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Articles

Perspectives

Vocational Factors in Disability Claim Assessment: A Comparative Survey of 11 Countries

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Public disability benefit programs in the United States and other countries consider, as a condition for benefit eligibility, the claimant's ability or inability to resume or find work because of a health impairment. Many countries use an applicant's vocational factors (VFs)—age, education, and work experience—in assessing disability claims. As such, VFs play an important role in determining who qualifies for disability and related benefits. This article offers a comprehensive examination of the disability assessment processes in 11 developed countries and highlights the use and relevance of VFs in those processes.

Introduction

Vocational factors (VFs) are characteristics of disability benefit claimants that are used by public disability-insurance program staff in many countries to inform decisions of whether to approve benefit claims. Specifically, VFs are the applicant's age, education, and work experience. This article explores the role of VFs in assessing disability benefit claims. In the United States, the Social Security Administration (SSA) uses a five-step process to determine whether an adult qualifies for disabled-worker benefits. This process comprises tests of (1) whether the claimant has current work and income, (2) the severity of the impairment, (3) whether the medical condition meets criteria contained in SSA's codified Listing of Impairments, and the claimant's ability to perform (4) past work or (5) any type of work. SSA considers VFs during the last two steps of the process. To varying extents, other countries employ VFs in similar ways. All countries conduct some sort of evaluation of a disability benefit claimant's residual capacity to engage in paid work, and it is during this evaluation that VFs are most likely to be applied. Although the assessment processes they use may not be as formulaic as SSA's five-step sequence, other countries generally follow a multistep process to determine program eligibility.

This article discusses the disability determination process in selected countries, with a focus on the residual-capacity evaluation and the use of VFs. The key participants in the process—besides the claimant—typically include the treating physician (the claimant's personal doctor and/or one contracted by the disability agency) along with medical and nonmedical agency staff who gather documentation, evaluate evidence, and present their findings to a nonmedical administrator authorized to make the final disability claim determination. In some countries, a broad-based review team (specialists in medicine, rehabilitation, and labor market placement) are available to address a potential range of claims, especially where a work capacity assessment is pivotal.

Selected Abbreviations

ICF	International Classification of Functioning, Disability and Health
OECD	Organisation for Economic Co-operation and Development
SSA	Social Security Administration
VF	vocational factor

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Certain countries encourage or even mandate employer efforts to assist the employee's possible return to work. Instead of requiring the disability program staff to rely exclusively on medical information to determine a claimant's benefit eligibility, this approach enables claimants who possess residual work capacity to be identified as potential participants in return-to-work interventions. Some countries use the term "gatekeeper" to describe certain medical or nonmedical staff who are tasked with work capacity assessment, vocational rehabilitation assignment, or job placement responsibilities. In executing those roles, various deadlines—affecting different stages of sickness, eligibility for work capacity assessment, and employer involvement—may come into play, although their application can be flexible.

Procedures vary from country to country based on variables such as jurisdiction (federal, provincial, or local); operational definition of disability (full or partial, temporary or permanent); whether disability determinations require the claimant to receive rehabilitation services; whether administrators are required to evaluate the claimant's work capacity and medical, functional, and vocational factors; and time limits on each step in the assessment processes. Non-U.S. disability programs often also provide sickness benefits for the initial period of absence from the workplace, for which workers may need to apply as a preliminary requirement before they can apply for long-term disability benefits.

This article examines the disability determination processes in the United States and 10 other developed countries. It describes each country's process in detail. It compares how the countries assess claimant functional capacity, and how that assessment affects disability determinations. In particular, it explores the role and relevance of VFs in each country's claim-processing procedure.

The article is divided into five sections, beginning with this introduction. In the second section, we list the countries in our sample and explain the methodology involved in their selection. In the third section, we profile each country, explaining how it processes disability claims and describing the extent to which VFs are used. In the fourth section, we summarize the disability program aspects that tend to recur—or differ—from country to country. The fifth section concludes the article by highlighting differences between the United States and other countries in the disability determination process and the role of VFs.

Country Selection and Research Methodology

The countries examined in this study use VFs in varying roles in their disability assessment processes. To select a representative sample of such countries, we reviewed official definitions of "disability" used by the member countries of the Organisation for Economic Co-operation and Development (OECD).[1] Those definitions provided reliable indications of whether the countries might use VFs in their disability determinations. On that basis we selected 11 OECD member countries (including the United States) for our sample. The 11 countries have advanced economies and well-developed social security systems. We verified that the countries employ at least one VF by reviewing program descriptions and other materials posted on disability agency websites.

We then sought further information on the extent to which VFs are used. We reached out to subject experts in the study countries and constructed a network of contacts from whom we gathered evidence that we present in the country profiles that follow.[2] This study relies heavily on the knowledge of these experts. Without their verification of the information we present, the study would not have been possible.

The development of a network of experts was also catalyzed by a coincidental request that SSA received from a panel representing the United Kingdom's Department for Work and Pensions. The panel was studying how the United States and other countries conduct work capacity assessments for disability determinations. At the same time, a panel of the Dutch Social Security Institute was conducting its own comparative study of other countries' work capacity assessment processes. By exchanging information with both of those panels, we expanded and solidified our database and refined the details of many of the country profiles presented in this article. To our knowledge, no other cross-national study in the disability literature focuses on VFs.[3]

Table 1 presents summary indicators of disability prevalence and the reach of disability benefit programs in our 11 sample countries. The prevalence of self-reported disability, based on OECD data as of unspecified years in the late 2000s, ranges from about 10 percent of the working-age population (Switzerland) to roughly 12 percent in the United States and nearly 21 percent in Finland and Denmark. Most countries in our sample have prevalence rates above

the OECD average (covering 27 member countries) of nearly 14 percent.

Table 1 shows the prevalence of disability benefit receipt among the working-age population for two reporting periods. An annual average for the period 2007–2008 is shown for each country (as well as the OECD average); a more recent figure—the latest available—is also given for each country (except Canada). For 2007–2008, only three of the countries in the sample recorded lower benefit receipt rates than the OECD average of 5.7 percent. Overall, rates ranged from 4.4 percent (Canada) to 6.2 percent (United States) and 10.3 percent (Norway and Sweden). More recent data provide largely similar country rankings, although some changes occurred in the interim—most notably, a dramatic decrease in Sweden's rate.

Table 1 also shows public disability program-related spending as a percentage of gross domestic product. Such expenditures include the costs of sick-leave, disability, and occupational benefits. The expenditure levels range from 0.8 percent (Canada) to 1.4 percent (United States) and more than 4 percent (Sweden and Denmark). Seven of the sample countries spend more than the OECD average of 2.1 percent.

Country Profiles: Disability Program Characteristics, Claim Procedures, and Role of VFs

In the country profiles that follow, the disability programs we examine are not necessarily limited to long-term disability pensions but may include others such as partial or short-term disability insurance, sickness benefits, and work-related injury compensation.

Each profile begins with an overview of the disability programs (both long- and short-term) operating in the country, including a detailed description of the disability determination process. Then, a subsection summarizes how VFs are used (directly or indirectly) in the disability assessment process. Each profile addresses the country's concept of residual work capacity and how that capacity is evaluated. Depending on the country, residual capacity may be discussed in either the program description or the VF subsection of the profile, or in both.

Each profile concludes with a list of information sources that are specific to the particular country; those sources were consulted extensively and many of them contributed substantially to our profiles.[4] When needed, a list of profile-specific abbreviations also appears.

Table 1.
Disability prevalence and summary disability program characteristics in selected OECD countries, various periods 2007–2013

Country	Working-age population (in millions)	Self-reported disability among working-age population (%)	Disability benefit receipt among working-age population (%)		Disability program spending (% of gross domestic product)
			2007–2008 annual average	Most recent available year [a]	
United States	211.6	11.9	6.2	6.8	1.4
Australia	15.6	12.0	5.4	5.5	2.6
Canada	24.2	12.1	4.4	. . .	0.8
Denmark	3.6	20.7	7.2	7.3	4.7
Finland	3.5	20.5	8.5	7.5	3.8
Ireland	3.0	13.3	6.5	6.4	2.0
Netherlands	11.1	16.8	8.2	7.9	3.1
Norway	3.4	16.3	10.3	10.7	3.7
Sweden	6.1	18.1	10.3	6.9	4.3
Switzerland	5.5	10.4	5.3	4.7	2.3
United Kingdom	40.1	17.6	7.0	6.7	2.0
OECD [b]	834.1	13.8	5.7	. . .	2.1

SOURCE: Authors' calculations based on data from various OECD publications and databases.

NOTE: . . . = not applicable.

a. Most recent year is 2012 for Denmark, Ireland, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom; and 2013 for the United States, Australia, and Finland.

b. Values are the total for 36 member countries (working-age population); and unweighted averages for 27 countries (disability prevalence), 28 countries (benefit receipt), and 32 countries (disability program spending).

We profile the United States first; but as a preface, we note the following significant differences between U.S. disability programs and those of most of the other sampled countries:

- U.S. programs do not extend eligibility to claimants with partial and/or temporary disabilities;
- Workers in many other countries receive sickness benefits for 1 year or longer before becoming eligible to claim long-term disability benefits;
- Although SSA assesses residual work capacity in the later stages of the five-step U.S. process, many of the other countries conduct their assessment in the initial determination phase; and
- Several other countries involve the claimant's employer in the assessment process.

We also note the following significant attributes that the U.S. disability programs share with those of other countries:

- The assessment is carried out in sequential steps (although agencies in other countries do not always spell out those steps quite as definitively as does SSA); and
- Medical experts are consulted to confirm diagnoses and evaluate disablement.

United States

SSA manages two programs that provide benefits based on disability or blindness: Social Security Disability Insurance (DI) and Supplemental Security Income (SSI). DI provides benefits to disabled or blind persons who are insured—workers who have made the required contributions to the DI trust fund—and to their dependents or survivors, if they meet the criteria to file under the insured worker's Social Security number.[5] By contrast, SSI is a means-tested program that provides cash payments to aged, blind, and disabled persons (including disabled children) who have limited income and resources. There is no work requirement. SSI payments are drawn from the General Fund of the Treasury.

Selected Abbreviations: United States

DDS	Disability Determination Service
DI	Disability Insurance
RFC	residual functional capacity
SGA	substantial gainful activity
SSI	Supplemental Security Income

The Social Security Act defines disability as the inability to engage in substantial gainful activity (SGA) because of a medically determinable physical or mental impairment that is expected to result in death or that has lasted, or is expected to last, for a continuous period of not less than 12 months. SSA uses a five-step process in both DI and SSI to determine whether an adult is disabled (SSA 2016a).[6] The five steps comprise tests of whether the claimant has work and income, the severity of the impairment(s),[7] whether the condition meets criteria contained in SSA's medical listings (described later), the claimant's ability to perform past work, and the claimant's ability to perform any type of work.

The process begins when a claimant files an application, typically at an SSA field office. The application (and related forms) require a description of the claimant's impairment, treatment sources, and other information relevant to an alleged disability. The field office is responsible for verifying nonmedical eligibility requirements, which may include age, employment, marital status, and Social Security coverage status. For SSI applications, field office staff must also obtain information on the claimant's income and resources. Once the information is verified, the field office refers the case to a federally funded state agency called a Disability Determination Service (DDS).

The DDS is responsible for compiling medical evidence and rendering the initial determination on whether a claimant's condition (including blindness) meets the law's definition of disability. The DDS first seeks evidence from the claimant's own medical sources. If that evidence is unavailable or insufficient to make a determination, the DDS will arrange for a consultative examination—conducted by a licensed physician who is not employed by SSA but is familiar with the disability programs—to provide the needed information.

After reviewing the evidence, an adjudicator and a medical (and/or psychological) consultant make the initial disability determination and return the case to the SSA field office for appropriate action. If the DDS allows the claim on medical grounds, the field office must confirm that all nonmedical criteria are satisfied before computing the benefit amount and initiating payments. If the DDS denies the application, the claimant may appeal the decision. The first appeal of a denied claim—called a reconsideration—is also adjudicated by the DDS. Any subsequent appeals, if needed, are reviewed by SSA's Office of Hearings

Operations (OHO), which uses the same evaluation process that the DDS follows.[8] We describe the process below. The adjudicative actions in steps 2–5 of the process are taken either by the DDS or OHO, depending on the iteration of the appeal; however, for brevity, we ascribe all such actions to the DDS in the discussion.

In step 1 of the disability determination process for adults,[9] the SSA field office determines whether the individual is currently engaged in SGA. SGA is a monthly earnings level that is adjusted annually to account for changes in the national average wage index.[10] It is meant to indicate

> the performance of significant physical and/or mental activities in work for pay or profit, or in work of a type generally performed for pay or profit, regardless of the legality of the work. "Significant activities" are useful in the accomplishment of a job or the operation of a business, and have economic value. Work may be substantial even if it is performed on a part-time basis, or even if the individual does less, is paid less, or has less responsibility than in previous work. Work activity is gainful if it is the kind of work usually done for pay, whether in cash or in kind, or for profit, whether or not a profit is realized. Activities involving self-care, household tasks, unpaid training, hobbies, therapy, school attendance, clubs, social programs, [and the like] are not generally considered to be SGA (SSA 2007).

If the field office determines that the applicant is not performing SGA, the case is referred to a DDS. At step 2, the DDS determines if an impairment is considered severe or not severe. Impairments are severe if they significantly limit an individual's physical or mental abilities to do basic work activities. Impairments that do not meet that standard, including those that have no more than a minimal effect on the ability to do basic work activities, are considered programmatically not severe.[11] When the DDS determines that a claimant has a severe impairment, the DDS adjudicator must proceed to step 3. If the claimant's impairment is deemed not to meet the programmatic definition of "severe," the DDS renders a "not disabled" determination.

At step 3, the DDS determines if an individual's impairment meets (or is of equal severity to) the criteria contained in SSA's medical Listing of Impairments. The listing "describes, for each major body system, impairments considered severe enough to prevent an individual from doing any gainful activity (or in the case of children under age 18 applying for Supplemental Security Income (SSI), severe enough to cause marked and severe functional limitations)" (SSA n.d. b). If the DDS determines that an individual's impairment does not meet or equal the criteria in the medical listings, the claimant's physical and/or mental residual functional capacity (RFC) must be assessed. RFC accounts for any work-related activities an individual can perform despite her or his impairment. The RFC assessment addresses the claimant's exertional, manipulative, postural, special sense, and mental capacities, as well as environmental restrictions. The RFC test is "an administrative assessment of the extent to which an individual's medically determinable impairment(s), including any related symptoms, such as pain, may cause physical or mental limitations or restrictions that may affect his or her capacity to do work-related physical and mental activities…RFC is the individual's maximum remaining ability to do sustained work activities in an ordinary work setting on a regular and continuing basis" (SSA 1996).

Role of VFs

VFs are considered in steps 4 and 5. In step 4, the DDS adjudicator must determine whether the individual's RFC would enable him or her to perform past relevant work. If so, the case is denied, whether or not such past work still exists in the national economy. Past work is considered relevant if the DDS, with assistance from the SSA field office if needed, confirms that the work was performed no more than 15 years prior to the adjudication of the claim,[12] lasted long enough for the claimant to learn the job, and was determined to constitute SGA (SSA n.d. a). The applicant's age and education are not considered at this step; work experience, by contrast, is the central nonmedical consideration.

If the vocational evidence is not sufficient to establish whether the claimant can perform past relevant work, the DDS must consider whether the claimant falls into any of three special medical-vocational profiles before proceeding to step 5.[13] This process may enable the DDS to preempt step 5 because the profiles list "combinations of the [VFs] of age, education and work experience that are so unfavorable that an individual who meets one of them will be deemed to be unable to adjust to other work and therefore will be found disabled at step 5 of the sequential evaluation

process" (SSA 2006). The special medical-vocational profiles are:

1. Arduous unskilled work. The claimant is not working at SGA level, has performed at least 35 years of arduous unskilled work and cannot continue this arduous work because of a severe impairment, and has no more than a "marginal" education (no formal schooling after grade 6).
2. No work experience. The claimant has a severe impairment, has no past relevant work, is aged 55 or older, and has no more than a "limited" education (formal schooling completed at grade 7 through 11).
3. Lifetime commitment. The claimant is not working at the SGA level and has a lifetime commitment (30 years or more) to a field of work that is unskilled or that is skilled or semi-skilled but with no transferable skills, cannot continue this past work because of a severe impairment, is aged 60 or older, and has no more than a limited education.

Claims are denied at step 4 if claimants are considered able to perform past relevant work. At step 5, the DDS considers the claimant's RFC along with the VFs of age, education, and work experience to determine his or her "occupational base," a term that denotes the approximate number of occupations the individual can perform given her or his exertional and nonexertional limitations.[14]

Age affects the claimant's ability to adapt to a new work situation and to participate in the competitive labor market.[15] Education (or training) can provide abilities that meet vocational requirements. The period between formal education and disability onset may be relevant. A claimant's education is classified as one of the following levels: illiteracy (including inability to communicate in English[16]); marginal (grade 6 or less), adequate for unskilled jobs; limited (grades 7–11), adequate for semiskilled or skilled jobs; and high school (at least grade 12), required for semiskilled or skilled jobs.[17,18] Work experience may impart transferable skills. When acquired skills are not transferable, the claimant is considered capable of adjusting only to unskilled work. SSA defines transferable skills as those "obtained from performing past relevant skilled or semiskilled work that a claimant can use to adjust to the requirements of other skilled or semiskilled work that falls within the claimant's RFC" (SSA 2018). Transferability applies only to jobs that would involve the same or a lesser degree of skill because claimants are not required to do more complex work than was expected in their previous jobs. DDS consideration of transferable skills extends to the use of the same or similar tools and machines and the involvement of the same or similar raw materials, production, processes, or services.[19]

In using VFs to assess whether the individual can work in employment consistent with his or her RFC, the DDS often consults a set of tables called the *medical-vocational guidelines* (sometimes shortened to the *vocational grid*).[20] Using the grid, the DDS can classify a claimant according to how four factors—age, education, past relevant work, and RFC—intersect. For example, a claimant with a relatively nonrestrictive RFC, and/or who is younger than 50, and/or has education or training or transferable job skills is considered likely to be able to adjust to other jobs.

The DDS denies a claim at step 5 if the applicant is deemed to be capable of performing any other work in the national economy. When this occurs, the DDS usually cites three examples of jobs that a claimant could perform. If the claimant is instead found to be unable to adjust to other work, the DDS medically allows the case and forwards it to the SSA field office to confirm that all nonmedical criteria are satisfied. If so, the field office then computes the claimant's benefit amount and initiates benefit payments.

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Australia

Benefits for Australians with permanent disabilities are provided primarily by the Disability Support Pension (DSP). To qualify for the DSP, an applicant must meet age, residency, disability, and employment criteria. The nonmedical factors (age and residency, as well as income and assets) are assessed first. A qualifying individual must be aged 16 or older, younger than pensionable age, and an Australian resident at the time of claiming. Disability benefits are means-tested unless the claimant is blind. Although Australia also has a Sickness Allowance program to assist individuals who temporarily cannot work or study because of an injury or illness, this profile focuses on the DSP program.

Selected Abbreviations: Australia

DSP	Disability Support Pension
JCA	job capacity assessment

Centrelink is the agency that administers the DSP. In 2012, policymakers introduced tighter eligibility rules, revised measures of how a person's impairment may affect her or his ability to work, and implemented requirements meant to encourage beneficiaries to work. A two-stage process for claiming DSP, detailed below, was established in July 2015 (Hermant 2016).

The DSP claim process begins with the job capacity assessment (JCA), which identifies the level of functional impairment caused by any permanent medical condition(s), current and future work capacity, barriers to finding and maintaining employment, and supports that may improve work capacity.[21] The JCA is conducted by Department of Human Services health professionals[22] who review medical evidence along with the claim documentation. Claimants who provide medical evidence of certain conditions may receive a "manifest grant" that immediately qualifies them for benefits. These conditions include terminal illness (life expectancy of less than 2 years with significantly reduced work capacity during that period); permanent blindness; severe intellectual disability (documented IQ of less than 70); a need of nursing-home or equivalent care; category 4 human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS); or a condition that qualifies for a veteran's disability pension with a rating of "totally and permanently incapacitated" (Australian Government 2016a, 2019).

To qualify for DSP benefits, claimants who do not receive a manifest grant must be judged to have a severe impairment causing a continuing inability to work more than 15 hours weekly at or above the minimum-wage level at any location in Australia (not only the claimant's locally accessible labor market). Additionally, claimants must either:

- actively participate in a program of support without which they will be unable to work independently in the next 2 years;
- undertake a training activity to prepare for independent work within the next 2 years; or
- be unlikely to complete such training or perform work in the next 2 years because of their impairment(s).

The JCA concludes with the claimant's referral either to employment support services or the second step of the DSP claim process, a disability medical assessment, which is conducted by a government-contracted doctor (Australian Government 2016a; Hermant 2016).[23] At this stage, an applicant can meet the DSP medical requirements either with a diagnosis

of permanent blindness or with a finding of permanent physical, intellectual, or psychiatric impairment that meets a given severity threshold. Persons who are permanently blind automatically meet the medical eligibility criteria for the DSP and are exempt from the income-and-assets test that applies to all other DSP recipients. The threshold for those in the latter group is a rating of 20 points based on point values listed in comprehensive Impairment Tables, which assess an applicant's work-related functional limitations. In the Impairment Tables, each level of functional impact has a corresponding rating expressed in points in accordance with a consistent, generic scale that has been adapted from a standard World Health Organization classification scheme. The ratings are 0 points if the functional impact is negligible, 5 points if mild, 10 points if moderate, 20 points if severe, and 30 points if extreme. For a physical, psychological, or psychiatric impairment to be considered permanent, it must be fully diagnosed, treated, stabilized, and unlikely to show any significant functional improvement within 2 years, with or without reasonable treatment.

The Impairment Tables describe functional activities, abilities, symptoms, and limitations in terms of their effects on body systems rather than as diagnoses (Australian Government 2011). When using the tables to assess functional capacity, the reviewer must evaluate the impairment on the basis of what the person can or could do, not of what the person chooses to do or what others do for the person. The claimant's self-reported symptoms must be corroborated by the treating physician's report and other medical evidence when the reviewer applies the Impairment Tables.

Using the information accumulated in the JCA and the disability medical assessment, Centrelink grants or rejects the DSP claim.

Role of VFs

As noted above, DSP applicants who are not considered manifestly disabled must undergo the JCA. The assessor collects the claimant's medical files, employment history, and other relevant information. Assessors and claimants discuss factors such as the claimant's educational attainment, work history, skills, qualifications, and interests, as well as medical matters such as treatment history and the stability of and prognosis for any episodic conditions. Assessors and claimants may also discuss other factors that could affect the claimant's ability to work, such as language difficulties or mobility problems. This information underlies the impairment rating.

A person receiving a DSP may remain qualified for benefits even if he or she works more than 15 hours a week. DSP beneficiaries who work remain subject to means testing.[24]

Since July 1, 2014, DSP recipients aged 34 or younger with an assessed work capacity of 8 or more hours per week must participate in Disability Employment Services, which involves developing and signing a Job Plan for work resumption and attending informational interviews on support service availability and beneficiary obligations with DSP administrators. Interviews must take place quarterly during the first 18 months of benefit receipt and semiannually thereafter. The Job Plan is individually tailored and includes voluntary activities that address vocational and nonvocational barriers to employment; however, DSP payment may be suspended or canceled for nonparticipation in the Job Plan's required activities (Australian Government 2015).

Apart from requiring the assessment based on the Impairment Tables, the regulations specify which factors Centrelink staff can and cannot consider when determining the ability to work. As specified in informational websites of the Australian Government (2016a, 2016b), the following factors must be considered:

- physical and intellectual characteristics required to perform any work;
- the impairment's effect on the claimant's ability to demonstrate those characteristics over the next 2 years;
- the impairment's effect on specific work functions, such as the ability to report regularly to work, persist at work tasks, understand and follow instructions, communicate, travel to and from work, move around, attend to personal care needs, manipulate objects, exhibit appropriate behavior, undertake a variety of tasks and alternate between tasks, and/or lift, carry, and move objects;
- whether a person requires a moderate to high level of ongoing assistance to maintain employment;
- the impairment's effect on the ability to undertake mainstream educational, vocational, or on-the-job training (excluding programs designed specifically for people with physical, intellectual, or psychiatric impairments); and
- whether such training is likely to enable the individual to do any work within the next 2 years.

Conversely, the following factors must be disregarded:

- the availability of the person's usual work in the locally accessible labor market;
- the availability of any kind of work in the locally accessible labor market that the person could do or be trained to do;[25]
- the availability of educational, vocational, or on-the-job training that would assist the claimant in developing work skills;
- the availability of transportation to and from work;
- the person's motivation to work or train, except when medical evidence indicates that the lack of motivation is directly attributable to the impairment (as in a psychiatric disability);
- the individual's preferences regarding the type of work or training;
- the person's potential attractiveness to an employer in a particular area of work;
- difficulties with literacy, numeracy, or language which are not directly attributable to a medical condition; and
- employer preferences and discriminatory practices that may exist in the open labor market.

Sources

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Canada

Disability benefits are provided under the Canada Pension Plan Disability (CPP-D) program, administered by Service Canada. CPP-D provides monthly benefits to program contributors who cannot work at any job because of a "severe and prolonged" physical and/or mental disability (IBIS Advisors 2017). A *severe* disability renders the applicant incapable of regularly pursuing any gainful occupation because it prevents the performance of any type of work on a regular basis. A *prolonged* disability is one of long-term and indefinite duration or that is likely to result in death (OECD 2010a).

CPP-D eligibility is based on earnings history and medical evidence. A CPP-D applicant must be younger than 65 and have made CPP payroll-tax contributions in at least 4 of the last 6 years, or in 3 of the last 6 years for long-term contributors (25 years or longer).

