Longitudinal Patterns of Participation in the Social Security Disability Insurance and Supplemental Security Income Programs for People with Disabilities

by Kalman Rupp and Gerald F. Riley*

Longitudinal access to disability benefits is affected by interactions in benefit eligibility between the Disability Insurance (DI) and Supplemental Security Income (SSI) programs and lags arising from processing time in receiving the first payment. Administrative records show that a quarter of the calendar year-2000 cohort of first-ever working-age disability awardees were involved with both programs over a 60-month period, indicating a higher degree of program interaction than apparent from cross-sectional data. Nonbeneficiary status is three times more prevalent 60 months after entry among those who entered SSI first compared with DI entrants, as a result of exits that are due to the SSI means test. Over half of new awardees qualifying for both DI and SSI benefits are eligible for SSI during 4 or 5 months of the 5-month DI waiting period, but many do not receive their first SSI payment until later because of lags in final award decisions.

Background and Research Questions

The purpose of this article is to provide a better understanding of longitudinal patterns of participation among working-age adults in the Social Security Disability Insurance (DI) and Supplemental Security Income (SSI) disability programs. We follow up a cohort of new awardees to assess two longitudinal aspects of access to cash benefits. The first is the effect of DI and SSI program rules, which determine benefit eligibility (also referred to as "payment eligibility"), on longitudinal patterns of access. The second is the effect of the timing of actual payments on access. Benefit eligibility and actual payments reflect two facets of the Social Security Administration's (SSA's) disability programs. Benefit eligibility for a given month reflects legislative intent. Actual payments are also affected by program implementation, which invariably results in lags between the first month of benefit eligibility and the first month of actual payment. Both DI and SSI provide benefits for people aged 18–64 with qualifying disabilities and share identical criteria for determining disability status. The two programs focus on different, but partially overlapping populations. DI covers people with substantial earnings histories; SSI covers people with subpoverty level income and few resources. The interactions between the two programs are substantial and complex, but not fully understood. Our analysis is designed to contribute to a better understanding of how interactions of benefit eligibility rules and the timing of actual benefit payments affect the dynamics of access to disability cash benefits.

We intend to build on and contribute to previous research in three areas: (1) overall access to disability benefits in the working-age population; (2) the dynamics of benefit eligibility for SSA's two disability

Selected Abbreviations

DI	Disability Insurance
SSI	Supplemental Security Income
TRF	Ticket Research File, version 8

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programs, which enhance access as a result of legislative design; and (3) delays in the start of actual benefit payments, which may create de facto temporal gaps in access.

The first area of previous research addresses disability benefit coverage, a fundamental aspect of overall access. It is well known that the vast majority of the working-age population is insured against the risk of disability through the DI program. Yet DI coverage is not universal, with the DI coverage gap being most noticeable among younger adults[1] and women close to retirement age (Mitchell and Phillips 2001). But the substantial role of SSI in supplementing this DI safety net has not been well understood until recently. Rupp, Davies, and Strand (2008) found that SSI covered a substantial minority of the working-age population. More than one-third would satisfy the SSI means test in the event of a severe disability. According to that study, SSI coverage played an important role in the safety net in three complementary ways: (1) it increased the overall coverage of the working-age population, (2) the program enhanced the bundle of cash benefits available to disabled individuals, and (3) it provided a path toward Medicaid coverage. This article complements that line of analysis by providing information on longitudinal patterns of participation in SSI and DI.[2]

The second area of previous research (primarily through a series of papers by Hennessey and Dykacz and by Rupp and Scott)[3] focuses on caseload dynamics of awardee cohorts based on administrative records. Hennessey and Dykacz found that exits that were due to reasons other than death and reaching age 62 were very rare among DI awardees. Rupp and Scott found a higher proportion of adults exiting the SSI program rolls, but when multiple spells of SSI participation were considered, they found that total duration was fairly similar to the average reported by Hennessey and Dykacz for DI. Importantly, Rupp and Scott found that exits from SSI during the first year were very high because of failure to meet the SSI income screen. They attributed these exits to serial transitions to the DI program as a result of the 5-month DI waiting period. However, both sets of previous studies use data that are now obsolete and that are based on separate data sets for DI and SSI, and therefore those studies could not explicitly account for longitudinal patterns of interactions between the two programs. The present study fills a clear gap by focusing on longitudinal patterns of participation among awardees of *both* programs, using a single data set matched at the individual level.[4] A related line of research (Daly 1998; Livermore, Stapleton, and Claypool 2010) focuses on changes in a broader array of indicators of financial well-being before and after the SSI and/or DI award decision.

The third area of previous research addresses the administrative process of disability determination in creating de facto delays in the availability of cash benefits. A now seminal paper by Donald Parsons (1991a) on self-screening in the DI program (self-selection among potential DI applicants) noted that the self-screening properties of the DI program depend on benefit structure (which is specified by the legislation) and the screening policy of the agency. Screening policy has two key parameters: (1) "screening rigor" or stringency, and (2) the duration of the disability determination process.[5] Much of the subsequent research focuses on the first of these two factors (stringency), which is outside the scope of our study.[6] Less explicit attention has been paid to the role of time lags arising from the disability determination process. Research conducted by Benitez-Silva and others (1999) is an exception. Those authors addressed the importance of duration in affecting the relative attractiveness of appealing an initial denial decision. Also, in the absence of access to high-quality record data, they developed a second-best measure of duration using self-reported data from the Health and Retirement Study. This article contributes to that body of literature by providing descriptive information on duration from benefit eligibility to actual payments among awardees. However, our substantive focus here is not on incentive effects, but on implications for the temporal dimension of access to benefits.

In this study, we address the following research questions:

- What are the characteristics of people who entered SSI, DI, or both programs during calendar year (CY) 2000?
- Can we use differences between SSI and DI program rules to develop a meaningful classification of longitudinal patterns of benefit eligibility?
- What is the distribution of first entrants to the disability program by major longitudinal patterns?
- What are the outcomes observed during the 60-month period after first disability entry in terms of disability benefit eligibility and transitions to nonbeneficiary status?
- What is the distribution of the time elapsing between the first month of benefit eligibility and the first month of actual payment receipt? What

is the effect on access to actual payments among various subgroups?

- What do longitudinal patterns of disability participation say about the overall role of SSA's disability programs in providing access to cash benefits?

The rest of the article is organized as follows: The next section describes DI and SSI program rules and deduces a classification of longitudinal patterns of interactions, which is followed by the data and methodology section. The results of our empirical analysis are given prior to the conclusions and issues for future research.

Program Rules and Longitudinal Interactions between DI and SSI Benefit Eligibility

Although DI and SSI share the same disability criteria, they have differences in other benefit eligibility requirements that affect a beneficiary's entitlement to DI, SSI, or both. In this section, we highlight key program rules with implications for longitudinal interactions of benefit eligibility.[7] We then deduce a classification scheme of major longitudinal patterns of benefit eligibility that will be empirically tested in the analysis. The following major factors are highlighted:

- *DI requires sufficient recent work experience as a precondition of benefit eligibility.* Only those categorically disabled beneficiaries who meet the criteria of "DI-insured" status may be eligible to receive DI benefits. Once initially qualified for DI, the benefits can be suspended or terminated for work-related reasons or because of medical improvement, but typically, DI-insured status continues until the beneficiary reaches the full retirement age or dies. DI benefits are essentially a function of the beneficiary's prior work history and in most cases change only because of annual cost-of-living adjustments common to both the DI and SSI programs.
- *SSI requires meeting a means test to qualify for benefit eligibility.* SSI provides benefits only to those categorically disabled working-age persons who also meet an income and resource test. SSI is a categorical negative income-tax program where benefits can fluctuate or cease because of changes in earned and unearned income from other sources (Rupp and others 2007). Thus, a person can lose SSI benefits because of changes leading to income and/or resource ineligibility regardless of meeting SSA's disability criteria.
- *DI benefits reduce or completely offset SSI cash benefits.* DI benefits are treated as unearned income in the SSI benefit formula. All but $20 of unearned income reduces SSI benefits $1 for $1. This offset may result in ineligibility for SSI benefits.
- *Some may be eligible for SSI benefits during the 5-month waiting period for DI benefit eligibility.* The DI program has a 5-month waiting period after the onset of categorical eligibility as disabled. SSI benefits can start right after the month of application. Thus, a categorically disabled person may be eligible for SSI benefits during the DI waiting period.
- *Retroactive determination of date of disability onset in the DI program may reduce the potential SSI role during the 5-month DI waiting period*. Some complexities arise because of different program rules concerning the relationship between the date of disability onset and the date of application for disability benefits. In the DI program, onset may be established retroactively for a period of 12 months. In the SSI program, there is no retroactivity in the establishment of categorical disability. Thus, if part or the entire DI waiting period occurred prior to application, SSI benefit eligibility cannot be granted for those months.

All of these major factors have direct implications for longitudinal interactions between DI and SSI benefit eligibility.[8] We deduce the following major longitudinal patterns of benefit eligibility from program rules:

- *DI-only benefit eligibility*—DI-only first entrants who never entered the SSI program during our 60-month observation period;
- *DI-only to "joint" DI/SSI benefit eligibility*—DI-only first entrants who transitioned to joint DI/SSI benefit eligibility at some point during our 60-month observation period;
- *SSI-only benefit eligibility*—SSI-only first entrants who never entered the DI program during our 60-month observation period;
- *SSI-only to DI-only "serial" benefit eligibility*—SSI-only first entrants who serially transitioned to DI-only status at the end of the 5-month DI waiting period because of the loss of SSI benefit eligibility as a result of the new DI benefit;[9] and
- *SSI-only to "joint" DI/SSI benefit eligibility*—SSI-only first entrants who entered the DI program at the end of the 5-month DI waiting period, but also retained SSI benefit eligibility. These SSI entrants

get reduced SSI benefits after DI begins, but do not lose those payments altogether.

We believe that this classification covers the most important longitudinal patterns with two caveats. First, our classification is somewhat tentative because our 60-month follow-up period is not sufficiently long to follow up all participants until they reach age 65 or die. In technical terms, this is the problem of right censoring. For example, people who participate in only DI for the full 60-month observation period may enter SSI sometime between month 61 and death or reaching age 65, but such transitions are unobserved in our data set. Second, the categories defined earlier are mutually exclusive, but not exhaustive. There may be other patterns of interest, such as SSI-only to DI transitions that occur later in the observation period (subsequent to DI benefit eligibility kicking in after the 5-month waiting period, but before month 60) because of gaining DI-insured status—the result of work activities while in SSI-only benefit eligibility status.

Data and Methodology

The source of data is Social Security administrative records. More specifically, we start from a 10 percent random sample of the Ticket Research File (TRF, version 8). The TRF is an analytical file containing longitudinal and one-time data on disabled beneficiaries who participated in the SSI or DI programs from March 1996 through December 2008. Longitudinal data for all disability program participants from March 1996 through December 2008 is included in this file, which contains monthly data from 1994 through 2008. The TRF is compiled from various Social Security administrative record systems and is maintained by Mathematica Policy Research. The system currently contains over 20 million observations. For details on the TRF, see Hildebrand and others (2010).

To create a file of first disability entrants in CY 2000, we exclude people who had any DI or SSI benefit eligibility spell prior to January 2000, who reached age 65, or who died. Although SSI may include state supplements, we consider eligibility for federal SSI benefits in creating the sample frame for the study and to establish longitudinal patterns of SSI benefit eligibility. Benefit eligibility is established on the basis of eligibility to receive benefits during a given month as reflected in "current-pay" status in the records data. Benefit eligibility reflects a person's entitlement to benefits during a given month according to legislative design, although it may not correspond to the actual payment of benefits during the given month, which is a function of implementation. In some cases, benefit eligibility is retroactively established and actual payments are received later. There is typically a lag between the first month of benefit eligibility and the first month of actual payments. We limit the analysis to people eligible for benefits as "primary beneficiaries," who are receiving benefits because of their own disabilities; secondary beneficiaries, receiving benefits as family members or survivors, are excluded. Finally, we scan data for each month of CY 2000 for the remaining records and retain only those observations with a positive benefit eligibility indicator for either DI or federal SSI involvement while the person was aged 18–64 for at least one month during CY 2000. This process yields a sample of 68,798 first-ever disability program entrants (defined by first entry to the DI, SSI, or both programs during CY 2000), corresponding to a universe of roughly 690,000 first disability spell entrants in the 12-month period.[10]

Note that we key our sample selection to the first month of benefit eligibility, rather than to the month of disability onset, the month of application, or the month of the actual receipt of first disability payments. Those other concepts are also relevant for the dynamics of disability program participation, although for the purpose of this study we choose the benefit eligibility concept to define our sample because it is the clearest indication of the legislative intent concerning access to cash benefits from either program. Note also that our definition is different from other commonly used concepts identifying cohorts of disability program entrants, such as new awardees (that may include repeat awards), CY 2000 DI entrants, or CY 2000 SSI entrants.

