

A Comparison of the Recovery Termination Rates of Disabled-Worker Beneficiaries Entitled in 1972 and 1985

*by John C. Hennessey and Janice M. Dykacz**

This article reports on the final phase of a longitudinal analysis of two cohorts of Disability Insurance (DI) beneficiaries. The analysis shows that changes in DI program provisions and demographic shifts in the beneficiary population have considerably affected standard recovery termination rates. Several covariates were also found to affect the rates, particularly age and education. Overall, the 1985 cohort has a lower standard recovery termination tendency during the first few years of entitlement. After an attempt was made to define a recovery event for the 1985 cohort to make it comparable to the 1972 cohort, it was found that the termination rate for the 1985 cohort was still lower than the termination rate for the 1972 cohort. These findings suggest that there will be fewer recoveries for beneficiaries who entered the DI program in the late 1980's than for those who came on the rolls earlier.

*Disability Research Staff, Office of Research and Statistics, Social Security Administration.

This article reports on the final phase of a longitudinal analysis of two cohorts of Disability Insurance (DI) beneficiaries and focuses on termination rates of beneficiaries who either medically recover or experience a work recovery. It compares the recovery termination tendencies for 1972 and 1985 cohorts of newly entitled disabled-worker beneficiaries. The overall analysis was largely designed to measure the length of time a person remains in the DI program and to study the factors underlying the recovery and reentitlement process. Because of the program's size and recent growth, it is important to understand the circumstances in which persons enter and exit the program. At the end of 1990, the number of disabled-worker beneficiaries totaled 3 million; payments amounted to \$2 billion, in December.¹ In 1990, there were 884,600 initial determinations and 333,700 initial allowances, yielding an allowance rate of 37.7 percent.²

Through most of the 1980's, and especially during the early part of the decade, changes in DI program provisions, administrative processing, and demographic shifts may have affected the recovery termination rate. Legislative changes allowed deductions for impairment-related work expenses. A 15-month extended period of eligibility (EPE) provision was established for beneficiaries who completed a 9-month trial work period (TWP). The EPE was later lengthened to 36 months. Medicare coverage also continued for 3 months beyond the EPE. In the short run, these work incentive provisions may delay recovery terminations. In the long run, however, more recoveries would be expected to occur.

Other program changes included a periodic 3-year review of beneficiaries with nonpermanent disabilities. This change was expected to increase the percentage of medical recoveries. On the other hand, later legislation mandated that medical improvement must be established in order to terminate benefits for medical reasons. This provision was expected to decrease the percentage of medical recoveries.

Before we examine the recovery termination rates, we will summarize the findings from the previous studies.

The first phase of the project examined the first event of interest after benefit entitlement—that is, recovery, death, or retirement for the 1972 entitlement cohort.³ Average length of time in the program was also estimated. The study projected that 11 percent of the beneficiaries would recover, 36 percent would die, and 53 percent would have their benefits converted to retired-worker benefits at age 65—that is, they would retire. Mean length of time in the program was estimated to be 9.3 years.

The postrecovery period of the 1972 cohort was analyzed in the second phase of the project.⁴ The study projected that about 43 percent of beneficiaries would end their postrecovery period by becoming reentitled to disabled-worker benefits, 5 percent would die, and 52 percent would retire. About half of the 43 percent expected to become reentitled would do so within the first 5 years after leaving the program. An examination of the covariates showed that those in the high primary insurance amount (PIA) group (\$500 or more per month) have a strong reentitlement tendency. It was projected that 65 percent would return to the program, compared with 34 percent in the low PIA group. The median length of time between termination based on recovery and reentitlement was 3 years for the high PIA group and 10 years for the low PIA group.

The third study found that the individual characteristics of persons entering the rolls have changed as well, reflecting the demographic shifts in the makeup of the DI population.⁵ In general, persons in the 1985 cohort are younger and have had more years of education; a greater percentage are female and are black; and their adjusted PIA level is higher. In addition, the 1985 cohort had a greater percentage of beneficiaries with mental disorders and a lower percentage with diseases of the circulatory system. The death rates were found to be very similar for both cohorts. The estimated percentages for those who survive 5 years after entitlement was 78 percent for the 1972 cohort and 77 percent for the 1985 cohort. It is not clear how these demographic shifts will affect the recovery termination rates.

Having summarized the earlier studies, we now turn to the analysis of recovery termination rates.

Types of Comparisons

The work incentive provisions established in the early 1980's allowed beneficiaries to remain in the DI program longer, thus complicating our comparisons between the cohorts. In particular, the EPE provision delayed work recoveries in the 1985 cohort by several years, compared with the 1972 cohort. Comparisons are further complicated because the length of the EPE was extended in 1987. One would expect these changes to lower the overall recovery termination rate. However, because medical recoveries are counted as well as work recover-

ies, it is not clear what the comparison of the recovery termination rates for the two cohorts will yield.

In addition, the short observation period for the 1985 cohort and the longer EPE make it virtually impossible to predict the final number of recoveries for the 1985 cohort. Unlike the previous studies of the 1972 cohort, the percentages of benefit terminations because of recovery, death, or retirement are not estimated in this study.

In light of these factors, what types of comparisons are possible? First, we will compare the standard recovery termination rates of the two cohorts. However, this comparison may not be appropriate because the rates for the 1985 cohort reflect the extension of time caused by the EPE. Thus, we will also

Table 1.—International Classification of Diseases codes for the primary diagnostic groups

Category	International Classification of Diseases	
	8th rev. for 1972 cohort	9th rev. CM for 1985 cohort
Infectious and parasitic disease (in 1972, infective and parasitic diseases)	000-136	001-041 044-135 137-139
Neoplasms	140-239	140-172 174-239
Endocrine, nutritional, and metabolic diseases, and immunity disorders (in 1972, endocrine, nutritional, and metabolic diseases)	240-279	240-278
Mental disorders	290-315	290-319
Diseases of the—		
Nervous system and sense organs	320-389	320-389
Circulatory system	390-458	390-459
Respiratory system	460-519	460-519
Digestive system	520-577	520-579
Genitourinary system	580-629	580-629
Musculoskeletal system and connective tissue	710-739	710-739
Congenital anomalies	740-759	740-759
Injury and poisoning (in 1972, accidents, poisonings, and violence)	800-999	800-999
AIDS and AIDS-related complex (ARC)	None	042, 043, 136, 173, 279
Other	All other codes	

consider the major event prior to entrance into an EPE—the first month of nonpayment of benefits due to recovery. This event will be called the first nonpayment month or the nonpayment event. The rate of occurrence of the event will be called the nonpayment rate or nonpayment tendency. For the 1972 cohort, the first nonpayment month occurs when the beneficiary either medically recovers or successfully completes a TWP. In the 1972 cohort, this nonpayment event is equivalent to the standard recovery termination. For the 1985 cohort, the first nonpayment month occurs when there is either a medical

recovery or the beneficiary completes the TWP and enters the EPE and works above the substantial gainful activity (SGA) level. At this point, benefits are either suspended or ceased.⁶ Given the disparate program provisions in 1972 and 1985, one could argue that the nonpayment rate is a better means of comparison than the standard recovery termination rate, because it is as close as one can come to identifying those beneficiaries in the 1985 cohort whose benefits would have terminated under the pre-1980's provisions. In this article we will compare the rates of occurrence of this event—the first nonpayment month—in

the two cohorts. We will also determine whether covariates such as age, sex, race, and primary diagnosis had the same effect on the recovery termination rate in 1985 as they had in 1972.