Medical eligibility depends on whether the claimant's disability meets the definitions of both severe and prolonged, noted above. If so, the adjudicator grants the CPP-D benefit and a benefit officer calculates the monthly benefit amount based on the applicant's lifetime contributions.

Medical adjudicators are registered nurses with specific knowledge of CPP-D legislation, regulations, policies, and procedures, who are authorized to determine CPP-D eligibility. After reviewing documentation of a claimant's clinical observations, diagnosis, and long-term prognosis, they decide whether the applicant's medical condition meets the CPP-D definitions of severe and prolonged. For complex cases, medical adjudicators may consult

Selected Abbreviation: Canada

CPP-D	Canada Pension Plan Disability

with a physician from the CPP-D Medical Expertise Division. Medical eligibility is not based solely on a specific diagnosis; instead, the adjudicator considers other factors as well, including the nature and severity of the medical condition(s); the effect of the condition (and its treatment) on the claimant's capacity to work at any job; and personal characteristics (for example, age, education, and work experience).

In addition to reviewing the detailed information provided by the applicant, the adjudicator may consult with employers, schools, and other third parties such as worker compensation boards and long-term disability insurers who may be able to provide additional information on the applicant's functional capacity. Information provided by the applicant's treating physician is also important. Medical adjudicators may also seek information from specialists who have seen the applicant in the past or from independent medical examiners to ensure that Service Canada has enough information to determine the applicant's eligibility.

Role of VFs

In processing a claim, the adjudicator uses the CPP-D Adjudicative Framework. The framework consists of five components: (1) establishing whether the medical condition (called the Prime Indicator) meets the definition of "severe"; (2) establishing whether the medical condition regularly prevents the applicant from pursuing substantially gainful work; (3) considering the claimant's personal characteristics (specifically, age, education, and work experience); (4) establishing whether the medical condition meets the definition of "prolonged"; (5) applying a reasonable standard of evidence for granting or continuing pension benefits (Government of Canada 2018).[26] In the course of following the framework, the adjudicator examines whether the condition is progressive, the functional limitations it imposes, and how its treatment affects the claimant; reviews the statements and opinions of health professionals as well as of the applicant himself or herself; and identifies any additional conditions.

The medical condition is evaluated in the context of work capacity. Specifically, the applicant must demonstrate that he or she has a severe and prolonged physical or mental disability that prevents him or her from regularly pursuing any substantially gainful occupation, defined in the CPP-D regulations as one "that provides a salary or wages equal to the maximum annual amount a person could receive as a disability pension." The medical adjudicator must determine if the evidence on the claimant's disability, notwithstanding any functional limitations and restrictions, indicates an inability to perform any job that exists in the competitive workforce. The regulations define "any job" as one in which a person might reasonably be expected to be employed because of skills, education, and training the person possesses or could timely acquire (on the job or otherwise), accounting for the person's limitations and restrictions (Canada Minister of Justice 2016). Although retraining must be considered in some cases, age may be a countervailing factor for some workers. In general, retraining for an occupation for which an applicant has no previously demonstrated suitability is not in itself an appropriate factor in determining whether an older worker is capable of work.

Age is evaluated in the context of the medical condition(s), as are education and work experience. These factors constitute the personal characteristics that are considered in the third component of the adjudication framework. Age alone does not entitle a person to a CPP-D benefit but it is an important consideration. With increasing age, there is a gradual reduction in the reserve capacity of most body organs. This can affect a person's ability to recover from injury or illness and to sustain work.

An applicant's education is also considered under the framework, because higher levels of education are assumed to enhance the likelihood that an individual will be able to perform some form of work. Education includes both formal and informal knowledge and skills obtained through a structured learning process and/or work experience.

The relevance of a claimant's work experience to an evaluation of work capacity is self-evident. The CPP-D adjudicator considers the type(s) of work the applicant has performed, reason(s) for stopping work, and the frequency and length of nonwork spells (as indicated by the Record of Earnings, or ROE). The ROE may reveal a decline in earnings that is consistent with the deterioration in the medical condition or a fluctuation that the adjudicator may ask the employer to explain.

The official title of the third component of the adjudication framework mentions socioeconomic factors. However, as a consequence of federal court rulings,[27] those factors—such as business closures or seasonal layoffs; regional unemployment, predominant language spoken, industry mix of employers, occupations available, and skills needed for those occupations; and local access to specific jobs—are not considered in a CPP-D determination, as they do not affect the

capacity of a claimant with a severe and prolonged disability to work at any job.

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Denmark

In Denmark, disability benefits are administered by municipalities under authority of the national pension program.[28] Benefits are payable to individuals whose ability to work has been permanently reduced by more than half. The program encourages rehabilitation by permitting a beneficiary to retain eligibility while earning a modest income through rehabilitative employment. A disability pension can be granted to a claimant aged 18–65 who has resided in Denmark for at least 3 years. Eligibility is means-tested and the benefit level is based on years worked and number of payroll contributions, not on earnings level (Pederson 2010).

The Danish system emphasizes labor force attachment at any practicable level for disability benefit claimants. Individuals younger than 65 who retain work capacity but cannot perform their prior jobs because of permanently reduced capacity are eligible for an extensive array of subsidized "flex jobs." Claimants whose reduced work capacity prevents them from holding a flex job qualify for the early-retirement disability pension. The number of flex-job offerings has increased in recent years to provide maximal alternatives to receiving cash benefits. As the number of flex jobs expanded in recent years to accommodate potential beneficiaries, the Danish system eliminated partial disability benefits. A claimant who qualifies for a flex job but cannot currently find one is eligible for a "waiting benefit," which has no time limit (OECD 2008).

Effective 2012, national pension program reforms restricted some of the eligibility criteria. For example, early retirement was virtually eliminated for individuals younger than 40 if return to work was possible. For claimants with any chance of returning to work, the municipality assigns a case manager to assist with rehabilitation, education, employment support, and social services.

A claimant may apply for various programs, such as sickness benefits, social assistance, and vocational rehabilitation. The case manager develops a human resource profile on receipt of an application for disability benefits (or after 8 weeks of illness, for a sickness-benefit recipient). The profile informs decisions on benefit eligibility or vocational rehabilitation and flex job requirements. Those decisions depend on the claimant's current and potential abilities and human capital and on whether the incapacity to hold a flex job has been proven. The case manager gathers evidence and renders a judgment on the claimant's abilities and human capital in the initial (medical) stage of the assessment, for which medical, psychological, vocational, or other experts may be consulted.

In the next step of the process, nonmedical staff of the municipality assess the claimant's residual work capacity using 12 measures: education, labor market experience, interests, social competence, adaptability, learning capacity, work-related preferences, performance expectations, the importance of work to one's identity, housing and finances, social networks, and health. Not all criteria are relevant to each case; and although "health" constitutes only 1 of the 12 criteria, a physician plays a critical role in the nonmedical assessment. The doctor's evaluation focuses on the claimant's resource capacity and its potential development. The claimant's capacity for labor market participation, rather than a specific diagnosis, is the primary factor of eligibility for disability benefits (Boer, Brenninkmeijer, and Zuidam 2004; ISF 2013).

In a typical claim, the worker notifies the municipality of work lost because of illness at some point during the first 4 weeks of the sick leave. The employer pays the benefit in the first 21 days of sickness. The employee initiates the claim by submitting a form describing the illness. (The employer may request a written statement as well.) After paying sick leave for the first 4 days, the employer may require the employee to provide a medical certification of illness. The municipality pays the employee's sickness benefits after 21 days. Payments may continue for 52 weeks, which may be nonconsecutive, over the ensuing

18 months. If medical certification has not been requested by the employer and has not been presented after 8 weeks of sick leave, the municipality requires such certification and is obliged to conduct follow-up evaluations at 8-week intervals thereafter to reassess the need for medical or vocational rehabilitation.

Based on the evidence gathered, the case manager may require vocational rehabilitation and begin to develop a plan with the client. Rehabilitation services typically last about 3 months but may be extended for as long as several years. If such services are judged insufficient to enable the claimant to find "normal" work, a flex job (or a series of such jobs) may be offered. Alternatively, an unsuccessful rehabilitation may lead to a new rehabilitation plan. If the rehabilitation service and flex job options are exhausted, the claimant is granted a disability pension. A disability pensioner may work and retain eligibility as long as earnings do not exceed a cap (OECD 2008; Kautto and Bach-Othman 2010).

Role of VFs

Age is not directly considered in rendering disability determinations, but the eligibility to file a claim for disability-related early retirement pension benefits without medical documentation certifying a permanent absence of working capacity is restricted to individuals aged 40 or older. Education and labor market experience (the latter of which includes the claimant's personal views on the importance of work) are among the 12 criteria used by municipality case managers to assess a claimant's work capacity.

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Finland

Two statutory pension systems provide disability benefits in Finland. The first, a universal flat-rate national pension, is administered by *Kansaneläkelaitos* (KELA), the Finnish Social Security Institution. The second, a mandatory employer-provided pension insurance program that ties benefit levels to lifetime earnings for private-sector wage and salary workers and self-employed persons, is coordinated by *Eläketurvakeskus* (ETK), the Finnish Centre for Pensions. The second program is authorized under five separate statutes, of which the primary law is the Employees' Pension Act, known by its Finnish acronym as TyEL; thus, the program is known as the TyEL pension or, more commonly, TyEL insurance.[29] The two programs complement each other. Workers with higher lifetime earnings qualify for higher earnings-based TyEL pension benefits and receive lower amounts from the KELA-run national pension; at a certain benefit threshold, high earners receive a benefit only from the earnings-related TyEL pension (IBIS Advisors 2017; ISF 2013). TyEL insurance is the primary source of pension benefits for Finnish workers. The national pension assures a minimum pension level for workers whose earnings-related pension is low because of an incomplete employment history or low wages.

Both pension systems encourage disabled persons to participate in a rehabilitation program. The national pension also provides an initial sickness allowance, which compensates for income lost because of work incapacity lasting less than a full year. The sickness allowance is available for individuals aged 16 to 67—employees, the self-employed, the unemployed, and students—and provides a preliminary phase before individuals are considered eligible to file a long-term disability claim under either the national pension or TyEL insurance.

Selected Abbreviations: Finland

ETK	*Eläketurvakeskus* (Centre for Pensions)
KELA	*Kansaneläkelaitos* (Social Security Institution)

Full or partial disability benefits under TyEL insurance are granted when incapacity for work is expected to last for at least 1 year; by contrast, national pension benefits are only granted in full.[30] Disability benefits granted under both the national pension system and the earnings-related pension system may continue indefinitely if the illness, handicap, or injury that reduces work ability appears unlikely to improve. Under the national pension, individuals who are blind or who are not mobile without assistance are entitled to a disability pension even if employed. Part-time work may be allowed with either a partial or full benefit under TyEL insurance, and new pension benefits accrue if the claimant works while receiving a disability pension (KELA 2017c).[31]

Eligibility for disability benefits under the national pension requires that insured claimants are Finnish residents aged 16 to 64 with an assessed illness, condition, or injury that prevents engaging in gainful employment (IBIS Advisors 2017; SSA 2016c). Disability benefits under TyEL insurance may be granted to covered individuals aged 18 or older, up to the age of eligibility for a retirement pension (63 or older, depending on birth year)[32] who have an assessed loss of working capacity of at least 60 percent and have exhausted the sickness allowance benefit (SSA 2016c). A partial disability pension may be provided to workers with an assessed loss of working capacity of 40–59 percent, with benefits equal to half the insured's potential full disability pension. Should the beneficiary of either disability pension program receive vocational rehabilitation services, the TyEL insurance benefit increases by 33 percent for the duration of those services[33] and the KELA-administered disability pension increases by 10 percent.

The ETK, a department of the Ministry of Social Affairs and Health, coordinates the TyEL insurance program. Employer coverage of employees in the TyEL system is mandatory.[34] Employers offer coverage through providers such as private insurance companies, pension funds, and foundations.[35] Most employees belong to a trade union or are covered under a collective agreement; their employers provide TyEL benefits complementing those provided by KELA under the national pension. For firms or industries in which workers generate proportionally greater numbers of disability claims, employers may face "experience-rated" insurance premiums. Experience-rated employer contributions to pension providers vary based on firm payroll and the incidence of disability cases among employees (Hytti 2008; ETK 2019a, 2019b).[36] The primary purpose of experience ratings is to encourage employers to promote workplace safety and employee well-being and rehabilitation.

When the sickness allowance is exhausted, the claimant can apply to KELA or the TyEL pension provider for a long-term disability pension. If the TyEL insurance benefit is expected to be relatively low, the claimant can apply for both pensions. In such cases, KELA and the authorized pension provider will coordinate their pension decisions (KELA 2017a, 2017b). The sickness allowance, rehabilitation subsidy, and long-term disability pension are all awarded primarily on the basis of incapacity for work, as assessed by a medical expert and a claims processor at KELA based on the medical certificate and the information provided in the application. As such, these documents must detail how a claimant's illness reduces work capacity at the current job. KELA considers a wide variety of factors during the evaluation process including the claimant's age, profession, education, place of residence, potential for finding employment that fits the claimant's vocational qualifications, and prospects for rehabilitation (as determined during the initial phase of the sickness allowance evaluation).

A long-term disability claim is submitted on a single form along with a medical statement detailing the claimant's health status. Disability benefits can be paid by the employee's authorized pension provider, by KELA, or by both parties.[37] The applicant submits the paperwork to KELA; then, as needed, KELA forwards documentation to the appropriate TyEL pension provider. The claimant's treating physician's statement contains the claimant's medical status and history, assessment of functional and working capacity, likelihood of recovering working capacity through rehabilitation, any additional findings, and concluding remarks. Before the pension provider can render a decision, it must investigate whether the employee is entitled to rehabilitation supports. If the claimant is able to cope with part-time work or a lighter workload, she or he can apply for a partial disability pension from the authorized pension provider. (Recall that a partial disability pension is not available from KELA.)

For a national pension claim, KELA assigns an administrative officer to the case. To avoid regional variation, KELA handles all national disability pension applications centrally. An administrative officer

prepares the case and forwards it to one of KELA's expert physicians, often a specialist who is selected based on the claimant's primary diagnosis. As a rule, the expert physician will assess working capability based on the medical documentation, including the care or rehabilitation plan that accompanies the claim. However, the physician may refer the claimant for an extensive multidisciplinary medical examination to more fully assess his or her functional and working capacity. This analysis typically addresses diseases that affect work capacity; medical history; information from previous examinations, treatments, and rehabilitations; results of any functional and work capacity tests; and the doctor's professional judgment of the activity restrictions imposed by the claimant's health status (Boer, Brenninkmeijer, and Zuidam 2004).

In the final stages of the disability determination, claim documentation is forwarded to an administrative officer who decides whether the applicant's work capacity has decreased so much that she or he is entitled to a full disability pension or, in the case of TyEL insurance, a partial pension. KELA sends approved TyEL pension claims to the designated pension provider. The case documents are accompanied by an evaluation of the applicant's working capability issued by the employer. TyEL pension providers often work closely with employers. After obtaining this information, a pension provider's administrative officer sends the medical documentation to an expert physician, who may request additional information from the treating doctor before rendering an opinion. Based on that information, the administrative officer decides the outcome in accordance with the pension provider's established practices (which may vary by region).

If a claimant is deemed eligible for benefits from both pension programs, the respective administrative officers attempt to reach a unanimous decision. If they do not, the respective expert physicians will attempt to reach an agreement based on the medical documentation. If they too cannot agree, the chief medical officers attempt to find a joint solution. In this way, the two medical assessments serve as "second opinions" for the assessing doctors.

Role of VFs

Age, education, and work experience are not addressed directly in the Finnish disability determination process. However, as mentioned earlier, a disability assessment can account for nonmedical factors such as the claimant's earning capacity in work that her or his education, work experience, age, and place of residence make reasonably possible. For example, disability benefits appear to be more easily granted to claimants aged 60 or older with low education levels and long work histories.

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Ireland

Ireland's Department of Employment Affairs and Social Protection (DEASP) administers three major income-support programs for people who are ill or disabled. The Illness Benefit is a short-term, contribution-based program that pays benefits to persons who are younger than 66, are unable to work because of illness, and meet the social insurance contribution requirements. Disability Allowance is a long-term, noncontributory, means-tested program that provides a weekly allowance for workers aged 16–66 with a disability that is expected to last at least 1 year. The Invalidity Pension (IP), a long-term contribution-based benefit, is paid to individuals who are permanently unable to work because of illness or incapacity (IBIS Advisors 2017; SSA 2016c). Ireland defines "disability" as the inability to work because of a specific disease or bodily/mental impairment.

This profile focuses on the IP program, which is similar to Disability Insurance in the United States. IP benefits may be awarded in cases of impairments judged to be severe based on a medical assessment or diagnostic medical report completed by the applicant's medical practitioner. A DEASP medical assessor reviews the report along with evidence-based medical protocols and follows departmental guidelines to determine benefit eligibility (Department of Social Protection 2014).

IP awards typically follow 12 months of cash Illness Benefits. A DEASP doctor must certify that an insured claimant is medically unfit for work and qualifies for IP benefits on medical grounds. To do so, the insured must have been incapable of work for at least 12 months and be likely to remain incapable of work for at least another 12 months, or have been declared permanently incapable of work because of serious illness or disability.

Entitlement to an Illness Benefit is determined after the claimant's treating doctor submits an initial certificate of incapacity, which provides a medical diagnosis or a description of symptoms. DEASP medical assessors—registered practitioners with special training in disability evaluation—then review the certificate and may offer an independent medical opinion of loss of functional capacity either for the claimant's usual work or for other categories of work. DEASP officers, unaffiliated with the medical assessors, then review the documentation and decide the claims. Once allowed, the short-term Illness Benefit is payable after a 3-day waiting period.

A process known as dual referral aims to streamline the transfer of a qualifying candidate to the long-term IP as the end of the 2-year Illness Benefit approaches. About 18 months into an Illness Benefit claim, DEASP requires the beneficiary and her or his treating physician to provide current medical evidence, with which the agency's medical assessor determines continued eligibility for the Illness Benefit. If the assessor finds in the affirmative, then eligibility for the IP is considered (DEASP 2019).

Role of VFs

Age is not considered in the disability determination process, and education and work experience are considered indirectly. IP claimants who are receiving a short-term Illness Benefit have been medically assessed as described above. An individual who is not currently receiving an Illness Benefit will also require medical certification and/or an examination to proceed with an IP claim. The condition documented as the claimant's certified cause of incapacity determines the timing with which the claim is referred for a Medical Review and Assessment (MRA) to determine benefit eligibility.

DEASP opens the MRA process by recording the claimant's medical history. The medical assessor determines whether the documentation establishes work incapacity without the need of further medical examination. The assessor considers the claimant's work history and educational and vocational qualifications, and reviews the claimant's statement about the medical condition and its effect on work and activities of daily living. The assessor then provides a clinical description of the condition's effects on the following functional areas: mental health, learning, consciousness, balance, vision, hearing, speech, continence, reaching, lifting/carrying, manual dexterity, bending/kneeling/squatting, sitting, standing, climbing stairs, and walking. The MRA concludes with a Work Capacity Assessment (WCA). If the claimant has been out of work for more than 6 months and no jobs are available, or if the claimant was never employed, the assessor determines whether the person is capable of fulfilling a function in any of nine occupational

Selected Abbreviations: Ireland

DEASP	Department of Employment Affairs and Social Protection
IP	Invalidity Pension

categories identified by the combination of one of three levels of effort required (light, moderate, or heavy) and one of three required skill levels (lesser-skilled, semi-skilled, and skilled) (Department of Social Protection 2014).

The assessor documents whether or not the claimant is capable of work in functional terms and cites any nonfunctional incapacitating factors (including conditions which may not adversely affect the claimant's ability to perform any work-related activities). Possible examples of nonfunctional incapacitating factors include conditions that lead to general fatigue or situations in which a person's condition would be aggravated by work.

After considering not only the claimant's illness or injury but also how the condition affects the ability to perform required tasks for a particular job, or for jobs in general, the medical assessor renders an opinion on whether the person is permanently incapable of work. The assessor also considers the potential workplace health and safety implications of the patient's condition. If the assessor's opinion on the claimant's capacity in any functional area differs from that alleged in the claim, the assessor indicates the symptoms that are not adequately explained by objective clinical findings. A clerical DEASP officer considers nonmedical as well as medical qualifying conditions in making the final decision on IP benefit eligibility.

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Netherlands

In the 1990s, the Netherlands initiated disability program reforms that have resulted in beneficiary inflows declining by about 40 percent since 2000. Those reforms shifted responsibility from the federal system to employers and employees, introduced more stringent eligibility standards, reduced the generosity of benefits, and partially privatized the programs (OECD 2010b).

The Dutch program for individuals with a full and permanent incapacity for work is called *Inkomensvoorziening Volledig Arbeidsongeschikten* (IVA). A separate program, *Werkhervating Gedeeltelijk Arbeidsongeschikten* (WGA), covers workers with partial disabilities. Employers must provide sickness and disability insurance for their workers; such insurance is optional for the self-employed. IVA is funded by employee and employer contributions in a pay-as-you-go-system. WGA benefits are financed in part by employer premiums that reflect the firm's (or the industry's) experience rating, or the relative history of disability prevalence among its employees. Prior to qualifying for IVA or WGA benefits, a worker receives employer-covered sickness benefits for up to 2 years. By requiring a 2-year waiting period, the Dutch programs encourage work-related disability prevention and disabled-worker reintegration (Willis Towers Watson 2016). Employers must consult a physician, typically under contract from a private-sector occupational health agency, who can confirm the legitimacy of a sickness report, refer a sick worker to specialists for evaluation, and suggest workplace management practices that might reduce the likelihood of sickness-related absenteeism. Employers must also contract with private work reintegration service providers who seek to retrain and find jobs for disabled employees who lack any suitable work opportunities from their current employer (de Jong 2015).

Selected Abbreviations: Netherlands

CAMS	Claim Assessment and Monitoring System
IVA	*Inkomensvoorziening Volledig Arbeidsongeschikten* (program for individuals with full and permanent incapacity for work)
WGA	*Werkhervating Gedeeltelijk Arbeidsongeschikten* (program for individuals with partial disabilities)

In the first 6 weeks of an employee absence because of sickness, the employer-provided occupational physician assesses the medical cause and the resulting functional limitations and provides a prognosis for work resumption. The doctor develops a "capacity profile" that summarizes the types of tasks the worker can undertake. In all, the profile addresses 28 different occupational tasks, such as walking, lifting, dexterity, bending and turning, and exhibiting various mental and psychological criteria. The physician creates a systematic inventory of capacities (unless the worker is judged to have virtually no remaining working capacity). Specifically, the level of work capacity is measured as the difference between current earning capacity and the worker's former wage. This approach is also used in the long-term disability assessment, described below.

Based on the occupational physician's prognosis, the employer and employee together draft a vocational rehabilitation plan that specifies an objective of either resuming the current job or starting a different job, under current or accommodated conditions. A schedule is set for plan reevaluations. The rehabilitation plan has to be established by the 8th week of sickness and is binding on both parties.

After 87 weeks of sickness benefits, the employee receives a disability insurance application from program administrators. The application form must be completed, submitted before the 92nd week of sickness, and accompanied by the rehabilitation plan and an assessment of why the plan did not lead to reemployment.

At the end of the 2-year waiting period (with sickness benefits), individuals who are partially or fully incapable of working may claim a long-term disability benefit. In processing the claim, a multidisciplinary team comprising a case manager, a social insurance physician, and a labor market expert assesses the medically caused functional limitations along with the claimant's earnings history to determine the degree of disablement.

The physician consults the previously assembled medical documentation, interviews the claimant, and may conduct a physical examination or other tests and contact previous medical assessors. For claimants with severe impairments and little or no chance of recovery, the physician can find full disability on medical grounds. For other claimants, the physician consults a standardized List of Functional Abilities (LFA) to determine functional capacity. The list contains 106 items arranged in six categories: personal functioning, social functioning, adjusting to the physical environment, dynamic movements, static posture, and working hours (Schellart and others 2011).

With the aid of a computer-assisted algorithm, a labor market expert uses the physician's LFA entries to determine the extent to which the claimant's residual functional abilities match the demands of various jobs, as well as the income the claimant could earn in those jobs. The expert calculates the degree of disability as the difference, in percent, between the claimant's predisability earnings and residual current earning capacity. The latter is determined by matching the claimant's functional abilities to the work demands outlined in a set of 7,000 heterogeneous regular job functions using the computerized Claim Assessment and Monitoring System (CAMS) (Broersen and others 2012). The task demands of jobs on file in the CAMS are taken from on-site observations by specialized labor market experts, with scheduled updates. The CAMS includes a list of jobs that corresponds with occupational classifications used by the Dutch national statistics agency.[38] The classifications distinguish occupations by educational requirements stratified into five levels of attainment: elementary, low, medium, high, and academic. The database of potential job descriptions in the CAMS reflects the Dutch labor market and the mental and physical capacities required to perform those tasks. Other typical characteristics of jobs recorded in the CAMS include wage levels, specific job tasks and required skills, and number of hours worked per day.

If the labor expert finds fewer than three suitable job descriptions for the claimant, the applicant is awarded a full disability benefit. If three or more suitable jobs are found, the wage of the job with the second highest earnings level serves as the claimant's earning capacity. The difference between residual earning capacity and predisability earnings is converted to a percentage of predisability earnings to indicate income loss. A result of 80 percent to 100 percent corresponds with full disability and a result of 35 percent to 79 percent represents a partial disability. In using the CAMS list of jobs to assess residual earning capacity, the labor expert may account for VFs such as age and Dutch language proficiency. Whether there are any vacancies among identified jobs is irrelevant.

Unless the physician diagnosed the claimant with either full disability or no disability in the initial stage, the case manager reviews the findings of the physician and the labor expert and either accepts or denies the application for disability benefits. IVA beneficiaries convert to the old-age pension upon reaching retirement age.