We present descriptive tables and charts to assess the practical importance of longitudinal aspects of access to disability benefits over a 60-month follow-up period. In the analysis, we also use reduced-form models, estimating the relationship between a dependent variable and a set of independent variables such as age, sex, race, and diagnosis. The choice of the specific technique depends on the nature of the dependent variable of interest. For a binary dependent variable (such as being or not being benefit eligible), we use logistic regression. For a nominal dependent variable with more than two unordered outcomes (longitudinal pattern of benefit eligibility), we use multinomial logit. For a continuous dependent variable (natural logarithm of duration of time from month of benefit eligibility and month of actual payment), we use ordinary least squares. Standard error estimates are included in the tables.

The use of administrative records for this study is a source of substantial strengths arising from the availability of highly accurate monthly data series for a long period of time and the relatively large sample size. However, a limitation is the lack of detail on socioeconomic characteristics. On balance, our data is clearly superior to potential survey data sources for this analysis.

Empirical Results

First, we describe the characteristics of our sample of awardees. This is followed by findings concerning the relative frequency of various longitudinal patterns of DI and SSI benefit eligibility. Next, we address trends in DI and SSI benefit eligibility over time. Finally, we present information on the role of the timing of first actual payments as a distinct facet of access to disability benefits.

Characteristics of Cohort of Awardees First Entitled to Disability Benefits in CY 2000

Table 1 provides demographic and diagnostic characteristics overall and for subgroups defined by first entitlement in CY 2000 to DI, SSI, or both. Chart 1 provides the more detailed distribution by age. Not surprisingly, DI-only first entrants are heavily skewed toward the 46–64 age group, while SSI-only first entrants are more prominent in the 18–30 age group. However, almost half of those entering only SSI or both programs are aged 46 or older. Looking at the more detailed age distribution shown in Chart 1, the most interesting finding is the age distribution of SSI-only first entrants. There is a clear peak at age 18 followed by a sharp drop reaching a low at age 24.[11] This seems to reflect primarily the effect of entry by disabled young adults who may have been previously ineligible because of parental "deeming."[12] The vast

Table 1.
Percentage distribution of demographic and diagnostic characteristics of new awardees first entitled to disability benefits (DI and/or SSI), by program of entry, CY 2000

Characteristic	First entitlement to disability benefits			Total
	DI-only	SSI-only	Both	
All awardees	45,773	13,732	9,293	68,798
Age group				
18–30	4.9	22.1	14.5	9.6
	(0.1)	(0.4)	(0.4)	(0.1)
31–45	24.9	29.4	36.4	27.4
	(0.2)	(0.4)	(0.5)	(0.2)
46–64	70.2	48.5	49.0	63.0
	(0.2)	(0.4)	(0.5)	(0.2)
Total	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)
Sex				
Women	47.3	53.3	44.7	48.1
	(0.2)	(0.4)	(0.5)	(0.2)
Men	52.3	45.5	55.0	51.3
	(0.2)	(0.4)	(0.5)	(0.2)
Missing	0.4	1.2	0.3	0.5
	(0.0)	(0.1)	(0.1)	(0.0)
Total	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)
Race/ethnicity				
White	76.8	56.0	63.1	70.8
	(0.2)	(0.4)	(0.5)	(0.2)
Nonwhite	21.9	42.0	36.2	27.8
	(0.2)	(0.4)	(0.5)	(0.2)
Missing	1.4	2.0	0.8	1.4
	(0.1)	(0.1)	(0.1)	(0.0)
Total	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)

(Continued)

Table 1.
Percentage distribution of demographic and diagnostic characteristics of new awardees first entitled to disability benefits (DI and/or SSI), by program of entry, CY 2000—*Continued*

Characteristic	First entitlement to disability benefits			Total
	DI-only	SSI-only	Both	
SSA primary diagnosis				
Congenital	0.1	0.3	0.2	0.1
	(0.0)	(0.0)	(0.0)	(0.0)
Endocrine	2.9	3.1	3.4	3.0
	(0.1)	(0.1)	(0.2)	(0.1)
Infectious and parasitic	1.2	2.9	3.1	1.8
	(0.1)	(0.1)	(0.2)	(0.1)
Injuries	3.7	3.6	4.4	3.8
	(0.1)	(0.2)	(0.2)	(0.1)
Intellectual disability [a]	1.0	7.9	2.4	2.5
	(0.0)	(0.2)	(0.2)	(0.1)
Mental [b]	19.4	30.1	27.2	22.6
	(0.2)	(0.4)	(0.5)	(0.2)
Neoplasms	9.6	8.7	8.1	9.2
	(0.1)	(0.2)	(0.3)	(0.1)
Circulatory	12.5	10.2	13.7	12.2
	(0.2)	(0.3)	(0.4)	(0.1)
Digestive	2.1	2.1	2.8	2.2
	(0.1)	(0.1)	(0.2)	(0.1)
Genitourinary	2.0	2.2	3.4	2.2
	(0.1)	(0.1)	(0.2)	(0.1)
Musculoskeletal	30.5	13.6	18.1	25.5
	(0.2)	(0.3)	(0.4)	(0.2)
Nervous	8.6	6.4	6.5	7.9
	(0.1)	(0.2)	(0.3)	(0.1)
Respiratory	4.4	3.8	4.7	4.3
	(0.1)	(0.2)	(0.2)	(0.1)
Other	0.7	0.6	0.8	0.7
	(0.0)	(0.1)	(0.1)	(0.0)
Missing	1.4	4.5	1.3	2.0
	(0.1)	(0.2)	(0.1)	(0.1)
Total	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

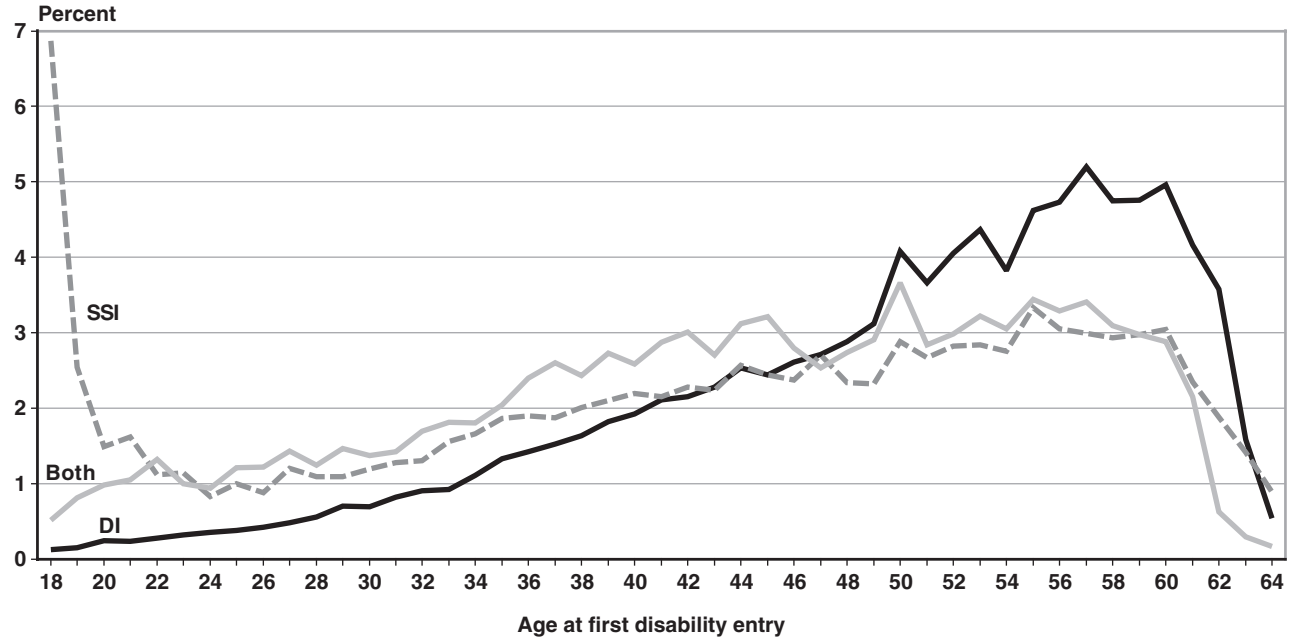
NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

a. Intellectual disability was formerly known as mental retardation.

b. Not including intellectual disability.

majority of them have a primary diagnosis of intellectual disability.[13] As Table 1 shows, DI-only entrants are slightly more likely to be men, substantially more likely to be white, and more likely to have diseases of the musculoskeletal system as primary impairments than SSI-only entrants. Women, nonwhites, and people with mental disorders (other than intellectual disability) are more prominently represented among SSI-only entrants.[14] Further detail about the relationship between diagnosis and age at first award is provided in Table A-1, which shows that almost half of persons with intellectual disability or congenital anomalies are aged 18–30. A relatively high proportion of those with mental disorders are young, but actually, about 80 percent of those with a mental disorder primary diagnosis belong to the two older age groups (31–45 and 46–64). The proportion of new awardees aged 46–64 at first entry is highest—above 70 percent—among those with a respiratory, circulatory, musculoskeletal, neoplasms, or endocrine primary impairment.

Chart 1.
Age distribution among subgroups representing first disability program of entry, CY 2000



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

Longitudinal Patterns of Benefit Eligibility among Awardees in 2000

In this section we first explore longitudinal patterns of benefit eligibility deduced from program rules to determine their success in classifying the bulk of awardees; then we estimate the relative size of those groups; and finally analyze the relationship between demographic and diagnostic characteristics and the relative odds of various longitudinal patterns of benefit eligibility. Table 2 shows the percentage distribution overall and by age group. The table includes the five patterns of major interest identified previously in addition to two smaller categories. The results show that the longitudinal patterns deduced from program rules are successful tools for classifying our cohort of awardees. Overall, the five patterns cover over 98 percent of our CY 2000 cohort of first entrants. An additional 1.2 percent entered the SSI and DI programs during the same month, while 0.7 percent followed some other pattern following first SSI entry.[15]

A key finding is that a fairly sizeable minority (24 percent) had involvement with both programs during the 60-month observation period. This figure is much higher than what can be gleaned from cross-sectional program data. Consistent with published results on the characteristic of beneficiaries, we find that only about 9 percent of disabled beneficiaries aged 18–64 had concurrent involvement with DI and SSI during December 2000. This constellation of differences between the two proportions (relatively low cross-section estimate) should be expected by analysts familiar with the difference between cross-section ("stock") and cohort-based ("flow") measures of participation. But the differences are sizable enough to highlight the importance of avoiding a common mistake in policy discussions that use cross-sectional data as if they are interchangeable with longitudinal measures of participation. The results also confirm the importance of the DI waiting period as a source of interaction between the two programs.