Program Administration

It is worth noting that there are some differences in the administrative processing of the first nonpayment month in the two cohorts that could be responsible for some of the observed differences. For the 1972 cohort, after completion of the TWP, the termination decision is made

Table 2.—Outcome after 4-year observation of 1972 and 1985 entitlements, by primary diagnosis of the disabling condition for standard recoveries

Diagnostic group	Total		Still in the program		Deceased		Recovered		Retired	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1972 cohort										
Total	18,816	100.0	11,948	63.5	3,902	20.7	1,477	7.7	1,519	8.1
Infectious	326	100.0	173	53.1	47	14.4	93	28.5	13	4.0
Neoplasms	1,525	100.0	288	18.9	1,154	75.7	37	2.4	46	3.0
Endocrine	620	100.0	404	65.2	139	22.4	14	2.3	63	10.8
Mental disorders	1,752	100.0	1,377	78.6	153	8.7	146	8.3	76	4.3
Nervous system	1,085	100.0	804	74.1	120	11.1	59	5.4	102	9.4
Circulatory	5,389	100.0	3,387	62.9	1,223	22.7	197	3.7	582	10.2
Respiratory	1,152	100.0	729	63.3	283	24.6	13	1.1	127	11.0
Digestive	545	100.0	278	51.0	195	35.8	35	6.4	37	6.8
Genitourinary	170	100.0	85	50.0	59	34.7	15	8.8	11	6.5
Musculoskeletal	2,917	100.0	2,144	73.5	202	6.9	285	9.8	286	9.8
Congenital	198	100.0	138	69.7	20	10.1	33	16.7	7	3.5
Accidents	1,276	100.0	741	58.1	71	5.6	407	31.9	57	4.5
AIDS .....	...	...	...	...	...	...	...	...	...	...
Other	1,861	100.0	1,400	75.2	236	12.7	113	6.1	112	6.0
1985 cohort										
Total	34,762	100.0	23,594	67.9	7,607	21.9	1,365	3.9	2,196	6.3
Infectious	1,409	100.0	1,113	79.0	164	11.6	112	7.9	20	1.4
Neoplasms	3,740	100.0	545	14.6	3,029	81.0	92	2.5	74	2.0
Endocrine	1,301	100.0	955	73.4	240	18.4	27	2.1	79	6.1
Mental disorders	8,500	100.0	7,494	88.2	457	5.4	300	3.5	249	2.9
Nervous system	2,634	100.0	2,114	80.3	279	10.6	73	2.8	168	6.4
Circulatory	6,028	100.0	4,044	67.1	1,193	19.8	76	1.3	715	11.9
Respiratory	1,787	100.0	1,136	63.6	445	24.9	3	.2	203	11.4
Digestive	512	100.0	288	56.3	189	36.9	21	4.1	14	2.7
Genitourinary	442	100.0	266	60.2	134	30.3	31	7.0	11	2.5
Musculoskeletal	5,046	100.0	4,116	81.6	265	5.3	174	3.4	491	9.7
Congenital	100	100.0	73	73.0	11	11.0	5	5.0	11	11.0
Accidents	1,605	100.0	1,155	72.0	108	6.7	252	15.7	90	5.6
AIDS	269	100.0	25	9.3	242	90.0	1	.4	1	.4
Other	1,389	100.0	270	19.4	851	61.3	198	14.3	70	5.0

based on the beneficiary's performing work at the SGA level. For example, if work was above the SGA level for the last month of trial work but below the SGA level for most of the other trial work months, the decision would most likely have been to allow benefits to continue. However, for the 1985 cohort, if the beneficiary was working above the SGA level in the last month of trial work, the EPE would definitely begin; the first nonpayment month would occur. Benefits would be suspended until a month of work is performed below the SGA level. This could, in fact, occur in the second month of the EPE. Therefore,

this 1 month suspension is not quite comparable to a benefit termination that would have occurred under the old provisions. Without a serious analysis of work patterns and benefit suspense patterns during the extended period of eligibility there can be no determination of how many of benefit suspensions were the result of a successful work attempt. Such an analysis is beyond the scope of this article and this data set.

The Data

The data set consists of 18,816 beneficiaries in the 1972 entitlement cohort

(a 5-percent random sample) and 34,762 in the 1985 cohort (a 10-percent random sample). The samples were extracted from the Social Security Administration's Master Beneficiary Record (MBR). For the 1972 cohort, the primary diagnosis and education information was extracted from the Continuous Disability History sample. For the 1985 cohort, the primary diagnosis was extracted from the MBR. The education information was extracted from the 831 files maintained by the Office of Disability. A complete description of the data can be found in an earlier study.⁷

The observation period for the 1972

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1985 cohort										
Total	34,762	100.0	22,878	65.8	7,589	21.8	2,109	6.1	2,186	6.3
Infectious	1,409	100.0	1,091	77.4	164	11.6	134	9.5	20	1.4
Neoplasms	3,740	100.0	526	14.1	3,027	80.9	114	3.0	73	2.0
Endocrine	1,301	100.0	935	71.9	238	18.3	49	3.8	79	6.1
Mental disorders	8,500	100.0	7,153	84.2	454	5.3	646	7.6	247	2.9
Nervous system	2,634	100.0	2,019	76.7	278	10.6	170	6.5	167	6.3
Circulatory	6,028	100.0	3,995	66.3	1,189	19.7	132	2.2	712	11.8
Respiratory	1,787	100.0	1,130	63.2	445	24.9	11	.6	201	11.2
Digestive	512	100.0	280	54.7	189	36.9	29	5.7	14	2.7
Genitourinary	442	100.0	246	55.7	133	30.1	52	11.8	11	2.5
Musculoskeletal	5,046	100.0	4,054	80.3	263	5.2	238	4.7	491	9.7
Congenital	100	100.0	67	67.0	11	11.0	11	11.0	11	11.0
Accidents	1,605	100.0	1,095	68.2	107	6.7	314	19.6	89	5.5
AIDS	269	100.0	25	9.3	241	89.6	2	.7	1	.4
Other	1,389	100.0	262	18.9	850	61.2	207	14.9	70	5.0

cohort is from month of entitlement in 1972 to December 1980, about 8 years. Although information regarding this cohort is available until June 1986, only information before January 1, 1981, is used here because temporary administrative changes in the disability review process and court intervention regarding benefit terminations in the early 1980's could distort the recovery tendency. As a result, for the early 1980's, we would expect an uncharacteristic surge of medical recoveries due to accelerated continuing disability reviews, followed by another uncharacteristic drop in medical recoveries due to court-mandated moratoriums.

The observation period for the 1985 cohort is from month of entitlement in 1985 to December 1989, about 4 years. Recovery information collected for the data file is valid until December 1989.

Covariates

The covariates used in the analysis are the same as those used in earlier studies—namely, primary diagnosis, age at entitlement, sex, race, education, and primary insurance amount (PIA).⁸ Results will be summarized here.