Role of VFs

A labor market expert may consider age when consulting the CAMS list of occupational classifications to determine residual earning capacity. Additionally, beneficiaries who are younger than 45 must undergo eligibility reassessments at regular intervals. Education is a central factor of the determination process; the CAMS occupational classifications are stratified in part by educational requirements, which are identified at one of five levels of attainment. The CAMS listings also account for knowledge that a worker would have acquired from prior work experience.

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Norway

Under Norway's National Insurance Scheme (NIS), insured individuals aged 18 to 67 whose work capacity is permanently reduced by at least 50 percent because of illness, injury, or disability are entitled to a disability pension (OECD 2013b). The NIS is administered by the Labour and Welfare Administration, known by the acronym NAV.[39] The discussion below focuses on full-time employees; however, the NIS also applies to many self-employed and part-time workers.

To qualify for NIS benefits, claimants generally must have at least 3 years of coverage at the time of application (SSA 2016c). The disability pension amount depends on the number of years of coverage (counted from age 16). A claimant typically must wait 1 year before being eligible to receive a disability pension benefit, during which time the worker is entitled to a sickness benefit that is paid partly by the employer and partly by the NIS. After 1 year of sickness benefits, the individual can apply for a work assessment allowance, which may provide payments for a period of up to several years (Støve and others 2015). The allowance is not granted automatically; it must be requested. The work assessment addresses the possibility of returning to work. If return to work is impossible, NAV grants a full permanent disability pension. If return to work is deemed possible, and work earnings might increase, NAV may grant a partial disability pension. During the assessment period, workers may receive an allowance that provides vocational rehabilitation, medical rehabilitation, and temporary disability benefits. The vocational and medical benefits are available to workers with a confirmed medical diagnosis, a reduction in work capacity of at least 50 percent, and the possibility of retaining employment (OECD 2013b; NAV 2016).

A disability benefit consists of a basic flat-rate portion and an income-tested portion; for low earners, it includes an additional income-tested supplement. The minimum benefit is based on length of residency and is independent of earnings history. It is calculated as a fixed multiple of the annually adjusted base amount. The total-benefit calculation considers the reduction in earning capacity: a full benefit is awarded

Selected Abbreviations: Norway

NAV	*Ny Arbeids- og Velferdsforvaltning* (Labour and Welfare Administration)
NIS	National Insurance Scheme

for an earning-capacity reduction of 100 percent, while reductions in earning capacity of 50 percent to 95 percent result in proportional partial benefits (SSA 2016c).

Before filing a disability application, an employee receives a sickness allowance for as long as 260 workdays (52 weeks).[40] The employer pays the allowance for the first 16 days; thereafter, NIS pays the benefit (OECD 2013b). Workers are encouraged to resume work during sick leave—both to retain contact with the workplace and to test their capacity to perform regular tasks. Most disability pension claimants have experienced one or more periods of sick-leave absence and the associated rehabilitation services (Boer, Brenninkmeijer, and Zuidam 2004).

Before the end of the 4th week of sick leave, the claimant and the employer develop a sick leave/part-time work plan, which the claimant's physician uses as the basis for a follow-up recovery plan. If there are medical causes for a 100 percent loss of work capacity, the worker's physician must produce a detailed certificate documenting the cause(s) before the end of the 8th week of sickness-related absence. If the sickness causes partial work limitations and the employer can provide accommodations, the employee is obliged to work part-time or in another (modified) job. The claimant's treating doctor informs NAV of ongoing treatment, plans for further treatment, and possible rehabilitation measures. Employers are required to take steps to minimize long-term absence during illness, including changing the employee's work hours, processes, and assignments.

After 52 weeks of sick leave, a worker can apply for a disability pension or a work assessment allowance (described above) with NAV. The application requires an assessment from the treating physician describing the claimant's health, diagnosis, and any treatment undergone. The NAV administrative officer reviews the application, gathers relevant information (including consultation with the NAV advisory physician if necessary), and prepares the case (OECD 2014b).

Role of VFs

The NAV review includes a work capacity assessment (which is a preliminary step toward the work assessment allowance rather than one of its components, as its name might suggest). Claimants must already have attempted medical and vocational rehabilitation measures. Those efforts (among other topics) are outlined in a self-assessment that the claimant submits to initiate the work capacity assessment. The NAV official uses the assessment to develop an activity plan that identifies any needed rehabilitation measures and underlies the benefit determination. When assessing work capacity and appropriate vocational measures, NAV considers the claimant's age, functional capacity, education, work experience, and job opportunities. For example, "high age (over 55) can influence the decision about granting a disability pension, if the person is viewed as difficult to reassign to alternative employment" (Boer, Brenninkmeijer, and Zuidam 2004). However, OECD (2013b) reports that official eligibility criteria for disability benefits are not strictly followed.[41] In particular, nonmedical factors such as social background, socioeconomic status, employment opportunities, and geographic location may be important.

Claimants who are granted a work assessment allowance must participate in various initiatives to strengthen their working capacity and show evidence of independent efforts to improve their capacity. The initiatives are documented in an activity plan developed by the allowance recipient in coordination with NAV. If the claimant fails to provide a valid reason for not participating in these initiatives, the allowance may be withdrawn.

The allowance may be paid for up to 4 years (or longer for special exceptions). During the payment period, the claimant must contact NAV every 2 weeks and describe the rehabilitation activities or other steps taken. If rehabilitation measures do not improve work functioning—that is, work capacity remains less than 50 percent and is deemed permanent—then a disability benefit may be granted.

The NAV administrative officer determines whether the claimant qualifies for a disability pension or a work assessment allowance. In assessing the person's vocational capability, the NAV officer considers the claimant's ability to perform any job, rather than the more restrictive criterion of being able to return to his or her own job. In certain cases (terminal or compound impairments, according to a standardized medical listing), NAV may decide that further testing of work capacity and employment prospects is unnecessary. NAV may refer some claimants to private or other non-NAV vocational rehabilitation institutions. However, health care professionals can provide medical documentation to NAV for persons with serious impairments if they believe that vocational rehabilitation is not possible. If vocational rehabilitation is deemed unnecessary, the claimant is referred back to NAV for a final decision on the disability pension.

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Sweden

The Swedish Social Insurance Agency (SIA) administers sickness benefit and disability benefit programs. At the initial stage of a work absence caused by illness, injury, or disability, an employee aged 16 or older with work earnings exceeding a modest threshold can claim a cash sickness benefit *(sjukpenning)*.[42] The benefit begins on the second day of the reported absence. Employers pay the benefits for days 2 through 14; SIA pays them thereafter. SIA pays all benefits for the involuntarily unemployed. Sickness benefits are capped at 1 year, with occasional exceptions in special cases. If the absence reaches 180 days, SIA assesses the beneficiary's work capability. Sickness benefits continue only if the worker is deemed presently unable to perform any work.

On the expiration of the sickness benefit, a claimant with a permanent impairment (expected to last at least 1 year) is assessed for eligibility for disability benefits, which are funded by employer contributions. Workers with an impairment-related reduction of work capacity of 25 percent or more may qualify for one of two disability benefit programs, depending on the claimant's age. Workers aged 19–29 are eligible for activity compensation *(aktivitetsersättning),* which is a temporary benefit intended to retain and reinforce young workers' connection to the labor market. Workers aged 30–64 are eligible for the long-term *sjukersättning* disability benefit—if necessary, until age 65 and conversion to retirement benefits (Kautto and Bach-Othman 2010). The purpose of providing a separate activity compensation program for younger workers is to furnish rehabilitation and other services that might improve functional capability and enable a return to work among those workers most likely to do so (ISF 2013).

SIA evaluates the claimant's work capacity against all work available in the labor market, including wage-subsidized employment targeted to people with disabilities. SIA subsequently reassesses a disability beneficiary's work capacity every 3 years. An administrative officer obtains medical documentation and other supporting material, as needed, to demonstrate a linkage between the claimant's diagnosis, disability, and activity limitation. Typically, SIA also considers the claimant's working and social conditions. The claimant's eligibility for a disability benefit is

Selected Abbreviation: Sweden

SIA	Social Insurance Agency

determined by a specially appointed adjudicator who follows uniform rules and processes (ISF 2013).

Disability benefits may be paid either as an earnings-related pension benefit (requiring at least 1 year of covered earnings) or as a guaranteed pension benefit (requiring at least 3 years of coverage and little or no income from the earnings-related pension).[43] A "full benefit" reflects a fixed percentage of the insured worker's future annual income (projected on the basis of the 3 highest-income years in a given period immediately before the year of the claim) for the earnings-related pension and a flat benefit amount (adjusted for age and years of coverage) for the guaranteed pension (SSA 2016c). Partially disabled beneficiaries receive three-quarters, one-half, or one-quarter of the full benefit amount, depending on the extent of reduced work capacity.[44] After 1 year of receiving either activity compensation or the long-term disability benefit, the beneficiary may attempt to work without losing entitlement to the benefit.[45]

Recent reforms have sought to reduce sickness-related work absence and reliance on disability benefits. In 2008, the government introduced a series of reforms with the goals of strengthening incentives for disabled individuals to work and improving their opportunities to do so (OECD 2009). One major policy reform was the "rehabilitation chain," which established a new timeline for providing rehabilitation services for the sickness benefit program; fixed time limits now applied, within which work capacity had to be assessed and sickness benefits were reduced for those choosing not to return to work (Hartmann 2011). Additionally, applications for sickness benefits and disability benefits now share a standardized screening and assessment process and are reviewed by the same officers (government vocational and rehabilitation practitioners) who administer the programs to promote workforce reintegration for the claimant before awarding benefits. Workforce reentry efforts are the focus of the sickness benefit period, which is capped at 1 year. After 3, 6, and 12 months of sickness benefits, an administrator evaluates the beneficiary's capacity to work in any job. These evaluations thereby provide rehabilitation and other supports for workers relatively shortly after impairment onset (Burkhauser and others 2014). The employer of a worker whose evaluation indicates residual work capacity is responsible for developing a rehabilitation plan with the employee, securing government approval of the plan, and tracking its progress and results. Employers must also track and report overall absence data to the national statistical agency (IBIS Advisors 2017).

Role of VFs

Age is the determining factor for whether a Swedish disability benefit applicant is eligible for one compensation plan or the other. Disability benefits can be granted without a work capacity assessment to applicants who have been prevented by disability from completing compulsory secondary education. Work experience is not directly considered in the determination process, given that work capacity is assessed against all work available in the labor market rather than the claimant's previous job. Sweden also provides subsidized employment arrangements for workers with disabilities. Such arrangements are not necessarily linked to work experience.

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Switzerland

The Swiss disability benefit system takes the form of three component programs or "pillars." The first pillar, public invalidity insurance, serves all Swiss residents and workers; coverage is mandatory for all persons of working age, including the self-employed and unemployed. The second pillar is an occupational pension program that covers all employees with earnings exceeding an annually adjusted threshold; coverage is mandatory for affected employees and their employers, voluntary for the self-employed, and available (with restrictions) to the unemployed. The third pillar, a supplementary benefit providing means-tested payments to individuals with low income and assets, is similar to the U.S. Supplemental Security Income program. Benefit levels for the three programs depend variously on earnings and payroll contribution histories, number of dependents, and other factors. Invalidity and occupational pension benefits replace 60–80 percent of covered net earnings (Bütler and others 2014). The invalidity insurance program is managed by the 26 cantons (administrative jurisdictions similar to U.S. states) under Federal Social Insurance Office (FSIO) oversight, and the occupational insurance program is managed by employer-provided private pension funds (for which the employer's premiums are experience-rated). Both programs operate under similar rules.

Because a partial disability benefit is available to workers who lose less than 100 percent of their earning capacity, many beneficiaries work at least part-time. The benefit amount depends on the degree of impairment, measured as the estimated earnings lost because of disability. Beneficiaries with a 40–49 percent degree of disability receive a quarter pension, those with a 50–59 percent degree of disability receive a half pension, those with a 60–69 percent degree of disability receive a three-quarter pension, and those with a disability degree of 70 percent or higher receive a full pension (Bütler and others 2014).

Employers are required by law to pay benefits equal to full regular pay to employees who cannot work because of sickness or impairment for at least the first 3 weeks of absence; the benefit period is extended for workers with longer tenure. However, the employer's legal responsibility does not include sickness management or providing supports to employees who return to work after a long sickness absence. Occupational disability benefits may be reduced if those benefits (plus other income and benefits) exceed 90 percent of the earnings lost because of disability (OECD 2014a).

Invalidity program claimants who are (or appear likely to become) disabled are entitled to rehabilitation services regardless of whether they were employed prior to disability onset. If the canton disability insurance office determines that a claimant's work capacity can be maintained or improved, it can require rehabilitation services (FSIO 2018a). A disability pension can be awarded if, in the administrator's judgment, "the income which the person could have earned if he/she were not disabled is compared to the income which he/she could earn exercising the employment which could reasonably be required in a balanced labor market, after completion of treatments and rehabilitation measures" (FSIO 2018b). Claimants must actively participate in work reintegration efforts; for example, by engaging job placement services. They are subject to sanctions for noncompliance. Conversely, positive reinforcements include extending disability benefits through a 6-month trial work period for those who find employment. Similarly, beneficiaries who agree to leave the rolls to search for jobs are entitled to employment counseling and transition benefits for as long as 3 years. Those who find work are monitored and reassessed for further work capacity decline (and reinstatement of disability benefits) after reemployment.

The medical evidence for a disability benefit claim originates with a general practitioner, who issues a medical certificate in the early stages of the illness or disablement. A 360-day period of disability-related work absence precedes any disability pension payments and, in most cases, permanent disability is not determined until after 2 years—the period for sickness benefit payment if the employer has entered into a contract for such coverage with a private insurance company. During a period of vocational professional rehabilitation, which may last 3 years or longer, a transitional benefit is paid. Under the occupational pension program, the payment amount relevant to a specific degree of disability begins with the expiration of the waiting period, as specified in the labor contract.[46]

Under public invalidity insurance, claimants undergo a medical examination to determine the impairment's damage to their health and effect on their activities. Regional medical services—each employing approximately 300 physicians—assess these medical reports and appraisals and may also conduct their own medical examinations. The regional medical services examine and sometimes supplement the medical

files of the canton offices. Regional medical service officials decide whether a claimant meets the medical eligibility criteria, particularly in relation to the earning incapacity for a pension claimant, suitability for professional rehabilitation services, and eligibility for occupational supports. Benefit decisions are made by the canton officers.

Role of VFs

Although age and education are not considered in the Swiss disability determination process, work experience plays a central role. To decide eligibility for and the payment amount of the first-pillar invalidity benefit, canton officials estimate two levels of hypothetical earnings: (1) the amount the claimant could earn if not disabled and (2) the amount she or he could earn after receiving vocational rehabilitation (or other services) in any job one could reasonably expect in the labor market. The former is based on predisability earnings and the latter is based on presumed postrehabilitation earnings. For a claimant deemed to have residual work capacity, the canton caseworker calculates potential earnings based on the assumed work capacity using official wage indices.

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United Kingdom

The United Kingdom operates a Statutory Sick Pay (SSP) program to provide temporary benefits for workers facing short-term work absence and an Employment and Support Allowance (ESA) benefit for workers facing potential long-term work absence because of illness, injury, or disability. SSP is funded and administered by employers and ESA is administered by a government agency called Jobcentre Plus.

ESA provides two kinds of benefits. *Contributory ESA* provides a flat-rate benefit to claimants who have met a threshold for national insurance contributions. *Income-related ESA* provides a means-tested benefit for claimants regardless of their insurance contribution history. An individual may qualify for either benefit or for both. Contributory ESA payments are capped at 12 months for most beneficiaries. There is no limit on the period for income-related ESA. ESA claimants must be aged 16–64 and must either have exhausted the 28-week limit on SSP benefits or have been unemployed when the disabling condition began.

The United Kingdom also provides noncontributory, nonmeans-tested benefits to help individuals meet the extra costs of living with a long-term disability, in the form of Personal Independence Payments (for persons of working age) or the Attendance Allowance (for those of State Pension—that is, retirement—age).

The ESA process begins with the claimant answering a questionnaire covering specific capabilities for work-related activity. The claimant submits the completed questionnaire (and, in most cases, a medical certificate) to a Department for Work and Pensions (DWP) adjudicator, who typically refers the claim to a privately contracted registered doctor, nurse, or other health care professional to conduct a face-to-face assessment with the claimant. On the basis of this assessment and medical evidence from the claimant's treating doctor, the DWP adjudicator determines the claimant's benefit eligibility. A claimant who is found "fit for work" or otherwise ineligible can apply for unemployment benefits.

Selected Abbreviations: United Kingdom

DWP	Department for Work and Pensions
ESA	Employment and Support Allowance
SSP	Statutory Sick Pay
WCA	work capability assessment

A work capability assessment (WCA), which may include the face-to-face assessment noted above, occurs within 13 weeks of the ESA claim.[47] While awaiting the assessment outcome, claimants receive a basic benefit equal in value to the unemployment benefit. The WCA determination places the claimant into one of two categories: a *support group*—which does not require the claimant to take part in any back-to-work activity—or a *work-related activity group*. Support group members can receive income-related ESA payments indefinitely. Members of the latter group can receive contributory ESA benefits for up to 365 days. The WCA does not apply for terminally ill claimants or those who are reapplying for ESA within 12 weeks of an earlier claim (and who already completed the assessment phase in that claim).

The WCA process was implemented in 2008 but from the outset, doctors, patients, charitable groups, and the DWP itself have aired concerns related to access, delays, accuracy, and other matters. For example, in 2011, the DWP required reassessments for all individuals receiving incapacity benefits, the ESA's predecessor program. Those reassessments were scheduled to conclude by April 2014; however, delays prevented their completion (Pring 2014).[48]

Role of VFs

The WCA emphasizes the functional effect of the claimant's health condition rather than any specific VFs. Claimants are assessed against a number of functional descriptors addressing both physical and mental health—for example, whether the claimant has mobility over a set distance or can learn and initiate various tasks. Thus, two individuals whose condition affects them in the same way should receive the same determination, regardless of (for example) age.

More specifically, the WCA indicates whether the claimant's capacity either for work or for work-related activity is limited. These capacities are assessed with a point-based system using itemized functional descriptors indicating tasks of varying levels of difficulty with corresponding point values of 0 to 15. Limited capability for work is assessed first. For this test, physical descriptors are grouped into 10 types of activity: mobility; standing and sitting; reaching; picking up and moving things; manual dexterity; making oneself understood; understanding communication; navigating and maintaining safety; controlling the bowel or bladder; and maintaining consciousness. Mental, cognitive, and intellectual descriptors comprise seven types of activity: learning tasks, being aware of everyday hazards, initiating and completing personal action, coping with change, getting about, engaging socially, and behaving appropriately with other people. With a score of 15 points in any one activity, or any combination of points totaling 15 or more, the claimant passes the test and retains ESA eligibility. A claimant who does not accrue at least 15 points may challenge the decision or file a Jobseeker's Allowance (unemployment insurance) claim instead (DWP 2016b).

The second test, which assesses limited capability for work-related activity, determines whether the claimant is placed in the support group or the work-related activity group. It also determines both the ESA benefit amount and the requirements for retaining the benefit. This test uses descriptors for each of 16 types of activities addressing physical and mental functions. These descriptors are slight variants of the 17 descriptors used in the first test and they similarly correspond with point values ranging from 0 to 15. A claimant who is found to be incapable of work-related activity in at least one of these functions is placed in the support group.

Claimants are asked about their work experience in the face-to-face assessment; however, that information is not used to determine ESA eligibility. It is used instead as part of the evaluation of former work tasks that the claimant no longer can do. The WCA functional descriptors are designed to reflect a generic modern workplace and to cover activities that would make up most (typically low-level) jobs.[49]

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Findings

This section summarizes the disability program characteristics shared by our 11 sample countries. It also reviews common approaches to assessing functional capacity and using VFs in those assessments. The review encompasses long-term, short-term, temporary, and partial disability programs.

Disability Program Characteristics

Table 2 briefly summarizes each country's disability program and its claim processes. Some countries operate multiple disability programs (Finland, Ireland, Sweden, Switzerland, and the United Kingdom). Although disability programs typically feature a contributory element (program financing and claimant eligibility depend on participant contributions, sometimes requiring the employer to ensure compliance), some programs are noncontributory and financed from general revenue (Australia, Ireland) and some are means-tested (Australia, Denmark, Finland, Ireland, Norway, Switzerland, and the United Kingdom). Of the latter, three (Denmark, Finland, and Norway) provide universal coverage with a residency requirement. Years of service (contributory periods) affect eligibility in Canada, Ireland, Norway, Switzerland, and the United States. Programs in some countries (Australia, Canada, Denmark, and the United States) do not have partial-disability coverage, but many of them link to or incorporate short-term sickness benefit programs lasting up to 1 year or longer. In countries with multiple disability programs, requirements for disability reassessment can vary between the programs (the Netherlands and Sweden). Sweden operates distinct programs for two target age groups. Some programs permit part-time work for beneficiaries (Australia, Finland, Norway, Sweden, Switzerland, and the United States), and many encourage vocational rehabilitation (Denmark, the Netherlands, Norway, Switzerland, the United Kingdom, and the United States).[50] Finally, employer involvement in disability program rules and processes differs; for instance, involvement may be either mandated or incentivized. In Finland, the Netherlands, and Switzerland, experience rating affects the level of contributions paid by the employer.

Functional Capacity

Table 3 summarizes how the 11 countries in our sample define and assess concepts related to functional capacity lost (or retained) by disability benefit claimants. Although disability determination processes differ, most countries require their administering agencies to calculate a quantifiable reduction in ability (or a residual capacity) to perform work for pay. Rating systems may involve some type of a point system (Australia and the United Kingdom) or link to one or more items on a comprehensive medical listing (the Netherlands and the United States) to determine either that a particular diagnosis is relevant or that a quantified level of residual capacity remains. In Australia, an applicant's functional work limitations are assessed in terms of effects on body systems rather than of a specific diagnosis. In the United Kingdom, a work capability assessment uses a point system for each of a series of functional descriptors to quantify a level of limitation both for work and for work-related activity.

To qualify for disability benefits, a U.S. claimant must be unable to engage in substantial gainful activity because of a medically determinable physical or mental impairment(s) that is expected to result in death, or that has lasted or is expected to last for a continuous period of at least 12 months. Among our study countries, only Canada and Ireland use a similarly restrictive definition of disability. For a claimant to qualify for a full benefit, some countries do not require

Table 2.
Disability programs in 11 OECD countries: Summary program descriptions and claim processes

Country	Description
United States	Social Security Disability Insurance (DI) and Supplemental Security Income (SSI) provide benefits based on disability. Eligibility for DI disabled-worker benefits is established by meeting a minimum threshold of lifetime Social Security payroll tax contributions and benefit levels are tied to earnings history. Benefits are drawn from the DI trust fund. SSI provides cash assistance to aged, blind, and disabled persons (and to disabled children) who have limited income and resources. For SSI, there is no work-history requirement. SSI payments are drawn from the General Fund. To qualify for DI or SSI disability benefits, applicants must be unable to perform substantial gainful activity because of at least one medically determinable physical or mental impairment that is expected to result in death or that has lasted, or is expected to last, for a continuous period of not less than 12 months. Both disability programs use the same five-step sequential evaluation process for determining disability, comprising tests of current work and earnings, impairment severity, whether the condition meets or exceeds criteria contained in SSA's medical Listing of Impairments, ability to perform previous work, and ability to perform any type of work.
Australia	The Disability Support Pension (DSP) is the primary source of income support for persons with permanent disabilities. Centrelink is the government agency responsible for determining eligibility and payments for providing support services. To qualify for DSP, an applicant must meet age, residency, disability, and employment requirements. The claim process consists of two stages: a job capacity assessment (JCA) and a disability medical assessment (DMA). The JCA is a comprehensive analysis of the claimant's level of functional impairment resulting from any permanent medical condition(s), current and future work capacity, any barriers to finding and maintaining employment, and any assistance required to help improve the existing work capacity. Claimants who meet certain criteria such as terminal illness or permanent blindness can receive an immediate DSP manifest grant. For other claimants, job capacity assessors review medical evidence along with the claim documentation to assess the functional effect of the medical condition(s) on the claimant's capacity for work. The JCA results in the claimant's referral either to (1) employment support services or (2) a DMA. In the DMA stage, an applicant can meet the medical requirements either by meeting the test for permanent blindness or by exhibiting evidence of a permanent physical, intellectual, or psychiatric impairment on a points-based scale, as adjudicated using Impairment Tables that assess an applicant's work-related functional limitations in terms of effects on body systems rather than a specific diagnosis.
Canada	To qualify for Canada Pension Plan Disability (CPP-D) benefits, the claimant must exhibit a "severe and prolonged" physical or mental disability that prevents him or her from regularly pursuing any substantial gainful occupation. Service Canada administers CPP-D and uses a comprehensive claim adjudication process. In addition to assessing whether the impairment meets the statutory definitions of both severe and prolonged, medical adjudicators (specially trained registered nurses) consider a claimant's capacity to pursue any substantial gainful occupation, his or her personal characteristics (such as age, education, and work history), and socioeconomic factors. Service Canada reviews the CPP-D application, the claimant's medical report, his or her earnings record and CPP-D contribution history, the adjudicator's recommendation, and other materials in making the benefit eligibility decision. Benefit amount is calculated based on contribution history. Service Canada also conducts continuing-eligibility reassessments for CPP-D beneficiaries.

