Length of Stay on the Supplemental Security Income Disability Program

*by Kalman Rupp and Charles G. Scott**

This article analyzes duration on the Supplemental Security Income (SSI) disability rolls prior to age 65 among children and working-age adults, based on a 10-year followup of 1974-82 cohorts of new awardees by utilizing monthly data from administrative records for 1974-92, and on statistical projections beyond the followup period. Although SSI means testing is responsible for a high proportion of early suspensions, when multiple spells are accounted for, long stays dominate. The estimated mean length of all first SSI spells is 5.5 years. It is 11.3 years for disabled children, 1.3 years for disabled adults eligible for both the Social Security Administration's Disability Insurance (DI) and SSI, and 6.4 years for adults eligible for SSI only. When multiple spells are accounted for, the projected mean total preretirement-age SSI disability stay almost doubles to 10.5 years for all awardees and increases to 26.7 years for children.

* Mr. Rupp is from the Office of Research and Statistics, Social Security Administration, and Mr. Scott is from the Office of Retirement and Survivors Insurance and Supplemental Security Income Policy, Division of Program Management, Research, and Demonstrations, Social Security Administration. The authors share equal responsibility for this article.

This article examines the contribution of long program stays to the cost of the SSI disability program, as well as the patterns of length of stay in other means-tested government programs. The article focuses on the following questions:

- How long do people stay on SSI during the first 10 postaward years?
- What are the main reasons for leaving SSI?
- What is the length of first benefit recipiency spell?
- What is the expected lifetime number of benefit years for new awardees before age 65?
- How do length-of-stay patterns vary by age and by diagnosis?
- How do SSI length-of-stay patterns compare with those of other means-tested welfare programs and to the Social Security Disability Insurance program (DI)?

Answers to these and similar questions are of great potential policy importance, primarily because program costs are directly related to the length of program stay. Because of the strict disability test applied in SSI, few awardees are expected to have a full medical recovery. Many of those who do not leave the program due to death will face long-term disabilities. Long stayers (persons with a first spell of disability that lasted at least 10 years), even if they form a small fraction of new awardees, contribute disproportionally to the caseload and, therefore, to SSI program cost. Expected future program outlays are largely a product function of the number of new awardees entering the rolls and their lengths of stay. The recent sharp rise in the number of persons awarded SSI benefits has been accompanied by an increasing proportion of children and young adults. To the extent that young people stay in benefit status longer than older awardees, there is concern that the recent explosion in the number of awards to younger persons will eventually have a magnified effect on program costs, because of the coincident rise both in the

number of new awards and expected lengths of stay. Therefore, projection of future program outlays critically depends on assumptions about length of stay. Policymakers might also be interested in how length of stay varies by subgroup characteristics (such as age and diagnosis).

There are two distinct questions concerning length of stay: What is the distribution of new enrollees by expected length of stay? And what is the contribution of long stayers to the beneficiary rolls? In our analysis we will analyze length of stay from both of these perspectives, and will also provide information on the length of initial stays, return to the rolls, and total time spent in benefit receipt status. The proportion and characteristics of long stayers are important in addressing policy options for containing caseload growth. For example, policies that prevent the entry of potential long stayers or induce earlier exits might have substantial effects on caseloads. To the extent that there are no feasible policies to induce earlier exits among potential long stayers, a high proportion of potential long stayers among new awardees is expected to result in difficulties in containing future caseload growth.

Little is currently known about length of stay in the SSI program; Scott (1989) followed a cohort of 1981 awardees for a period of 4 years from the initial receipt of award in 1981.[1] However, information does exist on length of stay in other programs. For example, Pavetti (1993), Bane and Ellwood (1983, 1994), and Ellwood (1988), provided information on length of stay on the AFDC rolls. Burstein (1993) analyzed information on the length of Food Stamp recipiency spells. Hennessey and Dykacz (1989) developed a competing risk hazard model for a 1972 cohort of Social Security Disability (DI) awardees, and estimated length of first spells and reason for leaving the rolls. Dykacz and Hennessey (1989) analyzed the postrecovery experience of disabled-worker beneficiaries, while Bye, Riley, and Lubitz (1987), Bye and Riley (1989), and Bye and others (1991), looked at Medicare utilization and costs for the same 1972 cohort of DI awardees. McManus (1981) analyzed the return to the DI rolls in the context of estimating disability insurance savings due to beneficiary rehabilitation. Hennessey and Dykacz (1992, 1993) compared death rates and recovery termination rates for disabled-worker beneficiaries entitled in 1972 and 1985. A recent study by Chirikos (1993) suggested that the increasing proportion of young persons among DI awardees is likely to have produced a marked increase in average length of stay on the DI program rolls.

This article fills a gap in program data by focusing on length of stay on the SSI disability rolls. In it we look at length of stay prior to age 65 only, even though many SSI disability beneficiaries continue to receive benefits past their 65th birthday. The main reason for limiting our attention to pre-65 benefit recipiency is that persons aged 65 or older, who meet the income and asset tests, qualify for SSI benefits regardless of disability, while children and working-age persons must meet both the means test and SSA's disability criteria to receive SSI benefits. Thus, the length of disability spells directly affects SSI payment eligibility during the preretirement (pre-65) years, but it has no direct effect on SSI eligibility beyond age 65. In addition, limiting the analysis to the pre-65 receipt of disability benefits also facilitates interprogram comparisons, particularly with DI.[2] Comparisons with DI are particularly interesting because of program design differences. In particular, while the two programs share the definition of disability for working-age adults, means-testing is an important source of exits in SSI (suspensions due to excess income or assets), while DI exits for reasons other than death or conversion to old age or survivors status are limited to medical or work recoveries.

Throughout the analysis we distinguish between three groups of SSI disability awardees because they differ substantially in factors affecting length of stay and reasons for exiting the SSI program: (1) Children aged 0-17 at first award; (2) Concurrent SSI/DI new awardees aged 18-64; and (3) SSI-only (non-concurrent) new awardees aged 18-64.

The need to distinguish between children and adults is obvious: labor-market variables do not directly enter in determining children's eligibility for SSI, and the income and assets of parents, rather than self and spouse, are the key to the means test. Concurrent adult awardees fundamentally differ from nonconcurrent adults, because many of them lose SSI eligibility as a result of the receipt of DI after the 5-month DI waiting period (the law requires that a person be disabled continuously for 5 months before he or she can qualify for a disabled-worker benefit). Such persons appear as very short stayers on SSI, even though they may continue to receive DI without any interruption for very long periods of time.

Data and Methodology

The main source of data for this article is a 1-percent sample of the Supplemental Security Record (SSR)—the main computer file used to administer the SSI program. The sample contains records for all persons eligible for SSI payments since the program began in 1974. Records for multiple periods of payment eligibility were combined into 72,921 person records, containing payment histories and demographic variables that represent all persons who were newly awarded SSI disability benefits between January 1974 to September 1992, the month the sample was drawn from the SSR. Persons converted from previous State programs were not included in the analysis because their stays had already begun. Monthly SSI payment history information in our analysis reflects payment eligibility (for example, payments that were supposed to have been made each month), rather than actual payment receipt, the latter being affected by initial delays in processing and interruptions that resulted from reporting problems.

Data were added to these person-level records from two other SSA administrative data sources: diagnostic information came from the National Disability Determination Services System file,[3] and information on participation in the DI program was taken from the Continuous Work History Sample (CWHS).

Since the focus of our study is longitudinal (payment eligibility history), the

analysis is cohort-based. We have defined annual cohorts of initial awardees based on the first date of payment eligibility for each person in our file. Persons with multiple spells of payment eligibility were classified based on their initial month of payment eligibility. Characteristics such as age and diagnosis that may be time-varying were measured at the time of initial payment eligibility. For adults, a concurrent indicator was added based on the presence or absence of an DI payment within 1 year of first SSI payment eligibility from the CWHS.[4]

The advantage of such a cohort-based alignment of the data is that it provides a clear-cut reference point for analyzing payment histories (for example, the time of first award) and it permits, in theory, the tracking of complete lifetime payment eligibility histories. However, for those people in our sample who neither died nor reached age 65 by September 1992, the observations are right-censored; that is, we did not observe the end of payment eligibility history. Right-censoring of payment histories is more of a problem for recent cohorts of new awardees than for earlier cohorts of new awardees. For example, we can observe less than 1 year of payment history for new awardees entering SSI in October 1991 or later. In contrast, the 1974 cohort of new awardees is observed for a comparatively long, 16-year period after the first month of payment eligibility. To deal with the problem of right-censoring of payment histories we used two basic approaches. First, much of the analysis has been based on a uniform 10-year followup period for the subset of 32,146 persons, with a first period of payment eligibility between 1974 and 1982. Second, we developed methods to project payment eligibility beyond this 120-month period allowing the estimation of indicators of total payment eligibility experiences to age 65. Both of these approaches will be detailed below. Using a uniform 10-year followup period allows for a straightforward way of describing length-of-stay patterns for the first 10 postaward years that uses actual observations for the whole study universe and is unaffected by assumptions that are required in more complex hazard analysis approaches. Limiting the study sample to cases with actual observations for at least a 10-year followup period also reduces the sensitivity of estimated lifetime payment experiences to assumptions about event histories beyond the observation period.

Some of our analyses focus on the length of the first disability benefit spell, while other parts account for multiple spells of benefit eligibility. The length of the first spell of payment eligibility was defined as the number of months of uninterrupted eligibility for benefits prior to the person's 65th birthday. The events defining the end of the first payment eligibility spell are: (1) the return to nonpayment status due to death, (2) other reasons for the cessation of benefits (for example, benefit suspension due to excess income or resources), or (3) reaching age 65. For persons with an uninterrupted first eligibility spell throughout the whole observation period (that is, 120 months), the total length of the first payment spell is right-censored, and the reason for leaving the first spell is unobserved. However, using a relatively long and fixed observation period (10 years), we can observe a high proportion of completed spells and can also identify long stayers (that is, people with a first spell length of at least 10 years). In this study our focus is on describing basic length-of-stay patterns in the SSI disability program. Our findings reflect the average experience of cohorts of awardees with a first period of payment eligibility between 1974 and 1982. Of course, SSI disability length-of-stay patterns could have changed through time because of changes in the characteristics of new awardees—for example, changes in age-mix or other reasons. Changes in length-of-stay patterns over time are important topics for future analyses, but they go beyond the scope of the empirical analysis presented in this article.

We also developed measures of the total number of benefit months during the first 10 postaward years and over the lifetime of awardees. These measures provide a count of the total number of months of payment eligibility, regardless of the number of interruptions. Such measures are useful for projecting program costs for a specific period of time (for example, 5 or 10 years) associated with new awards or over the lifetime.