There are clear differences in longitudinal pattern by age and to some extent sex.[16] Although the requirements needed to achieve DI-insured status are more relaxed for younger people than others, the fact remains that many younger people do not have sufficient work experience to qualify, and DI-only involvement is substantially lower compared with the older age groups. The opposite is true for SSI-only and concurrent involvement. These results are consistent with previous findings demonstrating the importance of concurrent DI and SSI coverage for a sizable portion of the working-age population (Rupp, Davies, and Strand 2008).[17] The combined effect of low DI coverage rates, relatively low expected DI benefits, and very

Table 2.
Comparison of percentage distribution of longitudinal patterns of disability program benefit eligibility, by age group, for the cohort of first-ever CY 2000 disability awardees

Longitudinal pattern (first 60 months of potential first benefit eligibility)	Age group			Total
	18–30	31–45	46–64	
All awardees	6,630	18,823	43,345	68,798
DI-only entrants	22.7	51.7	70.1	60.5
	(0.5)	(0.4)	(0.2)	(0.2)
DI-only to joint DI/SSI	16.5	13.4	6.5	9.3
	(0.5)	(0.2)	(0.1)	(0.1)
SSI-only entrants	37.3	16.6	12.0	15.7
	(0.6)	(0.3)	(0.2)	(0.1)
SSI/DI serial entrants	5.5	5.2	3.9	4.4
	(0.3)	(0.2)	(0.1)	(0.1)
SSI-only to joint SSI/DI	12.7	11.0	6.2	8.1
	(0.4)	(0.2)	(0.1)	(0.1)
SSI/DI simultaneous entrants	2.0	1.6	0.9	1.2
	(0.2)	(0.1)	(0.0)	(0.0)
Any other pattern following first SSI entry	3.4	0.5	0.4	0.7
	(0.2)	(0.1)	(0.0)	(0.0)
Total	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)
Of which entrants have—				
Some DI involvement	62.7	83.4	88.0	84.3
	(0.6)	(0.3)	(0.2)	(0.1)
Some SSI involvement	77.3	48.3	29.9	39.5
	(0.5)	(0.4)	(0.2)	(0.2)
Some involvement with both programs	40.0	31.7	17.8	23.8
	(0.6)	(0.3)	(0.2)	(0.2)

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

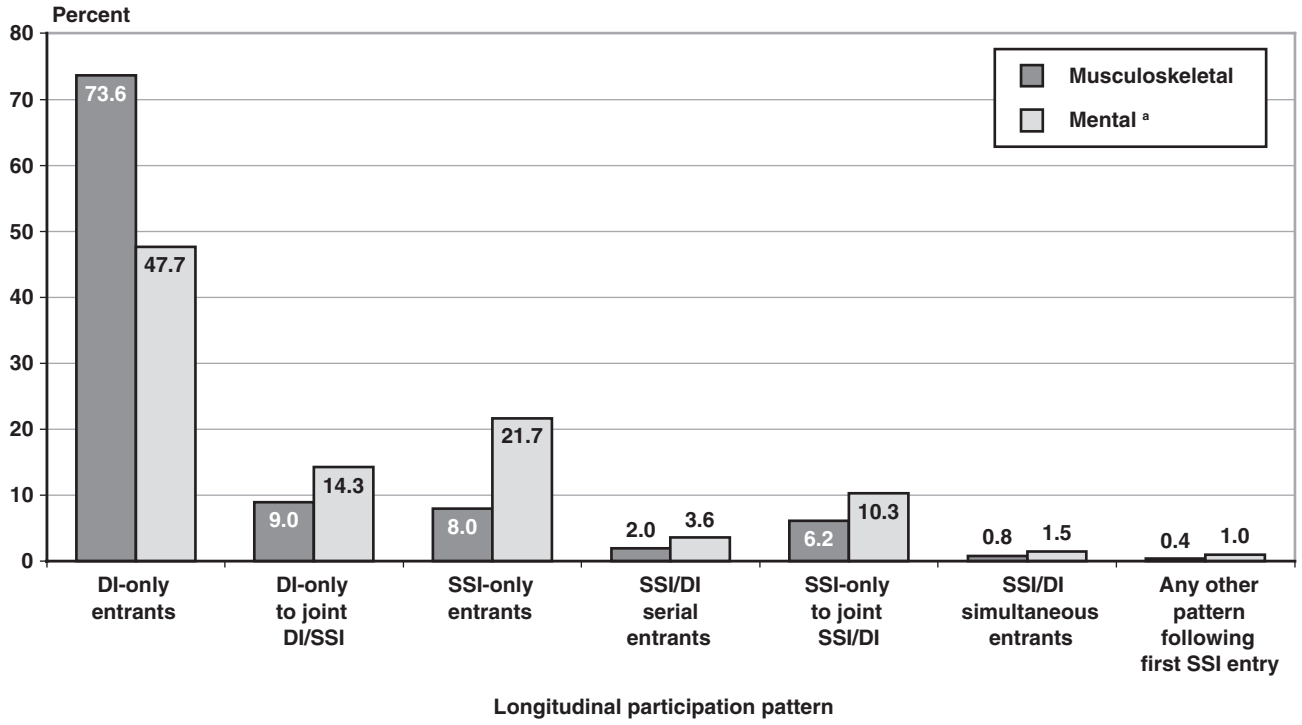
NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

limited financial resources available for those in the 18–30 age group helps to explain the relatively high fraction of new disability program entrants with SSI involvement (77 percent) in this age group.

Next we look at the longitudinal patterns of benefit eligibility for DI and SSI by diagnostic category, focusing on the top two diagnostic groups—"musculoskeletal" and "mental" (Chart 2). The contrast is sharp. First awardees in the musculoskeletal category are much more likely to have access to DI benefits only than awardees with mental disorders. In turn, those in the latter category are much more likely to have longitudinal access to SSI-only compared with the musculoskeletal group. Table A-2 provides more detail by primary diagnosis group and shows substantial variation in the proportion of various longitudinal patterns. In sum, the data reveal strong overall associations of age and diagnosis with the longitudinal pattern of benefit eligibility among awardees. In addition, women are represented relatively highly in the SSI-only group.

The relationship between beneficiary characteristics and longitudinal patterns of benefit eligibility is further explored with multivariate analysis. Table 3 shows the association of various demographic and diagnostic factors with the major longitudinal patterns of benefit eligibility based on multinomial logit estimates. Multinomial logit is a straightforward extension of logistic regression for unordered nominal dependent variables. In this case, the outcome of interest is longitudinal pattern. The independent variables include age, sex, and diagnosis. In the table, we present odds ratios for age, sex, race, and diagnosis. The interpretation of those odds ratios is similar to the interpretation of odds ratios in simple binary logit regression, except that in multinomial logit one category of the dependent variable is the comparison category, which is arbitrary.[18] Although we conduct this analysis on the

Chart 2.
Comparison of distribution of CY 2000 awardees first entitled to disability benefits on the basis of "musculoskeletal" and "mental" as primary impairment, by longitudinal patterns of disability benefit eligibility



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

a. Not including intellectual disability (formerly known as mental retardation).

full sample, our table focuses on the major patterns only. *DI-only* is the reference group, and the results are presented for the four additional major groups.[19]

The results show a clear relationship between age and longitudinal pattern of benefit eligibility. The regression-adjusted relative odds of access to the categories with SSI involvement are negatively—and very strongly—related to age. The contrast is sharpest between the SSI-only and DI-only reference groups. The adjusted odds ratios associated with the various diagnostic patterns suggest that generally the odds of SSI-only or SSI/DI serial patterns of benefit eligibility are relatively high, compared with DI-only for diagnostic categories other than musculoskeletal impairments. The relative odds of access to SSI-only status over time (compared with DI-only access) are especially high for intellectual disability, congenital anomalies, infectious diseases, and the mental disorders category. In sum, our regression analysis confirms the relevance of age, diagnosis, and sex as factors associated with the availability of different longitudinal patterns of benefit eligibility for the DI and SSI programs. These patterns of benefit eligibility directly affect the value of the cash benefit streams available for various subgroups of awardees, as well as the availability of Medicaid and Medicare. Although these latter topics are beyond the scope of this study, our results provide clear motivation for future research on access to combined benefit streams from all four of these major public benefit programs.

Trends in Benefit Eligibility Patterns

While our classification of longitudinal patterns of benefit eligibility is helpful in understanding caseload dynamics, it does not tell the whole story. To develop a better understanding of the dynamics of benefit eligibility, we look at trends in monthly benefit eligibility status over time. First we look at short-term dynamics, focusing on SSI involvement during the 5-month DI waiting period. This is followed by the analysis of longer-term dynamics over our 60-month longitudinal window, which addresses a broader range of outcomes, including trends in benefit eligibility pattern (DI, SSI, concurrent, or neither) and exits that are due to death or reaching age 65.

Table 3.
Results of multinomial logistic regression on factors affecting the pattern of disability benefit eligibility

	Longitudinal pattern											
	DI-only to joint DI/SSI			SSI-only entrants			SSI/DI serial entrants			SSI-only to joint DI/SSI		
Independent variable	Odds ratio	Standard error	P > z	Odds ratio	Standard error	P > z	Odds ratio	Standard error	P > z	Odds ratio	Standard error	P > z
Age group												
18–30	6.2	0.3	0.000	6.5	0.3	0.000	4.3	0.3	0.000	5.7	0.3	0.000
31–45	2.5	0.1	0.000	1.5	0.0	0.000	1.8	0.1	0.000	2.3	0.1	0.000
46–64 (reference category)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sex												
Women	1.1	0.0	0.004	1.5	0.0	0.000	0.7	0.0	0.000	1.0	0.0	0.758
Men (reference category)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Missing	0.1	0.1	0.002	5.0	0.6	0.000	0.9	0.2	0.558	0.4	0.2	0.024
Race/ethnicity												
White (reference category)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nonwhite	1.9	0.1	0.000	3.0	0.1	0.000	2.0	0.1	0.000	2.4	0.1	0.000
Missing	0.6	0.1	0.001	0.9	0.1	0.108	0.6	0.1	0.002	0.3	0.1	0.000
SSA primary diagnosis												
Congential	1.2	0.5	0.662	6.5	1.6	0.000	4.6	1.9	0.000	0.8	0.4	0.722
Endocrine	1.6	0.1	0.000	2.3	0.2	0.000	2.0	0.3	0.000	2.3	0.2	0.000
Infectious and parasitic	1.5	0.2	0.000	4.3	0.4	0.000	8.0	0.9	0.000	2.1	0.2	0.000
Injuries	1.0	0.1	0.815	1.8	0.1	0.000	2.7	0.3	0.000	1.7	0.1	0.000
Intellectual disability [a]	3.5	0.3	0.000	16.7	1.3	0.000	4.7	0.7	0.000	3.0	0.3	0.000
Mental [b]	1.7	0.1	0.000	3.0	0.1	0.000	2.1	0.2	0.000	1.8	0.1	0.000
Neoplasms	0.6	0.0	0.000	2.1	0.1	0.000	4.0	0.3	0.000	0.8	0.1	0.001
Circulatory	1.0	0.1	0.584	1.9	0.1	0.000	3.4	0.2	0.000	2.0	0.1	0.000
Digestive	1.5	0.1	0.000	2.5	0.2	0.000	2.4	0.3	0.000	2.0	0.2	0.000
Genitourinary	0.6	0.1	0.000	1.5	0.1	0.000	6.0	0.6	0.000	1.1	0.1	0.415
Musculoskeletal (reference category)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nervous	0.7	0.0	0.000	1.4	0.1	0.000	2.2	0.2	0.000	0.9	0.1	0.247
Respiratory	1.2	0.1	0.036	2.3	0.1	0.000	4.2	0.4	0.000	2.1	0.2	0.000
Other	1.1	0.2	0.700	1.4	0.2	0.027	1.3	0.4	0.441	1.5	0.2	0.020
Missing	0.9	0.1	0.431	7.1	0.5	0.000	2.1	0.4	0.000	2.0	0.2	0.000
Number of observations = 68,798												
Likelihood ratio $Chi^2(120)$ = 14,589.40												
Probability > Chi^2 = 0.0000												
Pseudo R^2 = 0.0852												
Log likelihood = -78,339.124												

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: DI-only is the reference group. "SSI/DI simultaneous" entrants and "Other" entrants are included in the multinomial logit model, but results are not presented here.

. . . = not applicable.

a. Intellectual disability was formerly known as mental retardation.

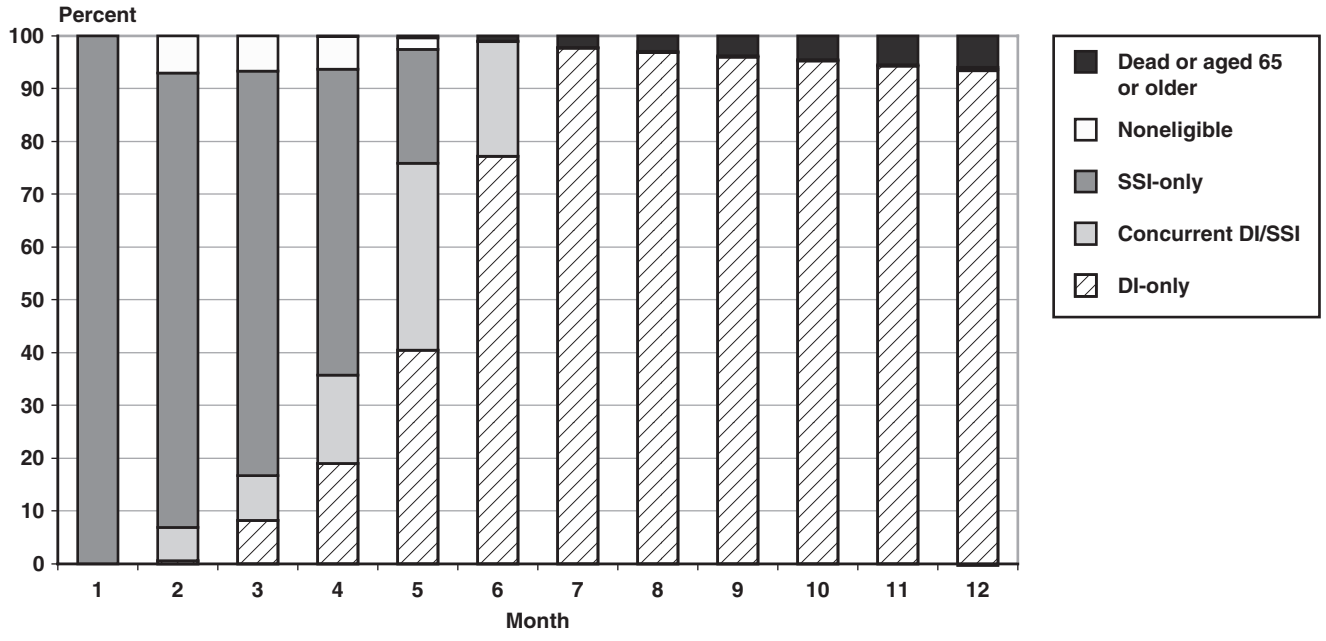
b. Not including intellectual disability.