The primary diagnosis of the disabling condition is the primary underlying impairment on which the entitlement decision has been made. The diagnostic groups were formed using the International Classification of Diseases (table 1).⁹ Most analyses are done separately for each diagnostic group, because prior analyses have indicated that the recovery tendency is different for each group. In analyzing the 1985 cohort, a new category has been added, acquired immune deficiency syndrome (AIDS). Some of the more noticeable differences in the primary diagnosis between the two cohorts are an increased percentage in the mental disorders group and a decreased percentage in the circulatory group for the 1985 cohort. The 1985 cohort has greater percentages in the infectious diseases, neoplasms, and nervous system groups. The 1972 cohort has greater percentages in the digestive, congenital, accidents, and "other" groups. There are no AIDS cases

in the 1972 cohort; only 0.8 percent of the 1985 cohort are in that group.

As in the previous studies, age at entitlement has been coded into three age groups—young (18-34 years), middle (35-49 years), and old (50-61 years). Records of persons whose age at entitlement is 62 or older are omitted because information distinguishing retired workers from disabled workers is not available in this data file. The 1985 cohort is younger. Nineteen percent of the 1985 cohort are in the young age group, compared with 11 percent of the 1972 cohort, and 54 percent of the 1985 cohort are in the old age group, compared with 65 percent of the 1972 cohort.

The 1985 cohort is 34 percent female, compared with the 1972 cohort, which is 30 percent female. Individuals were classified as black and non-black (white and other are classified as nonblack); the 1985 cohort has a greater percentage of black individuals, 16 percent, compared with 14 percent in the 1972 cohort.

The 1985 beneficiaries are more educated. Forty-eight percent of the 1985 cohort attained an educational level of high school graduate or some years of college, compared with 31 percent of the 1972 cohort. Four educational levels are determined by the highest number of years of schooling completed at the

Chart 1.-- Standard recovery tendency for total population

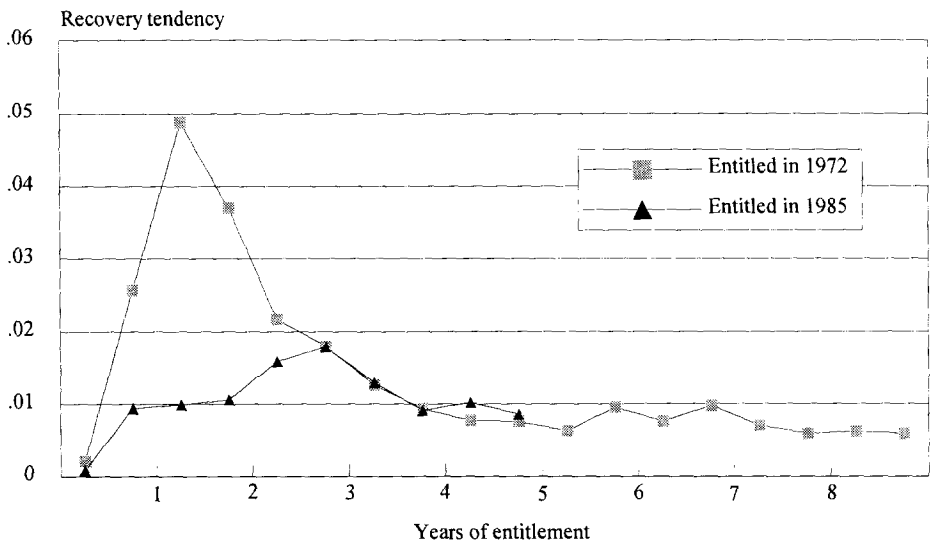
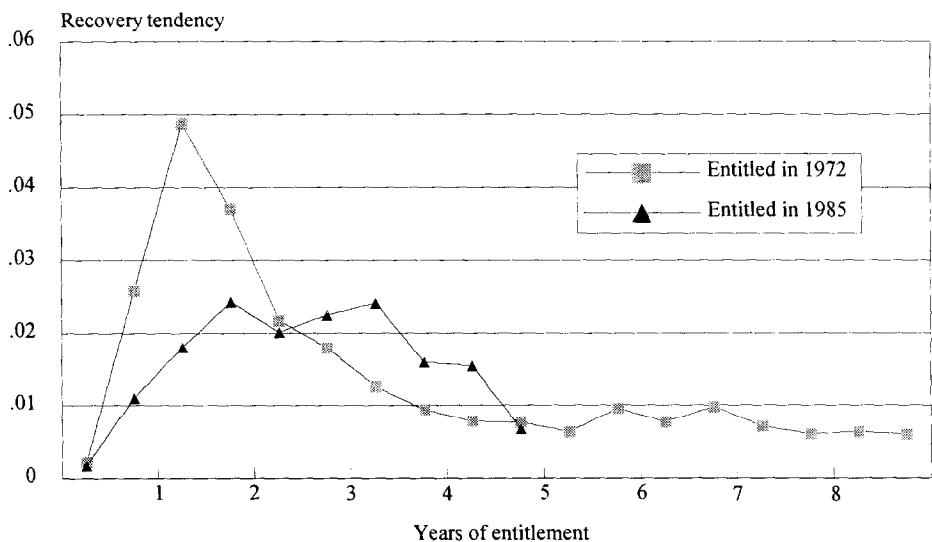


Chart 2.-- First nonpayment month tendency for total population



time of entitlement—0-8, 9-11, 12 (high school graduate), and 13 or more. A fifth group includes beneficiaries whose educational attainment is unknown.

The distributions of primary insurance amounts are different. For both cohorts, the PIA is in 1989 dollars. The PIA is the dollar figure on which cash benefits are based. It is related to past earnings levels, which gives a rough indication of a beneficiary's economic status. The PIA levels are \$1-\$299, \$300-\$499, \$500-\$699, and \$700 or more. For the 1985 cohort, 30 percent of beneficiaries are in the highest PIA category, compared with 6 percent for the 1972 cohort.

Termination As a Process of Competing Risks

Disability Insurance benefits are terminated for several reasons: The beneficiary recovers (either a medical or work recovery), dies, or retires (that is, the beneficiary is converted to the retirement program at age 65). Although the focus of this analysis is on recovery terminations only, it is important to have a basic understanding of the entire termination process.

At each point in time after entitlement, a beneficiary who is younger than age 65 could possibly leave the program because of recovery or death. Thus a "recovery tendency" and a "tendency for death" at this instant in time compete with each other. If both tendencies or rates are low, the probability of a program termination of either type will be low. If both tendencies are high, the probability of a termination of some type at this instant will be high. The strength of the two tendencies relative to each other will dictate which of the two termination types has the larger probability of occurrence.