Several caveats apply to the analysis. The study methods were designed to describe basic length-of-stay patterns, rather than to provide causal modeling of factors affecting length of stay. We focus on length-of-stay patterns stratified by age and diagnosis, and do not analyze the effect of a variety of other variables that may affect duration on the rolls. Our estimates of length-of-stay patterns represent the average experience of the annual cohorts included in our study data base. To the extent that cohorts systematically differ, cohort effects may change estimated length of stay. The validity of our projected first spell and total stay estimates depend, of course, on the validity of the underlying assumptions. The most important underlying assumption of our methodology is that after the first 10 postaward years, exit and reentry probabilities are primarily driven by age. The fact that diagnostic differences primarily affect early exits due to death, and that the use of actual experience for the first 10 postaward years captures a substantial amount of information that reflects diagnosis and other unmeasured variables, reduces the sensitivity of our estimates to the underlying assumptions. In fact, tests of our projections against actual observations based on 18 years of followup information for the first annual cohort of new awardees, indicated excellent predictive accuracy. In conclusion, our study was designed to provide baseline information on length-of-stay patterns in the SSI program and left a number of interesting analytic issues for possible further studies.

Appendix A of this article provides a description of the methods used to project first spell length and total SSI stays. Appendix B contains standard error estimates.

Length of Stay During the First 10 Postaward Years

We were able to track persons newly awarded SSI benefits from 1974 to 1982, for at least 10 years. In this section, data are presented on the distribution of first spell length, the number of spells, and

proportion of time persons were on SSI during the first 10 postaward years. Later in this presentation subgroup variations are analyzed.

Overview

One way that length of stay can be measured is by looking at the length of the first spell; that is, the number of months between first eligibility and the completion of the spell either by death, by reaching age 65, or other reasons (table 1). The three groups—concurrent adults, nonconcurrent adults, and children—show markedly different patterns. While, overall, less than half (41.4 percent) of new awardees complete their first disability spell for reasons of suspension or reaching age 65 during the first postaward year, about 75 percent of concurrent adults exit within 1 year. Presumably, many concurrent adults exit the program because the start of DI payments, after the 5-month DI waiting period, results in excess income—which is a reason for suspension. The proportion of short initial stays is much smaller for nonconcurrent adults (28.9 percent) and smallest for children (20.1 percent). In contrast, more than one-third of children (35.9 percent), and about one-fifth of nonconcurrent adults (20.6 percent), have an initial uninterrupted length of stay of at least 10 years.

Some individuals who leave the rolls early may return to SSI payment status. Therefore, in addition to the length of initial payment eligibility spells, it is also useful to look at the total number of months individuals are on the SSI rolls during the first 10 postaward years, without regard to the number of interruptions (table 2). When this method of measuring length of stay is used, the distribution changes somewhat. The proportion with the maximum total length of stay during this 10-year window (120 months or more), is exactly identical with the proportion in the longest initial stay category in table 1, simply because any interruption reduces the total below 120 months. However, a relatively large portion (9.2 percent) falls into the next-to-highest (109-119 months) stay category, suggesting that many of those who have interruptions during the first 10 years stay off the rolls for relatively short periods of time. The proportion is especially high (16.4 percent) for children; more than 50 percent of all children stay on SSI for at least 9 out of the first 10 postaward years.

Conversely, table 2 shows that the proportion with very short (12 months or less) total stays during the first 10 postaward years is much lower than the proportion of very short initial stays (table 1). This suggests that many of those who are suspended from the program after a short stay, return to the rolls.

If the question about length of stay involves the continued attachment to the SSI program after the 10-year period, neither of the first two measurement methods are useful. Instead, one might want to know the proportion of persons being paid during the 120th month (table 3). Although only about 17 percent were paid continuously over the 120-month period, nearly 31 percent were paid in the 120th month. This suggests that nearly one-third of the awardees still have some connection to the program in the last month of the 10-year period. And, the proportion with spells of benefit receipt beyond the 10th year after first award is likely to be even higher for two reasons—(1) persons were not followed after age 65, and (2) some persons under age 65 who were not on the rolls at the 120th month may have returned subsequently. Indeed, when program stays are projected beyond the 120-month observation period, this point about the importance of return to the rolls becomes even more

Table 1.— Percentage distribution of persons awarded SSI in 1974-82, by length of initial SSI disability spell

Initial spell in months	All awardees	Concurrent adults	Nonconcurrent adults	Children
All awardees	32,146	9,399	18,825	3,922
12 or under	41.4	75.3	28.9	20.1
13-24	12.6	11.8	13.4	11.1
25-36	7.3	3.7	8.8	8.4
37-48	5.0	2.0	6.4	5.6
49-60	4.2	1.5	5.5	4.2
61-72	3.2	.9	4.1	4.2
73-84	2.9	.9	3.8	3.1
85-96	2.5	.8	3.3	2.7
97-108	2.2	.6	2.8	2.9
109-119	1.7	.5	2.3	1.9
120 or more	17.1	2.1	20.6	35.9

Table 2.—Percent of persons receiving SSI during first 10 postaward years, by total number of months

Months receiving SSI	All awardees	Concurrent adults	Nonconcurrent adults	Children
All awardees	32,146	9,399	18,825	3,922
12 or under	29.4	57.5	20.0	7.7
13-24	10.3	11.7	10.5	5.7
25-36	6.9	5.5	8.1	4.7
37-48	5.6	4.1	6.5	4.4
49-60	5.1	3.2	6.1	4.4
61-72	4.1	2.7	4.8	4.4
73-84	4.1	2.4	4.8	4.5
85-96	4.1	2.4	4.8	5.0
97-108	4.3	2.5	4.6	6.9
109-119	9.2	5.9	9.3	16.4
120 or more	17.1	2.1	20.6	35.9

apparent (see later section on total lifetime benefit years).

Table 3 also provides a measure of the amount of time that different groups spent on and off the SSI rolls. On the average, new awardees were paid for almost half (56 months) of the first 120 postaward months. However, nonconcurrent adults, and particularly children, were paid for a substantially higher number of postaward months. Children were paid, on average, for 87 months of the 120-month observation period, almost 75 percent of the time. Because a substantial portion of those who left the rolls returned, about one-third of nonconcurrent adults (33 percent) and two-thirds (64 percent) of the children were still on it at the end of the observation period (120th month). On average, those awardees who were on SSI in month 120 were in payment status for 110 months, suggesting that few of them stayed off the rolls for long periods of time.

Because stay lengths are complicated by movement in and out of eligibility status, it is useful to have some idea of the number of completed spells experienced by these cohorts of awardees (table 4). The number of awardees with multiple spells appears small during the 10-year followup period. Since 17.1 percent of the awardees did not leave SSI, and an additional 60.3 percent had a single completed spell lasting less than 10 years, the vast majority (77.4 percent) had no more than one benefit suspension during this period of time. However, a small proportion (1.2 percent) had 6 or more completed spells, indicating frequent movements on and off the rolls for this subgroup. Moreover, when projections are made beyond the 10-year observation period, the importance of multiple spells becomes more apparent. While a very large proportion of children stayed on the rolls for 10 years without any interruption, it is notable that children were also overrepresented among those who moved on and off the rolls several times; 4.1 percent of the children had six or more completed benefit spells during the first 10-post-award years. Multiple spells are particularly important to consider over the lifetime for persons whose first payment eligibility spell occurred in childhood.

Exiting the SSI Program

Why do people leave the SSI program? Do the reasons for exit differ for short stayers and long stayers? We looked at the reasons for leaving during the first 10-postaward years to answer these and related questions.[5]

Table 5 provides an overview of the reasons for exiting the SSI disability program. The top third of the table provides, by reason, the proportion of awardees who exited at least once during the first 10 postaward years. For those who stayed on the rolls throughout the observation period without any interruption, the reason for leaving was unobserved, and, therefore, these cases were classified as "never suspended" in our 10-year followup analysis. The vast majority of concurrents (83.2 percent) and about 33 percent of the children and nonconcurrent adults were suspended because of excess income. The reason for the large percentage among concurrents that exited due to excess income is that the receipt of DI benefits gave them income in excess of the SSI benefit standard. Early exits due to excess income explains the low proportion of death as a reason for first exit among concurrent adults compared with nonconcurrent adults; the observed difference does not appear to reflect differential mortality risk. The proportion that died is much higher among nonconcurrent adults than among children, and while a substantial minority of nonconcurrent adults reached age 65, none of the children, by definition, left the disability program because of reaching age 65. Thus, death and reaching age 65 are the two major reasons why the proportion who stayed on the rolls throughout the 10-year postaward observation period is much lower among nonconcurrent adults than children.

Table 5 also provides information separately for those who had only one completed spell and those with multiple

Table 3.—Percent of persons in payment eligibility status, first 10 postaward years

Months in payment status	All awardees	Concurrent adults	Nonconcurrent adults	Children
Total number of awardees	32,146	9,399	18,825	3,922
Mean months paid	55.7	28.0	62.9	87.3
Percent paid continuously	17.1	2.1	20.6	35.9
Percent paid last month	30.8	12.0	33.2	64.3
Awardees paid in month 120	9,899	1,132	6,246	2,521
Mean months paid	109.8	97.7	112.0	109.9

Table 4.—Percentage distribution of persons receiving SSI, by number of completed spells during first 10 postaward years

Completed spells	All awardees	Concurrent adults	Nonconcurrent adults	Children
All awardees	32,146	9,399	18,825	3,922
None completed	17.1	2.1	20.6	35.9
1 completed	60.3	71.1	59.6	37.3
2 completed	14.6	18.5	13.1	12.4
3 completed	4.3	4.9	3.7	5.3
4 completed	1.8	1.8	1.4	3.2
5 completed	.8	.8	.6	1.9
6 or more	1.2	.8	.9	4.1

spells. For those with multiple spells, we provide information on the reasons for the first and last exit. For those persons suspended more than once, the first suspension is very likely to have been from excess income; last suspensions are more likely to have come as a result of other reasons, including death, and reaching age 65.[6]

We also looked at the reasons for leaving by the length of the first uninterrupted benefit eligibility spell for adults and children (table 6). The stub categories refer to the dwindling number of awardees who "survive" on the program until the beginning of the given length category. The percent distributions reflect the exit events during the subsequent 12-month period. In each row the "percent staying" represents the starting total for the next row. For each length-of-stay category we give the proportion that did not leave during the subsequent 12-month period (percent staying) and exit rates (hazard rates) during this 12-month period, by reason.