(Continued)

Table 2.
Disability programs in 11 OECD countries: Summary program descriptions and claim processes—*Continued*

Country	Description
Denmark	Danish disability programs are administered in districts known as municipalities. The system operates many interrelated programs, including temporary sickness benefits, vocational rehabilitation, social services, and the long-term disability pension. The municipality assigns a case manager to create a human resource profile for a claimant after 8 weeks of sickness benefits or once a disability benefit application is submitted. Medical factors are reviewed and the claimant's functional capacity is evaluated in the first stage of the assessment process. Municipality staff evaluate the claimant's residual work capacity to determine the most appropriate support service or benefit for the claimant during the second stage of the assessment. The evaluators use 12 measures which are primarily nonmedical, although a physician plays an important role in the assessment. The doctor focuses on the claimant's residual work capacity and its potential further development. Because the Danish system encourages labor force participation, eligibility for the disability pension focuses on the claimant's work capacity rather than a specific diagnosis. Claimants are often placed in vocational rehabilitation and related support services. In addition, the system provides a wide array of subsidized "flex jobs" for claimants who are deemed to have permanently reduced work capacity. Case managers develop follow-up plans that often emphasize workforce reentry, potentially involving long-term or multiple vocational rehabilitation or flex-job engagements. If rehabilitation measures and flex jobs fail, the disability pension is granted.
Finland	Finland operates two disability pension systems. One is the national flat-rate pension, administered by a government agency known by its acronym KELA. The other is an earnings-related pension operated by private insurers under government oversight. The latter is known as TyEL insurance, named for the primary law among the program's five authorizing statutes. Employers are required to contribute TyEL insurance premiums on the worker's behalf. An insured claimant typically receives a sickness allowance from KELA before he or she is able to apply for either of the disability pensions. An individual must obtain a physician's medical certificate to qualify for full or partial sickness allowance. After a worker receives 150 days of sickness allowance, KELA informs her or him of various rehabilitation options and encourages disability-pension application. The employee can apply to KELA or to the private pension provider for rehabilitation if it is deemed viable, submitting a certificate completed by the treating doctor that includes medical history, status, findings, assessment of functional and working capacity, chances to recover working capacity through rehabilitation, and a final conclusion. If a rehabilitation allowance is exhausted, the claimant can apply for a long-term disability pension. The sickness allowance, rehabilitation subsidy, and long-term disability pension benefits are awarded primarily on the basis of incapacity for work; remaining capacity for work is assessed by a medical expert and a claim processor at KELA based on the medical certificate and the information provided in the application. Once an individual applies to KELA for the national pension, an administrator prepares the documentation and forwards it to a KELA physician selected on the basis of the primary diagnosis. The physician assesses work capability based on the medical documentation, including the treatment or rehabilitation plan. The physician may refer the claimant for a medical examination as part of a more extensive multidisciplinary assessment of work capacity. The documentation is then forwarded to the adjudicative officer for a determination. If the claimant is also deemed eligible for the earnings-based TyEL insurance pension, the respective administrative officers attempt to reach a unanimous decision. If they do not succeed, the KELA and TyEL insurance physicians will attempt to reach an agreement based on the medical documentation. If they do not succeed, the chief medical officers attempt to find a joint solution.

(Continued)

Table 2.
Disability programs in 11 OECD countries: Summary program descriptions and claim processes—*Continued*

Country	Description
Ireland	Three programs provide disability benefits in Ireland. The Illness Benefit is a short-term, contribution-based payment available to insured workers who cannot work because of illness. The Disability Allowance is a long-term, noncontributory, means-tested payment for persons aged 16–66 with a disability that is expected to last for at least 1 year. The Invalidity Pension (IP) is a contribution-based long-term benefit for individuals who are permanently unable of work because of an illness or incapacity. The Department of Employment Affairs and Social Protection (DEASP) administers the programs. To qualify for IP benefits, an insured worker must be younger than 66 and have at least 260 weeks of pay-related social insurance contributions, with 48 of those weeks in the year prior to disability onset. Employees typically qualify for an IP after receiving 12 months of cash Illness Benefits. A government doctor must certify that the insured is medically unfit for work and that he or she has been incapable of work for at least 12 months and is likely to be incapable of work for at least another 12 months, or has been declared permanently incapable of work because of serious illness or disability. For an IP claim that follows a period of Illness Benefits, the claimant's doctor documents a "certified cause of incapacity." Other IP applicants may require a medical examination. A Medical Review and Assessment (MRA) follows. DEASP assessors record the claimant's medical and surgical history, work history, and educational and vocational qualifications. After reviewing the claimant's statement about the medical condition and its effect on work and activities of daily living, the assessor provides a clinical description of the condition in terms of loss of function for work-related activities, its overall effect on ability to work, the claimant's general health condition, and relevant clinical findings. The MRA process concludes with a Work Capacity Assessment that determines whether the claimant is capable of work in functional terms and indicates any nonfunctional incapacitating factors. A DEASP clerical officer renders a final IP eligibility decision after considering both medical and nonmedical qualifying conditions.
Netherlands	Public disability insurance takes the form of two distinct programs known by their Dutch acronyms. IVA covers individuals with full and permanent incapacity for work and WGA covers workers with either a partial disability or a full disability with a possibility of recovery. In addition, sickness benefits are provided for up to 2 years as a preliminary step toward disability benefits. Within 6 weeks of beginning sickness benefits, an employer-provided physician examines the worker to assess medical cause and functional limitations and provides a prognosis for work resumption. Next, the employer and employee together draft a vocational rehabilitation plan, which specifies an objective of either resuming the current job or starting a different one, under existing or alternative work conditions. After 87 weeks of sickness benefits, the employee receives a long-term disability insurance (IVA or WGA) application, which must be submitted by the 92nd week of sickness. The form must be accompanied by a rehabilitation report that includes the original rehabilitation plan and an assessment as to why the plan did not lead to reemployment. The disability benefit claim proceeds when the full 2 years of sickness benefits expire. Degree of disability is determined with a process that addresses both medical and labor market factors. As part of a multidisciplinary team, an administrative case manager and a social insurance physician examine the claimant's functional limitations. The physician can declare IVA eligibility on medical grounds for claimants with severe impairments and little or no chance of recovery. For other claimants, the physician consults the standardized List of Functional Abilities (LFA) to evaluate functional capacity. A labor market expert then uses the physician's LFA entries and a computer-assisted algorithm to determine the extent to which a claimant's residual functional abilities match the demands of various jobs and the income the claimant could earn in those jobs. The expert calculates the degree of disability as the percentage difference between the claimant's predisability earnings and estimated residual earning capacity, as determined by matching the claimant's functional abilities to work demands housed in a computerized Claim Assessment and Monitoring System. The expert summarizes the available information and the case manager decides whether the claimant qualifies for a disability benefit.

(Continued)

Table 2.
Disability programs in 11 OECD countries: Summary program descriptions and claim processes—*Continued*

Country	Description
Norway	The National Insurance Scheme (NIS) provides a disability pension to insured workers aged 18 to 67 whose work capacity has been permanently reduced by at least 50 percent because of illness, injury, or disability. NIS is administered by the Labour and Welfare Administration, know by its Norwegian acronym NAV. A worker with a disability must wait 1 year before filing a disability pension claim, during which a sickness allowance may be paid. Before the end of 8 weeks of sickness allowance, the claimant's physician must report results of a medical examination along with treatment and rehabilitation plans to NAV. If the impairment prevents work for the full year of the sickness allowance, the worker can apply for a work assessment allowance that emphasizes vocational and medical rehabilitation along with temporary disability benefits for claimants with a confirmed medical diagnosis and a reduction in work capacity of at least 50 percent. The work assessment allowance may last up to 4 years, during which the claimant must show efforts to reengage with the labor market. If the assessment finds that a return to work is not possible (work capacity is deemed to permanently remain at 50 percent or less after rehabilitation efforts), NAV grants a full disability pension. If return to work (along with increasing earnings) is deemed possible, NAV may grant a partial disability pension. An administrative officer decides the outcome after reviewing the application documentation and considering whether the claimant is capable of performing any work, not only his or her former job.
Sweden	The Swedish Social Insurance Agency (SIA) administers sickness benefit and disability benefit programs. At the initial stage of a work absence caused by a doctor-certified illness, injury, or disability, an employee aged 16 or older with earnings that exceed a modest threshold can claim the cash sickness benefit. If sickness benefits continue for 180 days, SIA assesses the beneficiary's work capacity to determine whether eligibility continues. A beneficiary's employer is required to participate in rehabilitation and other efforts aiming to allow workforce reengagement. In most cases, sickness benefits are capped at 1 year, at which point a claimant's eligibility for early retirement or a disability pension is assessed. A disability pension can be granted only to individuals with an impairment that reduces work capacity by at least 25 percent and is expected to last at least 1 year. Workers aged 19–29 can be granted temporary "activity compensation." Workers aged 30–64 can be granted long-term disability benefits. Disability benefits can take the form of an earnings-based pension benefit funded by employer and employee contributions or a government-funded guaranteed benefit. Awardees with a low earnings-related benefit may qualify for both pensions. To determine disability benefit eligibility, an SIA administrator gathers medical documentation and other relevant information. In reviewing the medical evidence, the administrator links diagnosis, disability, and activity limitation. Medical specialists and other agencies may be consulted. The administrator may also meet with the claimant to assess working capability and coordinate rehabilitation. SIA also investigates the claimant's working and social conditions. In addition to deciding benefit entitlement, SIA may determine the compensation level.

(Continued)

Table 2.
Disability programs in 11 OECD countries: Summary program descriptions and claim processes—*Continued*

Country	Description
Switzerland	Individuals with a health impairment that causes a full or partial loss of earning capacity may claim disability benefits. The Swiss system comprises three programs: (1) public invalidity insurance, which covers all Swiss residents and workers; (2) an occupational pension, which covers employees with earnings exceeding a minimum threshold; and (3) a supplementary benefit that offers means-tested benefits to individuals who cannot otherwise cover the basic costs of living. Invalidity insurance is operated by local districts (cantons) under Federal Social Insurance Office oversight. A physician submits medical certification of the claimant's condition at disability onset. The evidence is reviewed by government physicians who may augment the findings with additional examinations. These officials decide benefit eligibility as well as earnings incapacity and qualification for vocational or occupational rehabilitation services. The program encourages workplace reintegration for disabled individuals. Canton officials calculate the claimant's degree of disability as the earnings the claimant could have earned if not disabled divided by potential postrehabilitation earnings that could reasonably be expected in the labor market. Rehabilitation measures are mandatory if officials judge the claimant's work capacity as possible to maintain or improve. If the canton caseworker concludes that the claimant has residual work capacity, potential earnings are calculated based on assumed work capacity using official wage indices. A disability pension is granted only when (re)integration is deemed impossible.
United Kingdom	In addition to a Statutory Sick Pay program that provides short-term benefits (maximum 28 weeks) for workers facing work absences because of illness, injury, or disability, the United Kingdom's Employment and Support Allowance (ESA) program provides two kinds of long-term benefits. *Contributory ESA* provides a flat-rate benefit to claimants who have met a threshold for national insurance contributions. *Income-related ESA* provides a means-tested benefit for claimants regardless of their insurance contribution history. An individual may qualify for either benefit or for both. ESA claimants typically undergo a work capability assessment (WCA), which should occur within 13 weeks of application for ESA. In the interim, claimants receive a temporary basic benefit equal in value to an unemployment benefit. The WCA determination places the claimant into one of two categories: a *support group*—which does not require participation in any back-to-work activity—or a *work-related activity group.* Claimants placed in the latter group can receive contributory ESA for no more than 365 days.

SOURCE: Authors' compilation based on multiple sources cited in the country profiles.

NOTE: Abbreviations are country-specific.

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries

Country	Functional capacity	Age	Education	Work experience
United States	If a claimant's condition is determined not to meet the medical criteria contained in SSA's Listing of Impairments (or be deemed of "equal severity" to those criteria) at step 3 of the five-step process, the agency must assess the claimant's physical and/or mental residual functional capacity (RFC). RFC is the outcome of an administrative assessment of the extent to which an individual's medically determinable impairment(s), including any related symptoms, may limit or restrict the ability to engage in physical or mental work activities. RFC is expressed as the individual's maximum remaining ability to do sustained work activities in an ordinary work setting on a regular and continuing basis.	Age is directly addressed in step 5 of the determination process, in which the claimant's ability to adapt to any work in the competitive labor market is assessed. Age is analyzed in combination with RFC, education, and work experience to evaluate the individual's ability to engage in substantial gainful activity (SGA) in his or her former or alternative work. In step 5, an individual's ability to adjust to other work is judged to be decreasingly likely across four successively older age groups: younger than 50, 50–54, 55–59, and 60 or older.	Education is directly addressed in step 5 of the determination process, in which the claimant's ability to adapt to any work in the competitive labor market is assessed. Education is analyzed in combination with RFC, age, and work experience to evaluate the individual's ability to engage in SGA in work other than his or her prior work experience. Education comprises formal schooling or other training that contributes to the claimant's ability to meet vocational requirements of work, such as basic reasoning, arithmetical ability, and communicating. A claimant's educational attainment is identified as one of five categories ranging from illiterate (or unable to communicate in English) to high school diploma or more. The categories correlate with the required skill levels of potential other work.	Work experience is directly addressed in steps 4 and 5 of the determination process, in which the claimant's ability to return to his or her prior work, or to adapt to any work in the competitive labor market, respectively, are assessed. The relevance of work experience in step 4 is self-evident. In step 5, the transferability of skills obtained in the performance of past work to any other work within the claimant's RFC is assessed. If those skills are not transferable, the claimant is judged capable of adjusting only to unskilled work. Transferability applies only to jobs requiring equivalent or lesser skill because claimants are not expected to do jobs requiring more complex skills. When determining whether previous work is relevant, the Disability Determination Service may ask the SSA field office if the claimant performed SGA in the 15-year period (or longer) before adjudication. Claimants considered able to perform previous work or other work in the economy are denied disability benefits.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Australia	The Disability Support Pension (DSP) claim process begins with the comprehensive job capacity assessment (JCA), which identifies the claimant's level of functional impairment resulting from one or more permanent medical conditions, current and projected work capacity, barriers to finding and maintaining employment, and types of required or potentially helpful assistance for improving work capacity. All applicants not considered "manifestly disabled" undergo the JCA. The JCA is conducted by health professionals who review medical evidence and other claim documentation to assess the functional impact of the claimant's medical condition(s) on work capacity. The JCA results in a referral either to employment support services or to a government-contracted doctor for a disability medical assessment (DMA). Impairment severity is assessed with a points-based system that evaluates the applicant's work-related functional limitations in terms of impairment effects on body systems rather than a specific diagnosis.	Age is not directly considered. However, DSP recipients younger than 35 with an assessed work capacity of 8 or more hours per week must attend regularly scheduled informational interviews and develop job-search plans with program administrators.	Education is not a discrete factor in disability determinations. However, education (formal and informal knowledge and skills obtained through a learning process and/or work experience) is a strong indirect indicator of work capacity. Officials conducting the JCA can consider an impairment's effect on the claimant's ability to undertake mainstream educational, vocational, or on-the-job training (excluding programs designed specifically for people with physical, intellectual, or psychiatric impairments); and whether such training is likely to enable the individual to do any work within the next 2 years.	Work experience is not listed as a discrete factor in disability determinations. However, the DSP program defines "education" broadly to include work experiences (see adjacent cell), and that factor is used as a strong indicator of work capacity. Officials conducting the JCA gather medical files (including treatment history, stability of and prognosis for any episodic condition(s), and other impairment effects), employment history, and other relevant information such as educational attainment, work history, skills, qualifications, and interests. The JCA results in a referral either to vocational and employment support services (in which work experience plays at least an indirect role) or to a DMA.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Canada	The Canada Pension Plan Disability (CPP-D) medical adjudicator (a specially trained registered nurse) determines whether the claimant's medical condition regularly prevents substantially gainful work and focuses on those functional limitations that affect the capacity to work. The adjudicator must also determine whether all evidence related to a person's disability, notwithstanding functional limitations and restrictions, indicates that the person is able to perform any job that exists in the competitive workforce.	Age is one of the personal characteristics evaluated in the context of the medical condition(s) in the adjudication framework. Age alone does not entitle a person to a CPP-D benefit. However, increasing age brings an acknowledged gradual reduction in the reserve capacity of most body organs, which can affect the ability to recover from injury or illness and thus to sustain work.	Education is one of the personal characteristics evaluated in the context of the medical condition(s) in the adjudication framework. The framework assumes that with increasing educational attainment, the likelihood that the person can do some form of work also increases. Education includes both formal and informal knowledge and skills obtained through a learning process and/or work experience. These are considered within the context of the medical condition(s) to determine if the person's level of education affects the capacity for any work.	Work experience is one of the personal characteristics evaluated in the context of the medical condition(s) in the adjudication framework. The adjudicator reviews the claimant's earnings records for information on the types of work done, reasons for stopping work, and nonwork spells to determine whether work experience affects his or her regular capacity to pursue any substantially gainful occupation. The earnings record review also can identify a decline in work activity or an earnings decline that is consistent with a deterioration in the medical condition.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Denmark	A district-level case manager develops a human resource profile for the claimant after 8 weeks of sickness or upon application for a disability pension. The profile informs subsequent decisions on disability benefit, vocational rehabilitation, and flex jobs. Upon completion of a medical assessment, the case manager assesses each of 12 standardized aspects of work capability: education, labor market experience, interests, social competence, adaptability, learning capacity, work-related preferences, performance expectations, importance of work to one's identity, housing and finances, social networks, and health. Because the assessment methodology focuses on the claimant's present and potential resource capacity, a disability benefit award depends on his or her functional capacity relative to the labor market, not necessarily the diagnosis itself.	Age is not an explicit factor used by case managers when rendering disability determinations, but it is used in deciding when individuals are eligible to file for a disability pension. A disability pension cannot be granted to individuals younger than 40 without documentation certifying a permanent absence of working capacity.	Education is one of the 12 aspects that case managers assess when conducting the work capability determination.	Work experience (along with selected personal views on work) is among the 12 aspects that case managers assess when conducting the work capability determination.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Finland	A government administrative officer opens a claimant's assessment process by gathering medical and other information and forwarding the case to a government physician. The physician assesses working capability using the medical documentation, including the care or rehabilitation plan, that accompanies the claim. The physician may request a medical examination providing a multidisciplinary assessment of functional capability. This analysis typically involves: (1) diseases that affect the capacity for work; (2) medical history; (3) information obtained from previous examinations, treatment, and rehabilitations; (4) results of any tests of functional and work capacity; and (5) a description of the functional status based on any tests performed and the doctor's professional judgment about restrictions imposed by the health status.	Age is not directly considered in disability determinations. However, the nonmedical factors considered in a disability assessment include vocational qualifications (and rehabilitative possibilities) based on characteristics such as age, education, and work experience as they affect the claimant's earning capacity through available and reasonable work. Additionally, disability benefits tend to be more likely to be granted to claimants aged 60 or older with lower education levels and longer work histories.	Education is not directly considered in disability determinations. However, the nonmedical factors considered in a disability assessment include vocational qualifications (and rehabilitative possibilities) based on characteristics such as age, education, and work experience as they affect the claimant's earning capacity through available and reasonable work. Additionally, disability benefits tend to be more likely to be granted to claimants aged 60 or older with lower education levels and longer work histories.	Work experience is not directly considered in disability determinations. However, the nonmedical factors considered in a disability assessment include vocational qualifications (and rehabilitative possibilities) based on characteristics such as age, education, and work experience as they affect the claimant's earning capacity through available and reasonable work.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Ireland	The initial stage of a disability claim is a short-term Illness Benefit. If the initial Illness Benefit expires and the claim proceeds to an Invalidity Pension application, the claimant is referred for a Medical Review and Assessment (MRA). A government medical assessor collects the claimant's statement of how the medical conditions affect the performance of daily activities. The assessor then provides clinical descriptions of the effects of the condition(s) on each of 18 physical and mental functional areas. The final phase of the MRA is the Work Capacity Assessment (WCA), which considers whether the claimant can fulfill a function in any of 9 work capacity categories defined as the combination of one of three levels of job effort (light, moderate, or heavy) and one of three levels of required skills (lesser-skilled, semi-skilled, and skilled). The medical assessor renders an opinion on whether the person is permanently incapable of resuming former work or performing other work.	Age is not considered in the disability determination process.	Education is not directly considered in the disability determination process for all claimants. However, in cases requiring an MRA, the claimant's educational qualifications are considered along with vocational qualifications, self-reported functional capacity, prior medical assessments, and other factors.	Work experience is not directly considered in the disability determination process for all claimants. However, in cases requiring a WCA, a work absence of more than 6 months (if combined with the lack of available jobs in the local labor market) is considered in the eligibility decision. Additionally, the medical assessor must render an opinion of whether the person is permanently incapable of work, including how the medical condition affects the claimant's ability to perform required job tasks in the previous job (or for jobs in general).

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Netherlands	A social insurance physician assesses impairments and functional capacities. For claimants with severe impairments and little or no chance of recovery, the physician can award full disability benefits on medical grounds. For other claimants, the physician refers to a standardized List of Functional Abilities (LFA), which is based on the International Classification of Functioning, Disability and Health, to determine residual functional work capacity. The LFA consists of 106 factors divided into six sections: personal functioning, social functioning, adjusting to the physical environment, dynamic movements, static posture, and working hours. The LFA is not used for claimants who are considered able to resume their original job or are very severely disabled. Using the physician's LFA entries and a computer algorithm, a labor market expert assesses the extent to which (1) the claimant's residual functional abilities match the work demands of various jobs, and (2) the claimant could earn income in these jobs.	A labor market expert may consider age when consulting the Claim Assessment and Monitoring System (CAMS) list of occupational classifications to determine residual earning capacity. Additionally, Dutch disability beneficiaries who are younger than 45 must undergo eligibility reassessments at regular intervals.	Education is a primary factor of the disability determination process. The CAMS includes occupational classifications that are stratified in part by educational requirements, which are identified by five levels of attainment (elementary, low, medium, high, and academic). A labor market expert can select jobs that the claimant is deemed capable of doing according to education, other abilities (such as work experience), and the physician's LFA entries.	Work experience is tacitly considered in the disability determination process. The CAMS occupational classifications account for about 7,000 heterogeneous regular job functions, some of which will be influenced by a claimant's prior tasks and duties.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Norway	An administrative officer reviews a claimant's medical information and assesses her or his residual work capacity. Using a claimant self-assessment and a medical statement from the treating physician, the administrative officer develops an activity plan with the claimant. The plan identifies rehabilitation needs and can be used in the benefit determination. Benefit awardees must participate in various initiatives to enhance working capacity and must document their efforts. If work capacity remains less than 50 percent after rehabilitation and is deemed permanent, a disability benefit may be granted. In certain cases, such as terminal or compound impairments, the administering agency may cancel further work capacity testing. If vocational rehabilitation is deemed unnecessary, the claimant is referred back to the agency for a final decision on the disability-pension claim.	Age is directly addressed in the assessment process. A claimant's age, if 55 or older, can affect the decision on granting a pension benefit or the appropriateness of vocational or rehabilitative measures.	Education may be considered when assessing the appropriateness of vocational or rehabilitative treatment or disability assessment.	Work experience may be considered when assessing appropriateness of vocational or rehabilitative treatment or disability assessment. The law does not explicitly limit the kind of work the claimant is expected to do, except that it should be "suitable." Eligibility is based on the ability to perform any job (rather than the more restrictive definition of being able to return to one's own job).
Sweden	The functional capacity assessment requires medical documentation that identifies the diagnosis, disability, and activity limitation. An administrative officer may request assistance from a government physician who specializes in social insurance medicine. The request may include a physician's certificate from the social insurance specialist or a team investigation involving physiotherapists, psychologists, and occupational therapists, as needed.	Age is the distinguishing factor for the two types of disability benefits. Temporary activity compensation is available to claimants aged 19–29 and a long-term disability benefit is available to those aged 30–64. Providing a separate benefit for younger workers emphasizes support and rehabilitation for those most likely to improve working and functional capability and eventually reenter the labor market.	Education is a direct factor in one key aspect of temporary activity compensation. Disability benefits can be granted, without a work capacity assessment, to young applicants who have been prevented by a disability from completing compulsory secondary education. Other beneficiaries can electively suspend their eligibility ("dormant benefit") for up to 2 years while they work or study.	Work experience is not directly considered in the disability determination process. Reduced work capacity is assessed against all work available in the labor market, rather than for the claimant's former work. Subsidized employment arrangements for people with disabilities are not necessarily linked to work experience.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
Switzerland	Public invalidity insurance claimants undergo a medical examination to assess the impairment's effects on their health and on work and other activities. Physicians employed by regional medical service offices assess the examinations and may conduct some of their own. The regional service determines whether the claimant is medically eligible, focusing on loss of earning capacity, suitability for vocational rehabilitation, and eligibility for occupational supports. Benefit decisions are made at the canton (district) level. Canton offices evaluate the degree of disability, determine and monitor rehabilitation measures, and may request medical and occupational observation centers to help in difficult cases. For claimants judged to have residual work capacity, a canton caseworker calculates potential earnings based on assumed capacity and official wage indices.	Age is not an explicit factor when assessing disability eligibility.	Education is not an explicit factor when assessing disability eligibility.	Work experience, in the form of predisability earnings, is central to determining invalidity insurance eligibility and benefit amount. Canton officials estimate and compare two amounts of potential earnings: (1) income if the claimant were not disabled and (2) income that could be earned after receiving support services in any reasonably suitable job in the labor market. The former is based on predisability earnings and the latter is based on presumed postrehabilitation earnings.

(Continued)

Table 3.
Functional capacity assessment and VF use in disability determinations: Summary highlights for 11 OECD countries—*Continued*

Country	Functional capacity	Age	Education	Work experience
United Kingdom	Most Employment and Support Allowance (ESA) claimants undergo a work capability assessment (WCA) to evaluate their eligibility for benefits. The WCA identifies whether the claimant has a limited capability either for work or for work-related activity. The WCA employs a list of physical, cognitive, and intellectual functional descriptors to assess the claimant's ability to carry out a range of activities. To test for limited capability for work, an administrative officer uses a points-based rating system for each of 17 functional descriptors. A claimant can be granted an ESA benefit on the basis of points in any single functional category or by accumulated points in multiple categories. The test for limited capability for work-related activity uses a similar points-based system and 16 functional descriptors. The outcome for this test is the placement of the claimant in either a support group or a work-related activity group as well as the ESA benefit amount and the requirements for retaining the benefit.	Age is not directly considered during the ESA assessment. The purpose of testing claimants against physical and mental functional descriptors is to ensure that two individuals whose condition affects them in the same way should receive the same determination, regardless of age.	Education is not directly considered during the ESA assessment. The purpose of testing claimants against physical and mental functional descriptors is to ensure that two individuals whose condition affects them in the same way should receive the same determination, regardless of education.	Work experience is not directly considered during the ESA assessment. However, work history is used indirectly, as it provides the context in which evaluators can indicate the types of work a claimant once could but can no longer perform. To identify types of work a claimant might be able to do, WCA descriptors are designed to reflect a generic modern workplace, covering activities that would be required of most (low-level) jobs.