The recovery tendency changes over time. Given two groups of beneficiaries, if the recovery tendency curve over time for the first group is higher than the recovery tendency curve for the second group, it does not necessarily follow that there will be more recoveries in the first group. If the tendency toward death in the first group is also substantially

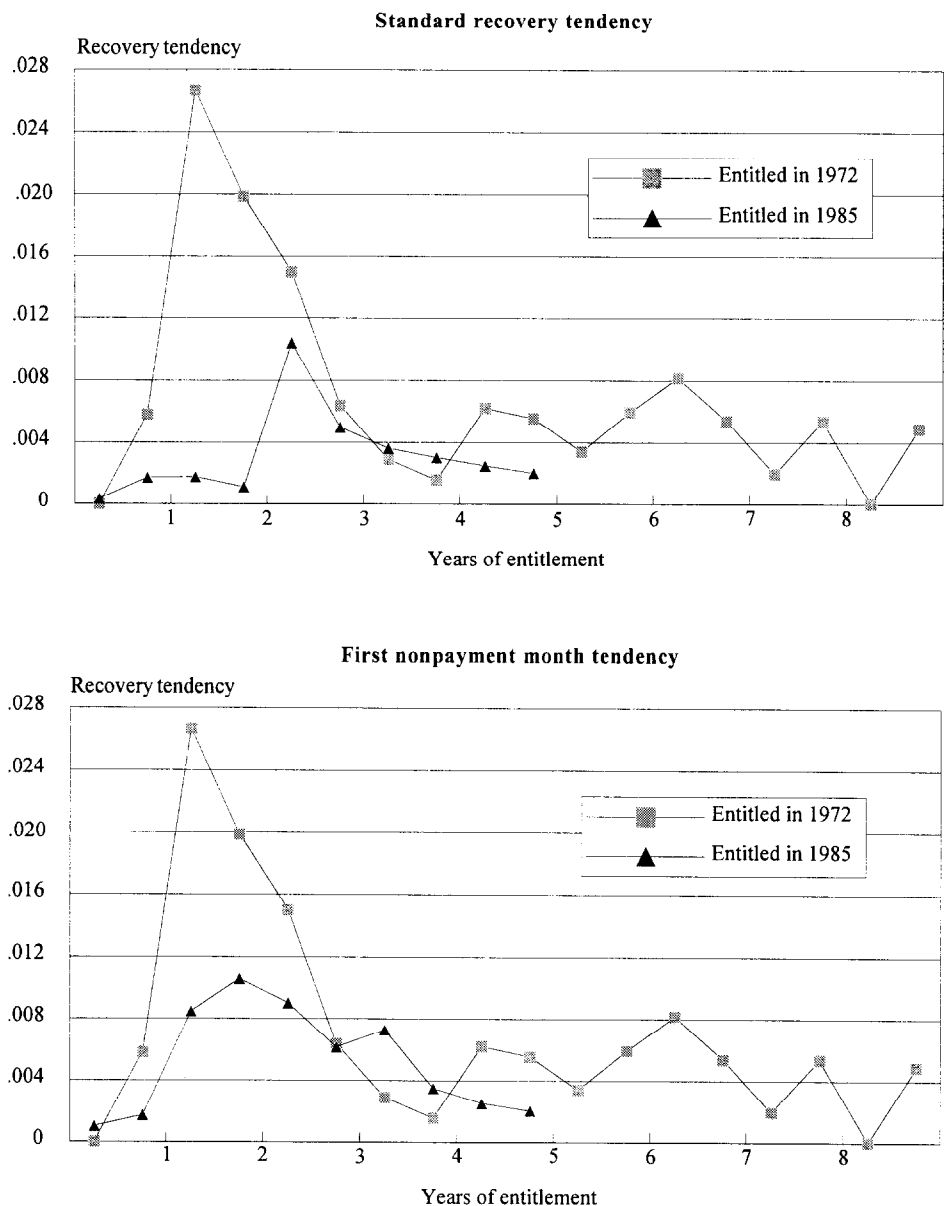
higher than the death tendency in the second group, more death terminations and fewer recovery terminations could occur in the first group when compared with the second group. Also, if the first group is older than the second group, the higher recovery tendency in the first group may not be strong enough to cause more recoveries before retirement, which would occur sooner in the first group.

Thus, even if one group has a higher tendency toward recovery than another group, this fact does not automatically translate into a larger percentage of recoveries. The other factors mentioned

above also affect the percentage of recoveries. However, policy changes to encourage more recoveries, especially work recoveries, are aimed at increasing the recovery tendency. It is important, therefore, to understand the pattern of these tendencies during the early years of benefit entitlement, which are analyzed in this article.

A recovery termination tendency competes with a death termination tendency—a competing risk situation—so that the ultimate percentage of recovery terminations and death terminations depends on both these tendencies and

Chart 3.-- Recovery tendency for circulatory group



on the attainment of retirement age. Because the observation period for the 1985 cohort is not long enough to allow for complete modeling of this competing risk situation, the recovery termination tendency is analyzed without attempting to estimate the final percentage of recovery terminations. This recovery termination tendency over time is known mathematically as a hazard function.

Initially, an attempt was made to model the recovery termination tendency using a proportional hazards model with covariates. However, analysis showed that this model was not appropriate. Thus, a nonparametric test, the Wilcoxon test, is used to determine if there are differences in the recovery termination tendencies between the two cohorts, overall and separately, within each diagnostic group. Within each cohort and diagnostic group, covariates are tested to determine if they had an effect on the recovery tendency. The LIFETEST procedure of the SAS computer program is used to compute the Wilcoxon test statistics and to construct the hazard functions.

Modified Raw Data Comparisons

The observation period for the 1985 cohort is considerably shorter than that for the 1972 cohort. A greater percentage of recoveries would be expected for the 1972 cohort because there is a longer observation period. Thus, a simple count of observed recoveries for each cohort is not informative. A better comparison is obtained by truncating the observation period of the 1972 cohort so that both cohorts have the same observation period. For descriptive purposes, this comparison is shown in table 2.

For each cohort, the outcomes observed after about 4 years—recovered, deceased, retired, or still in the program—are shown overall and for each diagnostic group separately. Recovery in this table means a standard recovery termination. It should be noted that in some groups the percentages of recoveries are very similar. In the neoplasms group, the percentage of recoveries is 2.4 percent for the 1972 cohort and 2.5 percent for the 1985 cohort. The