Table 5.— Percent of SSI disability awardees who exited the program during the first 10 postaward years, by reason of death, reaching age 65, or payment suspension

Exit reason	All awardees	Concurrent adults	Nonconcurrent adults	Children
	All persons			
Total number	32,146	9,399	18,825	3,922
Total percent	100.0	100.0	100.0	100.0
No exit during first 10 postaward years	17.1	2.1	20.5	35.9
Exited at least once	82.9	97.9	79.4	64.1
Reason for first exit:				
Excess income	47.5	83.2	32.4	34.9
Reached age 65	10.3	4.4	15.4	.0
Death	9.0	2.4	12.8	6.7
Excess resources	2.4	1.1	2.8	3.5
Public institution	3.3	1.3	4.2	3.4
Other suspension	10.5	5.5	11.9	15.5
	Persons exited only once			
Total number	19,380	6,682	11,227	1,462
Total percent	100.0	100.0	100.0	100.0
Reason for exit:				
Excess income	50.1	83.1	31.9	38.9
Reached age 65	17.1	6.2	25.8	.0
Death	15.0	3.4	21.4	18.1
Excess resources	2.2	.7	2.6	5.1
Public institution	2.4	.7	3.1	5.2
Other suspension	13.3	5.8	15.3	32.8
	Persons exited more than once			
Total number	7,277	2,519	3,714	1,053
Total percent	100.0	100.0	100.0	100.0
Reason for first exit:				
Excess income	76.6	89.9	67.7	76.1
Reached age 65	.0	.0	.0	.0
Death	.0	.0	.0	.0
Excess resources	4.7	2.1	6.0	6.2
Public institution	8.0	2.9	12.2	5.6
Other suspension	10.7	5.2	14.1	12.2
Reason for last exit:				
Excess income	48.8	52.6	41.8	64.9
Reached age 65	16.2	17.2	20.1	.0
Death	10.0	11.2	10.7	4.9
Excess resources	3.5	1.9	4.3	4.7
Public institution	6.4	2.6	9.2	5.4
Other suspension	15.1	14.6	13.9	20.0

One of the most salient findings from table 6 is that—on average—the observed probability of leaving SSI dramatically decreases as a function of duration, at least for the first couple of years. The proportion of stayers among nonconcurrent adults increases from 71.1 percent during the first postaward year, to 90.1 percent during the 10th postaward year. Actually, the data show a sharp increase in the proportion of stayers during the first couple of postaward years and a stable pattern of 89-90 percent stay rates during the 6-10th postaward years. Mirroring this pattern of stay rates, overall the percent exiting drops from 28.9 percent during the first full year to 9.9 percent during the 10th postaward year. Looking at exit rates by reason, excess income is clearly the main reason, especially during the first couple of postaward years. The probability of exit due to excess income is 14.7 percent during the first year, amounting to over 50 percent of all exits during the first year. Death hazards are high during the first couple of years, then decline, but continue to be much higher than comparable death rates for the general population.[7] The probability of leaving due to reaching age 65 inches upward, eventually becoming the single most important exit reason. As the probability of exits due to other reasons tends to decline with length of stay, the proportion of those who exit due to reaching age 65 increases from 9.3 percent of all 'leavers' during the first year, to 37.4 percent during the last year.

The bottom half of table 6 clearly indicates that children are more likely to stay than nonconcurrent adults. As much as 95 percent of those children who did not exit before the beginning of the 10th postaward year are expected to stay on

the rolls during the next year. Excess income is the dominant reason for leaving among children just as among adults. Exits due to death show a similar duration dependence for children as for adults. The probability of leaving for this reason is systematically lower for children than for adults, but it is relatively high compared with death rates for nondisabled children.[8] An important reason for the relatively high proportion of children who stay on SSI is that—in contrast to nonconcurrent adults—none of them reach age 65 during the first 10 postaward years. In fact, even at the end of the 10-year observation period, children (aged 10-27 at that point in time) still face a potential 38-55 years of exposure to the SSI disability program.

The observed association between previous duration on the rolls and the probability of exit is important for projecting caseloads; however, causal interpretation is more ambiguous. The empirical pattern discussed above might be the result of two distinct causes, or it may be a combination of them. First, it is possible that there is genuine duration dependence. In this case, the probability of exit declines as a result of duration on the rolls; staying on the rolls would make it harder and harder for the person to get off. Second, the same pattern of observations could be generated as a result of population heterogeneity. If there are two or more groups of new awardees with different hazard rates that are constant through time, the group(s) with relatively low hazard rates will increasingly dominate the subgroups remaining on the rolls for longer periods of time, simply as a result of the fact that subgroup(s) with relatively high hazard rates have a relatively high probability of early exit. Therefore, the observed average hazard rate for the various subgroups combined is expected to decline even if the hazards for the various subgroups were constant through time. Based on the data presented in table 6, it is impossible to differentiate between these two competing explanations. While the information provided can be useful in predicting declining exit rates conditional on previous duration on the rolls, the causal interpretation is more ambiguous. Prediction is important for some purposes, such as projecting caseloads, while causality may be relevant in other contexts, such as the design of the timing of vocational rehabilitation interventions or assessing the effects of duration on the labor supply of spouses or parents of children.[9]

Length-of-Stay by Age and Diagnostic Group

To develop a better understanding of how the changing mix of new SSI awardees affects length of stay and program cost,[10] it is important to analyze how age, disability diagnosis, and other characteristics are related to length of program stay. As the first step in analyzing the role of various factors affecting length of stay, we developed indicators of short (12 months or less) and long (120 months or more) initial stays by age and diagnostic group. Separating the independent effect of these and other characteristics on length of stay is an important

Table 6.—Percent of conditional probability of exit over subsequent 12-month periods, by length of uninterrupted initial stay

Length of uninterrupted stay in months	Total at beginning of 12-month period	Percent	Percent staying	Percent leaving during subsequent 12 months, by reason of—					
				Excess income	Death	Public institution	Excess resources	Reached age 65	Other
	Nonconcurrent adults								
1-12	18,825	100	71.1	14.7	4.6	1.5	0.6	2.7	4.8
13-24	13,392	100	81.1	7.2	2.8	1.2	.8	3.2	3.8
25-36	10,870	100	84.6	5.6	2.3	1.0	.7	3.2	2.6
37-48	9,205	100	86.9	4.8	2.1	.7	.6	3.2	1.7
49-60	7,991	100	86.9	4.4	2.5	.7	.5	3.6	1.4
61-72	6,949	100	88.9	3.8	1.8	.5	.6	3.5	1.0
73-84	6,179	100	88.4	4.0	2.0	.5	.6	3.7	.7
85-96	5,464	100	88.5	3.3	2.1	.5	.5	4.0	1.1
97-108	4,838	100	89.1	3.1	1.7	.5	.3	3.9	1.3
109-119	4,310	100	90.1	2.9	1.6	.6	.4	3.7	.7
	Children								
1-12	3,922	100	79.9	12.6	2.3	0.8	0.7	.0	3.6
13-24	3,135	100	86.2	6.7	1.6	.9	.9	.0	3.8
25-36	2,701	100	87.9	5.1	.9	.9	.5	.0	4.7
37-48	2,373	100	90.8	4.7	.8	.8	.6	.0	2.3
49-60	2,154	100	92.3	3.9	.6	.4	.8	.0	1.9
61-72	1,989	100	91.8	4.3	.9	.4	.8	.0	1.9
73-84	1,825	100	93.3	3.8	.6	.5	.4	.0	1.4
85-96	1,702	100	93.7	3.8	.6	.3	.5	.0	1.1
97-108	1,595	100	92.3	4.3	.7	.6	.5	.0	1.6
109-119	1,481	100	95.0	3.1	.7	.1	.2	.0	.9

topic for future research. In the following section we describe the length of initial spells by age and diagnostic group.

There is a strong negative association between age and length of stay. The proportion of short stayers is lowest for children; young people are relatively less likely to leave the rolls than middle-aged and older new awardees. This is partly related to the fact that the chances for early exit due to death increases with age. This pattern can be clearly seen in chart 1, which has the age category for children and nonconcurrent adults. Data on concurrent adults are not included here, since very short stays dominate for this group simply as a result of the loss of income eligibility due to the award of DI benefits after the 5-month waiting period.

In contrast to short stays, the proportion of long stays decreases with age. This is also partly attributable to differential mortality, but the sharp drop in the group aged 50-61 is primarily explained by the fact that a substantial portion of this group hits the 65-year cutoff point within 10 years after entry.

There are also substantial differences in length of stay by diagnostic group (table 7). The proportion exiting during the first year ranges from a high of 62.1 percent for neoplasms, to a low of 7.0 percent for mental retardation among nonconcurrent adults. Conversely, the proportion of long stayers shows the opposite patterns. The proportion of long stayers is relatively high for the psychiatric, mental retardation, central nervous system, and congenital categories both for adults and children.

Age, diagnosis, and other factors simultaneously affect the probability of short and long stays. Disentangling the separate effect of various factors and interaction effects is an important issue for future research.

First Payment Spell Length

While the 10-year postaward period analyzed in the previous section is a substantial followup period, a large proportion of new awardees do not complete their first uninterrupted payment eligibility spell within this period, especially children. Very long stayers have disproportionately large effects on mean length of stay and, as earlier noted, they are also substantially overrepresented among

Chart 1.—Length of first spell for children and nonconcurrent adults, by age at application

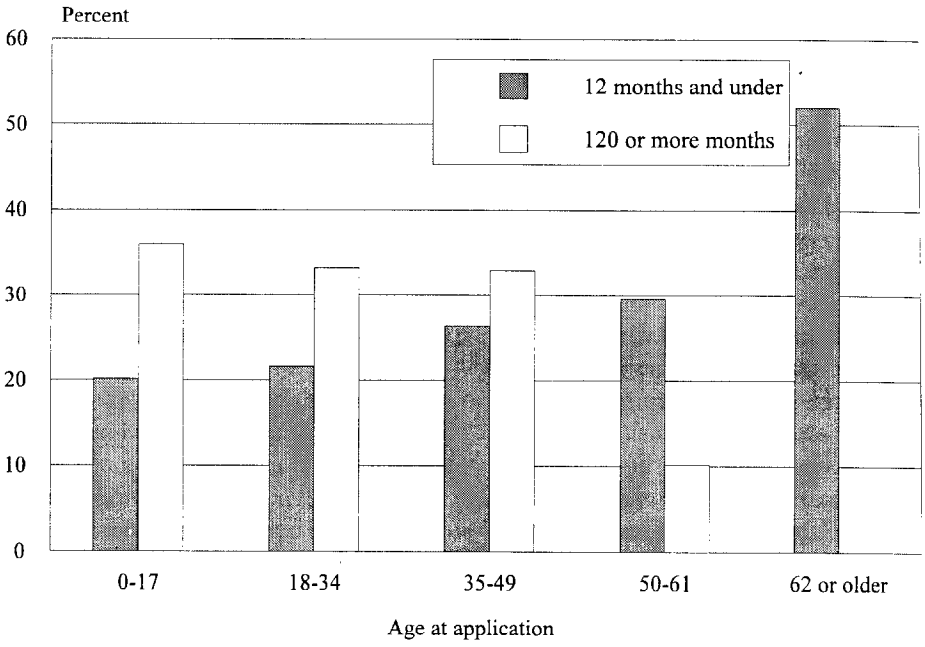


Table 7.— Proportion of short and long initial spells, by diagnostic group

Diagnostic group	Nonconcurrent adults			Children		
	Sample size	Percent		Sample size	Percent	
		1-12 months	120 or more months		1-12 months	120 or more months
Infectious	188	21.3	16.5	10	0.0	30.0
Neoplasms	854	62.1	3.3	82	32.9	4.9
Endocrine	702	20.7	16.8	35	20.0	17.1
Psychiatric	2,607	11.4	29.8	186	5.4	46.2
Mental retardation	2,077	7.0	37.2	1,529	3.8	33.2
Central nervous system	1,367	17.1	22.2	680	7.2	26.0
Circulatory	2,285	27.6	11.3	26	19.2	15.4
Respiratory	643	23.6	11.7	35	20.0	22.9
Digestive	283	35.3	9.9	5	.0	20.0
Genitourinary	141	22.7	12.8	23	17.4	8.7
Musculoskeletal	1,703	20.8	14.2	40	20.0	10.0
Congenital	173	11.6	27.2	243	12.3	27.2
Injury	524	21.0	17.9	53	20.8	32.1
Other	492	32.1	11.2	96	13.5	31.3

beneficiaries at any point in time. Without estimating first spell length for those still on the rolls at the end of the 10-year observation period, it is impossible to calculate mean length of first stay in order to get a complete picture of the effect of long stayers on the beneficiary rolls, and on program cost.