Short-term trends: SSI benefit eligibility during the 5-month DI waiting period. Two program design factors are relevant here. The first is the contrast between the immediate benefit eligibility of SSI awardees and the 5-month waiting period between onset and the first month of DI benefit eligibility. This creates an upper limit, a 5-month window of potential SSI benefit eligibility to complement the DI program prior to DI benefit eligibility kicking in. The second design factor is that the DI program allows for a 12-month window of retrospective consideration of disability onset (relative to the time of application). The SSI program does not allow retroactive crediting of categorical eligibility as disabled. Therefore, depending on the date of application, the awardee may be eligible for SSI benefits from anywhere between 0 and 5 months prior to the DI benefit eligibility kicking in among awardees who otherwise would satisfy the SSI means test during the 5-month DI waiting period.[20] In our classification scheme, "serial" and "joint" cases may display between 1 and 5 months of SSI benefit eligibility during the 5-month DI waiting period, and therefore these are the two longitudinal pattern subgroups we will focus on now.

The distribution of benefit eligibility status during the first 12 months among serial awardees is shown in Chart 3, which uses the month of first-ever SSI entry as the anchoring point (month 1 in the chart). Several conclusions emerge. First, DI kicks in by month 6 for virtually all serial awardees. Some are still eligible for SSI benefits during the first month of DI benefit eligibility because SSI benefits are established on the basis of income during the immediately preceding month. Those who were not eligible for DI benefits during month 5 may be concurrently eligible for both SSI and DI benefits during month 6. Second, for some applicants DI kicks in earlier (months 2 to 5) because the retroactive establishment of the date of onset in the DI program reduces the portion of the DI waiting period that overlaps with the period starting with the first month of SSI benefit eligibility. Third, SSI plays a substantial role in providing benefit eligibility during the months prior to DI benefit eligibility kicking in. Shifting our anchoring point to the onset of DI categorical eligibility as disabled, we estimate that the number of months of SSI benefit eligibility among serial awardees during the 5-month DI waiting period averages 3.6 (authors' calculation). In addition and as noted earlier, some awardees are still concurrently eligible for SSI benefits during the first month of DI benefit eligibility.

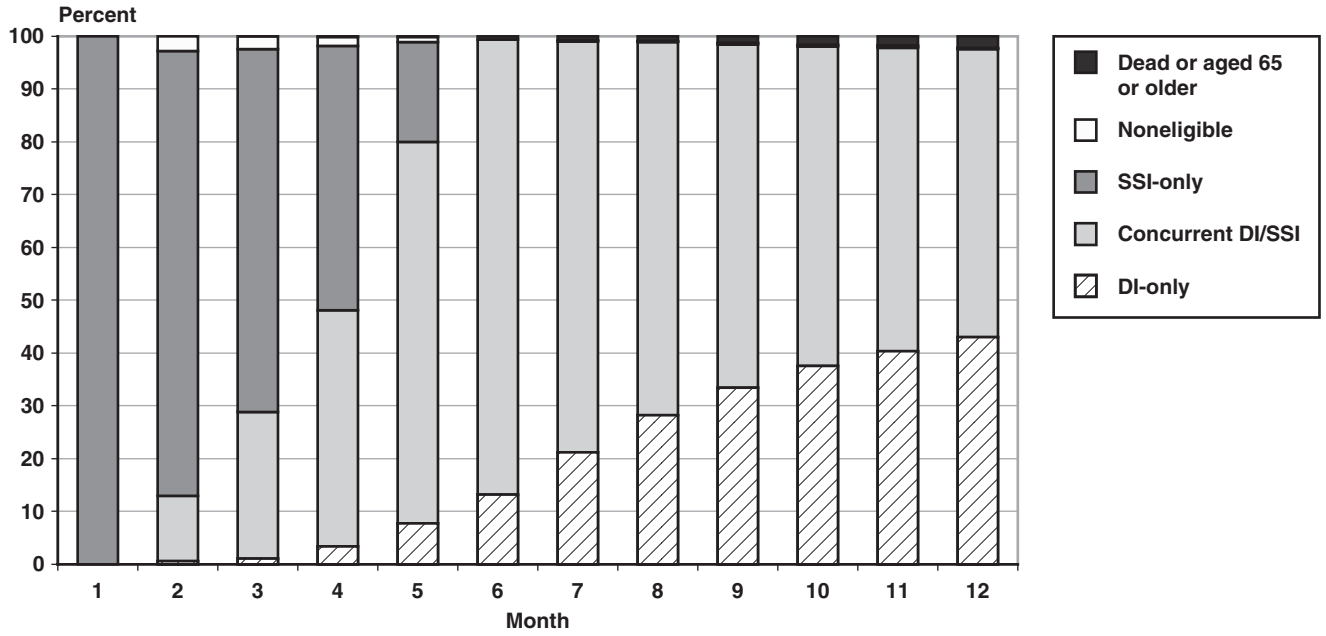
The corresponding distribution for joint awardees is shown in Chart 4. In contrast to serial awardees, a substantial portion of joint awardees are concurrently

Chart 3.
Percentage distribution of benefit eligibility status during the first 12 months among SSI/DI serial entrants, CY 2000



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

Chart 4.
Percentage distribution of benefit eligibility status during the first 12 months among SSI-only to joint SSI/DI entrants, CY 2000



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

eligible for SSI benefits during month 7 and beyond. Concurrent benefit eligibility is more common after month 1 compared with the experience of serial awardees. From the somewhat different perspective of the anchoring point of DI disability onset, we find that on average the number of months of SSI benefit eligibility among joint awardees during the 5-month DI waiting period is 3.3 (authors' calculation), and those awardees continue to be eligible to receive SSI benefits during subsequent months.[21]

Longer-term trends of DI and SSI benefit eligibility over time. Next we take a longer view and look at outcomes over a 60-month observation period. For any given month, a CY 2000 awardee can be in one of the following six states: (1) DI-only; (2) SSI-only; (3) both DI and SSI; (4) not eligible for either benefit and aged 65 or younger; (5) exited before reaching age 65 because of death; and (6) exited because of reaching age 65. This last category includes people who died after reaching age 65, but before the end of the 60-month observation period. The information presented here represents "snapshots" of the sample at specific times over the 60-month follow-up observation period. Except for the absorbing states of death and reaching age 65, people can move in and out of all of the other states over time. We are particularly interested in the role of SSI and DI involvement in shaping those trends and in factors affecting exits for reasons other than death and reaching 65 years of age. This analysis begins with an overview of trends for the whole cohort of first-ever awardees. Next, we disaggregate those trends by program of first entry. Finally, we assess factors affecting transitions to noneligible status.

Overall trends for all awardees. The overall trends for the whole awardee cohort are summarized in Table 4, which presents the status of the entire cohort of CY 2000 first-ever disability program entrants during selected months of the 60-month observation period. The data are presented in two panels. The top panel provides status for the whole awardee cohort, including status as a result of exits from the sample that are due to death or reaching age 65. The bottom panel is limited to survivors younger than age 65 during the various monthly snapshots. Three major conclusions emerge. First, much of the program interaction occurs between month 1 and month 12, and the changes for the remaining 48 months are fairly gradual. Second, there is a monotonic decrease in the proportion of the entry cohort in program status (from 100 percent to around 70 percent)[22]—largely because of exits that are due to death and reaching age 65. Third, the

Table 4.
Percentage distribution of benefit eligibility status at selected time points for CY 2000 disability program entrants first entitled to DI and/or SSI benefits

Month	Benefit eligibility status during month							Total	N
	DI-only	SSI-only	Concurrent DI/SSI	Noneligible and younger than age 65	Died before age 65	Reached age 65 and alive	Died after age 65		
Entry cohort									
1 (month of entry)	69.9	29.0	1.2	0.0	0.0	0.0	0.0	100.0	68,798
	(0.2)	(0.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
12	71.7	13.4	8.3	1.8	4.4	0.4	0.0	100.0	68,798
	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	(0.0)	(0.0)	
60	57.2	9.2	4.0	4.8	14.5	9.5	0.8	100.0	68,798
	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	(0.0)	
Survivors younger than age 65									
1 (month of entry)	69.9	29.0	1.2	0.0	. . .	. . .	. . .	100.0	68,798
	(0.2)	(0.2)	(0.0)	(0.0)	. . .	. . .	. . .	(0.0)	
12	75.3	14.1	8.8	1.9	. . .	. . .	. . .	100.0	65,497
	(0.2)	(0.1)	(0.1)	(0.1)	. . .	. . .	. . .	(0.0)	
60	76.1	12.2	5.3	6.4	. . .	. . .	. . .	100.0	51,752
	(0.2)	(0.1)	(0.1)	(0.1)	. . .	. . .	. . .	(0.0)	

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

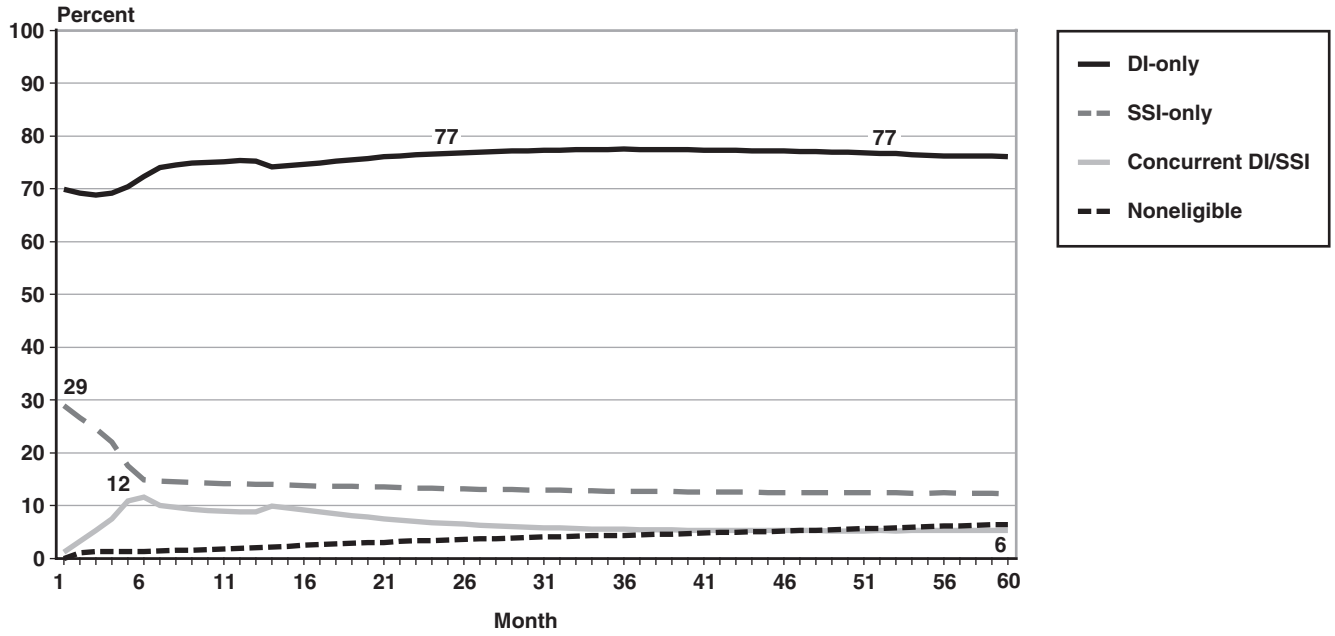
. . . = not applicable.

proportion of the awardee cohort that is not eligible for either benefit but alive and younger than age 65, while gradually increasing, is still under 5 percent at the end of the 60-month observation period. Although we cannot directly observe the subgroup not eligible for work-related reasons in this data set, the 5 percent figure is an upper bound for the proportion of the entry cohort not eligible for work-related reasons at any point in time because there are some who are in noneligibility status because of other factors, such as "excess income or resources" (SSI) or "medical improvement" (both programs), neither necessarily implying work.