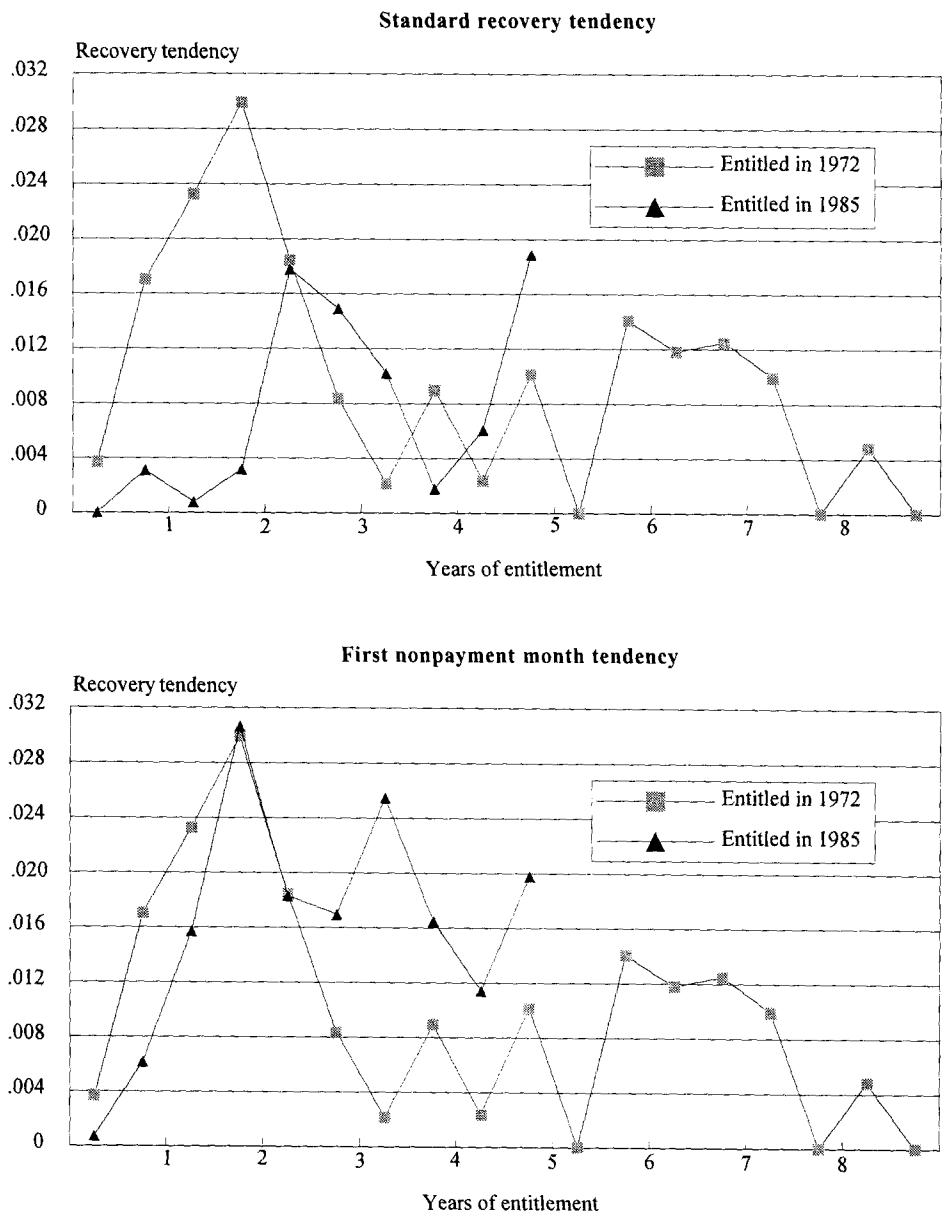
percentages for the “other” group are very different for the two cohorts. Because this group is an amalgam of different diagnoses and because most cases in this group are due to missing ICD codes, interpretations will not be given for this group.

This modified portrayal of the raw data shows that for many diagnostic groups the percentage of standard recoveries for the 1972 cohort with the truncated observation period is several times that for the 1985 cohort. For example, for the accidents group, the percentage is 32 in the 1972 cohort and 16 in the

1985 cohort. These results are expected because the EPE was available for those in the 1985 cohort but not for those in the 1972 cohort. Because of the program changes discussed previously, one could argue that a more appropriate equivalence of recovery—the first nonpayment month—should be used.

For the first nonpayment month, we would expect the percentages of recoveries in the two cohorts to be more similar (table 3). This indeed is the case, but, for many diagnostic groups, the percentages are still very different. For example, in the accidents group, the per-

Chart 4.-- Recovery tendency for nervous system group



centage of nonpayment events is 32 percent for the 1972 cohort with the observation period truncated, and 20 percent for the 1985 cohort. The percentages of nonpayment events are also markedly higher in the 1972 cohort, compared with the 1985 cohort, for the congenital, infectious diseases, and musculoskeletal groups. Note that for the 269 AIDS cases in the 1985 cohort there is only one standard recovery and two nonpayment events.

As was noted earlier, for the 1972 cohort the first nonpayment month is the same as the standard recovery event so that the first bank of table 3 is identical to the first bank in table 2. Although this modification and presentation of the raw data is simplistic (because it does not attempt to describe the recovery tendency over time), it points to the same conclusions as the statistical tests described later.

The Standard Recovery Tendency

Chart 1 shows the estimates of the standard recovery tendency curves for the two cohorts over the length of the observation periods of each cohort. The changes in the program provisions and the changes in the individual characteristics of the beneficiary population have affected the shape of the recovery tendency curve considerably. The curve for the 1972 entitlement cohort rises sharply and then drops sharply during the first few years of the program. The recovery tendency curve for the 1985 entitlement cohort is flatter and the peak is shifted to the right. There are several factors that could be contributing to this change in the recovery tendency. One of the most important factors is the establishment of the EPE. Many in the 1985 cohort who complete the TWP and are still engaged in SGA become eligible for a 36-month EPE. This provision delays the benefit termination that would have occurred if the person were in the 1972 cohort. In fact, extension of time in the program for beneficiaries who make a work attempt could explain the small increase in the recovery tendency that occurs for the 1985 cohort at about the fourth year. Unfortunately, the observation period

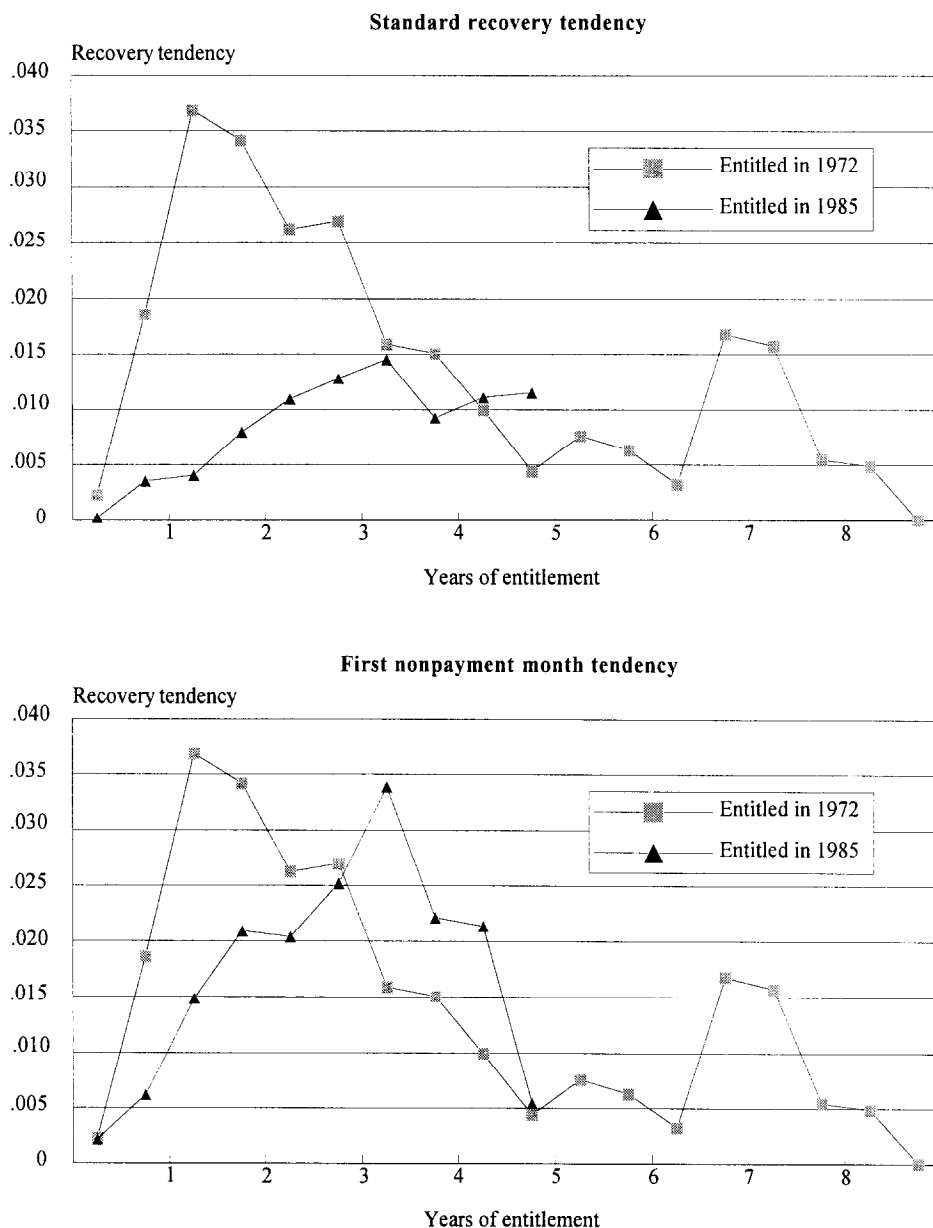
ends before the recovery tendency from the fifth year on can be computed. Thus, it is not clear whether or not there is any sustained increase in the recovery tendency for the 1985 cohort after the fourth year.