Therefore, we developed a simulation methodology to project the length of first payment spells beyond the first 10 post-award years. Appendix A summarizes the key features of our methodology. The key assumptions of our methodology are that (1) for those who have an uninterrupted first spell of at least 10 years, the probability of exit due to death, and other reasons for suspension, is a function of age; and (2) people who did not exit before their 65th birthday due to death or other reasons complete their first spell upon reaching their 65th birthday.

Chart 2 presents the estimated distribution of first spell length. The data show the large number of short stayers followed by small but persistent groups of recipients who stay on the rolls for very long times. While the chart shows that the vast majority of adults and approximately half of the children end their first spell during the first 5 years, the importance of long stayers is larger than the visual impression may suggest, especially for children. While only slightly more than 1 percent of children are expected to have an uninterrupted first spell of 55 years or more, these first spells contribute to the benefit rolls approximately 60 times as much as the program stays of those who complete their first stay in approximately 1 year.

In fact, even though about half of the children have a first uninterrupted spell of less than 5 years, their average length of first spells is 11.3 years. For nonconcurrent adults aged 18-64, the average first spell length is 6.4 years, while for concurrent adults it is only 1.3 years. Overall, the estimated average length of a first disability (pre-65) spell is 5.5 years for SSI first awardees.

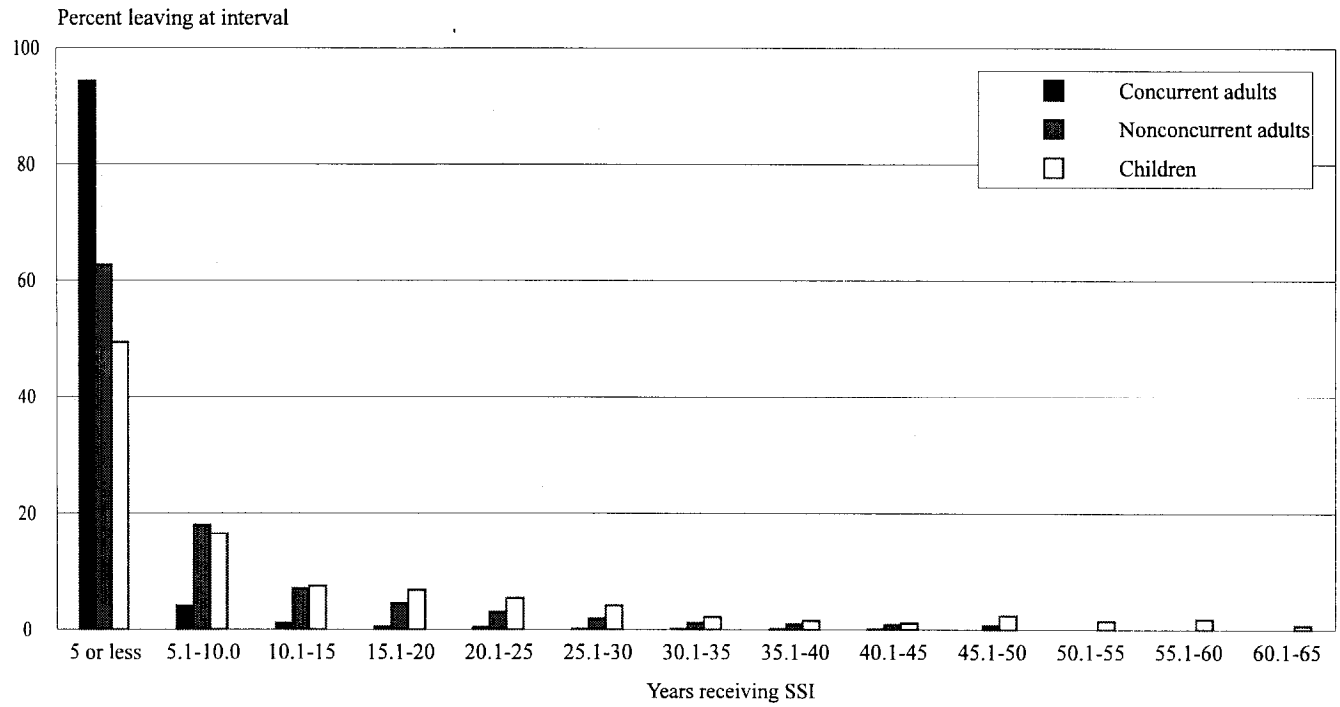
While these estimates are suggestive, it is important to keep in mind that the accuracy of the projections of very long stays depends on the validity of the underlying assumptions. Different methodologies of projecting spell length beyond the observation period may result in somewhat different estimates of mean length, and, of course, programmatic changes may also induce changes in behavior that may result in deviations from projected patterns. With these caveats in mind, however, our estimates are likely to provide a reasonable first approximation of subgroup differences in the expected mean length of first spells.

Return to the Rolls and Total Lifetime Benefit Years

Many people leaving the rolls subsequently return; therefore, it is important to move the analysis beyond the first spell, and account for the possibility of multiple SSI benefit spells during a lifetime. In this section, we provide data on return to the rolls and the estimated total length of stay in payment eligibility status prior to age 65.

Table 8 provides information on return to the rolls for the three subgroups of awardees, by the length of their initial spell. For each initial length-of-stay category the percentages in the table represent the proportion who returned to payment eligibility status after a noneligibility spell of the length indicated by the banner categories. For those with the shortest first spell (1-12 months), we observe potential returns during the first 9 postexit years, while the length of the postexit observation period is reduced by

Chart 2.—Distribution by length of first SSI disability spell



1 year for each successive initial length category.

About one-fourth of nonconcurrent adults return to the rolls within a year after first exit. The estimated proportion appears fairly invariant to the length of the first spell. While the proportion returning to the rolls appears to decline as a function of the length of the first noneligibility spell, the cumulative effect of return after more than 1 year spent in noneligibility status is not trivial. Among those with an initial stay of 1-12 months, 10.3 percent return to the rolls within 2-9 years in noneligibility status; this raises the proportion returning to SSI within the first 9 years to 36.5 percent.

The patterns of return to the rolls is similar for adult concurrents, with the exception of the lower probability of returning to SSI among those with an initial spell length of 12 months or less. This might be attributable to SSI awardees loosing payment eligibility as a result of qualifying for DI benefits.

The probability of return to the rolls is substantially higher for children than for adults in all initial stay categories. Approximately 40 percent of children with an initial stay of 1-12 months return to the rolls within 1 year, and the proportion returning to the rolls within the first year tends to increase as a function of the length of initial spells. The probability of returning to the rolls after a nonpayment eligibility spell of more than 1 year also tends to be relatively high for children—25.9 percent of children in the 1-12 month initial-stay category return within 2-9 years of their first exit. This increases the proportion returning in this initial-stay category to 65.7 percent within the first 9 years.

Thus, in the SSI program it is extremely important to account for the total length of all stays, rather than to rely exclusively on data limited to first spells. Estimates of the expected lifetime length

Table 8.—Number and percent of persons returning to SSI payment status, by length of initial SSI stay and first spell of noneligibility

[In months]

Length of first spell in months	Total number of awardees	Months of ineligibility before returning to rolls (percent returning)								
		1-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108
	Nonconcurrent adults									
1-12	5,433	26.2	3.4	2.2	1.2	0.9	0.8	0.5	0.8	0.5
13-24	2,522	27.0	4.8	1.5	1.3	1.2	1.0	.8	.6	
25-36	1,665	25.3	3.0	2.0	1.1	.9	.8	.7		
37-48	1,214	24.8	3.2	1.3	1.3	.7	1.4			
49-60	1,042	23.6	3.3	1.5	1.1	.5				
61-72	770	27.3	2.7	1.3	1.2					
73-84	715	23.6	3.1	.8						
85-96	626	26.5	1.0							
97-108	528	24.8								
	Concurrent adults									
1-12	7,019	22.7	2.3	1.2	0.9	0.8	0.7	0.7	0.5	0.5
13-24	1,108	33.2	3.0	2.2	1.3	.9	.7	.5	.9	
25-36	344	35.8	3.5	.6	.6	.6	1.5	.6		
37-48	189	25.9	2.1	1.6	.0	.5	.5			
49-60	138	34.8	2.9	.7	.0	.0				
61-72	88	19.3	1.1	2.3	1.1					
73-84	83	16.9	1.2	.0						
85-96	76	25.0	5.3							
97-108	53	30.2								
	Children									
1-12	787	39.8	7.9	4.4	4.3	3.2	2.8	1.0	1.4	0.9
13-24	434	45.4	6.2	5.5	2.1	2.8	1.8	.9	.9	
25-36	328	44.5	6.7	4.0	2.7	1.8	1.8	1.8		
37-48	219	51.1	7.8	2.3	1.8	1.8	3.7			
49-60	165	53.3	4.8	3.0	.0	1.2				
61-72	164	50.0	7.3	1.8	4.3					
73-84	123	58.5	5.7	6.5						
85-96	107	59.8	3.7							
97-108	114	56.1								

of disability stays prior to age 65, to be presented in the material that follows, allow us to project the expected contribution of very long stayers to the beneficiary rolls. This is an extension of our approach to simulating first spell length, the major difference being that here we account for the probability of returning to the rolls. In our simulation we allowed for the possibility of multiple spells of various length, and the exit and reentry probabilities beyond the 10-year post-award observation period are assumed to be a function of age, through an iterative process of aging the sample. Moreover, we developed separate models for children, concurrents, and nonconcurrent adults, and we assumed that as children reach adulthood, their exit and reentry probabilities will reflect the experienceof nonconcurrent adults.