SOURCES: Authors' compilation based on multiple sources cited in the country profiles.

NOTE: Abbreviations are country-specific.

an inability to perform any job in the national economy. Likewise, some countries do not require total work incapacity; for example, Denmark and Norway allow benefits for workers with a 50 percent incapacity rating, as do Finland at 60 percent, Switzerland at 70 percent, and the Netherlands at 80 percent. Programs that cover partial impairment require functional capacity to be quantified, usually on a percentage basis. In Finland, a full earnings-related disability pension may be granted to claimants with an assessed loss of working capacity of at least 60 percent (once they have exhausted the sickness allowance benefit) and a partial disability pension of half the insured's potential full benefit may be granted with an assessed loss of working capacity of 40–59 percent (SSA 2016c).

In 2001, all 191 members of the World Health Organization endorsed the International Classification of Functioning, Disability and Health (ICF) as the uniform international standard for measuring health status and disability at both the individual and aggregate levels. The ICF treats functioning as a dynamic interaction between a person's health condition, environmental factors, and personal factors (World Health Organization 2013). Despite broad agreement with the ICF framework, few countries have adopted its use in their disability determination processes.

Anner, Kunz, and Boer (2014) surveyed senior medical advisors of social insurance institutions in 15 European countries (Finland, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and nine countries not included in our own survey) and asked them "Do medical examiners use an instrument based on the ICF classification to depict work capacity?" Although the respondents in each country reported that they are required to report on work capacity and prognosis, only Sweden has compulsory guidelines for the content of the medical reports in a disability evaluation that are explicitly based on ICF categories. The core set of Swedish activity categories includes watching, listening, communicating, changing basic body position, maintaining body position, carrying, moving, handling objects, and so forth. Although the British and Dutch report-form guides were drafted before the ICF document was published, they contain comparable categories (Geiger and others 2017; Anner and others 2012).

Although the United States and the Netherlands both have a multistep evaluation process that is not based on the ICF framework, they follow the basic model of determining the interaction between a person's health condition and environmental factors, as well as whether the claimant can perform a job in the national economy with her or his assessed residual functional capacity (RFC).

U.S. adjudicators determine if an individual's impairment(s) "meet or medically equal" criteria included in SSA's Listing of Impairments. Although the listings include some functional criteria, the majority of the listings are impairment-specific. When the adjudicator determines that an individual's impairment does not meet or medically equal the description contained in the listings, the claimant's physical and/or mental RFC must be assessed. If the claimant's RFC no longer enables him or her to perform past relevant work (any job held in the prior 15 years), adjudicators use the RFC to determine whether the individual can work in any other job. Capability to do other work is determined by considering the interaction of RFC with VFs—age, education, and work experience—to indicate vocational adaptability. For this determination, the adjudicator may refer to a set of tables called the medical-vocational guidelines (sometimes known as the vocational grid).

Similarly, in the Netherlands, a social insurance physician assesses impairments and functional capacities. For Dutch claimants with severe impairments and little or no chance of recovery, the physician can assess full disability on medical grounds. For other claimants, the functional capacity for work is determined with reference to a standardized List of Functional Abilities, which is based on the ICF. It consists of 106 factors divided into six categories: personal functioning, social functioning, adjusting to the physical environment, dynamic movements, static posture, and working hours. A labor expert uses the physician's report and a computer-assisted algorithm to determine the extent to which the claimant's residual functional abilities match the work demands of various jobs and the income the claimant could earn in these jobs. The expert calculates the degree of disability as the difference between the claimant's predisability earnings and the potential postrehabilitation earnings from a job that could be performed given her or his RFC. The labor expert makes this determination by matching the claimant's functional abilities with work demands outlined in a set of 7,000 heterogeneous regular job functions, with the aid of the automated Claim Assessment and Monitoring System.

In Denmark and Norway, the initial purpose of assessing functional capacity is to determine if an individual can participate in vocational rehabilitation or remain in the workforce, rather than to determine

whether she or he immediately qualifies for a disability benefit. In Denmark, jurisdictional case managers develop a human-resource profile for the claimant after 8 weeks of sickness benefit receipt or upon application for disability benefits. The profile is used in making decisions on disability benefit eligibility and amount, as well as on vocational rehabilitation and accommodative flex job requirements. Following a medical assessment, case managers assess work capacity according to a standardized 12-point methodology, including functional areas such as social competence, learning capacity, and adaptability. The methodology focuses on the claimant's resource capacity and its potential development. The decision to award disability benefits depends on the functional capacity of the claimant in relation to the labor market, not necessarily on the diagnosis itself.

Similarly, one of the two outcomes of Australia's comprehensive job capacity assessment (JCA) is the claimant's referral to employment support services. The other JCA outcome is referral to a disability medical assessment and continuation of the disability determination process.

In several of the countries we surveyed, government health experts conduct formal assessments to determine an individual's functional capacity. In Canada, specially trained registered nurses have extensive knowledge of disability program legislation, regulations, policies, and procedures. As medical adjudicators, these nurses decide the disability benefit claims. In Ireland, an administrator reviews claims for the various programs with an assessment of medical evidence and/or a direct medical examination. The claimant's treating physician submits the initial certificate of incapacity by providing a medical diagnosis or description of symptoms. Medical assessors then offer an independent opinion on loss of functional capacity. In the United Kingdom, pension program adjudicators may refer the claimant to a face-to-face assessment with a registered doctor, nurse, or physiotherapist who works for a private health contractor as part of the determination process.

Role of VFs

Table 3 also summarizes whether—and how—each of the 11 countries we study uses VFs in the disability determination process. We discuss age, education, and work experience individually below. For each VF, the discussion highlights U.S. rules and policies and notes significant similarities and contrasts with the programs in the other surveyed countries.

Age

SSA considers a claimant's age in assessing his or her ability to adapt to and perform other work. An age of 55 or older, especially in combination with a severe impairment and limited work experience, is considered a limiting factor in one's ability to adjust to other work.

In other countries in our sample, age is generally considered a "soft" criterion; if used, it usually complements other VFs in the assessment process. Some countries may informally consider age for claimants nearing retirement but do not include age as an explicit factor in their disability assessment process (Australia, Denmark, Ireland, the Netherlands, Switzerland, and the United Kingdom). In Finland and Norway, age is specifically considered in the assessment process, indicating that vocational or rehabilitative measures are deemed less appropriate for older claimants, or that alternative employment options may prove difficult to find and retain.[51]

Age is a definitive factor in Sweden, where distinct disability programs provide either a temporary benefit (for beneficiaries aged 19–29) or a long-term benefit (for those aged 30–64). Providing temporary benefits to younger beneficiaries emphasizes vocational rehabilitation to improve functional capacity for the age cohorts most likely to respond to rehabilitative efforts and enter or return to the labor market.

In Australia, beneficiaries younger than 35 with an assessed work capacity of 8 or more hours per week must attend informative interviews and develop action plans designed to help them find and keep a job. In the Netherlands, disability reassessments are more frequent for beneficiaries younger than 45. Danish claimants younger than 40 must comply with stricter requirements than those for older claimants to become or remain eligible for disability benefits; they also must collaborate with case workers and receive social service supports designed to increase their chances to return to work.

Education

SSA considers a claimant's schooling and/or training in determining whether he or she can engage in substantial gainful activity in a job other than his or her relevant past work. SSA uses four broad categories of educational attainment to assess the level of job skills the claimant could fulfill.

Education is not considered during the disability determination process in Ireland, Switzerland, and the United Kingdom, but it plays a role—if an indirect one—in Australia, Canada, Denmark, Finland, the Netherlands, Norway, and Sweden. Similar to the

United States, some countries consider formal schooling and/or training to be factors that may enable a claimant to handle the vocational requirements necessary to secure a job. In the Netherlands, a labor market expert can select jobs that the claimant is capable of doing by linking his or her education level and related factors (such as language competency) to the List of Functional Abilities that the insurance physician compiled during the disability assessment. In Denmark, education is one of 12 components that assessors use to evaluate work capacity. The chance of placing a Danish claimant in a subsidized flex job is enhanced with a higher level of education.

Although education is not considered in disability determinations there, Sweden encourages education by extending temporary disability benefits to individuals as young as 19 to provide income support that permits completion of formal secondary schooling. In addition, a "dormant benefit" provision allows up to 2 years of combined work and study.

Australia also does not directly consider education in the assessment based on their impairment tables, but can consider the impairment's effect on the ability to undertake mainstream educational, vocational, or on-the-job training (excluding programs designed specifically for people with physical, intellectual, or psychiatric impairments). Norway's process accounts for education to the extent that the available vocational or rehabilitative treatment and employment options are considered appropriate. In Canada, "education" is assumed to encompass work experience, and the more education a Canadian claimant has, the more likely that person will be judged as able to do some form of work. In Finland, disability benefit awards tend to be more likely for claimants aged 60 or older with low educational attainment and a long work history than for younger and more educated claimants with shorter work histories.

Work Experience

To one extent or another, all countries in this study consider work experience in their disability assessment processes. In considering a claimant's work experience (especially the capacity to perform other work), SSA considers skills obtained from all previous employment and the transferability of those skills given the individual's RFC. SSA defines transferability in this context as applying work skills that a claimant has demonstrated in past relevant skilled or semiskilled work to meet the requirements of other skilled or semiskilled work. A claimant whose acquired skills are deemed not transferable is considered capable of adjusting only to unskilled work (note that individuals are not expected to perform jobs more complex than their prior work). When determining whether previous work is relevant, SSA considers whether the claimant performed substantial gainful activity in the 15-year period before adjudication. Claimants who are judged to be able to perform their past relevant work or other work in the economy within the limits of their RFC are denied disability benefits.

Many countries apply a similar "transferability of skills" criterion without defining a specific necessary skill set. For example, in Denmark, Norway, and Switzerland, assessors can deny a claim by citing the availability of a "reasonable" or "suitable" job elsewhere. In Norway, a vocational capability assessment considers all jobs for which the claimant may be qualified. Thus, the eligibility criteria are based on the ability to perform an disability benefits ranges from the local (Australia) to the national (Canada, Sweden, and the United States).

In Canada, the medical adjudicator reviews a claimant's work history (including jobless periods) to decide whether that experience affects the claimant's capacity to pursue any occupation. The Danish work capacity assessment includes labor market experience, work-related preferences, and the importance of work to one's identity. Benefit awards are based on how the claimant functions with respect to the labor market and not necessarily on the impairment or diagnosis. In the United Kingdom, the work capability assessment process uses employee descriptors that reflect a generic workplace indicative of most low-level jobs—somewhat similar to the U.S. concept of unskilled work—to provide the context of a claimant whose acquired skills are deemed not transferable.[52] In general, the United Kingdom disability determination process uses work history to indicate how the claimant's capacity for work has changed.[53]

The availability of other work and the length of time out of the workforce may also be considered in the disability determination (Ireland, the Netherlands). For example, when the claimant has been out of work for more than 6 months in Ireland and there is no job open, or if the claimant was never employed, the assessor considers whether the person is capable of fulfilling a function in any of nine categories combining three levels of required effort and three levels of required skills, with occupational examples provided for each category.

In the Netherlands, a claimant and his or her employer together devise a plan for the worker's reintegration under former or accommodated work conditions. Prior work experience and RFC are considered in making the plan. Later, a labor market expert may analyze the beneficiary's RFC and corresponding employment possibilities with the help of a computer algorithm. As in the Netherlands, employers in Finland, Norway, and Sweden are involved at various (typically early) stages of the assessment. The Swiss system does not require employer involvement but it does emphasize early intervention.

Concluding Remarks

This comparative survey has shown that the use of VFs in the disability determination process varies widely in OECD countries. Unlike previous surveys, this study focuses specifically on the role played by VFs—age, education, and work experience—in processing disability claims. We also describe the interplay between VFs and functional capacity.

The U.S. disability programs differ from those in other countries in ways besides VF use. For example, most other countries operate sick-leave programs through which the claimant progresses, sometimes in a series of time-limited stages, before application for a long-term disability benefit is permitted. These stages may assign responsibilities to parties besides the claimant, including the employer, the treating physician, and government (or contract) officials. Further, some countries provide partial-disability benefits, for which claim determinations may use VFs to various extents.

The timing with which VFs are used also may differ across countries—perhaps early in the assessment process (for sickness benefits), or later (for long-term disability), or even throughout the entire process, from application to benefit receipt. Mandatory employer participation is common.

In the 11 countries we survey, age and education may not be used as explicit VFs in disability determination processes, but they are used selectively for program eligibility decisions or as mechanisms to restrict or relax eligibility requirements. All of the countries in our survey consider work experience at some point in the disability determination, but they use different methods of assessing how prior work experience or the transferability of skills affects an individual's eligibility for benefits (or a variety of compensatory services). In fact, individual VFs are rarely considered alone but are generally used in tandem with other factors at different stages in the disability determination processes. For example, VFs may play integral roles in each country's functional capacity assessments.

To briefly summarize our findings on each VF, we observe that:

Age is not used in the disability determination processes of most of the countries we survey. The use of age as an explicit factor in determining whether certain claimants are disabled (as in step 5 of the U.S. sequential evaluation process) is rare. However, age is considered in determining eligibility for certain sickness and partial- or long-term disability programs. In general, advancing age is thought to increase the likelihood of disablement, and therefore increase the claimant's chance to receive a benefit. Sweden uses age in determining program eligibility and Australia uses age in deciding the frequency of reassessment for disability benefit eligibility.

Education is generally not directly considered during disability determination. The United States is the most notable exception, directly considering education in step 5 of its sequential evaluation process. Likewise, Denmark and the Netherlands consider education in determining the claimant's ability to perform other work in the general economy. In the same way, formal schooling or training may suggest a claimant's ability to undertake available vocational or rehabilitative options or employment opportunities.

Work experience is considered in the disability determination processes in each of the surveyed countries. Work experience is a central factor in assessing a claimant's transferable skills, which in turn constitute a central component of the RFC assessment that drives many disability assessment procedures.

Notes

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[1] The OECD is an intergovernmental organization that enables member countries to exchange economic policy experiences, address common problems, identify good practices, and coordinate domestic and international policies.

[2] For a list of our expert contacts, see the acknowledgments. We could not locate a resident expert in Ireland to confirm our findings. Fortunately, the Irish national disability website is comprehensive and provided information in as much depth as we gathered from contacts in other countries.

[3] Excellent cross-country comparisons on disability assessment procedures exist, including Boer, Brenninkmeijer, and Zuidam (2004), Honeycutt and Mitra (2005), *Inspektionen För Socialförsäkringen* (ISF, the Swedish Social Insurance Inspectorate) (2013), Burkhauser and others (2014), Morris (2016), and Geiger and others (2017).

[4] Some of those sources are government web pages, which may be updated and supersede the versions cited in this article.

[5] The circumstances under which dependents or survivors can qualify for DI benefits are described in SSA (2014) and SSA (2015).

[6] The evaluation process for children who file for SSI payments differs from the process for adults.

[7] In the discussion that follows, we often use the singular "impairment," although a claimant may have multiple impairments.

[8] For a brief summary of claim procedures and adjudication levels, see https://www.ssa.gov/OP_Home/cfr20/405/405-0001.htm.

[9] Children are not eligible for DI and their evaluation process for SSI differs from that of adults.

[10] For more information on eligibility criteria related to SGA, and current and historical SGA amounts, see https://www.ssa.gov/oact/cola/sga.html.

[11] For detailed information on how SSA examines whether an impairment is medically determinable as severe, see https://secure.ssa.gov/poms.nsf/lnx/0424505001.

[12] Or at least 15 years prior to the last instance in which DI insured status was met, if earlier.

[13] For information on expedited vocational assessment at steps 4 and 5, see https://secure.ssa.gov/apps10/poms.nsf/lnx/0425005005.

[14] For details on how SSA determines a person's occupational base, see https://secure.ssa.gov/poms.NSF/lnx/0425015020. For information on how SSA determines capability to do other work, see https://www.ssa.gov/OP_Home/rulings/di/02/SSR83-10-di-02.html.

[15] SSA regulations specify three age groups (49 or younger, 50–54, and 55 or older). Claimants may be classified into subcategories within these age groups.

[16] On February 1, 2019, SSA issued a notice of proposed rulemaking that would eliminate the education category "inability to communicate in English." For more information, see https://www.federalregister.gov/documents/2019/02/01/2019-00250/removing-inability-to-communicate-in-english-as-an-education-category.

[17] SSA defines work as unskilled if it "requires little or no judgment to do simple duties that a claimant can learn on the job in…30 days or less"; as semiskilled if it "requires some skills but does not [involve] complex duties"; and as skilled if it involves relatively demanding reasoning, judgment, and cognitive functions (SSA 2018).

[18] For more information about education as a VF, see https://secure.ssa.gov/poms.nsf/lnx/0425015010.

[19] For more information about SSA's Transferability of Skills Assessment, see https://secure.ssa.gov/poms.nsf/lnx/0425015017.

[20] For detailed information on the vocational grid, see https://www.ssa.gov/OP_Home/cfr20/404/404-app-p02.htm.

[21] The JCA was implemented July 1, 2006, to replace a less comprehensive first step of the DSP process.

[22] Assessors include accredited exercise physiotherapists; registered nurses, occupational therapists, and psychologists; rehabilitation counselors; social workers; and speech pathologists (Australian Government 2016a).

[23] Until January 2015, family doctors were permitted to assess patient disability claims. Requiring government-contracted doctors to assess new claims aims to achieve greater uniformity in applying program rules and to promote workforce reentry (Medhora 2014).

[24] DSP beneficiaries can work up to 30 hours a week and continue to receive a partial pension as long as they meet the income-test requirement.

[25] This factor was formerly considered specifically for claimants aged 55 or older. It cannot be considered for individuals who were granted a DSP on or after May 11, 2005.

[26] Officially, Government of Canada (2018) labels these components as (1) Severe Criterion for the Prime Indicator (Medical Condition); (2) Severe Criterion for "Incapable Regularly of Pursuing any Substantially Gainful Occupation"; (3) Personal Characteristics and Socio-Economic Factors; (4) The Prolonged Criterion; and (5) The Reasonably Satisfied Standard of Review for Determining Eligibility or Continuing Eligibility for Canada Pension Plan Disability Benefits.

[27] The rulings were handed down in 2002 (https://decisions.fca-caf.gc.ca/fca-caf/decisions/en/item/32264/index.do?q=rice) and 2003 (https://decisions.fca-caf.gc.ca/fca-caf/decisions/en/item/34433/index.do?q=angheloni).

[28] Danish "municipalities" are administrative districts that may include urban and rural areas; they are roughly equivalent to U.S. counties.

[29] All five pension statutes have similar benefit rules.

[30] The Finnish government is considering creating a partial benefit under the national pension system.

[31] Recipients of the full disability pension may earn up to 40 percent of their previous earnings, while partial pension beneficiaries may earn as much 60 percent of previous earnings.

[32] Finns born in 1954 and earlier are first eligible for a retirement pension at age 63. For each successive annual birth cohort from 1955 through 1963, the age of first eligibility is 3 months older than that of the previous cohort; thus, for Finns born in 1963, it is 65. Changes to the eligibility age for the 1964 and later birth cohorts will depend on longevity forecasts.

[33] To qualify for vocational rehabilitation and the 33 percent benefit increase under TyEL insurance, the insured person must meet a minimum threshold for earnings in the previous 5 years.

[34] Coverage for self-employed individuals is similarly mandated under separate legislation.

[35] Workers in certain industries have dedicated pension providers, such as the Pension Fund for Seafarers, the Farmers Pension Institution, and the Public-Sector Pension Institution.

[36] More specifically, experience ratings are based on insured-worker payroll over the previous 2 years. For employers with payroll above a certain threshold, disability-pension claim incidence in the past 2 years is also factored. Employers are assigned to one of 11 TyEL insurance contribution categories depending on the perceived disability risk; accordingly, each category has its own experience rating. An employer's contribution category is reviewed annually. Smaller companies pay a relatively fixed contribution rate (ETK 2019a).

[37] The disability pension may be paid by either a private insurer or a public-sector pension fund financed by local and national taxes or by both, if the person has worked in both sectors.

[38] This classification was originally based on the International Standard Classification of Occupations (ISCO-88) of the International Labour Organisation, comprising 1,211 distinct occupations.

[39] The agency was originally named *Ny Arbeids- og Velferdsforvaltning* (New Labour and Welfare Administration). Although "New" was later removed from the agency's name, the NAV acronym was retained.

[40] Most sickness allowance recipients neither intend to nor eventually apply for the disability benefit. Not all disability pension applicants are entitled to a sickness allowance. For example, younger individuals who have never had a job will not qualify for the disability pension; however, they may qualify for a work assessment allowance until they become eligible to file for the disability pension.

[41] Although the factors with which NAV assesses work capacity vary, the criterion of a 50 percent reduction in work capacity is strictly followed.

[42] Sickness benefits are also available to insured individuals who are involuntarily unemployed and are registered with the public employment service (SSA 2016c).

[43] Some beneficiaries qualify for both a low earnings-related benefit and a guaranteed benefit.

[44] Partial sickness benefits are likewise available at the same percentages.

[45] Compensation benefits can be suspended for a trial period of paid work of up to 24 months (a "dormant benefit") without forfeiture of entitlement (Bernitz and others 2013).

[46] The waiting period may be 3, 6, or 12 months; or, if a separate short-term disability plan exists, it may be 24 months.

[47] In recent years, WCAs have not always taken place in that window.

[48] For more information on the ESA WCA, mandatory reconsiderations, and appeals, see DWP (2016b).

[49] Critics have questioned whether the WCA accurately assesses claimants' ability to work or to do work-related activity. As a consequence of the criticism, the DWP and its original work-assessment contractor agreed to early termination of the contract in 2014. Critics also raised concerns about the replacement "fitness for work" contractor (Baumberg and others 2015).

[50] U.S. beneficiaries may engage in part-time work if earnings do not reach substantial gainful activity level (for details, see https://secure.ssa.gov/poms.nsf/lnx/0410501015). The Ticket to Work program encourages rehabilitation for U.S. beneficiaries (for details, see https://secure.ssa.gov/poms.nsf/lnx/0455001001).

[51] Finland takes ages 60 or older under such consideration; Norway does so for ages 55 or older.

[52] For a thorough comparison of the United Kingdom's WCA and the U.S. Disability Insurance assessment process, see Morris (2015).

[53] In recent years, Denmark, Ireland, and the Netherlands have adopted the United Kingdom's WCA framework, with each using VFs differently. Morris (2016) compares the Danish, Dutch, and British systems.

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Infant Mortality Among Supplemental Security Income Applicants

by Jeffrey Hemmeter and Paul S. Davies*

We explore neonatal and infant mortality rates among children who apply for Supplemental Security Income (SSI) payments before reaching 1 year of age. We examine mortality-rate trends across several SSI policy regimes, and compare SSI applicants with the U.S. population overall. We also examine selected characteristics of infant SSI applicants, focusing specifically on the cohort of children who applied in 2015. We find that neonatal mortality among SSI applicants closely follows national trends, but that infant mortality among SSI applicants is roughly five times that of all children. Among children awarded SSI before reaching age 1 in 2015, those diagnosed with low birth weight are less likely to die by age 1 than are children with other impairments. Children living in Medicaid institutions have the highest infant mortality rates while children living with their parents have the lowest mortality rates.

Introduction

Infant mortality (defined as the death of a child before 1 year of age) and neonatal mortality (defined as the death of an infant at 0–27 days of age) are important markers of a nation's health and well-being. Although significant intergroup disparities remain—for example, by race/ethnicity or across geographic areas (Mathews, MacDorman, and Thoma 2015; MacDorman, Hoyert, and Mathews 2013; Alexander and others 2003)—overall neonatal and infant mortality rates in the United States have steadily declined since at least the late 1960s. At the national level from 1985 to 2013, neonatal mortality decreased from 7 deaths per 1,000 live births to 4 deaths per 1,000 live births and infant mortality decreased from slightly more than 10 deaths per 1,000 live births to about 6 deaths per 1,000 live births (National Center for Health Statistics 1987; Mathews, MacDorman, and Thoma 2015).[1] Despite the declines, U.S. rates are higher than those in most developed countries (Organisation for Economic Co-operation and Development 2018), and some subpopulations in the United States have much higher infant mortality rates than others, as indicated above.

One such group includes infants who apply to the Social Security Administration (SSA) for Supplemental Security Income (SSI), a means-tested program that provides monthly income support and a link to public health insurance (Medicaid). As we will show, the infant mortality rate among SSI applicants is five times that of the general population.

To qualify for SSI, a child's family must have low income and limited resources and the child must have a severe disability. Newborns who spend time in a neonatal intensive care unit or are otherwise confined to a medical institution are not subject to the income and resource tests for SSI and can receive a small, fixed monthly benefit of $30 (as well as Medicaid coverage, if applicable in their state).[2] Anecdotal evidence

Selected Abbreviations

LBW	low birth weight
SSA	Social Security Administration
SSI	Supplemental Security Income
SSR	Supplemental Security Record

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suggests that some hospitals assist families in applying for SSI and Medicaid. In addition, several online resources point new parents (especially those of children born prematurely) to information and guidance on SSI and Medicaid. Parents may also find out about these programs through various other means before or after the child's birth: personal contacts or experiences, community resources, social workers, and the like.