Nonpayment Tendency

Chart 2 presents the graphs of the nonpayment tendency for the two cohorts. The curve for the 1972 cohort is identical to the curve in chart 1 because, for the 1972 cohort, the first nonpayment month and the standard recovery termi-

nation are identical. The curve for the 1985 cohort is higher in this chart than in chart 1 because entry to the EPE is now included as a nonpayment event. Although this curve rises higher than its counterpart in chart 1, the tendency in the 1985 cohort still does not reach the same height as the tendency for the 1972 cohort. Eventually, the 1985 curve rises above the 1972 curve at about 2.5 years after entitlement. For both cohorts, the tendency begins to decrease after about 3.5 years. The two curves cross again at about 4.8 years. Because this is the last data point, it is impossible to predict the

Chart 5.-- Recovery tendency for mental disorders group



relationship between these two curves in future years.

Diagnostic Groups

Comparisons between the 1972 and 1985 cohorts can be made within 13 diagnostic groups, excluding the AIDS group that did not exist for the 1972 cohort. When the populations are grouped by primary diagnosis, the differences between the standard recovery termination curves for the endocrine, genitourinary, and neoplasms groups are not statistically significant, using a level of significance of 0.05. Thus, 10 of the 13 diagnostic groups showed a statistically significant difference between the recovery tendencies in the 1972 and 1985 cohorts. For 9 of these 10 recovery groups, the standard recovery termination curve is, in general, lower for the 1985 cohort, indicating a lesser recovery tendency for this cohort. The "other" diagnostic group is an anomaly in that the tendency curve is higher for the 1985 cohort. The basic shapes of the curves for the diagnostic groups are about the same as those for the overall population.

However, when considering the first nonpayment month, the tests show that, in addition to the three groups cited above, the tendency curves for the congenital, digestive, nervous system, and respiratory groups are not significantly different at the 0.05 significance level. When comparing the 1972 and 1985 cohorts, only 6 of the 13 diagnostic groups (accidents, circulatory, infectious, mental disorders, musculoskeletal, and "other") have nonpayment tendency curves with differences that are statistically significant. For 5 of these 6 groups, the nonpayment tendency curve is lower for the 1985 cohort, indicating a lesser tendency for the 1985 cohort.

Let us consider a few examples. Chart 3 shows the standard recovery and the nonpayment tendency curves for the circulatory group. For both tendencies, the curve for the 1985 cohort is lower than that for the 1972 cohort.

On the other hand, chart 4 shows comparable curves for the nervous system group. The standard recovery termination tendency curve for the 1985 co-

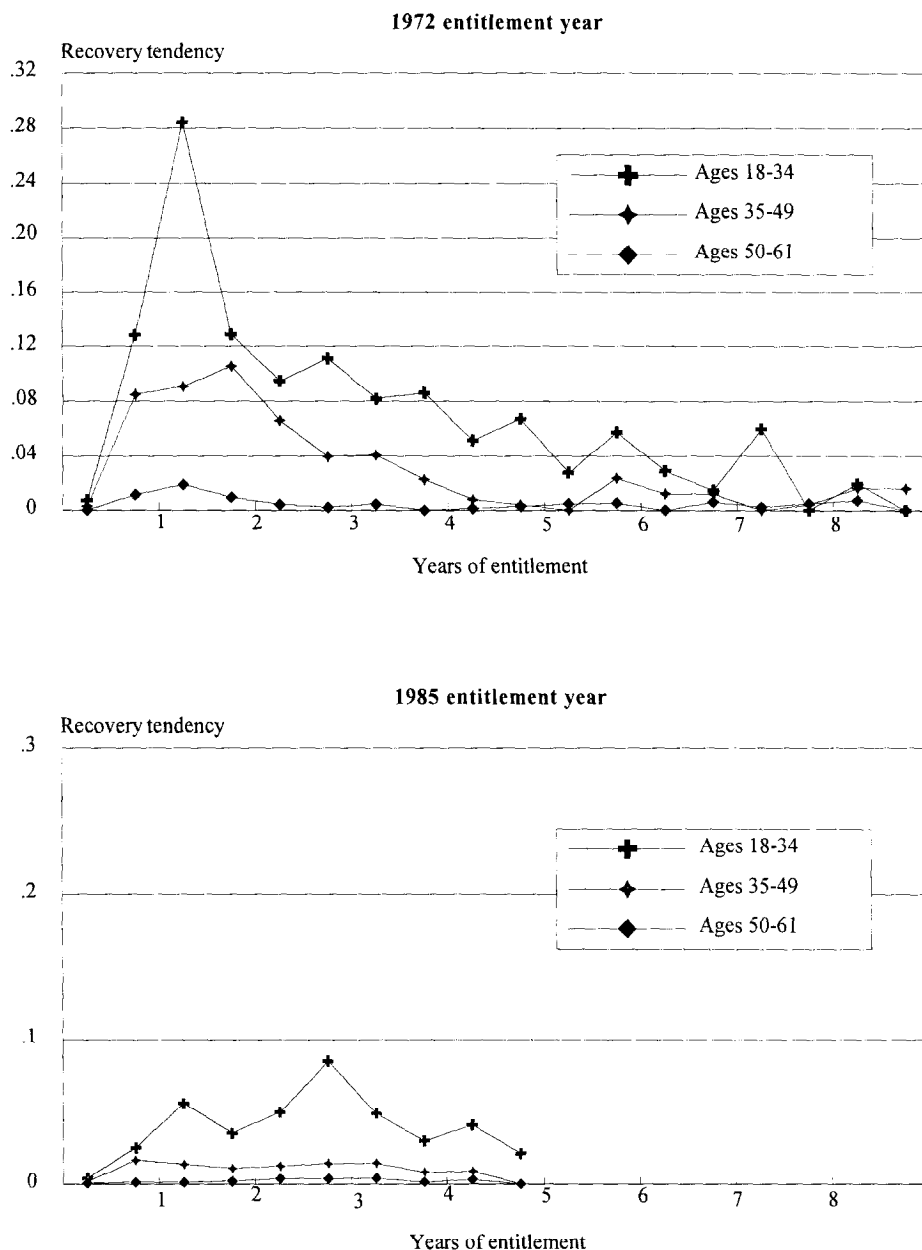
hort is lower than the corresponding curve for the 1972 cohort. However, the nonpayment tendency curve for the 1985 cohort looks similar to the curve for the 1972 cohort and has a peak that is identical to the peak for the 1972 cohort. The difference between these two curves is not statistically significant. Thus, the nonpayment event experiences for beneficiaries in the nervous system group is similar for those who became entitled in the pre-1980's and in the late 1980's program.