We estimate that the overall expected mean lifetime disability stay of new SSI awardees prior to age 65 is 10.5 years, almost twice as long as the mean length of first stays. The expected means can be seen dramatically as they vary by age at first award (chart 3). We estimate that those first awarded benefits as children aged 0-17, *on average*, are expected to accumulate 26.7 benefit years before they reach their 65th birthday.[11]

A direct comparison of projected first spell length and total lifetime disability benefit years for all awardees shows that accounting for multiple spells increases the estimated proportion in the longer stay categories (chart 4). There is an approximately 20-percentage point drop in the proportion staying for 5 years or less as a result of accounting for multiple spells. The proportion of lifetime stays of 20.1-25 years (5.6 percent) is more than twice the proportion of first spells (2.3 percent) falling into this length category. Although the proportion falling into each 5-year interval beyond 25 years tends to be small for both measures, the relative differences tend to increase as we move toward the longer length-of-stay categories. The cumulative differences are notable: while only 5.1 percent of first spells last more than 25 years,13.6 percent of total stays are longer than 25 years.

Chart 3.—Projected number of years that children and working-age adults will receive SSI disability payments prior to reaching age 65, by age when first eligible for SSI

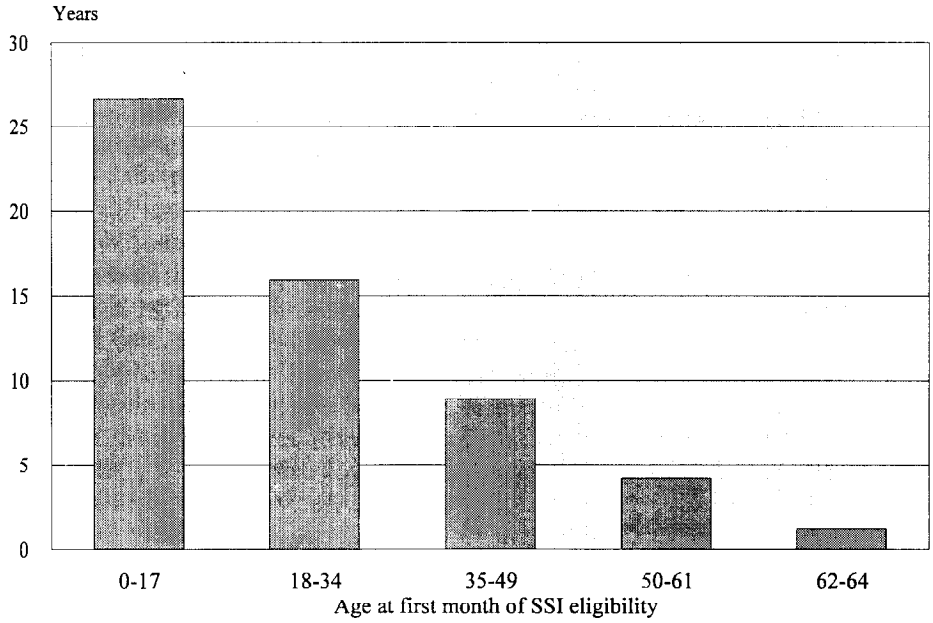
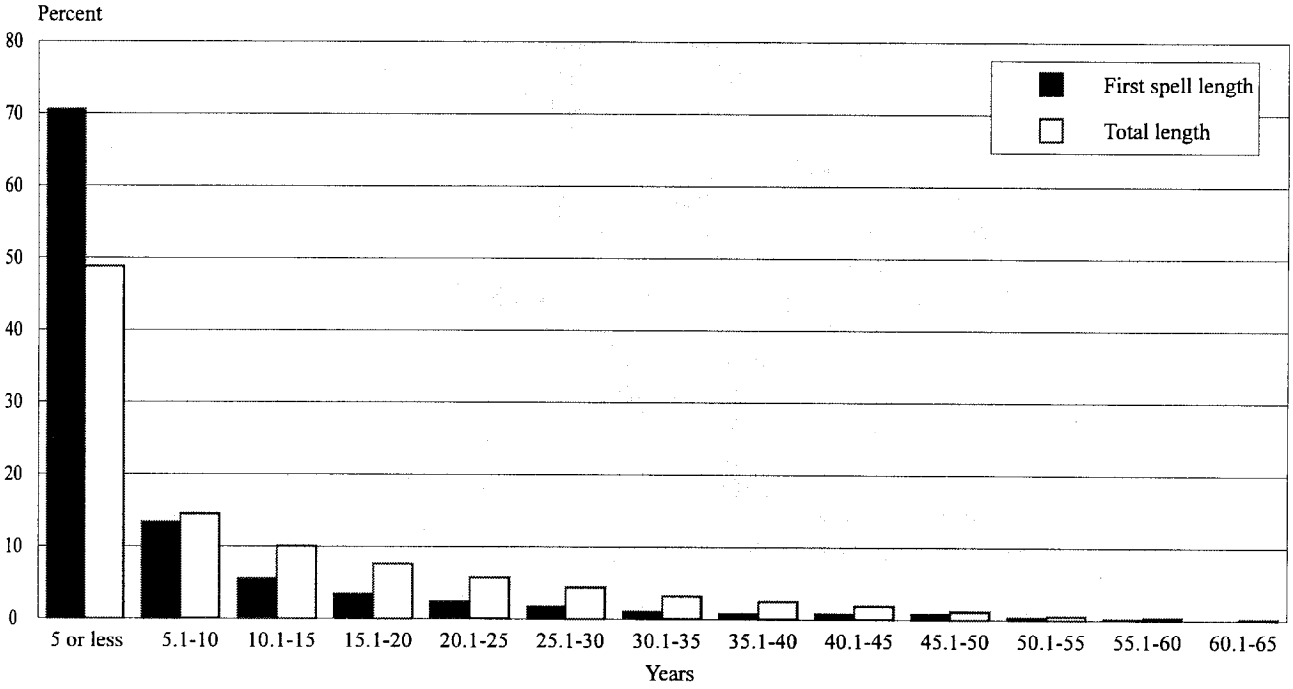


Chart 4.—Distribution by number of years receiving SSI disability payments before age 65, for children and working-age adults combined



The comparison can be highlighted for those who received their first SSI award as children (chart 5). For children, accounting for multiple spells dramatically changes the picture. While almost 50 percent of first spells are 5 years or less, we estimate that the proportion of children with expected lifetime stays falling into the same category is less than 10 percent. According to our estimates, about the same proportion of children are expected to have lifetime SSI stays of 50 years or more prior to age 65.

What is the anticipated effect of long stayers on the disability rolls in the long run? To answer this question we converted our cohort-based estimates of expected lifetime disability stays for new awardees to point-in-time estimates of the mix of SSI beneficiaries among the expected length-of-stay categories. Assuming a no-growth steady-state system, this can be done by weighting new awardees by expected length of stay: a new awardee with an expected 65 years of disability stay (the theoretical maximum) is expected to contribute to the stock of beneficiaries at a point in time 65 times as much as another new awardee with a 1-year expected length of stay.

The results of our simulation are dramatic (chart 6). New SSI awardees with an expected completed lifetime disability stay of 5 years or less comprise about 50 percent of new awardees, but their contribution to the simulated stock of beneficiaries is only slightly over 10 percent. In contrast, those with expected lifetime stays of more than 30 years comprise less than 10 percent of new awardees, but make up approximately one-third of the simulated stock of SSI beneficiaries.

Since the SSI program only started in 1974, and because very long stayers are expected to play such an important role in contributing to the number of beneficiaries, these simulations suggest that the system is far from having reached an equilibrium, and the proportion of per-

Chart 6.—Distribution by length of stay before age 65: New SSI awardees and caseloads

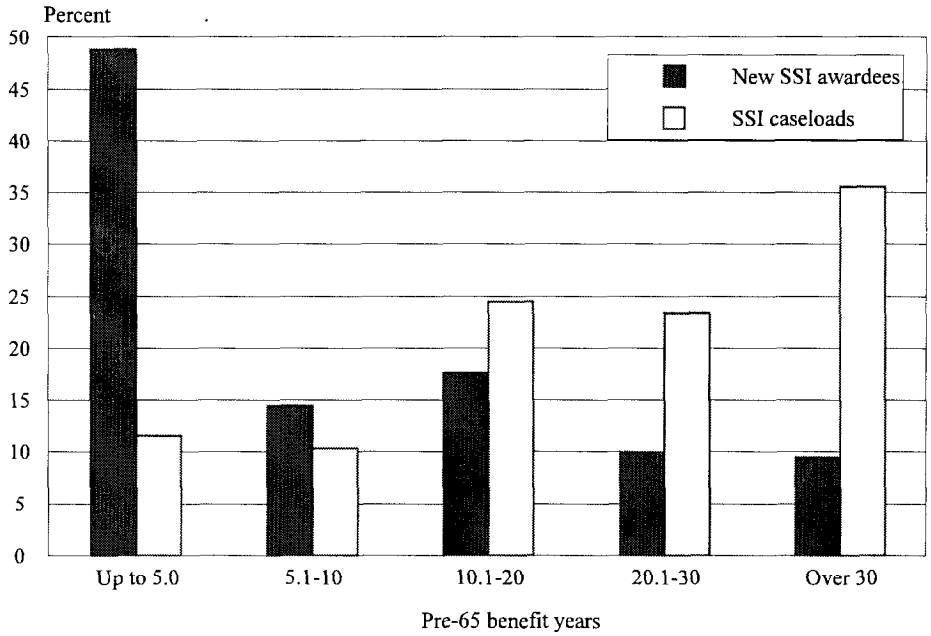
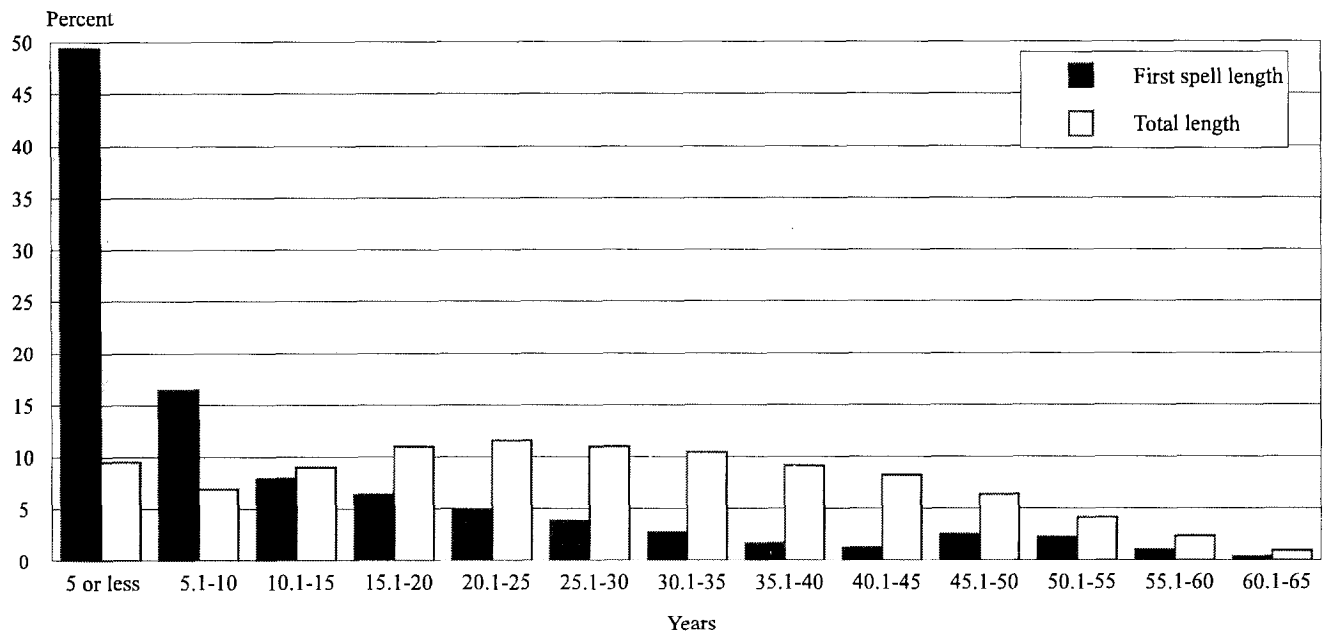


