status. Persons for whom no benefit amounts were recorded closely resembled the majority of those with benefit amounts in their demographic characteristics, but those with no recorded benefit included a high proportion of individuals with a primary diagnosis of neoplasms (43 percent). In contrast, those with benefit amounts who had neoplasms constituted a small proportion of all cases (6 percent).

It may be that those for whom no benefit amount was shown were persons with conditions so severe or so volatile as to result in recovery or death before benefit payments could begin or within a year of entitlement, in which case no regular monthly benefit payable at the end of the year would have been recorded.

Classification of later benefit status is based on the disability benefit determination code, which either gives the reason for last termination or indicates continuing benefit status. Thus, the later status presented in tables 3, 4, 6, and 7 is the status at the end of 1975 and does not reflect any intervening status between 1972 and 1975. Persons who recovered but had a relapse and returned to the rolls are not distinguished in these tables, but they are included among those who were still in disabled-worker beneficiary status in 1975. Those who left the rolls for recovery but subsequently died or obtained retired-worker benefits are counted among the recovered. Persons who left the disabled-worker rolls when their benefits were converted to retired-worker benefits and who subsequently died are not distinguished, but they are included among those who had retired.

Not included are records of persons aged 62–64 who filed for disabled-worker benefits and at the same time requested early retirement benefits in case the disability claim was denied. About 24,800 of the workers who filed concurrent disabled-worker and retired-worker claims were awarded disabled-worker benefits. Almost none of these persons left the rolls for recovery.

Table III.—Approximate standard errors of estimated number of weighted subsample drawn for multivariate analysis

Estimated number	Standard error
50.....	16.25
1,000.....	81.25
2,500.....	146.25
5,000.....	195.00
7,500.....	243.75
10,000.....	276.25
25,000.....	438.75
50,000.....	617.50
75,000.....	715.00
100,000.....	812.50
250,000.....	975.00

Table IV.—Approximate standard errors of estimated percentage of weighted subsample drawn for multivariate analysis

Size of base	Estimated percentages											
	1 or 99	2 or 98	5 or 95	8 or 92	10 or 90	15 or 85	20 or 80	25 or 75	30 or 70	35 or 65	40 or 60	50
50.....	3.9	5.8	8.8	11.0	12.4	14.6	16.2	17.6	18.5	19.5	19.8	20.5
1,000.....	1.0	1.3	2.0	2.6	2.6	3.2	3.6	3.9	4.2	4.2	4.6	4.6
2,500.....	.6	.6	1.3	1.6	1.6	2.0	2.3	2.6	2.6	2.6	2.9	2.9
5,000.....	.3	.6	1.0	1.0	1.3	1.3	1.6	1.6	2.0	2.0	2.0	2.0
7,500.....	.3	.3	.6	1.0	1.0	1.3	1.3	1.3	1.6	1.6	1.6	1.6
10,000.....	.3	.3	.6	.6	.6	.6	1.3	1.3	1.3	1.3	1.3	1.3
25,000.....	.3	.3	.3	.6	.6	.6	.6	.6	1.0	1.0	1.0	1.0
50,000.....	(¹)	.3	.3	.3	.3	.3	.6	.6	.6	.6	.6	.6
75,000.....	(¹)	.3	.3	.3	.3	.3	.3	.3	.6	.6	.6	.6
100,000.....	(¹)	(¹)	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
250,000.....	(¹)	(¹)	(¹)	.3	.3	.3	.3	.3	.3	.3	.3	.3

¹ Less than 0.05.

Automatic Interaction Detector

The multivariate statistical technique known as the automatic interaction detector (AID) program is essentially a repeated one-way analysis of variance by components. The objective is to select sequentially the characteristics most closely correlated with the dependent variable.¹⁷ To accomplish this sequential selection, the classifications of each characteristic are combined into the two subgroups associated with the greatest differences in the dependent variable, which in this study is the percentage who recovered. The single characteristic whose binary groups are associated with

the greatest variance is then selected as a major explanatory variable. All other characteristics were then associated with each of the two subgroups, and these two were then further divided into the mutually exclusive subgroups that account for additional variation. These comparisons were continued under a sequential branching procedure much like a "decision tree." Branching ceases when various limiting conditions are met. The major limiting condition is that the overall variance must be significantly reduced by the split. In this case, the BSS of subgroups (*k*) that are considered for further splits must not be less than 0.5 percent of the original TSS of deviations of observations in the entire group (*T*) about the mean: that is,

$$BSS \geq .005 TSS_T$$

¹⁷ John A. Sonquist et al., *op. cit.*

Table V.—Coefficients of logit analysis

Variable definitions	Coefficient	Standard error	<i>t</i> ratio ¹	Proportion or mean value for variable categories	
				Recovered	Not recovered
Constant.....	0.7427				
Sex: Male (1), Female (0).....	.4332	0.1029	*4.20	0.80	0.70
Race: White and other (1), black (0).....	.0195	.1310	.14	.88	.87
Children: Number.....	.0964	.0266	*3.62	1.10	.69
Marital status: Married and unknown (1), single (0).....	.0113	.1035	.10	.73	.77
Age: Mean age in 1972.....	-.0643	.0037	*17.37	41.71	51.81
Diagnostic group: Injuries, digestive, musculoskeletal, infective and parasitic disorders (1), other (0).....	1.2131	.1048	*11.57	.63	.31
Chronic (circulatory, respiratory) (1), other (0).....	.0826	.1364	.60	.15	.38
Mobility status: Limited (1), not limited (0).....	.2943	.0877	*3.35	.43	.25
Region of residence: East (Boston, New York, Philadelphia regions) (1), other (0).....	-.3242	.1233	*2.62	.26	.29
Midwest (Chicago, Kansas City, Denver regions) (1), other (0).....	-.1482	.1210	1.22	.29	.26
South (Atlantic, Dallas regions) (1), other (0).....	-.4927	.1269	*3.88	.24	.29
Education: Less than 9 years or special (1), other (0).....	-.6932	.1425	*4.86	.27	.44
High school (9-12 years) (1), other (0).....	-.3577	.1283	*2.78	.57	.46
Occupations: Professional, managerial, technical (1), other (0).....	.1272	.1157	1.09	.17	.13
Proportion of annual benefits to predisability earnings ²	-.6591	.1333	*4.94	.62	.84