The bottom panel of Table 4 shows the distribution among survivors younger than age 65 at each of the three selected time points. Chart 5 provides the monthly detail. The peak percentage in the SSI-only group (29 percent) is reached during the very first month of benefit eligibility with a sharp decline up to month 6 and with a very gradual, but still monotonic decline afterward. The peak percentage in the concurrent group (12 percent) is reached during month 6. The figure for the DI-only group is around 77 percent throughout the period from month 24 to month 53. The chart clearly shows the contrast between DI and SSI involvement over the 60-month observation period: There is a clear increase in DI involvement and a sharp decline in SSI involvement over time. Thus, the role of SSI as a source of "supplemental" income security—at least as reflected by benefit eligibility according to legislative design—is most important during the first 12 months after entry and less important in the longer run.[23] The proportion not eligible for either DI or SSI gradually increases over time, but it still peaks at a low rate (6 percent during the last month of our observation period).

Trends of awardees with DI as the program of first entry. Important trend differences emerge when we look at two subgroups defined by the program of first entry. Table 5 suggests that there is only fairly limited programmatic dynamics for those people who entered DI first. Not surprisingly, the DI-only group dominates the picture. The top panel of the table shows that the proportion in DI-only status is reduced to 69 percent over the 60-month observation period. This is almost exclusively the result of an increase in the proportion that died or exited because of reaching age 65. The proportion of noneligibles reaches only 2.8 percent by the end of the 60-month observation period. These

Chart 5.
Trends in the proportion of survivors younger than age 65 in each program eligibility status category, by month



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

Table 5.
Percentage distribution of benefit eligibility status at selected time points for disability program entrants first entitled to DI benefits, CY 2000

Month	Benefit eligibility status during month							Total	N
	DI-only	SSI-only	Concurrent DI/SSI	Noneligible and younger than age 65	Died before age 65	Reached age 65 and alive	Died after age 65		
Entry cohort									
1 (month of entry)	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	48,056
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
12	90.5	0.0	4.8	0.5	3.8	0.4	0.0	100.0	48,056
	(0.1)	(0.0)	(0.1)	(0.0)	(0.1)	(0.0)	(0.0)	(0.0)	
60	68.7	0.0	3.2	2.8	13.6	10.8	0.9	100.0	48,056
	(0.2)	(0.0)	(0.1)	(0.1)	(0.2)	(0.1)	(0.0)	(0.0)	
Survivors younger than age 65									
1 (month of entry)	100.0	0.0	0.0	0.0	. . .	. . .	. . .	100.0	48,056
	(0.0)	(0.0)	(0.0)	(0.0)	. . .	. . .	. . .	(0.0)	
12	94.5	0.0	5.0	0.5	. . .	. . .	. . .	100.0	46,033
	(0.1)	(0.0)	(0.1)	(0.0)	. . .	. . .	. . .	(0.0)	
60	92.0	0.0	4.2	3.7	. . .	. . .	. . .	100.0	35,885
	(0.1)	(0.0)	(0.1)	(0.1)	. . .	. . .	. . .	(0.0)	

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

. . . = not applicable.

changes are gradual and monotonic. SSI-only status is extremely rare (no more than 0.03 percent) and appears as zero in the table as a result of rounding. Because DI-insured status can never be lost as long as the person stays categorically disabled, there are only very few situations when DI benefit eligibility status is suspended while SSI eligibility status is retained. The programmatic dynamics largely relate to concurrent DI/SSI benefit eligibility status. The monthly underlying data series (not shown) reveals that concurrent eligibility peaks at around 7 percent at month 14 and declines to about 3 percent (3.2 percent of all awardees) by month 60. After limiting the subsample to those alive and younger than age 65 at month 60 (bottom panel of the table), the corresponding percentage is still very low—4.2 percent. Overall, SSI is not very important for most people whose first award is DI.

Trends for awardees with SSI as the program of first entry. Table 6 focuses on people who entered the SSI program first and reveals salient changes. First, the relevance of the two SSA programs dramatically changes over time. The top panel of the table shows that the proportion in SSI-only status substantially decreases in contrast to the increases in the proportion in DI-only status. The proportion in concurrent status peaks at 28 percent during month 6, and it gradually declines afterward (detailed data not shown). Thus, a cohort that started as SSI-only dramatically changes its programmatic profile, reaching a roughly even representation of SSI and DI among those who are on the disability rolls during month 60. Second, when participation in both of SSA's disability programs is considered, the overall level during month 60 (67 percent of combined participation) is very close to the 72 percent level for the subgroup that entered the DI program first, as presented in Table 5. Finally, by month 60 the percentage not eligible among those who entered the SSI program first reaches 9.8 percent of all awardees (Table 6, top panel) and 12.8 percent of the subgroup still alive and younger than age 65 during month 60 (bottom panel of the table). These percentages are over three times as large as the corresponding percentages among those who entered the DI program first. Because of the importance of this empirical finding, we are examining the reasons for this difference next.

Transition to nonbeneficiary status and the SSI means test. The SSI means test is the most plausible reason for the large month-60 difference between the

Table 6.
Percentage distribution of benefit eligibility status at selected time points for disability program entrants first entitled to SSI benefits, CY 2000

Month	Benefit eligibility status during month							Total	N
	DI-only	SSI-only	Concurrent DI/SSI	Noneligible and younger than age 65	Died before age 65	Reached age 65 and alive	Died after age 65		
Entry cohort									
1 (month of entry)	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	19,930
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	
12	26.7	46.3	15.8	5.1	5.7	0.6	0.0	100.0	19,930
	(0.3)	(0.4)	(0.3)	(0.2)	(0.2)	(0.1)	(0.0)	(0.0)	
60	29.3	31.7	5.7	9.8	16.5	6.5	0.5	100.0	19,930
	(0.3)	(0.3)	(0.2)	(0.2)	(0.3)	(0.2)	(0.1)	(0.0)	
Survivors younger than age 65									
1 (month of entry)	0.0	100.0	0.0	0.0	. . .	. . .	. . .	100.0	19,930
	(0.0)	(0.0)	(0.0)	(0.0)	. . .	. . .	. . .	(0.0)	
12	28.4	49.3	16.8	5.4	. . .	. . .	. . .	100.0	18,686
	(0.3)	(0.4)	(0.3)	(0.2)	. . .	. . .	. . .	(0.0)	
60	38.3	41.4	7.5	12.8	. . .	. . .	. . .	100.0	15,237
	(0.4)	(0.4)	(0.2)	(0.3)	. . .	. . .	. . .	(0.0)	

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

. . . = not applicable.

percentage in nonbeneficiary status among people who entered awardee status through the SSI as opposed to the DI program. We test this hypothesis in two ways: (1) by looking for confirmatory evidence, and (2) by testing for evidence with the potential for rejecting the hypothesis. The first approach is based on accounting for SSI suspensions, using spreadsheet calculations. The second approach is based on logistic regression, assessing factors associated with nonbeneficiary status at the end of our observation period.

Insofar as confirmatory evidence is concerned, our hypothesis suggests that SSI suspensions should explain the difference. The results of our spreadsheet calculations (details not shown) are consistent with this hypothesis.[24] While the raw percentage among survivors of the group that entered the SSI program first was much higher than the percentage for those who entered the DI program first (12.8 percent versus 3.7 percent), *net* of suspensions related to the SSI means test, the respective percentages are 3.4 percent and 3.2 percent, a virtual tie.[25] The 3.4 percent and 3.2 percent for the two entry groups that are not explained by suspensions include "medical recoveries" and miscellaneous factors.

The second strategy is to assess whether observed factors other than the SSI means test can account for the observed subgroup differences in the probability of being in nonbeneficiary status during month 60. For this test, we use logistic regression to adjust differences in the relative odds associated with the various entry patterns for demographic and diagnostic factors (Table 7). The dependent variable is status among survivors younger than age 65 during month 60. Those with a 0 value are eligible for DI, SSI, or both during month 60. Those with a value of 1 are not eligible for either program during month 60. (This can be seen as a positive outcome in terms of independence from reliance on disability benefits.) Stepwise regression is a suitable analytic strategy here.[26] Model 1 includes only the longitudinal entry pattern indicators as independent variables; no adjustments are made for other factors. In contrast, model 2 adds age, sex, race, and diagnosis as predictor variables. The results show that the unadjusted and adjusted relative odds ratios for the SSI-only group are fairly similar in magnitude (6.5 and 5.5, respectively). Thus, consistent with our hypothesis, the variables adjusting for case mix do not explain away the substantial difference in the relative odds between the SSI-only and the DI-only groups. Overall, the results of two different tests are consistent with the hypothesis that differences in program rules—suspensions that are the result of the SSI means test, which do not apply to the DI program—provide a credible explanation of the bulk of observed differences in the odds of transitioning to nonbeneficiary status over time between SSI and DI awardees. The determination of whether SSI work incentives (the more favorable treatment of earned income) play a role here would be a worthwhile topic for future research. Another potential area of further research is family dynamics that may affect SSI, but not DI benefit eligibility in our sample.

Timing of First Cash Payment as a Facet of Access to Disability Benefits

The longitudinal interactions affecting access to benefits analyzed so far primarily arise from program *design* features such as the DI waiting period and the SSI means test. However, the receipt of benefits also depends on program *implementation*. The instantaneous payment of public benefits is never feasible. Some time must elapse before benefits can be paid because of the need to establish benefit eligibility and the processing of payments. Thus, there must be a lag between the first month of benefit eligibility (which is established retroactively) and the first month of actual payments, but its length is consequential. In the case of SSA's disability programs, this is a particularly challenging problem because the establishment of categorical eligibility as disabled involves multiple steps to assure that qualified applicants who may be initially denied eventually receive the benefits to which they are entitled.

Looking from another perspective, the SSA disability determination process has been perceived as cumbersome and lengthy in many instances. Social Security's administrative process innovations address this temporal dimension of access to cash payments. Two examples are "Compassionate Allowances" rules and the "Single Decision Maker" model. Compassionate Allowances rules allow Social Security to quickly target the most obviously disabled individuals for allowances based on objective medical information.[27] The Single Decision Maker model is designed to expedite the initial disability determination process by increasing operational flexibility at the Disability Determination Service (DDS) level. Specifically, it allows the DDS administrator to grant disability examiners discretionary authority to make initial decisions without consulting a medical doctor or psychologist under some circumstances.[28]

Table 7.
Results of logistic regression on factors affecting the probability of program status as "not eligible for disability benefits" during month 60 among survivors younger than age 65

Independent variable	Model 1			Model 2		
	Unadjusted odds ratio	Standard error	P > z	Adjusted odds ratio	Standard error	P > z
Pattern						
DI-only entrants (reference category)	. . .	. . .	. . .	. . .	. . .	. . .
DI-only to joint DI/SSI	1.1	0.1	0.393	0.9	0.1	0.130
SSI-only entrants	6.5	0.3	0.000	5.5	0.3	0.000
SSI/DI serial entrants	2.1	0.2	0.000	1.6	0.1	0.000
SSI-only to joint SSI/DI	1.2	0.1	0.027	1.0	0.1	0.681
SSI/DI simultaneous entrants	1.7	0.3	0.001	1.4	0.2	0.035
Any other pattern following first SSI entry	1.6	0.3	0.021	1.1	0.2	0.607
Age group						
18–30	- - -	- - -	- - -	3.1	0.2	0.000
31–45	- - -	- - -	- - -	1.6	0.1	0.000
46–64 (reference category)	. . .	. . .	. . .	. . .	. . .	. . .
Sex						
Women (reference category)	. . .	. . .	. . .	. . .	. . .	. . .
Men	- - -	- - -	- - -	0.9	0.0	0.000
Missing	- - -	- - -	- - -	0.0	0.0	0.003
Race/ethnicity						
White (reference category)	. . .	. . .	. . .	. . .	. . .	. . .
Nonwhite	- - -	- - -	- - -	1.0	0.0	0.302
Missing	- - -	- - -	- - -	1.2	0.2	0.249
SSA primary diagnosis						
Congenital	- - -	- - -	- - -	0.6	0.2	0.212
Endocrine	- - -	- - -	- - -	0.9	0.1	0.271
Infectious and parasitic	- - -	- - -	- - -	1.2	0.2	0.163
Injuries	- - -	- - -	- - -	1.9	0.2	0.000
Intellectual disability [a]	- - -	- - -	- - -	0.6	0.1	0.000
Mental [b]	- - -	- - -	- - -	1.1	0.1	0.397
Neoplasms	- - -	- - -	- - -	5.6	0.5	0.000
Circulatory	- - -	- - -	- - -	1.1	0.1	0.232
Digestive	- - -	- - -	- - -	1.8	0.2	0.000
Genitourinary	- - -	- - -	- - -	2.5	0.3	0.000
Musculoskeletal (reference category)	. . .	. . .	. . .	. . .	. . .	. . .
Nervous	- - -	- - -	- - -	0.9	0.1	0.243
Respiratory	- - -	- - -	- - -	1.1	0.1	0.693
Other	- - -	- - -	- - -	1.6	0.3	0.013
Missing	- - -	- - -	- - -	2.1	0.2	0.000
Log likelihood	-11,273.416			-10,735.951		
Likelihood ratio Chi^2	2,128.30			3,203.23		
Probability > Chi^2	0.0000			0.0000		
Pseudo R^2	0.0863			0.1298		
Number of observations	51,752			51,752		

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: The study sample is limited to people alive and younger than age 65 during month 60 of the observation period.