Chart 5.—Distribution by number of years receiving SSI disability payments before age 65, for children



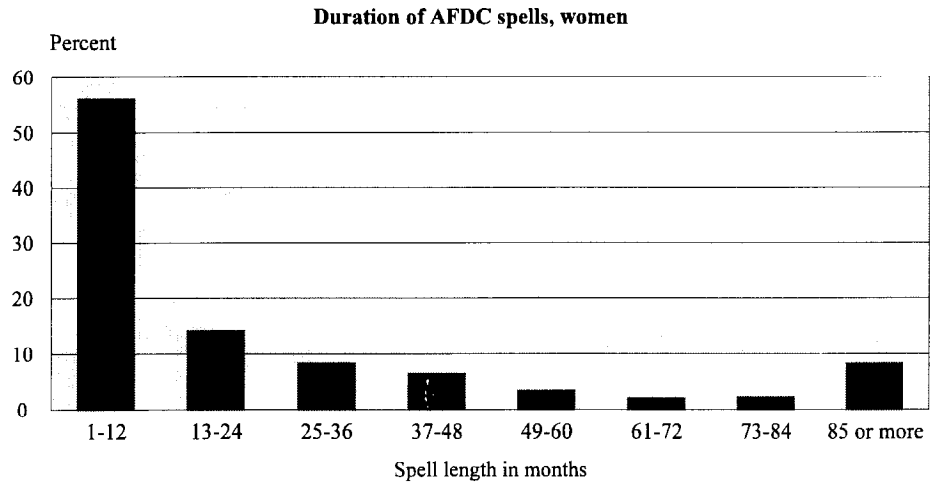
sons with expected very long stays is likely to increase in the future, even if the composition of new awardees were to stay constant. Since the proportion of new awardees who enter the program as children or young adults has in fact increased through time, the likely increase in the share of very long stayers in the program is expected to increase even more dramatically in the future.

Interprogram Comparisons

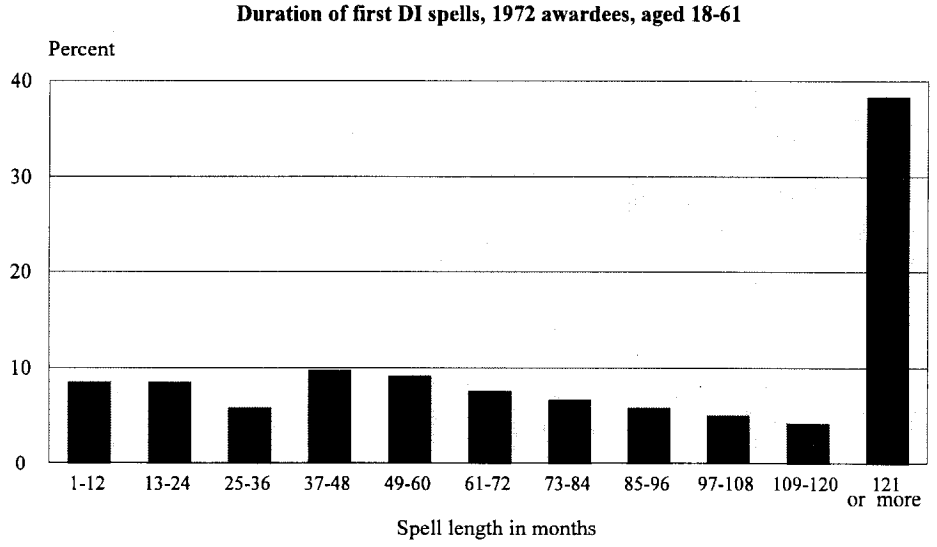
Length of stay is of substantial interest among policymakers concerned about other social programs as well, essentially for the same reason: program cost is greatly affected by how long people stay in payment status. In some programs, like the Food Stamp program, participation is primarily a short-term phenomenon for most people. As reported by Burstein (1993, p. 36), about half of completed Food Stamp spells last for 6 months or less (50.9 percent), and only a small minority (19.7 percent), have uninterrupted spells of more than 2 years. This is undoubtedly related to the fact that individuals can obtain eligibility for food stamps based on a means test alone; low income persons affected by temporary declines in income due to job loss or other factors may qualify without satisfying any other requirements.

However, in other programs such as AFDC and DI (as well as SSI for the blind and disabled nonelderly), the receipt of benefits is contingent on such conditions as the presence of children, or qualifying disabilities that, for many persons, contribute to long program stays—which is one of the reasons for interest in the length of program participation and the feasibility of policies to reduce stay length for all three programs. In this section, we focus on comparisons with AFDC and DI for various reasons. Much of the previous work on duration of program participation has focused on AFDC, and AFDC has come to represent the notion of a public program where long duration is a major concern. Programmatic interest in comparing SSI and DI is obviously related to the similarity of target populations by disability status and differences attributable to economic

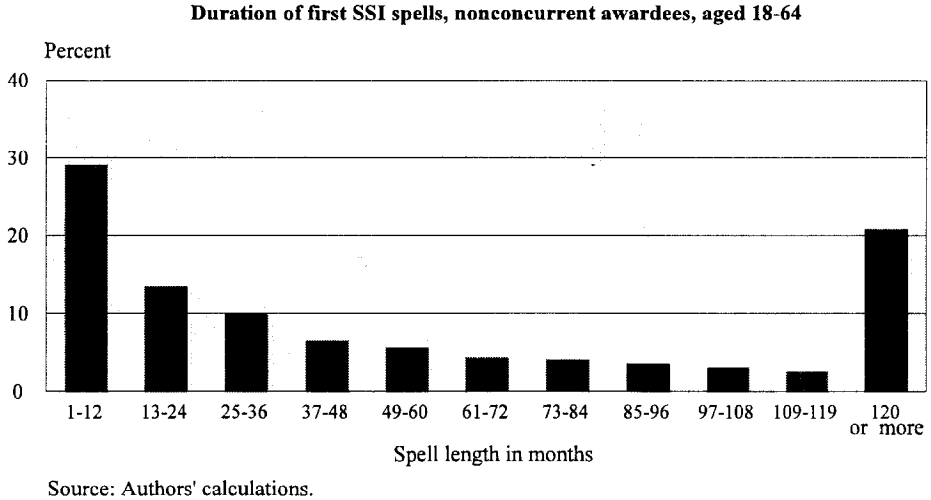
Chart 7.—Comparison of the distribution of AFDC, DI, and SSI nonconcurrent adult spells, in months



Source: Pavetti (1993).



Source: Hennessey and Dykacz (1989).



Source: Authors' calculations.

eligibility requirements. The SSI program rules share means testing with AFDC and disability criteria with DI.

Chart 7 provides a comparison of the distribution of projected spell length for three programs: AFDC, DI, and SSI. There are some differences in methodology, but these do not affect the major conclusions from the comparison.[12] The SSI distributions presented here represent the experience of nonconcurrent adults, and, therefore, do not overlap with the DI information. However, we note that the DI chart includes the DI benefit receipt experience of both DI only and concurrent beneficiaries; no information is currently available on the duration of these two groups of beneficiaries on the DI rolls separately.

More than half of the AFDC spells last less than 1 year, reflecting the means-tested nature of the program as well as the relative frequency of moving in and out of the labor force—a characteristic of many AFDC recipients. In contrast, a very high proportion of DI new awardees stay in the program for 10 years or more without any interruption, reflecting the fact that DI eligibles can stay on the rolls based on long-term disability unaffected by the interruptions that characterize means-tested programs. SSI is both a means-tested and a disability program: this is reflected in the relatively high proportion of short spells (compared with DI)[13] and the relatively large proportion of long spells (compared with AFDC).

Chart 8 compares the mean length of first spells for SSI nonconcurrent adults and DI for comparable age groups. The DI data are derived from Hennessey and Dykacz (1989). Both the SSI and DI means were estimated using projected spell lengths up until age 65. The data clearly show that first spells tend to be longer for DI. This is largely attributable to the fact that very few—only an estimated 11 percent—of DI beneficiaries leave the rolls for reasons other than death or reaching the regular retirement age. In contrast, the most frequent reason for leaving the SSI rolls is excess income, especially during the early years. Exit rates tend to be higher for SSI than for DI—hence the lower mean length of first spells.

The interprogram comparisons previously discussed were based on a single spell. However, SSI and AFDC caseload dynamics are substantially affected by return to program payment status, and, therefore, interprogram comparisons should also account for multiple spells. Chart 9 clearly shows the importance of accounting for multiple spells in interprogram comparisons. The first three columns of chart 9 present comparable data on first spell length and expected total time on AFDC[14] and SSI. Because of the lack of comparable data for DI, the fourth column provides the authors' rough estimate for lifetime DI stays.[15]

The comparisons in chart 9 show that accounting for multiple spells is particularly important for SSI, especially for children. The chart reflects the Bane and Ellwood (1983) estimate that accounting for multiple spells increases the estimated mean AFDC stay from 4.7 years for first spells to 6.2 years of expected total time on AFDC for women beginning a new spell. This is comparable, although not as dramatic as the estimated increase from 5.5 years to 10.5 years for all SSI new disability awardees in our analysis that arises from accounting for multiple spells. In contrast, we estimate that accounting for multiple spells increases mean DI length of stay from 9.3 years to 9.7 years only, a fairly minor increase. This is not surprising in light of the fact that although—as Dykacz and Hennessey (1989) estimate—almost 50 percent of those who recover from DI eventually return to it, but only 10 percent of new awardees are expected to recover. In the DI-SSI comparisons, the inclusion of children in the SSI disability program plays a major role. However, even for nonconcurrent SSI adults the estimated effect of accounting for multiple stays is dramatic. We estimate that accounting for multiple spells increases mean length of stay for nonconcurrent SSI adults from 6.4 to 10.4 years. The contrast with the relatively minor role of multiple spells for DI can be partly explained by the fact that new DI awardees tend to be older than new SSI awardees and, as noted, means testing applies only to the latter group.