Low birth weight (LBW) is defined by SSA either as a weight of less than 1,200 grams or as "at least 1,200 grams but less than 2,000 grams and small for gestational age"[3] (Table 1). It is among the conditions that SSA considers to be "functionally equivalent" to criteria contained in its medical Listing of Impairments, which the agency consults to establish disability eligibility for SSI payments.[4] Research shows that birth weight and length of gestation are the two most important determinants of infant survival. Nearly 25 percent of very LBW infants (less than 1,500 grams) die during the first year of life (Singh and van Dyck 2010). Impairments that are more common among premature and LBW infants are retinopathy of prematurity, chronic lung disease of infancy, intraventricular hemorrhage, necrotizing enterocolitis, and periventricular leukomalacia. Other disorders affecting this group include poor nutrition and growth failure, hearing disorders, seizure disorders, cerebral palsy, and developmental disorders (SSA n.d.).

Chart 1 shows the neonatal and infant mortality rates among SSI applicants and all U.S. children from 1985 through 2015. Although the neonatal mortality rates among SSI applicants and all U.S. children have been roughly similar, the infant mortality rate for SSI applicants has been several orders of magnitude greater than the overall infant mortality rate. The gap was widest in 1985, declined substantially until the early 1990s, and has been closing gradually ever since. In 1991, the infant mortality rate for SSI applicants was about 50 deaths per 1,000 compared with the overall rate of about 9 deaths per 1,000. By 2000, the infant mortality rate among SSI applicants had declined to about 40 deaths per 1,000 while the overall rate had declined to 7 deaths per 1,000. Between 2007 and 2014, the infant mortality rate among SSI applicants declined to about 30 deaths per 1,000, which was still roughly 5 times the overall rate of about 6 deaths per 1,000.[5]

Table 1.
SSA LBW cutoffs by gestational age

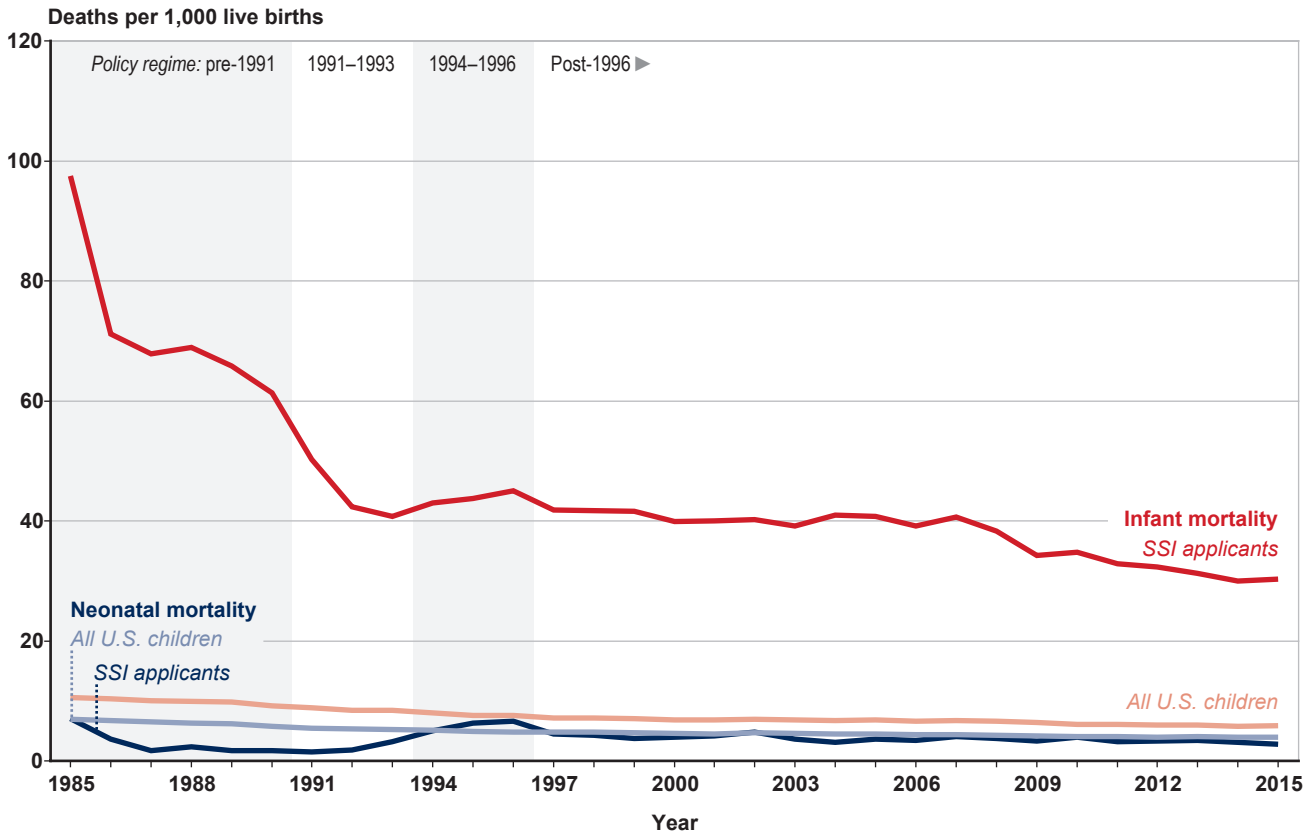
Gestational age (in weeks)	Birth weight (in grams)
37–40	2,000
36	1,875
35	1,700
34	1,500
33	1,325
32	1,250

SOURCE: SSA (n.d.).

Several policy changes during the 1990s affected the eligibility of infants for SSI. In 1991, SSA revised its regulations for determining disability in children in response to the 1990 U.S. Supreme Court ruling in *Sullivan v. Zebley*. Along with establishing an individualized assessment of functioning for children with impairments that do not "meet or equal" the criteria in the Listing of Impairments, the revised regulations established LBW as functionally equivalent to meeting a medical listing. In 1993, SSA began allowing presumptive disability awards for LBW using the criteria described above. In addition, SSA began targeting LBW children for continuing disability reviews (CDRs) as part of a broader effort to reduce the SSI CDR backlog. In the mid-1990s, the SSI eligibility cessation rate following CDRs for LBW children was around 40 percent. Finally, welfare reform legislation enacted in 1996 (and modified in 1997) required redetermination of SSI eligibility at or around a recipient's first birthday if LBW was a contributing factor material to the disability determination. These changes establish the boundaries of four distinct policy regimes, which we identify by date range: pre-1991, 1991–1993, 1994–1996, and post-1996. Box 1 summarizes the policy regimes, and Charts 1 and 2 indicate their boundaries.

This article has three primary objectives. The first is to document the trends in infant and neonatal mortality among SSI applicants. The second is to explore whether ease of access to public health insurance (Medicaid) improves mortality outcomes. The third is to explore whether mortality rates differ among SSI applicants by type of disability. These questions are important given the substantial federal, state, and local outlays for this population. SSA awarded SSI payments to more than 30,000 infants in 2015.[6] More than half of those children were considered LBW,[7] and of those, virtually all were eligible for public health insurance through Medicaid in addition to their monthly SSI payment—in most states, Medicaid eligibility is automatic for SSI recipients. Although we do not estimate the causal role of SSI on mortality or public health outlays, understanding the use of these programs is important from both fiscal and public health policy perspectives.

Chart 1.
Neonatal and infant mortality rates among SSI applicants and all U.S. children, 1985–2015



SOURCE: Authors' calculations using Social Security administrative records and National Center for Health Statistics reports.

Box 1.
SSI policy regimes 1985–2015

Years	Policy highlight
Pre-1991	A child applicant's impairment must meet or equal criteria contained in SSA's medical Listing of Impairments.
1991–1993	SSA revises regulations to establish LBW as functionally equivalent to meeting a listing.
1994–1996	LBW children receive SSI disability awards presumptively. LBW SSI recipients are targeted for continuing disability reviews.
Post-1996	SSI recipients undergo an eligibility redetermination at age 1 if LBW was a contributing factor material to the initial disability determination.

SOURCE: Authors' compilation.

Data and Methods

We obtain our data from SSA's Supplemental Security Record (SSR), the master file for SSI program data. We organize the data by effective date of application (the first day of the month following the date on which the application is filed, or on which the individual first becomes eligible, whichever is later), which we shorten hereafter to "application date." For each annual cohort, we use the SSR to identify the applicant's sex, type of disability, living arrangements, state, type of Medicaid access, and other characteristics, along with whether payments were awarded or denied. We link these data to SSA's master file of Social Security number holders, referred to as the Numident file. We use the Numident, which includes the Death Master File, to obtain mortality outcomes including date of death.

We categorize SSI applicants and recipients by policy regime in effect as of the application date (pre-1991, 1991–1993, 1994–1996, and post-1996), state of residence at the time of application, sex, type of disability (LBW, all others), living arrangements (as defined by SSI rules),[8] and type of Medicaid access (defined by state policy at the time of application).[9]

Our analysis is largely descriptive. We present mortality trends among infant SSI applicants and compare them with trends for all U.S. infants for 1985 through 2015. We focus some components of the analysis on subsamples such as SSI recipients (awardees), applicants awarded before age 1,[10] or the 2015 application cohort. We describe the characteristics of infant SSI applicants and examine neonatal and infant mortality rates by applicant characteristics including award or denial. We then present mortality-rate estimates with regression adjustments for SSI award, state of residence, living arrangement, and type of Medicaid access. We also consider the role of age at SSI application on mortality because applications filed very soon after birth may differ from those for older infants in terms of medical conditions, treatment needs, levels of support, and other factors. Finally, we run Cox proportional hazard models to explore the relationships between applicant characteristics and the hazard of mortality by age 1.

Our data are limited in that we use only the primary impairment code from the SSR to identify impairments, including LBW. We do not use the secondary impairment code from the SSR, nor do we have access to information on other comorbid conditions or the cause of death. In terms of geography, we are limited to state of residence at the time of SSI application. To the extent that SSI applicants may have moved in the time between application and award, or after award, our measure of the type of Medicaid access will include some classification errors. In the cases of SSI denials, we know applicant characteristics only as of application date.

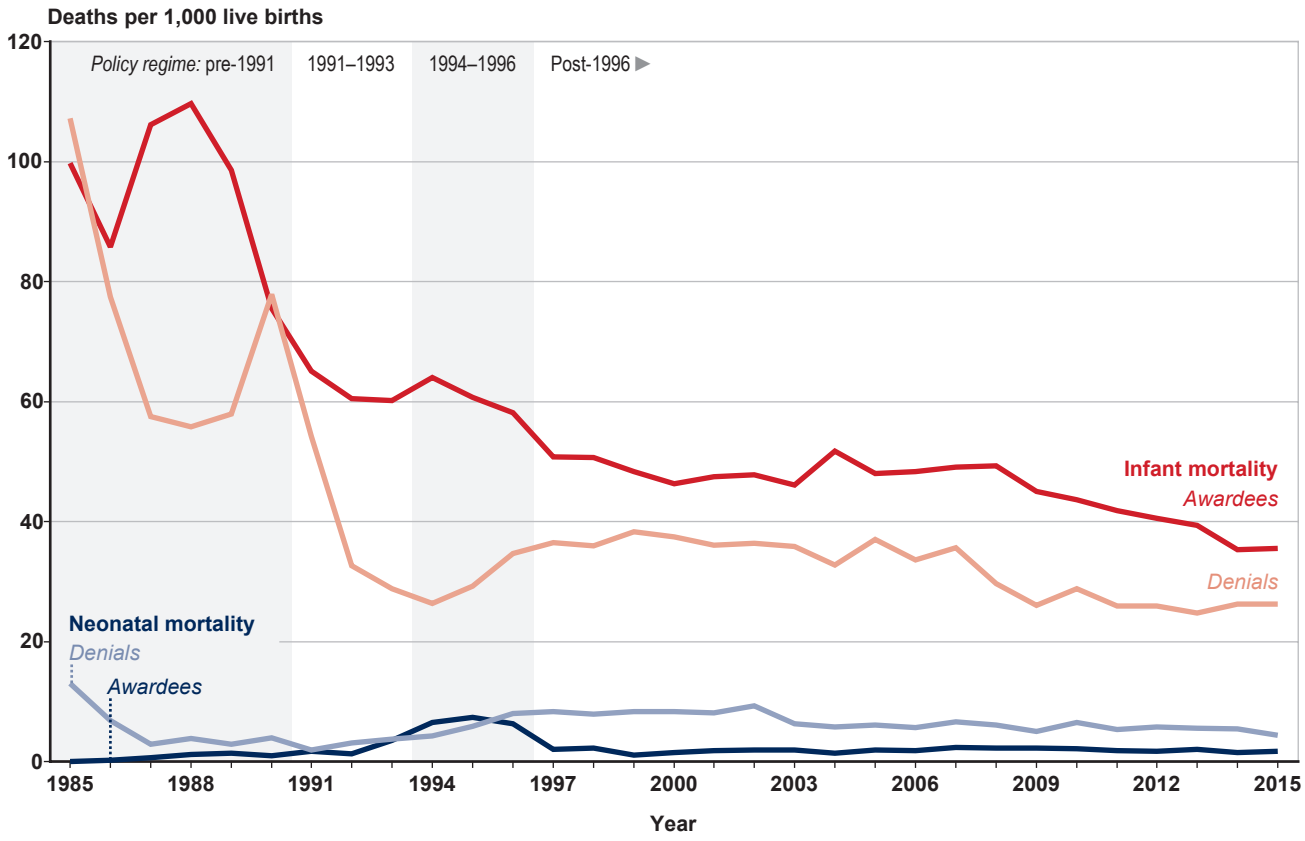
In addition to data limitations, our analysis of SSI applicants and awards likely suffers from selection effects. Many or most children with the highest neonatal mortality will never apply for SSI simply because there is not enough time to apply and establish eligibility. Children who apply for SSI generally have lived through the period of highest likelihood of death. Further, children who are awarded SSI payments generally have more severe disabilities (and thus higher mortality) than do those whose applications are denied, but they also are more likely to have survived the application processing period (and are thus now at comparatively lower risk of mortality). The potential bias from these selection effects is difficult to determine deductively, and we do not attempt to control for these selection effects in our analysis.

Results

Chart 2 disaggregates the population of SSI child applicants into awardees and denials (for cases decided before the applicant reaches age 1) and presents neonatal and infant mortality rates for 1985 through 2015.[11] Infant mortality rates are much higher than neonatal mortality rates regardless of case outcome. Before 1997, the infant mortality rates for awardees (SSI recipients) and denials varied widely, sometimes swinging in opposite directions. Thereafter, the infant mortality rate for awardees loosely tracked the infant mortality rate for denials, with the rate for awardees exceeding the rate for denials by roughly 13 per 1,000 after 1997. After averaging roughly 48 deaths per 1,000 between 1997 and 2008, the infant mortality rate among awardees began to decline, dropping to less than 36 deaths per 1,000 in 2014 and 2015. Conversely, the neonatal mortality rate was higher for denials than for awardees in most years. Although the absolute difference in neonatal mortality rates between awardees and denials is smaller than that for infant mortality rates by case outcome, the neonatal mortality rates in many years differed by a factor of 3 or more.[12]

Table 2 presents estimated infant mortality rates over time and across policy regimes. We use Cox proportional hazard models in which the risk (hazard) of infant mortality is expressed as a function of the

Chart 2.
Neonatal and infant mortality rates among SSI applicants, by outcome, 1985–2015



SOURCE: Authors' calculations using Social Security administrative records.

Table 2.
Estimated infant mortality rates (per 1,000 live births) among SSI applicants, by policy regime (time of application), 1985–2015: Nine alternative models

Model	Pre-1991	1991–1993	1994–1996	Post-1996
1. No covariates	65.1	45.5	42.7	37.7
2. Covariate: Medicaid access	63.7	44.7	42.0	37.0
3. Covariates: Medicaid access, SSI award	72.7	48.6	42.9	36.4
4. Covariates: Medicaid access, SSI award, living arrangement	76.1	59.2	46.1	33.4
5. Covariates: Medicaid access, SSI award, living arrangement, age at application	80.2	61.7	46.2	33.3
6. Covariate: State of residence	63.9	44.7	42.1	37.0
7. Covariates: State of residence, SSI award	72.7	48.6	43.0	36.4
8. Covariates: State of residence, SSI award, living arrangement	76.2	58.9	46.3	33.4
9. Covariates: State of residence, SSI award, living arrangement, age at application	80.2	61.4	46.3	33.2

SOURCE: Authors' calculations using administrative data from SSA.

NOTE: Observations = 1,455,750.

four policy regimes described earlier and summarized in Box 1. There is no right-censoring in the model because we observe all SSI applicants through at least age 1, which captures all instances of infant mortality. Each model adds control variables sequentially: type of Medicaid access, application outcome, living arrangement, age at application, and state of residence at application. Table 2 presents the adjusted infant mortality rates for each policy regime, conditional on the specific set of control variables included in the model. Three conclusions emerge. First, the adjusted infant mortality rates are largely invariant to the combination of control variables included in the model. Second, the adjusted infant mortality rates show a clear decreasing trend across the policy regimes. Finally, controlling for age at application (models 5 and 9) results in a marked increase in mortality rates in the early policy regimes.

2015 Cohort

The remainder of the analysis focuses on the 2015 cohort of SSI applicants and examines their characteristics and the relationships between those characteristics, application outcome, and infant mortality. Table 3 shows the characteristics of children who applied for SSI before age 1 in 2015.[13] Nearly 54 percent of those applicants were awarded SSI payments before reaching age 1 and the denial rate for this cohort of SSI applicants was 42 percent. Slightly more than half of applicants and of awardees were male. About 35 percent of applicants and nearly 62 percent of pre–age 1 awardees were diagnosed with LBW. Nearly 82 percent of applicants in our study population lived in states where SSA determines Medicaid eligibility, as authorized by section 1634 of the Social Security Act; another 4 percent lived in states that make their own Medicaid-eligibility determination following the SSI criteria. The remaining 14 percent of applicants in our study population lived in states that determine Medicaid eligibility using criteria that are more restrictive than the SSI criteria, as authorized by section 209(b) of the Social Security Act. Most applicants and awardees lived with their parents, although 10–11 percent lived in Medicaid institutions and around 5–7 percent lived with others (such as a nonparent relative or in foster care).

We find that more infant applications were filed within 1 week of birth than in any subsequent week; after week 1, the frequency of application steadily declined with additional weeks of age. Although we observe this pattern among infants regardless of disability, it is more pronounced for LBW cases than for others. Among infant SSI applicants diagnosed with LBW, about 23 percent applied within 1 week of birth versus only about 6 percent of cases with a primary impairment other than LBW (not shown).

Table 3 presents two different breakouts for age at application: (1) each of the first 4 weeks versus the rest of the first year and (2) less than 180 days (about 6 months) versus 180 to 365 days. Overall, about 10 percent of infant applications occurred in the first week after birth. Awardees before age 1 were more likely than denials to have applied in each of the first 4 weeks after birth. More than 80 percent of infant applications were filed before 6 months of age. Again, the proportion of applicants who filed before 6 months of age was greater for awardees than for denials. Note that older infants are likely not to be presumptively disabled because of LBW and so would likely have a longer disability determination process by default.

Chart 3 presents infant mortality rates by state for all infants and for SSI applicants in 2015. The states are ordered by the infant mortality rate among SSI applicants. Vermont had no observed deaths among infant SSI applicants in 2015. Of the remaining states, the rates ranged from a low of 11.4 deaths per 1,000 applicants in Rhode Island to a high of 69.0 deaths per 1,000 applicants in the District of Columbia. In all states except Vermont, the infant mortality rate for SSI applicants far exceeded the rate for infants overall. Singh and van Dyck (2010, Figure 8) find modest regional patterns in overall infant mortality rates in 1970 and 2007, with higher rates generally concentrated in the southeastern states. For SSI applicants in 2015, several southeastern states had above-average infant mortality rates, but there is no dominant geographic pattern, suggesting that factors other than geography are at play.

Table 4 presents mortality rates for infant SSI applicants in 2015 disaggregated by disability diagnosis, type of Medicaid access, living arrangement, and age at application. Among all SSI infant applicants, the mortality rate is significantly higher for those with LBW than for those with all other disability diagnoses, as indicated by the *p*-value from the likelihood ratio tests of the homogeneity of the mortality rates. However, this result masks differences in infant mortality rates for LBW infants by application outcome. The vast majority of SSI denials are not diagnosed with LBW and experience a very low mortality rate (19.8 per 1,000, or about 2 percent). For the 3.7 percent of SSI denials with LBW (Table 3), the infant mortality rate is extremely high (195.4 per 1,000, or about 20 percent;

Table 3.
Characteristics of infants applying for SSI in 2015, by outcome

Characteristic	All [a]		Awarded before reaching age 1		Denied	
	Percentage distribution	Standard error	Percentage distribution	Standard error	Percentage distribution	Standard error
Total	100.00	. . .	100.00	. . .	100.00	. . .
Sex						
Female	47.52	0.21	49.02	0.29	45.78	0.32
Male	52.48	0.21	50.98	0.29	54.22	0.32
Diagnosis						
LBW [b]	35.41	0.20	61.95	0.28	3.67	0.12
All others	64.59	0.20	38.05	0.28	96.33	0.12
Medicaid access						
SSA determination [c]	81.54	0.16	80.53	0.23	83.10	0.24
State determination using—						
Own (restrictive) criteria	14.30	0.15	14.73	0.20	13.66	0.22
SSI criteria	4.16	0.08	4.74	0.12	3.25	0.12
Living arrangement						
Alone	4.77	0.09	6.06	0.14	2.23	0.10
With nonparent(s)	6.92	0.11	5.90	0.14	8.28	0.18
With parent(s)	65.27	0.20	76.35	0.24	49.70	0.32
In Medicaid institution	10.41	0.13	11.50	0.18	9.97	0.19
Unknown	12.62	0.14	0.18	0.02	29.81	0.30
Age at application (in days)						
0–6	10.24	0.13	15.01	0.21	5.13	0.14
7–13	9.40	0.12	12.44	0.19	6.42	0.16
14–20	8.79	0.12	10.67	0.18	7.20	0.17
21–27	7.99	0.11	9.22	0.17	7.17	0.17
28–365	63.58	0.20	52.66	0.29	74.08	0.28
0–179	83.36	0.16	93.11	0.15	77.58	0.27
180–365	16.64	0.16	6.89	0.15	22.42	0.27
Number	56,483		30,313		23,724	
Percentage	100.00		53.67		42.00	

SOURCE: Authors' calculations using administrative data from SSA.

NOTE: . . . = not applicable.

a. Includes applicants awarded after reaching age 1 (2,446 observations).

b. Includes "failure to thrive."

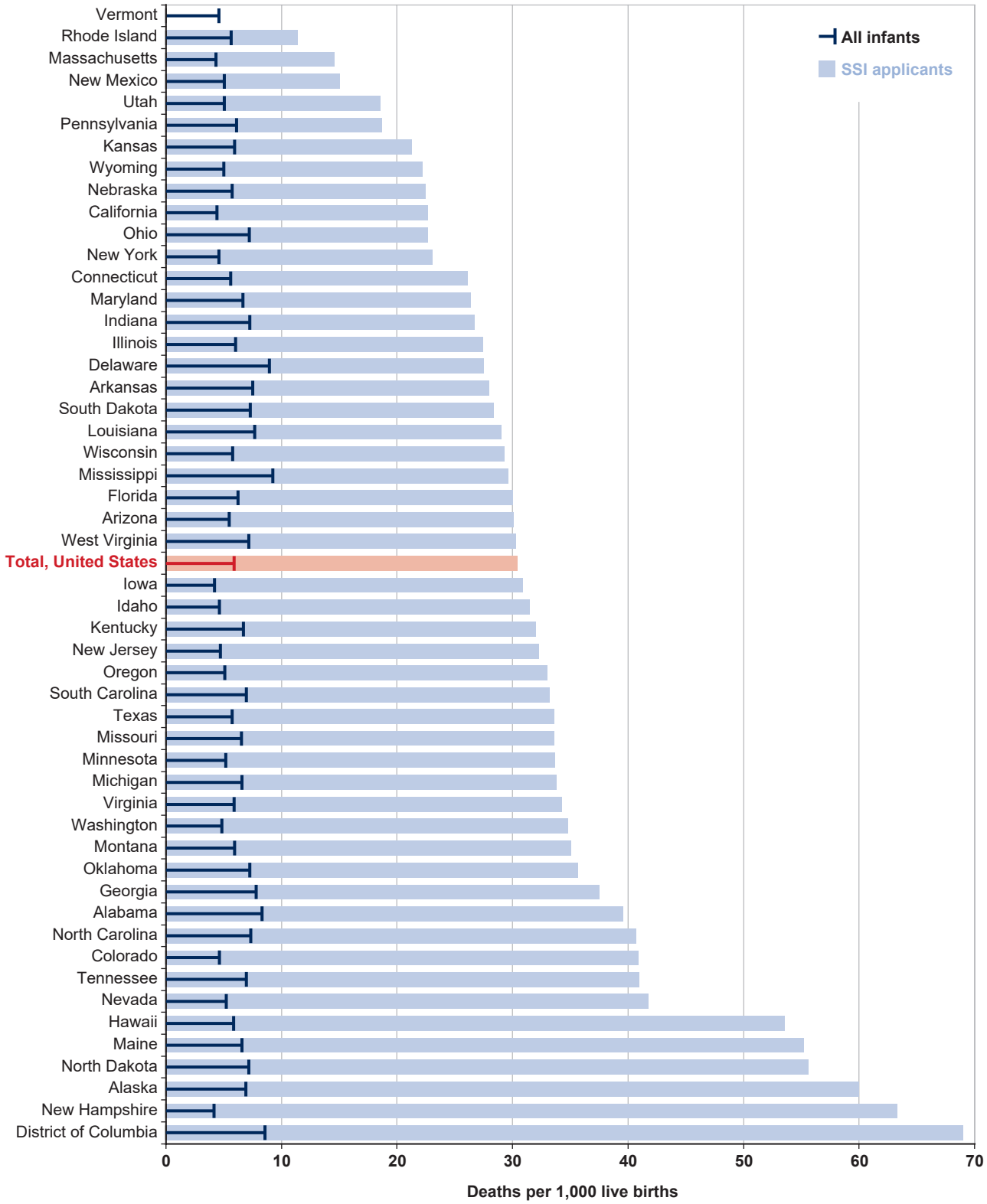
c. SSI award confers Medicaid eligibility automatically.