Chart 5 shows the same graphs for the mental disorders group. Similar to

the previously discussed groups, the standard recovery termination tendency curves in the top graph are quite different. The difference in the nonpayment tendency curves, shown in the bottom graph of the chart, is statistically significant at the 0.05 level, but the p-value is 0.0488, indicating a borderline result. This chart shows the peaks of both curves reaching about the same height, with the peak for the 1985 cohort further to the right.

In many of the diagnostic groups there is not a statistically significant difference in the nonpayment tendencies.

Chart 6.-- Standard recovery tendency for musculoskeletal group, by age at entitlement



However, for some sizable groups, the difference is statistically significant and the 1985 curve is higher in the accidents, circulatory, infectious, mental disorders, and musculoskeletal groups. These groups make up about 64 percent of the total population of both cohorts combined and comprise about 73 percent of the total number of nonpayment events. Overall, there is a difference in the nonpayment tendency for the two cohorts, because the diagnostic groups where the difference is statistically significant are larger and dominate the data set.

Covariate Effects

Within each entitlement cohort, each covariate is analyzed separately. The Wilcoxon test statistic is computed to determine whether the covariate is related to the standard recovery tendency or to the nonpayment tendency at the 0.05 significance level. Overall trends will be emphasized in the discussion below for the following reasons. Some of the diagnostic groups, such as the respiratory and AIDS groups, have only a handful of recoveries and/or nonpayment events despite statistical significance of a covariate. In general, the covariate effects on the recovery tendency and the nonpayment tendency were similar. Overall, age at entitlement and education have an effect on the tendencies for most of the primary diagnostic groups. The results presented here agree qualitatively with an analysis of the 1972 cohort in the earlier studies.¹⁰

Age at Entitlement

Chart 6 presents the standard recovery tendencies by age group for the two entitlement years for the musculoskeletal group. The trends observed in this diagnostic group are typical of the age effects in the other groups. In both entitlement cohorts the expected result is seen—that is, the recovery tendency for the young age group is the highest, followed by the tendency for the middle age group and then the old age group. The Wilcoxon tests show that the differences among age groups are statistically significant for both entitlement cohorts. In addition, for

each age group, the recovery tendency curve for the 1985 cohort is lower than the corresponding curve for the 1972 cohort, as seen in chart 6.

Although the curves for the primary diagnostic groups are not identical, the curves for the age groups within each primary diagnostic group display the same basic features. Similar results hold for the nonpayment tendencies.

Gender/Race

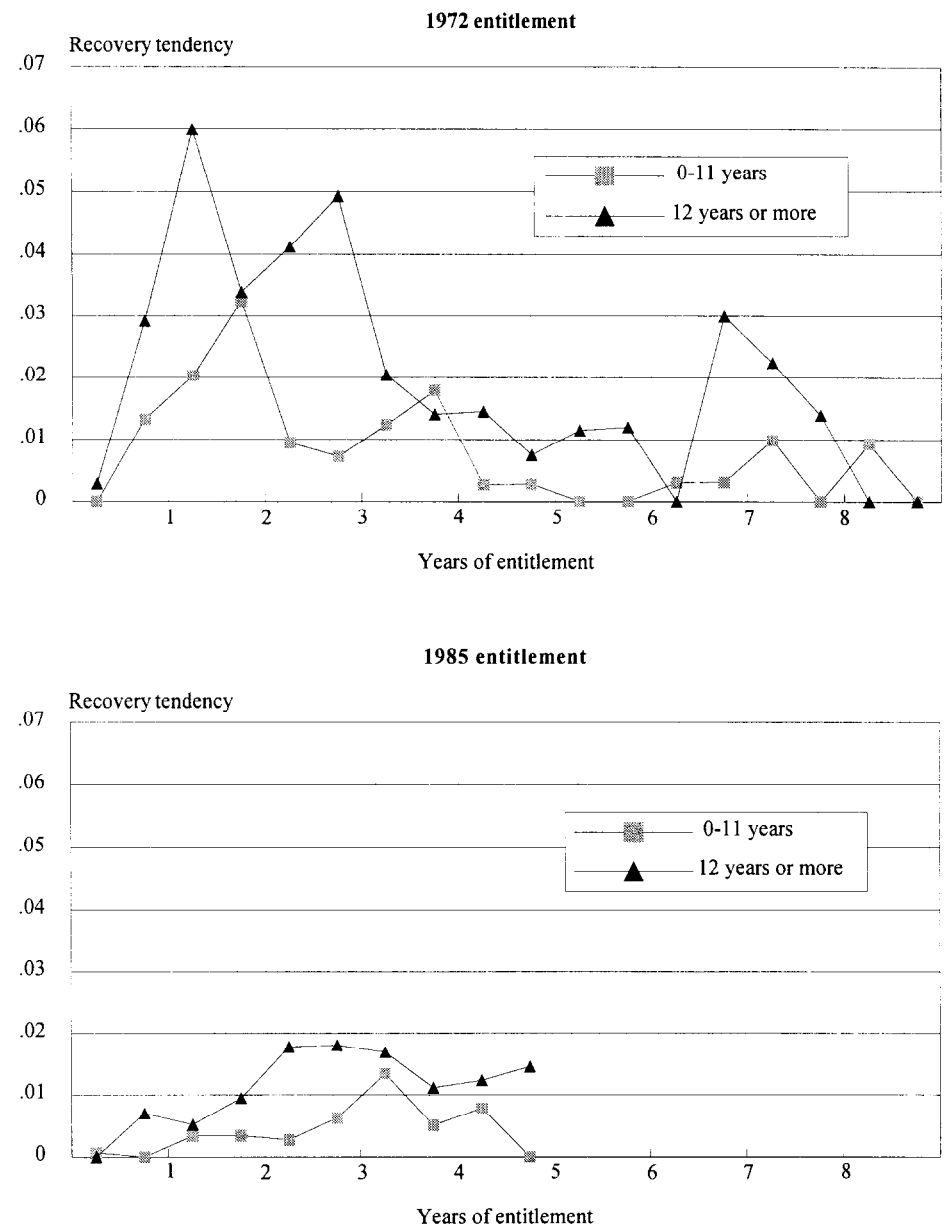
For both the recovery and nonpayment tendencies and for both cohorts,

gender is a statistically significant covariate in several of the diagnostic groups—accidents, circulatory, congenital, and musculoskeletal. Females show a lesser tendency compared with males. For both entitlement cohorts and the standard and nonpayment tendencies, race does not appear to have a statistically significant effect.

Education

In most cases, education has a statistically significant effect on the recovery tendency. The general trend is that, if

Chart 7.-- Standard recovery tendency for mental disorders group, by years of education



education is statistically significant, the college (13 years or more) or high school graduate (12 years) groups exhibit the higher recovery tendency. Similar findings occur for both the standard recovery termination and the nonpayment event. In the 1972 cohort, the only diagnostic groups where education is not a statistically significant covariate are the congenital, infectious, neoplasms, and "other" groups. In the 1985 entitlement cohort, education is not statistically significant for the AIDS, congenital, digestive, endocrine, genitourinary, and respiratory groups. Chart 7 illustrates that, for the mental disorders group, education does increase the tendency toward a standard recovery. Although the Wilcoxon tests were performed with the total population divided into five education groups, the graphs are drawn for two groups, 0-11 years of education and 12 or more years of education, excluding the unknown category. This collapsing of the groups is done because the four graphs overlaid are difficult to read. The education effect for the mental disorders group is typical of all of the groups where education was significant.