¹ Result of coefficient in column one divided by standard error in column two. Items with asterisk are statistically significant at the 5-percent confidence level when equal to or greater than 2.

² Earnings defined as those in the high year of earnings in the 5 years before the year of decision (1972). The logit program was rerun with the variable "earnings replacement" removed, and "benefits" and

"predisability earnings" were introduced as independent variables. The effect and direction of the other independent variables were essentially the same as shown here. Scores of the "benefits" and "predisability earnings" were: Coefficient—benefits, -.00015; previous earnings, .00014. Standard error—benefits, .000043; previous earnings, .000019. *t* score—benefits, 3.48; previous earnings, 7.36.

Logistic Model

A logit analysis was used to determine the independent effect of each variable when the other variables were held statistically constant on the qualitative dependent variable of proportion with recovery.¹⁸ The functional form of the logistic model is

$$P = \frac{e_x^{1\beta}}{1 + e_x^{1\beta}}$$

- when P is the probability of recovery given x .
- x is a vector of independent variables, the first of which is the constant 1.
- β is a vector of coefficients to be estimated.

The coefficients for this model, as shown in table V, were estimated from a subsample of the 1972 CDHS

¹⁸ For a general description of logistic analyses, see Marc Nerlove and S. James Press, **Univariate and Multivariate Log-linear and Logistic Models**, Rand Corporation, December 1973.

by maximum likelihood procedure. The subsample was chosen by taking all those who recovered and an equal number of the nonrecovered who remained on the rolls. The nonrecovered represent a simple random subsample. Because the subsample is stratified on the dependent variables, a weighted maximum likelihood estimator was used.¹⁹

The sample for the logit analysis was drawn from 9,646 workers with disability allowances by 1975 (4,823 who recovered by 1975 and the same number of those continuing on the disability rolls at the end of 1975). Excluded were those who had left the disability rolls by the end of 1975 for death or retirement or whose later benefit status was unknown. Also excluded were those with benefit amount unknown or with zero earnings.

¹⁹ See Charles Manski and Daniel McFadden, **Alternative Estimation and Sample Designs for Discrete Choice Analysis**, University of California at Berkeley (paper prepared under a National Science Foundation grant, January 1977).

Program Operations

(Continued from page 2)

1 percent were reported in 11 of the 16 States with higher caseloads, with the largest rises in absolute numbers reported by Maryland, New York, and Virginia. Nationwide, GA payments totaled \$98.2 million. September's total had been \$508,000 lower. The average payment per recipient (\$130.82) was \$1.50 higher; the average payment per case (\$160.11) went up \$1.20.

Medicare Benefits

Withdrawals from the hospital insurance (HI) trust fund for payments to hospitals, skilled-nursing facilities, and home health agencies providing services to beneficiaries totaled \$1.5 billion in December 1978. Supplementary medical insurance (SMI) benefits amounted to \$621 million. Cumulative withdrawals from the hospital and medical insurance trust funds for the first 3 months of fiscal year 1979 were \$4.6 billion and \$1.9 billion, respectively.

As of October 25, 1978, Social Security Administration records indicate that 8.2 million bills were approved and reimbursements of \$11.0 billion were made under HI from January through August 1978. Approximately 89 percent of the total amount reimbursed during this 10-month period was for the population aged 65 and over, and 11 percent was for the disabled.

The average amount reimbursed for all ages was

\$1,607 per inpatient hospital bill (all hospitals), \$169 per home health bill, and \$570 per skilled-nursing facility bill. These amounts reflect increases of 9 percent per inpatient hospital bill, 6 percent per home health bill, and 7 percent per skilled-nursing facility bill, from the average amounts reimbursed during calendar year 1977.

Short-stay hospital bills account for 80 percent of all bills approved and 95 percent of total reimbursements. Hospital charges were \$218 per day for the aged and \$234 per day for disabled beneficiaries. Covered days of care for the disabled were fewer, however (9.2, compared with 9.8 for all ages).

As of September 30, 1978, 85.6 million bills were recorded and \$5.0 billion reimbursed under SMI since January 1978. Approximately 85 percent of the total amount reimbursed was for the disabled.

The average amounts reimbursed per bill for disabled beneficiaries were \$62 for physicians' services, \$116 for outpatient care, \$19 for independent laboratory services, \$143 for home care, and \$259 for all other services.

The average amounts reimbursed during the first 9 months of 1978 for services to disabled beneficiaries increased by 4 percent for physicians' services, 4 percent for outpatient hospital services, 6 percent for clinical laboratory services, 8 percent for home health care, and 16 percent for all other services above the average amounts reimbursed during 1977.