Table 4). Among the much larger group of SSI awardees diagnosed with LBW, the infant mortality rate is 28.3 per 1,000. In fact, the infant mortality rate for SSI awardees with LBW is significantly lower than the 47.4 per 1,000 infant mortality rate for SSI awardees with other disability diagnoses.

It is possible that denials diagnosed with LBW lack access to the health care that is available to others who acquire Medicaid eligibility by virtue of an SSI award.[14] However, we observe no statistically significant differences in infant mortality rates among SSI awardees or denials by type of Medicaid access. We do, however, see statistically significant differences in infant mortality rates by living arrangement for all applicants, awardees, and denials. In all groups, those living in Medicaid institutions have the highest infant mortality rates: For awardees, the infant mortality rate is 185.0 per 1,000; for denials, it is 150.1 per 1,000.

Infant mortality rates by age at application decline steadily with each successive week after birth within the first month. Among all applicants, rates decline from about 52 deaths per 1,000 first-week applicants to 43 deaths per 1,000 fourth-week applicants. We see a similar pattern among denials, although the mortality

Chart 3.
Infant mortality rates among SSI applicants and all U.S. children, by state, 2015



SOURCE: Authors' calculations using Social Security administrative records and National Center for Health Statistics' National Vital Statistics Reports.

NOTE: Spearman's ρ = 0.1875; p-value = 0.1877 (H_0: no association between two series); Pearson correlation coefficient = 0.1780.

Table 4.
Mortality rates of infants applying for SSI in 2015, by selected characteristics and application outcome

Characteristic	All [a]			Awarded before reaching age 1			Denied		
	Total	Deaths	Mortality rate	Total	Deaths	Mortality rate	Total	Deaths	Mortality rate
Diagnosis									
LBW [b]	19,998	705	35.3	18,780	532	28.3	870	170	195.4
All others	36,485	1,006	27.6	11,533	547	47.4	22,854	452	19.8
p-value	. . .	. . .	0.0000	. . .	. . .	0.0000	. . .	. . .	0.0000
Medicaid access									
SSA determination [c]	46,056	1,402	30.4	24,411	873	35.8	19,714	523	26.5
State determination using—									
Own (restrictive) criteria	8,076	241	29.8	4,464	158	35.4	3,240	80	24.7
SSI criteria	2,351	68	28.9	1,438	48	33.4	770	19	24.7
p-value	. . .	. . .	0.9114	. . .	. . .	0.8782	. . .	. . .	0.7780
Living arrangement									
Alone	2,694	44	16.3	1,838	23	12.5	530	20	37.7
With nonparent(s)	3,909	66	16.9	1,788	49	27.4	1,964	17	8.7
With parent(s)	36,869	486	13.2	23,145	343	14.8	11,792	142	12.0
In Medicaid institution	5,881	1,007	171.2	3,487	645	185.0	2,365	355	150.1
Unknown	7,130	108	15.1	55	19	345.5	7,073	88	12.4
p-value	. . .	. . .	0.0000	. . .	. . .	0.0000	. . .	. . .	0.0000
Age at application (in days)									
0–6	5,784	300	51.9	4,550	202	44.4	1,218	97	79.6
7–13	5,309	265	49.9	3,770	160	42.4	1,524	103	67.6
14–20	4,966	218	43.9	3,234	139	43.0	1,708	79	46.3
21–27	3,512	194	43.0	2,795	122	43.6	1,700	71	41.8
28–365	35,912	734	20.4	15,964	456	28.6	17,574	272	15.5
p-value	. . .	. . .	0.0000	. . .	. . .	0.0000	. . .	. . .	0.0000

SOURCE: Authors' calculations using administrative data from SSA.

NOTES: Mortality rates are expressed as deaths per 1,000.

p-values are from likelihood ratio test of the homogeneity of the mortality rates.

. . . = not applicable.

a. Includes applicants awarded after reaching age 1 (2,446 observations).

b. Includes "failure to thrive."

c. SSI award confers Medicaid eligibility automatically.

rates are much higher in the first 2 weeks for those applicants. From one week to the next, the infant mortality rate is about the same for all eventual infant awardees who applied in the first month after birth. At some point, the mortality rates of denied and awarded applicants cross. This is likely due to the changing nature of predominant disabilities among older infant applicants.

Table 5 presents infant mortality hazard ratios by selected characteristics of 2015 SSI applicants as estimated from Cox proportional hazard models. The models use a continuous measure of time under which a child is at risk of dying each day through day 365. The hazard ratios are interpreted as the cumulative risk of death by age 1 relative to a reference group. Thus, hazard ratios greater than 1.0 represent greater relative risk of infant mortality; hazard ratios less than 1.0 represent lower relative risk of infant mortality. In the first model, we estimate each variable's effect on infant mortality, independent of the effects of any other variables for the full sample of SSI applicants. However, because the variables may affect infant mortality in different ways for awardees and denials, we also estimate hazard ratios using three other models. The second model fully interacts the application outcome and applicant characteristics for the full sample of SSI applicants. The third and fourth models estimate two independent equations—one for awardees and one for denials. Although this pair of equations is qualitatively similar to the fully interacted

Table 5.
Estimated mortality hazard ratios for infants applying for SSI in 2015, by selected characteristics

Variable	Uninteracted model		Interacted model		Awardee-only model		Denial-only model	
	Hazard ratio	Standard error	Hazard ratio	Standard error	Hazard ratio	Standard error	Hazard ratio	Standard error
Application outcome								
Awarded	1.8956***	0.1259	0.5229*	0.1788	. . .	. . .	. . .	. . .
Denied (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sex								
Male	0.9947	0.0483	1.1367	0.0923	0.9515	0.0579	1.1299	0.0917
Female (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Diagnosis								
LBW [a]	0.5467***	0.0353	6.3342***	0.5950	0.2776***	0.0188	5.9867***	0.5641
All other (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Medicaid access								
SSA determination (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
State determination using—								
Own (restrictive) criteria	1.0264	0.0721	0.9295	0.1123	1.0332	0.0894	0.9354	0.1129
SSI criteria	0.8631	0.1081	0.7362	0.1726	0.8798	0.1305	0.7473	0.1752
Living arrangement								
Alone (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
With nonparent(s)	1.1595	0.2277	0.2477***	0.0805	2.6445***	0.6691	0.2486***	0.0808
With parent(s)	0.8344	0.1332	0.3007***	0.0719	1.3776	0.2972	0.3031***	0.0724
In Medicaid institution	12.0407***	1.9139	2.7890***	0.6549	24.8513***	5.3371	2.7429***	0.6443
Unknown	1.1754	0.2198	0.3630***	0.0901	38.1979***	11.8543	0.3632***	0.0901
Age at application (in days)								
0–6 (reference)	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
7–13	0.9821	0.0833	1.0085	0.1432	0.9620	0.1020	1.0081	0.1432
14–20	0.9818	0.0880	0.8942	0.1364	0.9626	0.1069	0.8989	0.1371
21–27	1.0204	0.0950	0.7895	0.1238	1.0049	0.1167	0.7985	0.1253
28–365	0.7839***	0.0581	0.5934***	0.0759	0.6825***	0.0626	0.5989***	0.0767
Interactions: SSI award and—								
Male	. . .	. . .	0.8377*	0.0850	. . .	. . .	. . .	. . .
LBW [a]	. . .	. . .	0.0446***	0.0052	. . .	. . .	. . .	. . .
State use of —								
Restrictive Medicaid criteria	. . .	. . .	1.1088	0.1647	. . .	. . .	. . .	. . .
SSI Medicaid criteria	. . .	. . .	1.1960	0.3318	. . .	. . .	. . .	. . .
Living—								
With nonparent(s)	. . .	. . .	10.6283***	4.3781	. . .	. . .	. . .	. . .
With parent(s)	. . .	. . .	4.5710***	1.4719	. . .	. . .	. . .	. . .
In Medicaid institution	. . .	. . .	8.6699***	2.7586	. . .	. . .	. . .	. . .
Unknown			100.3987***	39.8927				
Age at application of—								
7–13 days	. . .	. . .	0.9547	0.1692	. . .	. . .	. . .	. . .
14–20 days	. . .	. . .	1.0777	0.2034	. . .	. . .	. . .	. . .
21–27 days	. . .	. . .	1.2699	0.2478	. . .	. . .	. . .	. . .
28–365 days	. . .	. . .	1.1562	0.1819	. . .	. . .	. . .	. . .
Observations	54,037		54,037		30,313		23,724	

SOURCE: Authors' calculations using administrative data from SSA.

NOTES: Awards granted after reaching age 1 (2,446 observations) are omitted.

*** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.10$; . . . = not applicable.

a. Includes "failure to thrive."

model, it is often more easily interpreted; however, the reduction in sample size in each equation makes the second method less statistically efficient.

Among all applicants, awardees in the uninteracted model have a significantly greater estimated risk of death before age 1 than the reference group of denials, by a factor of about 1.9. Infants who live in Medicaid institutions also have significantly greater estimated risk of death before age 1 than do children who meet the SSI definition of living alone.[15] Infants with a LBW diagnosis are less likely to die than are those with other impairments. Finally, children who applied more than 27 days after birth are estimated to be less likely to die before age 1 than are those who applied in the first week after birth.

When we consider interactions between SSI award and the other independent variables, we find that the estimates for awardees and infants with LBW are intertwined. In the interacted model, although children with LBW are more likely to die overall (hazard ratio = 6.33), those with LBW who are awarded benefits are less likely to die (hazard ratio = 0.04). This is seen in the separate models, too, where the hazards reflect different directions of risk.

The estimates by living arrangement are also intertwined with award, as awardees living with nonparents or in Medicaid institutions have significantly higher risk of infant mortality than do those living alone. Living in a Medicaid institution increases the risk of mortality in both the awardee- and denial-only models, all else equal.

Discussion

In this article, we show that the neonatal mortality rate among SSI applicants closely resembles the neonatal mortality rate among all U.S. children, but that the infant mortality rate among SSI applicants is roughly five times that of infants overall. Infant mortality among SSI applicants decreased dramatically from 1985 to 1993, a period in which SSI program changes increased the likelihood of awards to LBW infants soon after birth. Among SSI applicants who filed from 2007 to 2015, infant mortality decreased by about one-quarter.

For SSI infant awardees, we find differences in mortality by how the state of residence administers Medicaid access for SSI recipients. We also find that infant awardees diagnosed with LBW are less likely to die by age 1 than are children with other impairments. Denied applicants with LBW, on the other hand, are significantly more likely to die by age 1 than are denied applicants with other impairments.

Living arrangement appears to be a primary factor associated with mortality, as infants living in Medicaid institutions have the highest mortality rates and those living with their parents have among the lowest mortality rates. Of course, it is unlikely that living arrangement is itself the cause of this differential. Individuals living in a Medicaid institution are, by definition, in poor health and thus at greater risk of death.

This study has limitations that future studies should work to overcome. First, our analysis includes only SSI applicants. Many families may not have been informed of potential SSI eligibility in the neonatal period or they may have erroneously expected their infant's health status to improve quickly. We do not know their outcomes relative to those of our study population. Second, we have limited information on types of disability, especially for denied applicants. SSA records for that group may not indicate an impairment type, which introduces potential error into our measure of disability diagnosis. Similarly, we cannot measure Medicaid and other health insurance coverage among denied applicants.

We stress that our findings do not present a causal effect of SSI on infant mortality. Nor does this article determine the role of SSI in other outcomes. In addition to mortality, LBW and lack of health care access have been linked to poor school outcomes and potentially poor adult employment outcomes (Behrman and Rosenzweig 2004; Black, Devereux, and Salvanes 2007; Oreopoulos and others 2008). One purpose of SSI is to mitigate the effects of poverty and disability on disabled children and their families so that the child recipients can eventually lead self-sufficient lives. Guldi and others (2017) provide some evidence that SSI mitigates some of the disadvantages borne by LBW children of mothers with low educational attainment. Additional studies should assess the effectiveness of SSI on the long-term outcomes for this vulnerable population.

Notes

Acknowledgments: The authors thank Sika Koudou, Robin Doyle, Manasi Deshpande, Michael Stephens, and Susan Wilschke for their thoughtful comments on drafts of this article. The authors also thank David Weaver for encouraging research on the topic.

[1] Hereafter, we shorten "per 1,000 live births" to "per 1,000."

[2] For details, see https://secure.ssa.gov/poms.nsf/lnx/0500520011.

[3] "Small for gestational age" is defined as birth weight that is lower than the 3rd growth percentile or is two or more standard deviations below the mean (SSA 1997).

[4] For a description of functional equivalence regulations, see https://www.ssa.gov/OP_Home/cfr20/416/416-0926a.htm.

[5] We examined infant mortality separately for children who applied for SSI within 179 days (or about 6 months) of birth and those who applied 180 or more days after birth. The share of infant applications that were filed within 6 months of birth increased from about 60 percent in the 1980s to more than 80 percent in 2015. As such, overall results for 2015 closely resemble the pre-180 day application results. These results are available from the authors on request (Jeffrey.Hemmeter@ssa.gov).

[6] This number includes all children awarded SSI payments before age 1 in 2015, which is greater than the number of SSI recipients younger than age 1 in December 2015 reported in SSA (2017). The difference stems largely from the dynamics of SSI eligibility and, as we will show, recipient mortality.

[7] For brevity, we classify all cases of LBW and the closely related "failure to thrive" as LBW.

[8] SSI rules identify four types of living arrangements: living alone, living with other (that is, with nonparents), living with parents, and institutionalized. The latter category includes only those individuals residing in an institution where Medicaid and/or other (private) insurance covers at least 50 percent of the expenses. LBW children are considered to live alone if they reside in an institution where Medicaid and/or private insurance pays less than 50 percent of the expenses. Children who live in foster care or are homeless (without a parent) are also considered to be living alone for SSI purposes. For more information, see https://secure.ssa.gov/poms.NSF/lnx/0500835000.

[9] States (and the District of Columbia) use one of three approaches to enrolling SSI recipients in Medicaid. The approaches range from automatic Medicaid enrollment and eligibility to elective enrollment and conditional eligibility for SSI awardees. For a detailed explanation of these policies, see https://secure.ssa.gov/poms.nsf/lnx/0501715010; for a concise overview, see Rupp and Riley (2016).

[10] It is possible for an individual to apply before age 1 but not be awarded payments until several years afterward.

[11] Children neither awarded nor denied by age 1 are excluded from these analyses but are included in the values shown in Chart 1.

[12] Prior to 1991, an individual was unlikely to apply for and be awarded SSI before 28 days; thus, the sample sizes are much smaller during that period.

[13] We include the 4.3 percent of infant applicants who did not receive an SSI award until after age 1 in the column showing statistics for all applicants.

[14] SSA data do not necessarily include information on diagnoses for denied cases. Thus, some cases categorized as "all other" diagnoses may actually be LBW (or failure to thrive) cases that were denied for nonmedical reasons (such as leaving the hospital before eligibility was determined or not meeting the parental-income means test).

[15] Recall that children in foster care and certain other custodial situations may be considered "living alone."

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Work-Related Overpayments to Social Security Disability Insurance Beneficiaries: Prevalence and Descriptive Statistics

by Denise Hoffman, Benjamin Fischer, John T. Jones, Andrew McGuirk, and Miriam Loewenberg*

We estimate the prevalence, duration, and dollar amount of work-related overpayments accrued to Disability Insurance (DI) beneficiaries based on administrative data from the Social Security Administration (SSA) for January 2010 through December 2012. We find that 1.9 percent of DI beneficiaries in our sample were overpaid because of work in 1 or more months during that period. Although overpayments were rare among DI beneficiaries overall, among those with earnings sufficient to put them at risk of a work-related overpayment, 71 percent were overpaid. Work-related overpayments lasted for a median of 9 months and accrued a median amount of $9,282. Overpayments were statistically associated with low levels of education and relatively low monthly benefit amounts. Findings for certain beneficiary and program-related characteristics suggest that modifying SSA outreach and communication efforts might help beneficiaries comply with DI earnings-reporting requirements and avoid overpayments.

Introduction

For decades, Social Security Administration (SSA) efforts to increase employment among Social Security Disability Insurance (DI) beneficiaries have been a focus of considerable interest among both policymakers and researchers. However, beneficiary work activity sometimes results in benefit overpayments, and research on the extent of those overpayments—and the characteristics of affected beneficiaries—has been relatively limited. A work-related overpayment occurs when SSA issues a monthly DI benefit to which an individual is not entitled because the agency either is not aware that the beneficiary has earnings exceeding the benefit-eligibility threshold for that month, or it has not yet concluded an investigation of reported earnings with benefit suspension or termination. Such overpayments can occur for several reasons, including the beneficiary's failure to report work activity timely, as required by DI rules; resource-related constraints on agency responses to reports of beneficiary work activity; and the complexity of the rules governing beneficiary work activity (Government Accountability Office [GAO] 2011, 2013, 2015). Although work activity is not the cause of all DI overpayments, this article focuses on work-related overpayments and we use the

Selected Abbreviations

BOND	Benefit Offset National Demonstration
CDR	continuing disability review
DAF	Disability Analysis File
DBAD	Disabled Beneficiaries and Dependents
DI	Disability Insurance
EPE	extended period of eligibility
GAO	Government Accountability Office

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Selected Abbreviations—*Continued*

IRP	initial reinstatement period
MBR	Master Beneficiary Record
OIG	Office of the Inspector General
SGA	substantial gainful activity
SSA	Social Security Administration
STW	suspension or termination because of work
TWP	trial work period

term "overpayments" in that specific context, unless noted otherwise.

DI overpayments account for a substantial sum of money and create administrative and fiscal management challenges for SSA. Work-related overpayment amounts ranged from $831 million in fiscal year 2010 to $980 million in fiscal year 2012. Over the same period, DI overpayments (including those not related to work) represented between 0.69 percent and 1.27 percent of total DI benefits paid. SSA failed to meet its benefit payment accuracy targets in all 3 years (SSA 2013a).

When SSA detects overpayments, beneficiaries are obligated to reimburse overpaid funds unless they succeed in appealing the overpayment finding or in requesting that the overpayment be waived. Overpayments can be quite large, especially when measured against the generally modest financial resources of DI beneficiaries. SSA policy is to attempt to recover the full overpayment amount immediately, but in practice, most repayments are effected through partial withholding of the monthly DI benefit once benefit payments have resumed (GAO 2016). Because the withholding is limited, full repayment can take many years. Overpayment recovery may continue after the disabled-worker benefit converts to a retirement benefit when the beneficiary reaches full retirement age. It may also result in benefit reductions for auxiliary beneficiaries (the worker's spouse and/or other dependents) and, should the beneficiary die, may be collected from surviving dependents. SSA estimates that the administrative cost of recovering overpayments for all reasons (including those not related to work) is 7 cents for every $1 recovered (SSA 2016, 132). In some cases, the overpayment is never recovered. Of the overpayment debt for all reasons identified in 2004, 53 percent was recovered, 26 percent was still outstanding, and 21 percent was waived or canceled as of February 2014 (SSA 2015, Table 4).

Anecdotal evidence suggests that overpayments and their aftermaths can be traumatic experiences for beneficiaries and may function as disincentives to work. For example, in qualitative interviews conducted as part of an assessment of SSA's Benefit Offset National Demonstration (BOND), field staff and beneficiaries reported concerns about the consequences of overpayments (Gubits and others 2013; Hoffman and others 2017). Similarly, qualitative interviews conducted with 91 beneficiaries who had recently worked at levels sufficient to trigger overpayments revealed that such overpayments were common and a source of great frustration (O'Day and others 2016). Similar findings emerged from semistructured interviews with 84 overpaid DI beneficiaries, as did reports that more than half of the interviewed beneficiaries immediately terminated employment upon learning of their overpayment (Kregel 2017). However, it is unclear if these findings are representative of the reactions of all overpaid beneficiaries.

One can easily find estimates of aggregate work-related overpayment amounts, as well as accounts of the reported frustrations of DI beneficiaries; but information on the prevalence of overpayments and the typical size of individual overpayments is scarce. In GAO (2013), the authors estimated that 0.4 percent of primary DI beneficiaries encountered a work-related overpayment over a 15-month period. However, those authors relied on sources other than Social Security administrative records, and they acknowledge that their statistics likely understate the prevalence of overpayments. An audit report by the SSA Office of the Inspector General (OIG) studied a sample of 985 DI beneficiaries in current-pay or temporary-suspension status as of October 2003. By February 2014, 3.2 percent of the sample had received a work-related overpayment at some point, with an average amount of $14,397 per overpaid beneficiary (SSA 2015). Calculations based on estimates in that report suggest that among the beneficiaries who worked at sufficient levels to be at risk of a work-related overpayment, 63 percent were overpaid. Another OIG audit report conducted case reviews of 275 beneficiaries with substantial earnings from 2007 through 2011 and revealed work-related overpayments that lasted an estimated 9 months and totaled $8,114 on average. Further, an estimated 60 of 65 beneficiaries at risk of a work-related overpayment (92 percent) were overpaid (SSA 2014). These are the best available statistics on work-related overpayments, but they were generated from relatively small samples of beneficiaries.

We have found no research that describes the characteristics of beneficiaries who encounter work-related overpayments. In general, one might expect that the likelihood of work-related overpayment is associated with beneficiary characteristics such as low levels of mental functioning or minimal contact with the SSA disability programs because those beneficiaries may have limited understanding of or exposure to DI rules on reporting work activity. Conversely, one might expect beneficiaries with high levels of education to be less likely to receive overpayments if they are better able to understand and fulfill the reporting requirements. However, these expectations are not borne out in all cases, as we describe below.

This article provides detailed statistics on the prevalence of work-related DI overpayments, the average size and duration of overpayments, and the characteristics of beneficiaries who were overpaid. We use an algorithm developed for the BOND evaluation to provide information on overpayments. We apply the algorithm to Social Security administrative data to detect overpayments. Administrative data allow us to scale our analysis more easily than we could do with the case-review data employed by other studies. In this analysis, we use a 10 percent random sample of DI beneficiaries who received or were potentially eligible for DI benefits in January 2010. We chose that starting date because SSA increased its efforts to identify overpayments at that time.

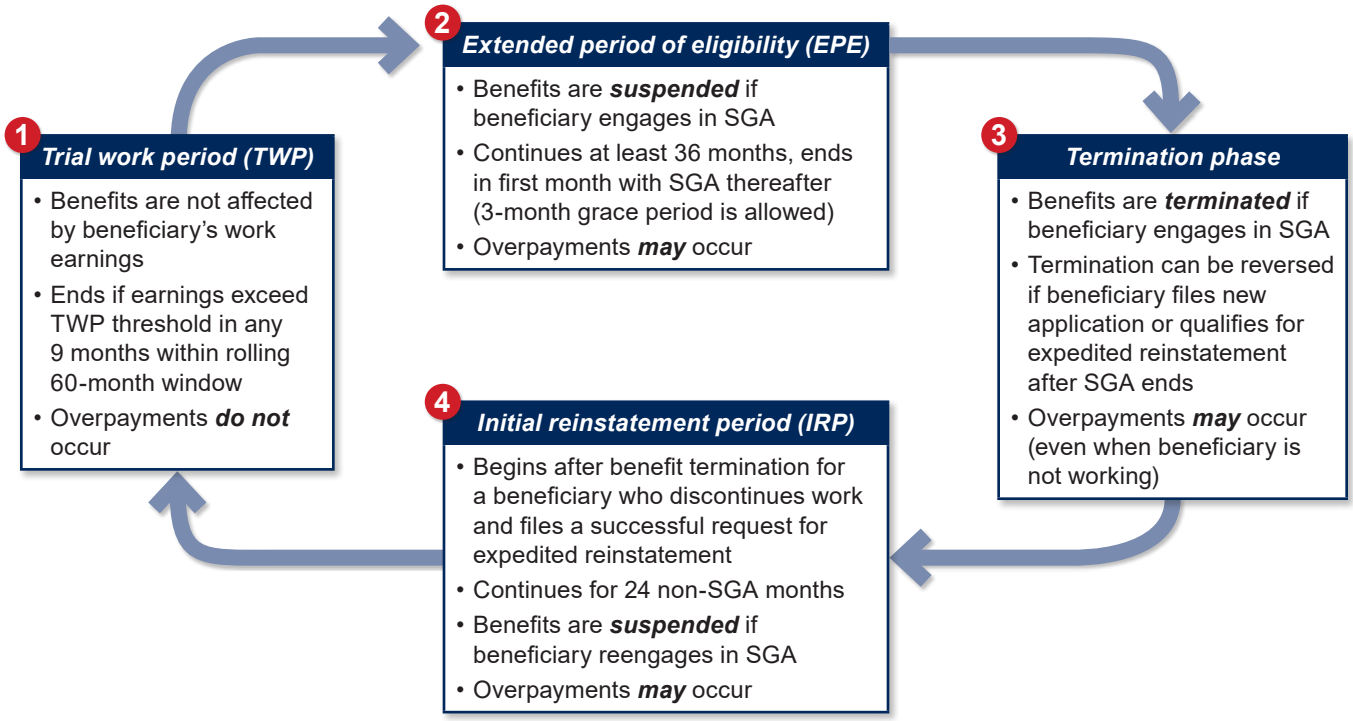
Although overpayments are rare among DI beneficiaries overall—reflecting that only a small portion of them work at sufficient levels to be at risk of a work-related overpayment—we find that overpayments are probable among at-risk beneficiaries (of whom 71 percent were overpaid). The median duration of work-related overpayments was 9 months and the median amount they accrued was $9,282. Overpayments were most prevalent among traditionally disadvantaged or vulnerable populations, including beneficiaries who are black or Hispanic, those with low monthly DI benefit amounts, those for whom medical improvement is not expected, and those with less than a high school education, holding other characteristics equal.