. . . = not applicable; - - - = variable not included.

a. Intellectual disability was formerly known as mental retardation.

b. Not including intellectual disability.

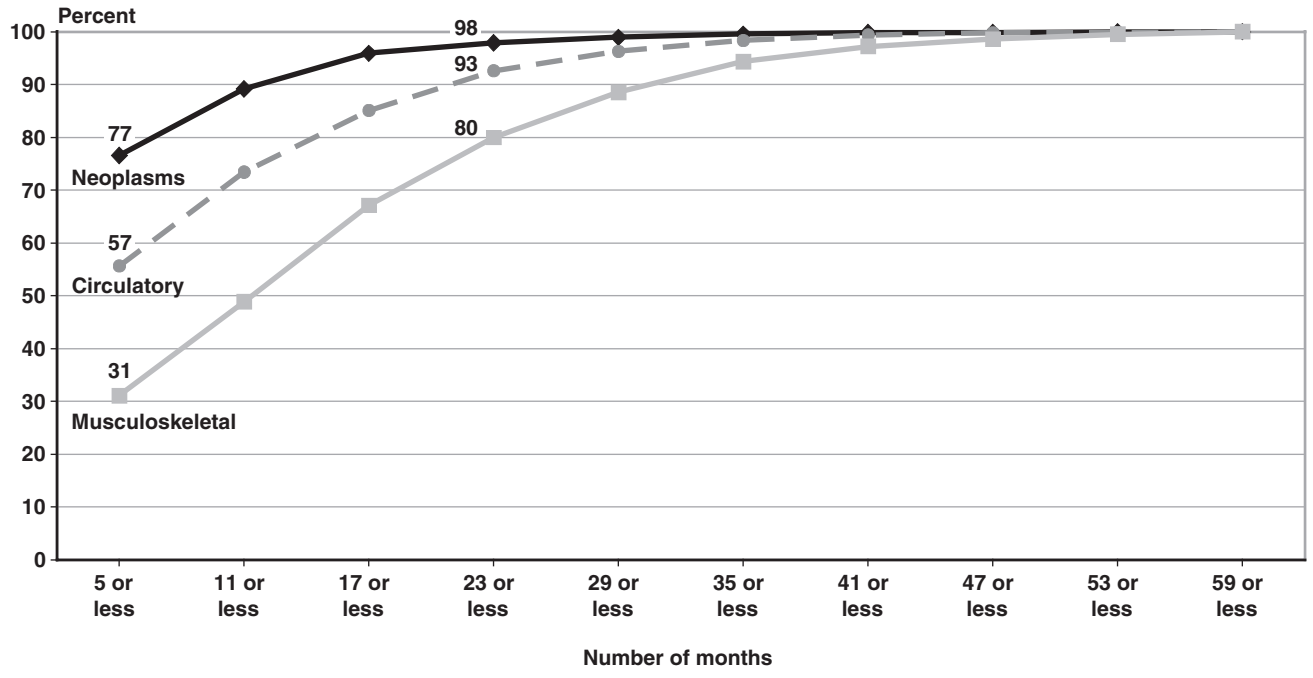
Because we have data both on the first month of benefit eligibility and on actual payments, we can calculate the time elapsing between the two events. The distribution is highly skewed, so we present several summary indicators for our disability program (DI and/or SSI) awardee cohort in the following tabulation:

Average number of months elapsing between the first month of benefit eligibility and the first month of payments received	10.2 months
Standard deviation in months	10.6 months
Median	6 months
First payment received within 1 year of the first month of benefit eligibility	67.1 percent
First payment received 1–2 years after the first month of benefit eligibility	22.3 percent
First payment received more than 2 years after the first month of benefit eligibility	10.7 percent

These summary measures indicate substantial variation in the lag of receiving the first actual payment. Such delays reduce the cash available to support current consumption among people with severe disabilities during a period of financial vulnerability. We do note that there is no loss of benefits in a narrow accounting sense because of the retrospective payment of delayed benefits. Table A-3 provides more detail by various characteristics and displays substantial subgroup differences. Chart 6 illustrates differences by diagnostic category and presents the cumulative distribution for three selected diagnostic categories: neoplasms, circulatory, and musculoskeletal. The cumulative distribution is consistently different for these three diagnoses across different points in time, with neoplasms on a fast track, musculoskeletal impairments on a slow track, and circulatory impairments in between. For example, a payment was received by 77 percent of neoplasms awardees within 5 months or less; the corresponding figure is only 31 percent for musculoskeletal awardees. While almost all neoplasms awardees (98 percent) receive their first payment within 23 months or less, the corresponding figure is lower (80 percent) for musculoskeletal awardees.

The reasons for such differences may be quite complex. As a first step of exploring the ways in which various factors interact, we estimate a regression model allowing us to assess the marginal relationship between duration and various subgroup characteristics. Table 8 summarizes the results of a linear regression model of the natural logarithm of time from the

Chart 6.
Cumulative distribution of duration of time between first month of benefit eligibility and first month of actual payment among disability program entrants, by selected diagnostic categories



SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

Table 8.
Estimated regression coefficients from a linear regression model predicting the natural logarithm of time from the first month of disability benefit eligibility to the first month of actual benefit payment

Independent variable	Coefficient	Standard error	P > t	Estimated marginal effect (%) [a]
Pattern				
DI-only entrants (reference category)	. . .	. . .	. . .	. . .
DI-only to joint DI/SSI	0.65	0.01	0.000	90.9
SSI-only entrants	-0.43	0.01	0.000	-35.1
SSI/DI serial entrants	-0.76	0.02	0.000	-53.4
SSI-only to joint SSI/DI	0.25	0.02	0.000	28.7
SSI/DI simultaneous entrants	-0.24	0.04	0.000	-21.7
Any other pattern following first SSI entry	-0.22	0.05	0.000	-19.6
Age group				
18–30	0.11	0.02	0.000	11.5
31–45	0.38	0.01	0.000	46.3
46–64 (reference category)	. . .	. . .	. . .	. . .
Sex				
Women	0.12	0.01	0.000	12.6
Men (reference category)	. . .	. . .	. . .	. . .
Missing	-0.40	0.06	0.000	-33.2
Race/ethnicity				
White (reference category)	. . .	. . .	. . .	. . .
Nonwhite	0.03	0.01	0.003	2.9
Missing	-0.04	0.04	0.296	-3.8
SSA primary diagnosis				
Congenital	-0.67	0.11	0.000	-49.0
Endocrine	-0.11	0.03	0.000	-10.7
Infectious and parasitic	-0.91	0.03	0.000	-59.7
Injuries	-0.37	0.02	0.000	-30.8
Intellectual disability [b]	-0.61	0.03	0.000	-45.4
Mental [c]	-0.28	0.01	0.000	-24.6
Neoplasms	-1.14	0.02	0.000	-68.2
Circulatory	-0.54	0.01	0.000	-41.8
Digestive	-0.34	0.03	0.000	-29.0
Genitourinary	-1.26	0.03	0.000	-71.6
Musculoskeletal (reference category)	. . .	. . .	. . .	. . .
Nervous	-0.57	0.02	0.000	-43.7
Respiratory	-0.62	0.02	0.000	-46.0
Other	-0.27	0.05	0.000	-23.6
Missing	-0.05	0.03	0.071	-5.3
Constant	1.95	0.01	0.000	0.0
Adjusted R^2 = 0.2041				
Number of observations = 68,423				
F(26, 68396) = 675.92				
Probability > F = 0.0000				

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: . . . = not applicable.

a. Calculated from the first column as $100*(e^{ß} - 1)$.

b. Intellectual disability was formerly known as mental retardation.

c. Not including intellectual disability.

first month of eligibility to the first payment. A logged dependent variable was used to improve model fit given its skewed distribution. Generally, the results suggest substantial variation in the duration between benefit eligibility and actual payments. These differences warrant future research.

Conclusions and Issues for Future Research

In this analysis, we did the following:

- Demonstrated that longitudinal access to DI and SSI benefits is affected by interactions in benefit eligibility, reflecting legislative design and lags in receiving the first payment.
- Followed up a cohort of new disability awardees aged 18–64 who were first receiving DI or SSI benefits during CY 2000.
- Identified five major longitudinal patterns of benefit eligibility based on interactions between SSI and DI program rules: (1) DI-only; (2) SSI-only; (3) DI-only transitioning to joint DI/SSI benefit eligibility; (4) SSI-only transitioning to DI-only serial benefit eligibility; and (5) SSI-only transitioning to joint DI/SSI benefit eligibility. These five patterns cover about 98 percent of all new first awards for federal disability benefits.
- Performed empirical analysis of factors affecting benefit eligibility and lags in receiving the first payment.

Several conclusions arise from the empirical analysis. The results of multinomial logit analysis show substantial differences in the relative odds of various longitudinal patterns of benefit eligibility, primarily as a function of age and diagnostic category. We show that about 40 percent of awardees are involved with SSI or both disability programs over a 60-month follow-up period. The results indicate a substantially higher degree of program interaction than apparent from cross-sectional data. Among those people participating in both programs, the role of SSI is most likely to be front-loaded, especially among younger awardees. In the majority of cases, SSI benefit eligibility fills 4 or 5 months of the gap arising from the 5-month DI waiting period among awardees eligible for both types of benefits. More than half of those who entered SSI first and were still in disability participant status at month 60 transitioned to the DI program or were in concurrent program status at that time. Less than 4 percent of survivors younger than age 65 among those who first entered the DI program were in nonpayment status 5 years after entry. In contrast, about 13 percent of those who first entered the SSI program were in nonpayment status 5 years later, the difference reflecting exits that were due to the SSI means test. We also find substantial variation in the months elapsing between the first month of benefit eligibility and the first month of actual payments.

There are a number of promising future research directions. The authors plan to conduct a follow-up study that focuses on the ways in which longitudinal patterns of benefit eligibility affect public health insurance coverage among disabled people, with a particular focus on the role of SSI in providing a path toward Medicaid coverage. Another area for follow-up analysis is the effect of program implementation factors—such as lags in receiving the first benefit payments, relatively restrictive Medicaid eligibility rules, and auto-enrollment—on Medicaid coverage and utilization. Further studies may explore the longitudinal stream of cash and health insurance benefits arising from these interactions. All of these lines of inquiry will contribute to a better understanding of how interactions among these four important public programs affect the public safety net.

Appendix

The relationship between diagnosis and age at first award is provided in Table A-1. Table A-2 shows longitudinal patterns of benefit eligibility by primary diagnosis. Table A-3 gives summary measures of the distribution of duration of time from the first month of initial benefit eligibility to the first month of actual payment, by various characteristics.