An important issue is the expected contribution of long stayers to the SSI caseload. To illustrate this point, chart 10 provides two columns for each program: "new awardees" and "caseload." The

Chart 8.—Mean length of first spell: SSI nonconcurrent adults and DI, by age

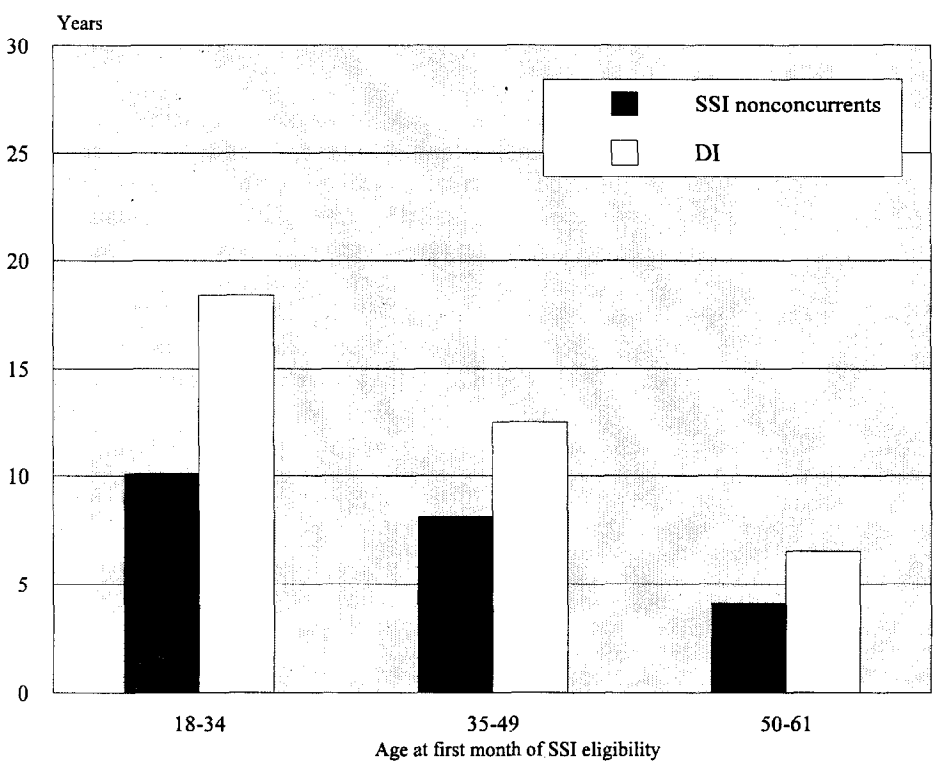


Chart 9.—Length of first spell and expected lifetime program stays: AFDC, SSI, and DI programs

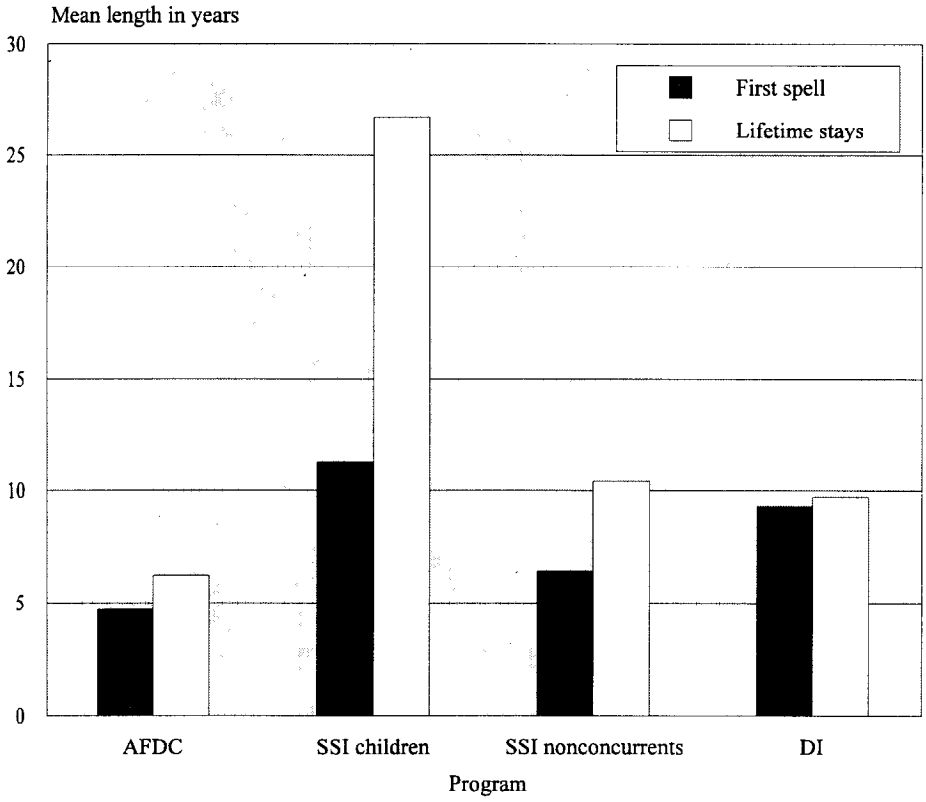
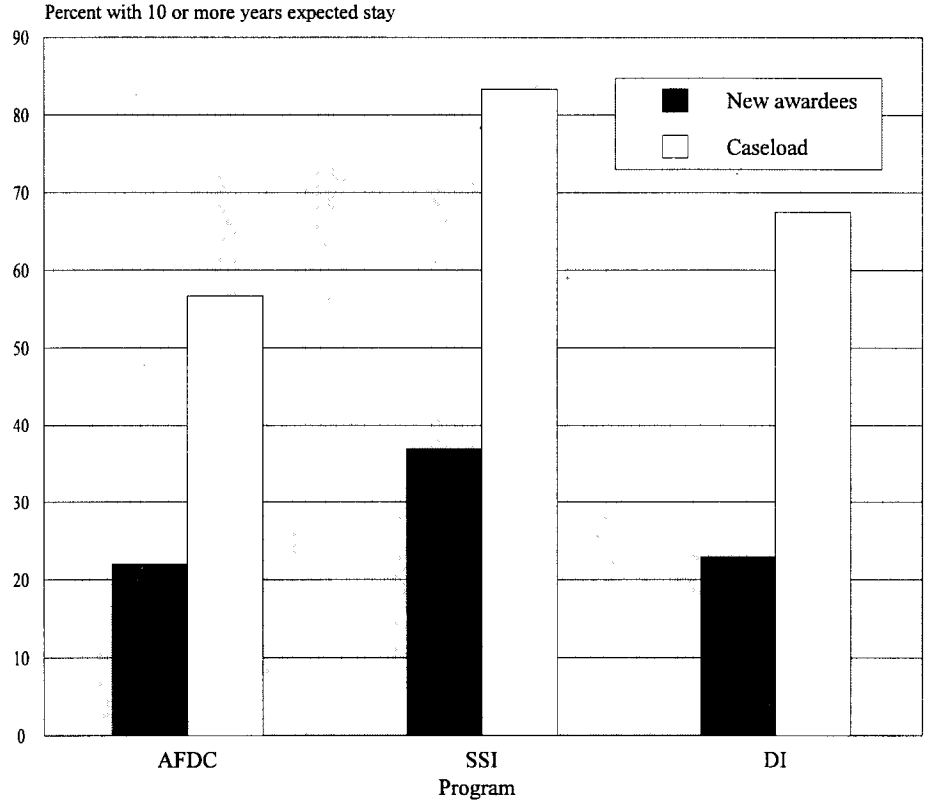


Chart 10.—Proportion of long stayers: New awardees and caseloads, AFDC, SSI, and DI programs



"new awardees" column is cohort-based and provides mean lifetime benefit year estimates for new awardees.

The second column for each program in chart 10 shows the simulated proportion of beneficiaries with long expected program stays. The source of the AFDC estimate is Bane and Ellwood (1994, p. 39). The SSI and DI estimates were calculated by the authors from our study file and the cohort-based estimates from Hennessey and Dykacz (1989, p. 8), assuming a no-growth steady state. These data show the estimated proportion of beneficiaries at a point in time who are expected to have long (10 years or more) program stays over their lifetimes. The chart also shows that long stayers dominate the caseload of all three programs, with SSI at the top: 83.3 percent of all SSI beneficiaries on the rolls at a given point in time are expected to have lifetime SSI disability stays of 10 years or more. (Our data reflect expected lifetime stays, not uncompleted stays that can be observed at any point in time. Some eventual long stayers show up with relatively short uncompleted stays at any point in time.)[16] The large proportion of long stayers in the SSI caseload has at least two major policy implications: (1) to the extent that there are no feasible policies to reduce very long stays, the presence of long stayers is expected to make it difficult to control caseload size, and (2) policies that reduce long stays or prevent the entry of potential long stayers are expected to have substantial effects on caseloads. Since the program is still in a maturing stage, our findings suggest that the proportion of long stayers is expected to be an increasingly important feature of the SSI caseload as we move towards the next century.

Conclusions

Long stayers contribute heavily to SSI caseloads. About half of all awardees under age 65 leave the rolls within 2 years. However, many who leave the rolls return. More than one-third of the new disability awardees are expected to stay in SSI disability payment status for 10 or more years prior to age 65, and many will stay after age 65. Because

long stayers contribute to the SSI rolls over an extended period of years, their representation among new awardees translates into an even higher eventual contribution to the SSI caseload. The over one-third representation of long stayers among new awardees translates into an over-80 percent expected representation of persons with long stays (10 or more years) on the SSI disability caseload. While means testing accounts for a more complex caseload dynamics in SSI than in the DI program, both programs are dominated by long stayers, primarily reflecting the strict disability severity criteria applied in both programs. The inclusion of children, with a potentially full lifetime exposure to the SSI program, further contributes to the importance of long stays in the SSI disability program.

This article provides the first descriptive cohort-based estimates on length of stay, reasons for leaving, and lifetime disability benefit years for the SSI disability program. Many questions of substantial analytic interest and policy relevance remain for future study. We need to learn about the factors affecting length of stay and, in particular, duration dependence. Multivariate models could account for the separate contribution of key variables such as age and diagnosis to length-of-stay outcomes. Event history analysis techniques should be of help in developing a better understanding of caseload dynamics. In order to get a complete picture of disability program participation among concurrent SSI/DI beneficiaries, analyses are called for that follow up benefit receipt from both programs. A further topic of great policy interest is the effect of compositional changes in SSI new awardee characteristics through time on expected length-of-program participation and future caseload growth. Identifying cohort effects and their possible relationship to demographic and other factors affecting the size and composition of awardees should be of help in projecting future caseloads. Refinements in the methodology to project expected lifetime benefit years is also called for, especially for children. The effects of legislative and regulatory changes such as the Zebley decision, and revised listings on expected length of stay and caseloads are of substantial policy interest and also raise methodological challenges.

The results of this study demonstrate that improvements in the projection of caseload growth in the SSI program require both a better understanding of factors affecting trends in new awards, and also those factors that affect length of stay. The findings suggest that issues related to potentially long program stays will be of increasing importance in policy discussions about the SSI disability program.

Notes

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[1] The study analyzed the proportion suspended, reasons for suspension, awardees with interrupted eligibility, and 4-year program costs.