Primary Insurance Amount

The PIA is a statistically significant covariate for most of the diagnostic groups in the 1972 cohort, but not for most of the diagnostic groups in the 1985 cohort. Where it is a statistically significant covariate, the highest and the lowest groups tend to have the higher recovery tendency. In the 1972 cohort, the PIA is statistically significant in all primary diagnostic groups, except the genitourinary group. The groups having the higher recovery tendency tend to have PIA's in the highest (\$700 or more) and the lowest (\$1-\$299) levels. However, in the 1985 cohort, the only diagnostic groups in which the PIA is statistically significant with respect to the standard recovery tendency are the mental disorders and nervous system groups, with those with the lowest PIA level having the highest standard recovery tendency. Examining the nonpayment tendency for the 1985 cohort, the PIA is statistically significant for only three

diagnostic groups—accidents, mental disorders, and nervous system, with those in the \$300-\$499 level having the highest nonpayment tendency.

Conclusions

Several covariates affect the recovery termination rate. Age and education are statistically significant covariates for both cohorts in the expected direction. Gender is statistically significant in some groups, with females showing a lesser recovery tendency. Race is not statistically significant in general. The PIA is statistically significant for most of the diagnostic groups in the 1972 cohort, but not for most of the diagnostic groups in the 1985 cohort.

Overall, the 1985 cohort has a lower standard recovery termination tendency during the first few years of entitlement, compared with the 1972 cohort. For 9 of the 13 diagnostic groups, the standard recovery termination tendency is lower for the 1985 cohort. Part of the reason for the dramatic drop in recoveries during the first few years of benefit entitlement is the establishment of the EPE. In effect, work terminations are now delayed over the time of the EPE. Of course, this delay was recognized and accepted by Congress to encourage more work attempts and ultimately more work recoveries.

However, when the focus is shifted to the first month of nonpayment of benefits, the 1972 curve still remains higher than the 1985 curve. Overall, the curve for the 1985 cohort is considerably lower for the first few years than the curve for 1972 cohort. For five diagnostic groups, the nonpayment tendency is lower for the 1985 cohort than for the 1972 cohort. In fact, within each of these groups, the curve for the 1972 cohort has a sharp rise during the first year and a half. Then, a sharp decline occurs during the next year. The curve for the 1985 cohort rises less sharply during the first 2 years. It then remains relatively flat for a little over a year. Then it starts to drop to the 1972 curve. These findings suggest that there will be fewer recoveries for persons who became entitled under the late 1980's program than for those

who came on the rolls during the pre-1980's program.

A recent Congressional Research Service report mentions several factors that may be contributing to this phenomenon.¹¹ The report states:

Legislation enacted in 1984 to deal with the termination caseload crisis then may have caused a permanent reduction in the rate that people are removed from the rolls. Strong criticism was levied at SSA over the large number of recipients removed from the rolls in the early 1980s. Numerous instances of unfair treatment received wide publicity, and many whose entitlement was terminated at the State-agency level were subsequently reinstated on appeal by SSA's ALJs and the Federal courts. . . . in 1984 legislation was enacted changing the rules for terminating benefits. Under the new rules, a recipient could be disqualified on the basis of his or her medical condition only if the condition had improved since the previous decision. . . . Very few social security disability recipients were examined in 1984 and 1985 while the new standard was being implemented, and when the reviews resumed in 1986, only 5.6 percent of the cases reviewed were found ineligible by State-agency adjudicators. Since then, no more than 12 percent have been found ineligible in any year. This is much lower than the 40- to 50-percent ineligibility rates found in the 1977-1980 period (before the termination crisis emerged). . . . The result has been that the number of people dropped from the rolls in the past 5 years as a result of the reviews is lower than it was in the termination-crisis period of the early 1980s, even though the number of disabled recipients was larger in the more recent period.

The report also discusses the constraints on State workloads and the impact on conducting disability reviews of current recipients. These constraints could be a contributing factor to the lower termination recovery rate of the 1985 cohort during the first few years in the DI program. Further, the report points out that new criteria for mental impairments and other changes may have liberalized standards.

The legislation (in 1984) required SSA to revise criteria for claims based on mental impairments to "realistically evaluate a person's ability" to do substantive work "in a competitive workplace environment." In 1982, 11 percent of all awards were based on mental impairments; by 1991, the figure had risen to 24 percent, making mental impairments the largest category of new awards. The biggest increase occurred in 1985 and 1986, shortly after the criteria were revised.

There are, most likely, other external factors that have contributed to the growth of the DI program. For example, some people argue that the application rate increases when the economy declines. Studies should be undertaken that are designed to develop a better understanding of the forces that drive entrance into the program and exit out of the program.

Notes

¹ 1991 *Annual Statistical Supplement* to the *Social Security Bulletin*, Washington, DC, U.S. Government Printing Office, p. 2.

² Office of Disability, Social Security Administration Disability Determination File.

³ John C. Hennessey and Janice M. Dykacz, "Projected Outcomes and Length of Time in the Disability Insurance Program," *Social Security Bulletin*, Vol. 52, No. 9, 1989, pp. 2-19.

⁴ Janice M. Dykacz and John C. Hennessey, "Postrecovery Experience of Disabled-Worker Beneficiaries," *Social Security Bulletin*, Vol. 52, No. 9, 1989, pp. 42-66.

⁵ John C. Hennessey and Janice M. Dykacz, "A Comparison of the Individual Characteristics and Death Rates of Disabled-Worker Beneficiaries Entitled in 1972 and 1985," *Social Security Bulletin*, Vol. 55, No. 3 (Fall), 1992, pp. 24-40.

⁶ The same computer code is used for benefit suspense when the beneficiary is incarcerated. We have no way to determine how many cases this includes but we suspect that the number is low enough so that it will not affect the comparisons made.

⁷ Hennessey and Dykacz, "A Comparison of Individual Characteristics and Death Rates," p. 26.

⁸ Hennessey and Dykacz, "Projected Outcomes and Length of Time in the Disability Insurance Program," pp. 3-5, and Dykacz and Hennessey, "Postrecovery Experience of Disabled-Worker Beneficiaries," pp. 43-45.

⁹ *Manual of the International Classification of Diseases, Injuries, and Causes of Death* (Eighth Revision, 1967; Ninth Revision, 1978), Geneva, World Health Organization.

¹⁰ Hennessey and Dykacz, "Projected Outcomes and Length of Time in the Disability Insurance Program," pp. 20-41, and Dykacz and Hennessey, "Postrecovery Experience of Disabled-Worker Beneficiaries," pp. 61-66.

¹¹ "Status of the Disability Insurance Programs of the Social Security Administration," Congressional Research Service Report, September 8, 1992.

Note

Corrections have been made to technical appendix tables I-IV in "Projected Outcomes and Length of Time in the Disability Insurance Program," *Social Security Bulletin*, September 1989. These tables give coefficient estimates of recovery hazard functions and death hazard functions. Copies of the tables can be obtained from ORS Publications Staff, 4301 Connecticut Ave., NW., Suite 209, Washington, DC 20008.