Table A-1.
Percentage distribution of new awardees first entitled to disability benefits (DI and/or SSI), by SSA primary diagnosis and age group, CY 2000

Subgroup	Age group			Total	N
	18–30	31–45	46–64		
All awardees	9.6	27.4	63.0	100.0	68,798
	(0.1)	(0.2)	(0.2)	(0.0)	
SSA primary diagnosis					
Congenital	48.0	21.0	31.0	100.0	100
	(5.0)	(4.1)	(4.7)	(0.0)	
Endocrine	4.7	23.6	71.8	100.0	2,089
	(0.5)	(0.9)	(1.0)	(0.0)	
Infectious and parasitic	9.0	54.8	36.3	100.0	1,229
	(0.8)	(1.4)	(1.4)	(0.0)	
Injuries	13.9	30.8	55.3	100.0	2,582
	(0.7)	(0.9)	(1.0)	(0.0)	
Intellectual disability [a]	48.0	31.9	20.1	100.0	1,751
	(1.2)	(1.1)	(1.0)	(0.0)	
Mental [b]	20.5	39.2	40.4	100.0	15,535
	(0.3)	(0.4)	(0.4)	(0.0)	
Neoplasms	4.2	21.6	74.3	100.0	6,334
	(0.3)	(0.5)	(0.6)	(0.0)	
Circulatory	1.6	13.0	85.3	100.0	8,384
	(0.1)	(0.4)	(0.4)	(0.0)	
Digestive	5.3	35.3	59.4	100.0	1,498
	(0.6)	(1.2)	(1.3)	(0.0)	
Genitourinary	9.9	30.8	59.2	100.0	1,541
	(0.8)	(1.2)	(1.3)	(0.0)	
Musculoskeletal	2.7	24.4	72.9	100.0	17,530
	(0.1)	(0.3)	(0.3)	(0.0)	
Nervous	11.6	27.4	61.0	100.0	5,418
	(0.4)	(0.6)	(0.7)	(0.0)	
Respiratory	1.7	11.9	86.4	100.0	2,949
	(0.2)	(0.6)	(0.6)	(0.0)	
Other	16.2	34.1	49.7	100.0	463
	(1.7)	(2.2)	(2.3)	(0.0)	
Missing	9.7	33.8	56.6	100.0	1,395
	(0.8)	(1.3)	(1.3)	(0.0)	

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees.
Totals may not sum to 100 because of rounding.

a. Intellectual disability was formerly known as mental retardation.

b. Not including intellectual disability.

Table A-2.
Percentage distribution of longitudinal patterns of disability benefit eligibility among first-ever disability benefit (DI and/or SSI) awardees, by primary diagnosis, CY 2000

	Longitudinal pattern of benefit eligibility									Percent involved with—		
SSA primary diagnosis	DI-only entrants	DI-only to joint DI/SSI	SSI-only entrants	SSI/DI serial entrants	SSI-only to joint SSI/DI	SSI/DI simul-taneous entrants	SSI entrants following other pattern	Total	N	DI	SSI	DI/SSI
Endocrine	56.6	11.4	15.2	3.2	11.4	1.4	0.8	100.0	2,089	84.8	43.4	28.2
	(1.1)	(0.7)	(0.8)	(0.4)	(0.7)	(0.3)	(0.2)	(0.0)		(0.8)	(1.1)	(1.0)
Infectious and parasitic	37.4	10.8	25.2	13.1	11.1	1.3	1.1	100.0	1,229	74.8	62.7	37.4
	(1.4)	(0.9)	(1.2)	(1.0)	(0.9)	(0.3)	(0.3)	(0.0)		(1.2)	(1.4)	(1.4)
Injuries	59.4	9.0	13.7	5.5	10.8	1.2	0.4	100.0	2,582	86.3	40.6	26.9
	(1.0)	(0.6)	(0.7)	(0.5)	(0.6)	(0.2)	(0.1)	(0.0)		(0.7)	(1.0)	(0.9)
Intellectual disability [a]	16.0	12.9	53.6	3.5	7.5	1.4	5.1	100.0	1,751	46.4	84.0	30.4
	(0.9)	(0.8)	(1.2)	(0.4)	(0.6)	(0.3)	(0.5)	(0.0)		(1.2)	(0.9)	(1.1)
Mental [b]	47.7	14.3	21.7	3.6	10.3	1.5	1.0	100.0	15,535	78.3	52.3	30.6
	(0.4)	(0.3)	(0.3)	(0.2)	(0.2)	(0.1)	(0.1)	(0.0)		(0.3)	(0.4)	(0.4)
Neoplasms	67.1	4.4	15.7	7.3	4.2	1.2	0.2	100.0	6,334	84.3	32.9	17.2
	(0.6)	(0.3)	(0.5)	(0.3)	(0.3)	(0.1)	(0.1)	(0.0)		(0.5)	(0.6)	(0.5)
Circulatory	64.5	6.6	11.7	6.0	9.8	1.2	0.3	100.0	8,384	88.3	35.5	23.8
	(0.5)	(0.3)	(0.4)	(0.3)	(0.3)	(0.1)	(0.1)	(0.0)		(0.4)	(0.5)	(0.5)
Digestive	56.3	11.4	15.7	4.1	10.4	1.3	0.8	100.0	1,498	84.3	43.7	28.0
	(1.3)	(0.8)	(0.9)	(0.5)	(0.8)	(0.3)	(0.2)	(0.0)		(0.9)	(1.3)	(1.2)
Genitourinary	56.9	6.2	14.2	13.2	7.7	1.5	0.4	100.0	1,541	85.9	43.1	28.9
	(1.3)	(0.6)	(0.9)	(0.9)	(0.7)	(0.3)	(0.2)	(0.0)		(0.9)	(1.3)	(1.2)
Musculoskeletal	73.6	9.0	8.0	2.0	6.2	0.8	0.4	100.0	17,530	92.0	26.4	18.4
	(0.3)	(0.2)	(0.2)	(0.1)	(0.2)	(0.1)	(0.1)	(0.0)		(0.2)	(0.3)	(0.3)
Nervous	68.3	6.6	12.6	4.7	6.2	0.9	0.7	100.0	5,418	87.4	31.7	19.1
	(0.6)	(0.3)	(0.5)	(0.3)	(0.3)	(0.1)	(0.1)	(0.0)		(0.5)	(0.6)	(0.5)
Respiratory	63.1	7.2	13.1	6.2	9.0	1.2	0.3	100.0	2,949	86.9	36.9	23.9
	(0.9)	(0.5)	(0.6)	(0.4)	(0.5)	(0.2)	(0.1)	(0.0)		(0.6)	(0.9)	(0.8)
Minimum percent	16.0	4.4	8.0	2.0	4.2	0.8	0.2	. . .	. . .	46.4	26.4	17.2
Maximum percent	73.6	14.3	53.6	13.2	11.4	1.5	5.1	. . .	. . .	92.0	84.0	37.4

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees. The "Congenital," "Other," and "Missing" SSA primary diagnosis categories (comprising 2.8 percent of the study universe) are not presented in the table. Totals may not sum to 100 because of rounding.

. . . = not applicable.

a. Intellectual disability was formerly known as mental retardation.

b. Not including intellectual disability.

Table A-3.
Percentage distribution and summary measures of the duration of time from the first month of initial benefit eligibility to the first month of actual payment, by various characteristics, CY 2000

Characteristic	Duration of time from first month of benefit eligibility to first payment			Total	N	Mean number of months	Standard deviation	Median number of months
	1 year or less	1–2 years	More than 2 years					
All awardees	67.1	22.3	10.7	100.0	68,423	10.2	10.6	6
	(0.2)	(0.2)	(0.1)	(0.0)		(0.0)		
Pattern								
DI-only entrants	64.5	23.9	11.7	100.0	41,392	10.6	10.8	7
	(0.2)	(0.2)	(0.2)	(0.0)		(0.1)		
DI-only to joint DI/SSI	42.6	35.7	21.7	100.0	6,357	16.6	11.7	15
	(0.6)	(0.6)	(0.5)	(0.0)		(0.2)		
SSI-only entrants	83.1	11.6	5.4	100.0	10,762	6.5	8.5	3
	(0.4)	(0.3)	(0.2)	(0.0)		(0.1)		
SSI/DI serial entrants	98.0	1.7	0.4	100.0	3,054	2.8	3.2	2
	(0.3)	(0.2)	(0.1)	(0.0)		(0.1)		
SSI-only to joint SSI/DI	64.5	27.8	7.7	100.0	5,585	11.0	8.7	8
	(0.6)	(0.6)	(0.4)	(0.0)		(0.1)		
SSI/DI simultaneous entrants	76.4	18.4	5.3	100.0	812	7.9	9.0	4
	(1.5)	(1.4)	(0.8)	(0.0)		(0.3)		
Any other pattern following first SSI entry	77.2	15.6	7.2	100.0	461	8.2	9.6	5
	(2.0)	(1.7)	(1.2)	(0.0)		(0.5)		
Age group								
18–30	71.7	19.4	8.9	100.0	6,577	9.3	10.4	5
	(0.6)	(0.5)	(0.4)	(0.0)		(0.1)		
31–45	57.1	26.1	16.9	100.0	18,644	13.0	11.9	10
	(0.4)	(0.3)	(0.3)	(0.0)		(0.1)		
46–64	70.7	21.0	8.3	100.0	43,202	9.1	9.8	5
	(0.2)	(0.2)	(0.1)	(0.0)		(0.1)		
Sex								
Women	64.1	23.7	12.3	100.0	32,906	11.0	11.0	7
	(0.3)	(0.2)	(0.2)	(0.0)		(0.1)		
Men	69.6	21.1	9.3	100.0	35,147	9.5	10.2	6
	(0.3)	(0.2)	(0.2)	(0.0)		(0.1)		
Missing	95.1	3.8	1.1	100.0	370	3.0	5.1	1
	(1.1)	(1.0)	(0.5)	(0.0)		(0.3)		
Race/ethnicity								
White	66.2	22.9	10.9	100.0	48,452	10.3	10.6	7
	(0.2)	(0.2)	(0.1)	(0.0)		(0.1)		
Nonwhite	69.1	20.6	10.3	100.0	19,012	9.9	10.6	6
	(0.3)	(0.3)	(0.2)	(0.0)		(0.1)		
Missing	70.4	21.1	8.6	100.0	959	9.1	10.0	5
	(1.5)	(1.3)	(0.9)	(0.0)		(0.3)		

(Continued)

Table A-3.
Percentage distribution and summary measures of the duration of time from the first month of initial benefit eligibility to the first month of actual payment, by various characteristics, CY 2000—*Continued*

Characteristic	Duration of time from first month of benefit eligibility to first payment			Total	N	Mean number of months	Standard deviation	Median number of months
	1 year or less	1–2 years	More than 2 years					
SSA primary diagnosis								
Congenital	71.4	22.5	6.1	100.0	98	7.4	8.9	3
	(4.6)	(4.2)	(2.4)	(0.0)		(0.9)		
Endocrine	55.4	28.5	16.2	100.0	2,066	12.9	11.6	10
	(1.1)	(1.0)	(0.8)	(0.0)		(0.3)		
Infectious and parasitic	79.8	14.9	5.3	100.0	1,226	6.6	8.8	3
	(1.2)	(1.0)	(0.6)	(0.0)		(0.3)		
Injuries	66.6	22.6	10.8	100.0	2,575	10.3	10.3	7
	(0.9)	(0.8)	(0.6)	(0.0)		(0.2)		
Intellectual disability [a]	78.8	16.1	5.1	100.0	1,740	7.3	9.0	4
	(1.0)	(0.9)	(0.5)	(0.0)		(0.2)		
Mental [b]	66.0	24.4	9.7	100.0	15,464	10.8	10.1	8
	(0.4)	(0.4)	(0.2)	(0.0)		(0.1)		
Neoplasms	90.4	7.6	2.1	100.0	6,312	4.3	6.2	1
	(0.4)	(0.3)	(0.2)	(0.0)		(0.1)		
Circulatory system	75.1	18.3	6.6	100.0	8,353	8.1	9.1	5
	(0.5)	(0.4)	(0.3)	(0.0)		(0.1)		
Digestive	63.8	23.6	12.7	100.0	1,490	11.0	10.9	7
	(1.3)	(1.1)	(0.9)	(0.0)		(0.3)		
Genitourinary	90.3	7.7	2.0	100.0	1,540	4.0	6.2	1
	(0.8)	(0.7)	(0.4)	(0.0)		(0.2)		
Musculoskeletal system	51.6	30.0	18.3	100.0	17,376	14.0	11.8	12
	(0.4)	(0.4)	(0.3)	(0.0)		(0.1)		
Nervous	71.6	20.4	8.0	100.0	5,395	8.8	9.8	5
	(0.6)	(0.6)	(0.4)	(0.0)		(0.1)		
Respiratory	76.9	16.8	6.3	100.0	2,945	7.7	9.0	4
	(0.8)	(0.7)	(0.5)	(0.0)		(0.2)		
Other	62.0	23.9	14.1	100.0	461	11.5	10.7	8
	(2.3)	(2.0)	(1.6)	(0.0)		(0.5)		
Missing	51.1	29.1	19.8	100.0	1,382	13.7	12.5	12
	(1.4)	(1.2)	(1.1)	(0.0)		(0.3)		

SOURCE: Authors' calculations from Social Security administrative record data extracted from the TRF, version 8.