[2] Nevertheless, we acknowledge the potential usefulness of replicating our study without the use of the age-65 cutoff point for some purposes, both from a budgetary and analytic viewpoint, for example, to provide estimates of total length of time on SSI, including program eligibility beyond age 65. The adoption of such a data analysis strategy is feasible in a potential future study that focuses on complementary analytic and budgetary issues more directly related to the experience of the elderly.

[3] Because this file contains information from SSA form 831 it is commonly referred to as the "831 file."

[4] Since the CWHS contains only a single DI payment indicator for each year, rather than the total monthly DI payment history, this method might slightly understate the incidence of concurrent DI awards, but the magnitude of the measurement error is likely to be small for purposes of our analysis.

[5] Note that we classified those who stayed on the rolls until their 65th birthday as leaving the disability portion of the SSI program, and, therefore, reaching age 65 was defined as a reason for exit in addition to the normal programmatic categories for suspension.

[6] "Other" reasons include no longer being disabled, leaving the country, failing to file a required report, voluntarily withdrawing from the program, and others.

[7] SSA periodic life tables for 1991 (Social Security Administration, 1994, p. 182) indicate death probabilities of 0.15 percent for 18-year-old males and 0.05 percent for 18-year-old females in the general population. While death probabilities monotonously increase with age, they reach 1 percent only at age 56 for males and age 62 for females. At age 64, the death probability in the general population is 2.2 percent for males and 1.2 percent for females. These numbers compare favorably with the first-year exit probability of 4.6 percent, due to death among nonconcurrent adults.

[8] See Social Security Administration (1994) for comparable death probabilities by single years of age and gender. For the general population, the highest death probabilities among children are observed for 17-year-old males (1.4 percent), with most single years-of-age-by-gender death probabilities well below 1 percent. In contrast, the probability of exit due to death during the first postaward year is 2.3 percent among SSI children.

[9] For details on the methodological issues involved in modeling duration dependence, see Heckman and Singer (1984, 1985).

[10] For programmatic purposes, the SSI disability program includes both persons under age 65 and persons aged 65 or older who started to receive SSI benefits prior to age 65 because of disability. However, the aged are eligible for SSI based on the SSI means-test alone. Therefore, the effects of the mix of disabled awardees on program cost is driven by SSI stays prior to age 65.

[11] The validity of the point estimate is, of course, subject to caveats. However, given the fact that our methodology did not explicitly account for duration dependence, if anything, potential improvements in methodology could be expected to result in higher, rather than lower estimates of expected lifetime disability stays for children.

[12] The source of welfare, essentially AFDC data, is Pavetti (1993, p. 29). These data, based on the National Longitudinal Survey of Youth, reflect all spells, rather than first spells only, as the SSI and DI distributions. The Pavetti estimates are based on 2,145 completed and uncompleted (right-censored) spells of welfare. Left-censored spells are excluded. Pavetti also presents data on 980 first spells (p. 48) displaying a very similar distribution to the all-spells data presented in our analysis. The DI distributions are based on estimated first spell length derived by Hennessey and Dykacz (1989, p. 8) based on a random sample of 18,816 DI beneficiaries who were first awarded benefits in 1972. The only important caveat in making the DI-SSI comparison is that the Hennessey-Dykacz distribution is limited to persons aged 18-62 at first award, and, therefore, excludes 63-64 year-olds who are short stayers and are included in the SSI distribution because of the 65-year cutoff in both the DI and SSI analyses. In effect, the comparisons somewhat overstate the differences in the proportion of short and long stayers between DI and SSI. However, since 62-64- year-olds comprise only about 6 percent of all SSI disability awardees, (less than 7 percent of new awardees aged 18-64), the effect of this compositional difference between the DI and SSI samples on the distributions is relatively minor.

[13] In theory, the less liberal DI rules related to work activities would act in the opposite direction. However, as a practical matter, very few DI beneficiaries are suspended or terminated for work-related reasons, while the means testing in SSI is affected by income and resources acquired by other family members, rather than the recipient's own earnings only.

[14] The source of the AFDC data is Bane and Ellwood (1994, p. 39) who derived their estimates from the 21-year Panel Survey of Income Dynamics (PSID). Note that in contrast to our SSI analysis that is based on monthly data, the PSID data used by Bane and Ellwood provides annual data only. As shown by Pavetti (1993), total time calculations based on annual data provide a relatively accurate estimate of total times on welfare, but they miss considerable monthly dynamics affecting single spell distributions.

[15] Hennessey and Dykacz (1989, p. 2) estimate that only 11 percent of DI new awardees leave because of recovery. Dykacz and Hennessey (1989, p. 42) estimate that 43 percent of recoverers end their recovery period by returning to the DI rolls. Assuming that the average length of total stay after returning to the rolls is identical with the average length of first spells (9.3 years), we obtain that accounting for returnees adds approximately 0.4 years to the overall mean of DI stays (.11*.43*9.3=0.44).

[16] At any point in time, some persons who will eventually stay on SSI for a long time can be observed with a relatively short stay simply because the observation occurred shortly after time of award for a subset of recipients. In a simple cross-sectional analysis of time on the rolls since first award, some eventual long stayers might be incorrectly classified as short stayers based on such incomplete duration data. For a discussion of the distinction between the concept of completed spell distribution represented by our estimates of expected lifetime stays and uncompleted spell distributions that can be derived from cross-sectional samples of right-censored duration data, see Bane and Ellwood (1994, pp. 30-37).

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Appendix A: Methodology

First Spells

In estimating the average duration of first spells, we relied on actual observations for a uniform 10-year followup observation period.

The methodology for projecting the length of first payment spells beyond the 10-year observation period assumes that for those persons who have an uninterrupted first spell of at least 10 years, the probability of exit due to death or other reasons is a function of age, and that persons who did not exit before their 65th birthday because of death, or other reasons, complete their first spell upon reaching their 65th birthday.

We calculated by age group the probability of exit due to death during the 11th year conditional on the person having an uninterrupted program stay up until the end of the 10th year.[1] For those persons aged 64 at the beginning of the 11th year, and who did not die before the end of the 11th year, we assumed that they exited due to reaching age 65. For persons aged 63 or younger at the beginning of the 11th year, and who did not die during the year, we assumed that the conditional probability of exit due to other reasons was a function of age. We then aged our sample, year by year, until our algorithm assigned a suspension, or the person reached age 65.

Using a combination of actual length-of-stay information for those who left the program by the end of the 10th year and projected length data generated from our algorithm for the rest, enables the estimation of the complete first-spell-length distribution and the mean. Relying on a uniform and fairly long (10-year) followup period for the projections reduced the sensitivity of estimates to simplifying assumptions. Moreover, it provided an opportunity to interpret our results as the average experience of the component annual cohorts.

Expected Lifetime Disability Years (pre-65)

The methodology for estimating the expected total lifetime number of benefit months was an extension of the simulation model used to project first spells beyond the 10-year postaward period. In contrast to estimating first spell length, an estimate of total lifetime benefit months required a simulation allowing for persons who exited from SSI to have a chance to return to it. Therefore, we divided our sample into two groups:

Group A consists of persons who were on the SSI rolls during month 120; and Group B consists of persons who were off the SSI rolls during month 120.

For Group A (some of whom may have had previous interruptions of stay), we used a methodology similar to the one described above to estimate exits by month 132 for reasons of death, other suspension, or reaching age 65. For Group B we estimated the probability of returning to the rolls within the next year, staying off of it, and reaching age 65 in a similar fashion.

Based on these probabilities, sample observations were aged through an iterative process of moving on and off SSI, with probabilities conditional on age until the person either was assigned to a status of leaving the SSI rolls because of death or reaching age 65. Then, for each sample person the total number of actual (until the end of the 10th postaward year) and imputed (from the beginning of year 11 until death, or reaching age 65), benefit months were computed to derive an estimate of the expected lifetime number of disability benefit months prior to reaching age 65.

Exit and reentry probabilities in the above algorithm were separately calculated for children, nonconcurrent adults, and concurrent adults, and as children were aged into adulthood, the non-concurrent adult probabilities were applied to them. The separation of concurrents is important primarily because of the dependence of reentry probabilities on concurrent status. The majority of concurrents who were off the rolls at month 120 had completed their first SSI spells during the first postaward year. Reentry probabilities for concurrents who completed their first SSI spell during the first postaward year tended to be lower than for nonconcurrent adults.

These estimates resulted in the calculation of estimated means and distributions of lifetime (pre-65) disability benefit months.[2] Finally, the projection methodology was tested by comparing the projected results for the oldest cohort to actual experience through 1992. The two sets of numbers were very similar for both initial and total stays.

Notes

[1] One awardee cohort (1982) was deleted from this analysis, since there were no data for the 11th year.

[2] The caveats concerning the validity of the underlying assumptions, and the sensitivity of the results to simplifying assumptions, should be somewhat stronger here than in the context of first spell length projections discussed earlier in the article, primarily because of the uncertainties in projecting movements on and off the rolls beyond the 10-year observation period. In particular, methodological improvements, or more data, might result in nontrivial refinements of these estimates, especially for children. Nevertheless, this first attempt to project lifetime disability years produced some highly suggestive results, and clearly indicates the importance of accounting for multiple spells.

Appendix B: Standard Error Estimates

Estimates based on sample data may differ from the figures that would have been obtained had all, rather than a sample, of the records been used. These differences are termed "sampling variability." The standard error is a measure of sampling variability; that is, the variation that occurs by chance because a sample is used. The standard error is used to describe confidence intervals. The confidence interval represents the extent to which the sample results can be relied upon to describe the results that would occur if the entire population (universe) had been used for data compilation rather than the sample.

In about 68 percent of all possible probability samples with the same selection criteria, the universe value would be included in the interval from one standard error below to one standard error above the sample estimate. Similarly, about 95 percent of all possible samples will give estimates within two standard errors, and about 99 percent will give estimates within two and one-half standard errors.

Tables I and II provide approximations of standard errors of estimates shown in this article. Table I presents approximate standard errors for the estimated number of recipients from the 1-percent file. Table II presents approximations of standard errors for the estimated percentage of persons from the 1-percent file. Linear interpolation may be used to obtain values not specifically shown.

Table I.—Approximations of standard errors of estimated numbers of persons from a 1-percent sample file

Size of estimate	Standard error
10	3
25	5
50	8
100	11
250	17
500	24
750	30
1,000	34
2,500	54
5,000	96
10,000	111
50,000	258

Table II.—Approximations of standard errors of estimated percentages of persons from a 1-percent sample file

Size of base	2 or 98	5 or 95	10 or 90	25 or 75	50
10	4.7	7.3	10.1	14.5	16.8
100	1.5	2.3	3.2	4.6	5.3
500	.7	.1	1.4	2.1	2.4
1,000	.5	.7	.1	1.5	1.7
5,000	.2	.3	.4	.7	.8
10,000	.1	.2	.3	.5	.5
50,000	.1	.1	.1	.2	.2