NOTES: Standard errors are in parentheses. The sample excludes 126 state-only SSI new awardees. An additional 375 observations are excluded because of missing information on the actual payment date. Totals may not sum to 100 because of rounding.

a. Intellectual disability was formerly known as mental retardation.

b. Not including intellectual disability.

Notes

Acknowledgments: Paul O'Leary provided invaluable assistance by creating extract files for purposes of this analysis from the Ticket Research File administrative records data system. We appreciate the expert assistance of Francoise Becker in the creation and analysis of the data files used in this article. The authors are also thankful to Nancy Early and Thuy Ho for helpful data processing assistance during exploratory phases of this project. We would also like to thank Richard Burkhauser, Paul Davies, Jeff Hemmeter, Howard Iams, and Joyce Nicholas for thoughtful comments and suggestions reflecting on earlier versions of this article.

[1] According to the *Annual Supplement to the Social Security Bulletin*, in 2009 the proportion of the US population aged 20–64 that was DI-insured was 77.4 percent. The corresponding figure among those aged 15–19 and 20–24 was 16.1 percent and 65.6 percent, respectively. In contrast, among those aged 55–59, the proportion DI-insured was 78.9 percent (authors' calculations based on Tables 4.C2 and 4.C5).

[2] Note the distinction between "coverage" and "participation" in SSA's two disability programs. The DI-insured concept is a coverage concept akin to that of health insurance coverage. Rupp, Davies, and Strand (2008) generalized this concept of coverage to the SSI program, defining working-age adults "covered" by the program as those who would pass the SSI means test if they applied for benefits and were found categorically disabled. This article focuses on patterns of participation, which is conditional on coverage.

[3] See Dykacz and Hennessey (1989), Hennessey and Dykacz (1989), Hennessey and Dykacz (1993), Rupp and Scott (1995), Rupp and Scott (1996), and Rupp and Scott (1998).

[4] Rupp and Davies (2004) also used record data for both programs, but followed up a cross-sectional population sample, not an awardee cohort.

[5] Parsons' fundamental insight was that potential applicants self-select into the applicant pool considering a number of factors, including administrative procedures affecting the probability and timing of disability awards. In this framework, anticipated delays reduce the attractiveness of application.

[6] The now classical debate between Parsons (1980, 1991a, 1991b) and Bound (1989, 1991) focused on the appropriateness of relying on denied applicants as a counterfactual in assessing effects on labor supply. Delays in the disability determination process play an important, but primarily methodological, role in this strain of the literature. The key issue was whether initially denied applicants strategically keep their labor supply low in order to increase their chances of being approved for disability benefits during subsequent steps in the reconsideration and appeals process. The potential importance of this issue clearly depends on the time elapsing between the various steps.

[7] For a more detailed discussion, see Rupp, Davies, and Strand (2008).

[8] In the preceding list, we did not include differences in rules concerning public health insurance because they do not affect cash benefit eligibility, which is the focus of this study. Yet because of the major importance of public health insurance coverage, these differences are worth mentioning here. The DI program has a 24-month waiting period for Medicare eligibility after the start of DI benefits (which can be up to 29 months from onset considering the 5-month DI waiting period). In contrast, in most cases, SSI recipiency status results in immediate categorical eligibility for Medicaid. One of the implications is that SSI may provide a path toward public health insurance coverage for DI awardees during the Medicare waiting period. This is an issue of great interest to policymakers and researchers (Riley 2004; Riley 2006; Livermore, Stapleton, and Claypool 2010).

[9] The SSI benefit formula for each month considers unearned income during the preceding month. As a result, for the first month of DI benefit eligibility, the SSI benefit formula considers the zero DI benefit amount for the previous month rather than the positive DI benefit for the current month. Among *serial* beneficiaries, this could result in a single month of concurrent DI and SSI benefit eligibility right after the 5-month DI waiting period.

[10] In our analysis of time elapsing between the first month of disability benefit eligibility and the first month of the actual receipt of cash benefits, we had to make some further exclusions because of the lack of evidence concerning any positive payment during the 60-month observation period. The excluded cases amounted to 0.8 percent of the main analytic sample, resulting in a subsample size of 68,423 for the analysis related to actual receipt of cash benefits.

[11] Note that the age-18 redetermination is not a factor here because we focus on the very first positive adult entitlement episode; age-18 redetermination cases entered as children, and thus are outside of our sample frame.

[12] Deeming is a technical term referring to the rules relevant to the consideration of parental income and resources in establishing the financial eligibility of a child who is categorically disabled according to SSI rules.

[13] In accordance with Public Law 111-256 (enacted October 2010), the terms "retardation" and "mental retardation" have been replaced with "intellectual disability."

[14] Because of the distinctness of the intellectual disability group, references to "mental" disorders in the rest of this study is shorthand for "mental disorders other than intellectual disability."

[15] These people first entered SSI with simultaneous or subsequent DI entry, but did not qualify under our SSI/DI serial or joint entrant category because the DI entry occurred at a point in time beyond the DI-waiting period. This would be the case of an SSI entrant who was not DI-insured at the time of SSI entry, but subsequently accumulated sufficient work experience to qualify as DI-insured. Our finding concerning the very small fraction falling into this category is consistent with the results of demonstration evaluations suggesting that return to work on a substantial scale among disability beneficiaries is rare, even among those who received demonstration services or waivers.

[16] The results of tabulations by sex are available from the authors by request. The most obvious difference is the relatively high proportion of women who are SSI-only for the whole 60-month observation period. An estimated 18.3 percent of women are in the SSI-only group compared with 13.0 percent of men.

[17] Using data from Table 2 and Chart 1 of Rupp, Davies, and Strand (2008, 11–13), we estimate that the proportion DI-insured among the US population aged 18–30 was only 69 percent in November 1996, in contrast to the 82 percent DI coverage rate for the 31–45 age group, and the 78 percent rate for those aged 46–64. The proportion covered by SSI has shown a sharp negative gradient across the three age groups, from 63 percent for those aged 18–30 to 18 percent for those aged 46–64.

[18] Note that the anchoring point for relative odds ratios is the value of "1" as opposed to the value of "0," which would be the case on a linear interval scale. Both are associated with "no difference." We can assess the "relative magnitude" of odds ratios by treating odds ratios smaller than 1 as equivalent (in relative terms) to their inverse, which is always greater than 1. This is equivalent to the use of absolute value as a measure of relative magnitude on a linear scale where 0 corresponds to no difference.

[19] The results are robust to the inclusion or exclusion of the smallest two groups, comprising 2 percent of the total sample. The full results are available from the authors.

[20] For example, if the date of disability onset is 12 months before application, a DI-insured person may become eligible to receive DI benefits immediately, and SSI plays no role during the 5-month DI waiting period. In contrast, if onset is established for the month immediately prior to the month of application, SSI may fill in the full 5-month gap in DI benefit eligibility.

[21] About 63 percent of *serial* and 51 percent of *joint* awardees are eligible for SSI for 4 or 5 months of the DI waiting period.

[22] In technical terms, a trend is monotonic if the first derivative does not change sign. For example, this means that a decreasing trend is monotonic if it is not interrupted by subperiods of increase.

[23] We note, however that this may not be reflected in actual payments during the first 12 months as a result of lags arising from the disability determination process—an issue that will be addressed later in the article.

[24] First, we calculate the percentage in SSI suspension status because of excess income or excess resources for month 60 among survivors younger than age 65 in the cell representing "noneligible" status for two groups: (1) the group that entered the DI program first (Table 5), and (2) the group that entered the SSI program first (Table 6). Second, we back out these cases from the *noneligible* group, in effect producing a subgroup of *noneligibles* for reasons not involving the SSI means test.

[25] Thus, roughly 74 percent [100*(12.8-3.4)/12.8] of those among the SSI-first program group who were in nonpayment status at month 60 had either excess income or excess resources listed as the reason for suspension.

[26] Stepwise regression is a common procedure in regression analysis where groups of variables are sequentially added to the list of independent variables in the model.

[27] For details, see http://www.socialsecurity.gov/compassionateallowances/.

[28] For more information, see http://www.socialsecurity.gov/OP_Home/cfr20/404/404-0906.htm.

References

Benítez-Silva, Hugo, Moshe Buchinsky, Hiu Man Chan, John Rust, and Sofia Sheidvasser. 1999. "An Empirical Analysis of the Social Security Disability Application, Appeal, and Award Process." *Labour Economics* 6 (1999): 147–178.

Bound, John. 1989. "The Health and Earnings of Rejected Disability Insurance Applicants." *American Economic Review* 79(3): 482–503.

———. 1991. "The Health and Earnings of Rejected Disability Insurance Applicants: Reply." *American Economic Review* 81(5): 1427–1434.

Daly, Mary C. 1998. "Characteristics of SSI and DI Recipients in the Years Prior to Receiving Benefits: Evidence from the PSID." In *Growth in Disability Benefits: Explanations and Policy Implications,* edited by Kalman Rupp and David C. Stapleton, 177–196. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Dykacz, Janice M., and John C. Hennessey. 1989. "Postrecovery Experience of Disabled-Worker Beneficiaries." *Social Security Bulletin* 52(9): 42–66.

Hennessey, John C., and Janice M. Dykacz. 1989. "Projected Outcomes and Length of Time in the Disability Insurance Program." *Social Security Bulletin* 52(9): 2–41.

———. 1993. "A Comparison of Recovery and Termination Rates of Disabled-Worker Beneficiaries in 1972 and 1985." *Social Security Bulletin* 56(2): 58–69.

Hildebrand, Lesley, Laura Kosar, Jeremy Page, Miriam Loewenberg, Dawn Phelps, and Natalie Hazelwood. 2010. *Data Dictionary for the Ticket Research File (TRF08)*. Report prepared for the Social Security Administration (contract no. 0600-03-60130) Washington, DC: Mathematica Policy Research, 388.

Livermore, Gina A., David C. Stapleton, and Henry Claypool. 2010. "Health Care When Workers Need it Most: Before and After Entry into the Social Security Disability Insurance Program." *Inquiry* 47(2): 135–149.

Mitchell, Olivia S., and John W. R. Phillips. 2001. "Eligibility for Social Security Disability Insurance." MRRC Research Paper No. WP 2001-011. Ann Arbor, MI: Michigan Retirement Research Center. http://ssrn.com/abstract=1084651.

Parsons, Donald O. 1980. "The Decline in Male Labor Force Participation." *Journal of Political Economy* 88(1): 117–134.

———. 1991a. "Self-Screening in Targeted Public Transfer Programs." *The Journal of Political Economy*, 99(4): 859–876.

———. 1991b. "The Health and Earnings of Rejected Disability Insurance Applicants: Comment." *American Economic Review* 81(5): 1419–1426.

Riley, Gerald F. 2004. "The Cost of Eliminating the 24-Month Medicare Waiting Period for Social Security Disabled-Worker Beneficiaries." *Medical Care* 42(4): 387–394.

———. 2006. "Health Insurance and Access to Care among Social Security Disability Beneficiaries during the Medicare Waiting Period." *Inquiry* 43(3): 222–230.

Rupp, Kalman, and Paul S. Davies. 2004. "A Long-Term View of Health Status, Disabilities, Mortality, and Participation in the DI and SSI Disability Programs." In *Research in Labor Economics: Accounting for Worker Well-Being*, Vol. 23, edited by Solomon Polachek, 119–183. Amsterdam: Elsevier, JAI Press.

Rupp, Kalman, Alexander Strand, Paul Davies, and Jim Sears. 2007. "Benefit Adequacy among Elderly Social Security Retired-Worker Beneficiaries and the SSI Federal Benefit Rate." *Social Security Bulletin* 67(3): 29–52.

Rupp, Kalman, Paul S. Davies, and Alexander Strand. 2008. "Disability Benefit Coverage and Program Interactions in the Working-Age Population." *Social Security Bulletin* 68(1): 1–30.

Rupp, Kalman, and Charles G. Scott. 1995. "Length of Stay on the Supplemental Security Income Disability Program." *Social Security Bulletin* 58(1): 29–47.

———. 1996. "Trends in the Characteristics of DI and SSI Awardees and Duration of Program Participation." *Social Security Bulletin* 59(1): 3–21.

———. 1998. "Determinants of Duration on the Disability Rolls and Program Trends." In *Growth in Disability Benefits: Explanations and Policy Implications*, edited by Kalman Rupp and David C. Stapleton, 139–173. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.