Background: SSA Policy Regarding Work Activity

SSA defines disability, in part, as the inability to engage in substantial gainful activity (SGA). Each year, SSA adjusts the earnings level that defines SGA based on changes in the national average wage. SGA is expressed as a monthly earnings threshold; in 2019, it is $1,220 for nonblind individuals and $2,040 for blind individuals.[1] Because a condition of eligibility for DI benefits is an inability to engage in SGA, a beneficiary's earnings may affect continued eligibility. The eligibility of a beneficiary with earnings is affected in different ways in each of four stages, described below and summarized in Chart 1.

1. The *trial work period (TWP)* enables a DI beneficiary to test her or his ability to work. During the TWP, work activity has no effect on receipt of DI benefits. The TWP consists of the first 9 months within a rolling 60-month window in which earnings have exceeded an annually adjusted monthly threshold ($880 in 2019).
2. The *extended period of eligibility (EPE)* immediately follows the TWP and lasts at least 36 consecutive months. During the EPE, beneficiaries are ineligible for DI benefits in any month in which they engage in SGA, except for a grace period comprising the first month of SGA and the following two months. Benefits not paid under these circumstances are said to be "suspended for work," and benefits resume if SGA ends. Work-related overpayments can occur in the EPE when a beneficiary engages in SGA, thereby meeting the conditions for which benefits should be suspended according to program rules, but SSA has not yet revised the beneficiary's records to change his or her eligibility status. Thus, overpayments accrue during all months in which the beneficiary engages in SGA and should have benefits suspended, but instead receives a benefit payment.
3. The *termination phase* may follow the EPE. Beginning with the 37th month after the TWP, DI benefits will terminate if the beneficiary engages in SGA; otherwise, the EPE continues. Benefit eligibility terminates in the first month of SGA (or the first such month after the beneficiary uses any grace-period months that may remain). Overpayments can accrue from the month benefit eligibility terminates through the month in which SSA takes corrective administrative action to discontinue the benefit payments. For example, consider a beneficiary who has used all 3 grace-period months in his or her EPE and engages in SGA in the 37th month after the TWP. That beneficiary's *eligibility* terminates in that month, but SSA may not be aware of that change of status, and the agency may continue to issue monthly benefits. If SSA does not terminate benefit payments until the 57th month after the TWP, all benefits paid during that 20-month period

Chart 1.
How work affects benefit eligibility for DI beneficiaries



SOURCE: Authors' compilation of SSA program descriptions.

will be counted as overpayments, even if the beneficiary was not working in months 38 through 57 (because eligibility terminated in month 37).

4. The *initial reinstatement period (IRP)* may follow a period of benefit termination for individuals who do not sustain SGA. After benefit termination, a beneficiary may request expedited reinstatement of benefits beginning with the first month in which she or he is no longer engaging in SGA. This request triggers a medical continuing disability review (CDR). During this review, the beneficiary enters the IRP and SSA pays provisional benefits for up to 6 months. If SSA determines that the beneficiary is medically disabled, the IRP continues for at least 24 months from the month of the expedited reinstatement request. As with the EPE, benefit eligibility may be suspended in any month in which the individual engages in SGA, and overpayments can occur. The IRP lasts until the beneficiary receives 24 monthly benefit payments, not counting monthly payments that are suspended for SGA or certain other reasons. After the IRP, the beneficiary is entitled to another TWP and the cycle can begin again.

This description of SSA's work rules does not fully capture their regulatory complexity and the administrative challenge of enforcing them. GAO (2015) posits that the complexity of the SSA work rules contributes to overpayments. Indeed, in qualitative interviews, beneficiaries reported that SSA's earnings-reporting rules were confusing and that they did not have sufficient information (O'Day and others 2016).

To summarize, beneficiaries who work and who complete the TWP and grace-period months are at risk of a work-related overpayment.[2] Overpayments may occur during the EPE, the termination phase, or the IRP. During those periods, if beneficiaries engage in SGA, SSA should either suspend benefits (if during the first 36 months of the EPE or in the IRP) or terminate them (after the first 36 EPE months), bringing about a benefit-payment status referred to as suspension or termination because of work (STW). However, for reasons we will detail, SSA does not always timely suspend or terminate benefits, and the lapse results in an overpayment.

Only beneficiaries who meet the criteria for STW status can have a work-related overpayment. As described in more detail below, our analysis identifies

beneficiaries at risk of an overpayment as those meeting two criteria: (1) they meet the conditions to have their benefits suspended or terminated for work, and (2) SSA, either concurrently or subsequently (through the date we extracted the analysis data), designated them as in STW status. As researchers, we can only identify beneficiaries who meet the first criterion if SSA has also done so by designating them as in STW status. Hence, it is possible that there are other beneficiaries who were at risk of and potentially accruing overpayments, but were not yet known to SSA or to us as researchers. For brevity, we refer to all beneficiaries who meet both criteria as those who were "in STW status."

SSA depends on beneficiaries' timely reporting of changes in work activity to avoid overpayments. However, based on data in SSA (2011b), we calculate that in 2010, between 66 percent and 75 percent of beneficiaries with earnings did not comply with earnings-reporting requirements. Similarly, OIG case reviews for 2012 suggest that 65 percent of work-related overpayment dollars were attributed to beneficiary failure to report earnings (SSA 2018). However, a majority (58 percent) of employed beneficiaries who responded to the National Beneficiary Survey indicated that they reported earnings to SSA within 3 months of starting a job (Wright and others 2012). Together, these statistics suggest that some beneficiaries attempt to report earnings but do not follow the correct reporting procedures or that some SSA staff do not correctly process earnings reported by beneficiaries.

When it does not receive a timely earnings report from a beneficiary, SSA must wait to receive earnings information from an administrative data source. During the period we analyze, SSA detected unreported earnings solely from Internal Revenue Service (IRS) data that became available with a lag of as long as 24 months after the earnings occurred (SSA 2011b). The delay reflects the nature of earnings reporting to the IRS. Employers are generally required to submit annual earnings information to the IRS on Form W-2 by January 31st of the year following the calendar year in which the earnings accrued. In turn, employees and the self-employed report their earnings to the IRS when they file their income tax returns, for which the standard deadline is mid-April after the calendar year in which the earnings accrued—although workers may request a 6-month extension to mid-October. After these lags, which vary depending on the earner's situation, SSA receives the IRS data. Agency staff match the IRS records to the SSA account to discern any discrepancies with earnings information reported to SSA by a beneficiary or third party, or lack thereof (Olsen and Hudson 2009). Overpayments may occur and accrue during these periods for any beneficiary with work earnings who has exhausted his or her TWP and grace-period months.

When SSA is apprised of overpayments, whether from beneficiary self-reported earnings or IRS records, agency staff must confirm alleged work incentives, verify wages, and gather other evidence from employers or other knowledgeable third parties before issuing a finding. This process is called a *work CDR* (in contrast with the medical CDR mentioned earlier). Because of agency backlogs, a work CDR can take several months to complete, adding to potential overpayment accruals. GAO (2011) documented an average delay of about 7 months for SSA to initiate a work CDR across a sample of 60 cases with overpayments. The delays and subsequent overpayments occurred both for beneficiaries who reported their earnings to SSA and those who did not.

Data and Methods

In this section, we describe the data sources and sample selection criteria we use in this analysis. We then describe our approach to identifying work-related overpayments and calculating the associated dollar amounts. Finally, we describe our approach to using this information to produce descriptive statistics on overpayments, adjusting for censoring and truncation.

Data

This analysis uses administrative data from SSA to develop descriptive statistics on the prevalence, size, and duration of work-related overpayments as well as the characteristics of beneficiaries who are overpaid as a result of work. We use data from Disabled Beneficiaries and Dependents (DBAD) files, which are monthly extracts of the Master Beneficiary Record (MBR), the primary repository of data used in administering the DI program. When SSA is apprised of beneficiary work activity, agency staff update the MBR to reflect the revised status. Each MBR update supersedes all previous iterations, and historical records are not retained. The DBAD files, however, capture historical information by preserving monthly snapshots of the MBR. A monthly DBAD snapshot includes the most recent MBR update—which may apply to multiple months—as well as up to 34 previous MBR updates. Note that, for some beneficiaries, the DBAD covers the history of all MBR updates and hence includes the entirety of those beneficiaries' tenures on DI.

For this analysis, we used four different DBAD files to provide data on a 3-year observation period (January 2010–December 2012). We selected the study sample from the January 2010, December 2012, and December 2014 DBAD files. The January 2010 file provided the majority of the statistics we present on beneficiary characteristics. To conduct the analysis of overpayment prevalence, amount, and duration, we used the March 2016 DBAD file, the most recent available at the time we began the analysis. The March 2016 file covered the entire tenures (from January 2010) for all but five beneficiaries, whom we dropped from the analysis.

Because the DBAD files do not contain comprehensive beneficiary information, we used the Disability Analysis File (DAF) for supplemental information. The DAF is SSA's largest longitudinal database of DI beneficiaries. It combines data from a variety of administrative data sources, including the MBR. The DAF is recreated every year with updated data. This analysis used the 2014 version of the DAF.

Analysis Sample

We selected a 10 percent random sample of beneficiaries with records in the January 2010 DBAD file who met certain criteria chosen to represent all eligible or potentially eligible beneficiaries not in terminated-benefit status as of that date. The first criterion was benefit payment status as of January 2010. We included beneficiaries in current-payment status, with payments deferred because of workers' compensation, and with benefits temporarily suspended for one of 10 reasons.[3] Beneficiaries in current-payment status in January 2010 accounted for nearly all (98 percent) of the sample.

The second criterion was entitlement to DI disabled-worker benefits on the basis of one's own earnings history (primary beneficiary status). We excluded auxiliary beneficiaries (those who are entitled on the basis of a spouse's, parent's, or decedent's earnings record), as well as beneficiaries who are dually entitled on the basis of both their own and spousal or parental earnings. Overpayment rates for auxiliary and dually entitled beneficiaries may differ from those of the disabled-worker beneficiaries in our sample. We excluded auxiliary beneficiaries because it is difficult to distinguish between overpayments accrued as a result of the primary beneficiary's earnings and those stemming from earnings of the auxiliary or dually entitled beneficiary in the DBAD files. We selected records in which the beneficiary is entitled to benefits only on his or her own earnings record in the January 2010 and December 2012 DBAD files.

Third, we included only beneficiaries who were younger than 62 in the last month of the study period (December 2012) and were not assigned to one of two benefit-offset demonstrations. We implemented the age criterion to exclude from the sample any DI beneficiaries who might have converted to Social Security retirement benefits during the study period. We excluded beneficiaries identified in the December 2014 DBAD file as assigned to either the BOND or the four-state Benefit Offset Pilot Demonstration (BOPD) because the effect of earnings on benefits for BOND and BOPD treatment-group beneficiaries differs from that of current-law beneficiaries and the size and duration of their overpayments will similarly differ. Finally, we excluded 30 beneficiaries whose records were missing in the March 2016 DBAD file.

Our final analysis sample includes 490,193 observations representing all disabled-worker beneficiaries not assigned to BOPD or BOND who were aged 59 or younger and in current-payment or designated suspended-benefit status in January 2010.[4] As this is a 10 percent sample, we would expect there to be nearly 5 million such beneficiaries in the DI program at that time. In 2010, there were 5.8 million disabled-worker DI beneficiaries who were younger than 60 (SSA 2011b). Because we exclude dually entitled and auxiliary beneficiaries, beneficiaries assigned to BOPD and BOND, and beneficiaries in certain payment statuses, our sample size appears to be in line with the published SSA estimates of the relevant DI population.

Identifying Overpayments

For this analysis, we focus on overpayments occurring when beneficiaries engage in SGA during the EPE or meet the criteria for work-related benefit termination after the EPE (see Chart 1). We do not examine overpayments that occur during the IRP because the events that trigger them (and the extent of beneficiaries' awareness of their accrual) likely differ from those of overpayments that occur in the EPE or termination phase. Furthermore, only a very small proportion of our sample (0.1 percent) engaged in SGA during the IRP in 2010 and were thus at risk of work-related overpayments. We also do not examine work-related Supplemental Security Income (SSI) overpayments, which could occur for individuals concurrently receiving DI and SSI benefits.

We identify overpayments with a method developed for the BOND evaluation. Because the DBAD files

enable us to compare historical and updated beneficiary records for our 2010–2012 study period, we can use this method to identify beneficiaries at risk of overpayment because of their work activity, determine whether a given beneficiary was overpaid, and calculate the overpayment amount. We summarize the method and the efforts to validate our approach below; more detailed information is available in Hoffman and others (2017).

First, we use the March 2016 DBAD to identify beneficiaries who SSA had designated as in STW status (and hence were known to be at risk of overpayment) during 2010–2012.[5] Recall that beneficiaries who do not meet the STW criteria are not at risk of overpayment because they are either not engaging in SGA or are using TWP or grace-period months. The March 2016 DBAD, the most recent monthly DBAD file available at the time we conducted this analysis, provides updated SSA information with which to identify STW status.

To identify work-related overpayments, we isolate the historical data on benefits paid in 2010, 2011, and 2012 for beneficiaries whose benefit status had been updated to STW as of the March 2016 DBAD. Specifically, we identify beneficiaries as overpaid when the updated data for a given month retroactively indicate that the beneficiary was in STW status but the historical data, reflecting SSA's awareness at the time, indicate that the beneficiary was in current-payment status. The dollar amount of the overpayment thus identified equals the amount of the benefit due in that month because a beneficiary in STW status is due no benefit.

We validated this approach as part of the BOND evaluation. An SSA official reviewed 10 randomly selected cases for which our algorithm indicated no overpayment and 20 cases in which we identified overpayments. For the 10 instances in which our algorithm identified no overpayment, the SSA review agreed in 9 cases and identified only a $2 overpayment in the other case. This small discrepancy falls within the agency's $30 administrative tolerance and would not warrant recording the overpayment on the beneficiary's record or notifying the beneficiary. In all 20 cases for which the algorithm identified overpayments, the SSA case reviews agreed. Our algorithm's estimate was within 5 percent of the SSA calculation of the overpayment amount for 16 of 20 cases and within 10 percent for 3 of the other 4 cases. In the final case, our algorithm predicted an overpayment of $1,386 versus the SSA calculated overpayment of $1,865. The difference resulted from a retroactive SSA recomputation of the beneficiary's monthly benefit amount that the algorithm did not capture. In aggregate, the predictions from our algorithm for all 20 cases were within 0.3 percent of the corresponding SSA estimate.

Analytical Approach

We begin our analysis by estimating the prevalence, duration, and dollar amount of work-related overpayments. We first estimate overpayments that accrued during 2010. The results provide context on beneficiary-level experiences that correspond with statistics on aggregate overpayments, which are often reported as annual measures, for example in SSA (2013a). Next, we extend the horizon to a 3-year span and produce the same statistics for overpayments that accrued in any month from January 2010 through December 2012. We use the Consumer Price Index for All Urban Consumers to adjust 2011 and 2012 dollars to 2010 values. We expect that the prevalence, duration, and amount of overpayments will all be greater over the longer horizon.

For the 3-year window in which we identify overpayments, overpayment months need not be consecutive. These 3-year statistics are lower-bound estimates of the prevalence, duration, and amount of overpayments beneficiaries may encounter during their DI tenure. For example, some beneficiaries may have accrued overpayments before 2010 or may begin to accrue overpayments in a later year which will not be reflected in the prevalence reported in this article. As described below, we adjust estimated overpayment durations and amounts to account for censoring and truncation.

We analyze overpayments in 2010 because in that year, SSA initiated changes to better identify overpayments. In January 2010, SSA convened a national workgroup that evaluated work CDR processes (SSA 2011a). SSA implemented many of the group's recommendations, including allocating more resources to complete work CDRs and prioritizing the work CDRs with the highest likelihood of overpayments (SSA 2014). Hence, we might expect pre-2009 overpayment statistics to differ from those for 2010 and later.

We do not extend the analysis period beyond 2012 because the necessary lag in SSA identification of overpayments cuts into the potential follow-up period. The more time has elapsed between the study period and the follow-up period, the more comprehensive the statistics on overpayments. The March 2016 DBAD allows for an identification lag of at least 3 years and 3 months (the period from our last month observed, December 2012, to March 2016). Extending the study period by 1 year would decrease the identification

period by a year, to a minimum of 2 years and 3 months. In the previous application of this overpayment methodology, Hoffman and others (2017) showed that reducing the lag period from 2 years and 10 months to 1 year and 4 months (that is, removing 18 months of data) decreased the measured prevalence of overpayments by 7 percent, and reducing the lag period from 3 years and 10 months to 2 years and 4 months (similarly, removing 18 months of data) decreased the measured prevalence of overpayments by 4 percent. Accordingly, we are more confident in the estimates produced by using a longer identification period.

We estimate the distribution of the total number of months overpaid based on observed overpayments occurring from January 2010 through December 2012. As noted earlier, these estimates represent the minimum number of overpayment months beneficiaries encounter during their DI tenure. We refine these estimates using survival analysis techniques, which are needed when only partial information is known for some beneficiaries (because we cannot observe overpayments occurring before or after our study period). We use survival techniques to adjust our estimates of months overpaid and total overpayments for two factors: (1) left-truncation, reflecting the potential bias for beneficiaries whose overpayments began before January 2010, because those with longer pre-2010 overpayment periods are more likely to be observed with an overpayment in the 2010–2012 window; and (2) right-censoring, to include the partial information known for beneficiaries whose overpayment extended into 2013 (that is, we know that their months overpaid may exceed a certain value, but not by how much). We flag overpayments observed in January 2010 that are in a spell of consecutive STW months as truncated. We flag observed overpayments in December 2012 as censored; we do not observe overpayment or STW months in or after 2013. Survival analysis is used in estimating the duration and amount of overpayments only and does not change the prevalence of overpayment or the composition of overpaid beneficiaries. Appendix A presents details on our survival analysis methods.

We produce descriptive statistics for beneficiaries with at least one work-related overpayment and, separately, for beneficiaries in STW status who were not overpaid in 2010–2012, and compare their characteristics. We use information in the January 2010 DBAD on beneficiary age, sex, primary impairment, use of a representative payee, duration of current entitlement, first month in STW status during the current entitlement, monthly benefit amount, and geographic region. We use the 2014 DAF for supplementary information on several measures that are not provided or are not as detailed in the January 2010 DBAD, including race, education, concurrent receipt of SSI payments, level of DI claim adjudication, and medical improvement expectation.[6] DAF records are available for 490,127 of the 490,193 total observations, resulting in a 99.99 percent match rate. In both data sources, all characteristics reflect the most recent information known as of January 2010.

Finally, we conduct a multivariate analysis to estimate the relationship between beneficiary characteristics and the likelihood of overpayment. We use a logistic regression model in which the independent variable is a binary indicator of a work-related overpayment in 2010, 2011, or 2012. The analysis sample is all beneficiaries in STW status during the study period. We control for a variety of beneficiary characteristics including age group, sex, race, primary impairment, duration of current entitlement to DI, first instance of STW status in current entitlement, use of a representative payee, monthly benefit amount, level of claim adjudication, medical improvement expectation, concurrent receipt of SSI payments, and geographic region. We present marginal effects—estimates of the average effect of changing from the variable's reference category to the indicated category—for ease of interpretation.

Results

In this section, we present descriptive statistics on overpayment prevalence, duration, and dollar amounts. We then examine the demographic and programmatic characteristics of beneficiaries who receive overpayments, including multivariate analysis of the associations between overpayment and certain characteristics.

Statistics on Overpayments

In 2010, 1.2 percent of DI beneficiaries in our sample accrued a work-related overpayment (Table 1).[7] However, only 1.8 percent of beneficiaries in our sample were in STW status and hence at risk for a work-related overpayment in 2010 (not shown). Of those engaged in SGA after the end of their grace periods in 2010, 65.2 percent were overpaid.[8]

Among beneficiaries who received a work-related overpayment in any month in 2010, the average beneficiary was overpaid in 6.5 months (which were not necessarily consecutive). That average time span represents 58.7 percent of months in 2010 during which beneficiaries were in STW status and thus were at risk of a work-related overpayment as described above.

Table 1.
Prevalence, duration, and dollar amount of work-related overpayments to DI beneficiaries: 2010 and aggregate 2010–2012

Measure	2010	2010–2012
Prevalence (%) among—		
All DI beneficiaries	1.2	1.9
DI beneficiaries in STW status	65.2	71.0
Duration		
Months of overpayment among beneficiaries with any overpayments	6.5	9.4
Overpayment months as a percentage of STW months	58.7	56.7
Overpayment amount ($) among—		
All beneficiaries (mean)	82	192
Beneficiaries with an overpayment		
Mean	6,976	9,941
Median	5,897	7,219

SOURCE: Authors' calculations based on March 2016 DBAD.

NOTES: A work-related overpayment is a benefit payment occurring in a month for which administrative records later establish that the beneficiary met the conditions for STW status but was not yet designated as such by SSA.

Sample size = 490,193.

Reflecting the low prevalence of overpayments among all beneficiaries, the mean work-related overpayment amount for the entire sample was $82. However, the mean amount among those with any overpayments was nearly $7,000. The median overpayment among affected beneficiaries was less than $6,000, and the gap between the mean and median amounts indicates that some beneficiaries received substantial overpayments. Indeed, the 95th percentile overpayment amount in 2010 was $16,914 (not shown).

When we analyze the 3-year window of observations, we find that the prevalence, duration, and amount of overpayments are all higher than those observed in the 1-year frame. The prevalence of work-related overpayments accrued among all beneficiaries during calendar years 2010, 2011, and 2012 was 1.9 percent, exceeding the 2010 rate of 1.2 percent. The prevalence among beneficiaries in STW status during 2010–2012 (71 percent) likewise exceeded the prevalence in 2010 (65 percent). Of course, for any fixed group of beneficiaries, the prevalence over a 3-year period will always at least match the prevalence over a single year within that period.

Beneficiaries who received an overpayment at any point in 2010–2012 were overpaid in 9.4 months on average. Despite a tripling of the study period from 1 year to 3 years, the average duration of overpayment in 2010–2012 is only about 50 percent longer than that for 2010, primarily because right-censoring of spells is less common in the 3-year window than in the 1-year window. By contrast, the percentage of STW months with overpayments was 59 percent in 2010 alone but only 57 percent in 2010–2012. Because this is a cohort analysis, that difference may indicate the effect of an increasing share of individuals in terminated-benefit status over time. Overpayments presumably become less likely the longer benefits have been terminated.

The average overpayment amount among all beneficiaries was $192 and among beneficiaries with any overpayments it was $9,941 for the period 2010–2012. The latter amount is 43 percent greater than the single-year accrual ($6,976). Because the total overpayment amount is the product of the duration of the overpayment period and the monthly benefit amount, which is relatively constant from year to year, we would expect the difference between 1-year and 3-year overpayment amounts to be roughly proportional to the change in the average duration of overpayment. Indeed, the 3-year average duration of overpayment exceeded the 1-year duration for those overpaid by 45 percent.

The differences between the 1-year and the 3-year observations of the prevalence, duration, and size of overpayments highlight the potential effects of truncation and censoring on our statistics. Thirty-four percent of beneficiaries with any overpayments during 2010–2012 were overpaid in January 2010 and an additional 17 percent were overpaid in December 2012. We infer that some beneficiaries in the former group had overpayment spells that began before 2010, given that 86 percent of beneficiaries overpaid in January 2011

and 83 percent of those overpaid in January 2012 were also overpaid in the preceding month. Thus, a significant portion of beneficiaries who were overpaid in January 2010—presumably, more than 80 percent of them—likely were also overpaid before the start of our analysis period. Similarly, we expect that some of those who were overpaid in December 2012 continued to be overpaid beyond 2012.

We adjust the 3-year estimates to account for left-truncation and right-censoring and estimate the total duration of overpayments that occurred in 2010, 2011, or 2012. As described in Appendix A, these adjustments are based, in part, on a proxy for the pre-2010 overpayment months. This proxy is derived from the experiences of approximately 6,000 overpaid beneficiaries in our sample who were first in STW status in 2010, 2011, or 2012. During those 3 years, the ratio of overpayment months to STW months was 65 percent for those beneficiaries. We multiply this estimate by the number of consecutive pre-2010 STW months for each beneficiary with a first STW month before 2010 (1.7 months); the average of this product is 1.1 months.[9] We use the proxy for number of pre-2010 overpayment variables as the "entry time variable" in our truncation adjustment. We account for right-censoring by flagging overpayments in December 2012 as censored observations.

The adjusted estimates of the total duration of overpayments accounting for censoring and truncation differ slightly from the unadjusted estimates (Table 2). Among overpaid beneficiaries, we observe a median of 7 months with overpayments in 2010–2012. The adjusted estimate indicates that, if we observed the entirety of the affected beneficiaries' overpayment spells, some of those spells would continue, resulting in a median overpayment duration of 9 months. Estimated overpayment spell durations at the 25th, 75th, and 95th percentiles also increase when accounting for truncation and censoring, from 3 to 4 months, from 14 to 16 months, and from 24 to 30 months, respectively.

Table 2 also shows adjusted and unadjusted overpayment amounts among beneficiaries who received them. The estimated overpayment amounts that account for truncation and censoring are between about $1,000 and $2,000 higher than the unadjusted estimates at each quartile. The median observed overpayment amount is $7,219 and the median amount accounting for truncation and censoring is $9,282. The estimated overpayment amount at the 5th percentile is $928 before and after adjustment, while at the 95th percentile the observed overpayment amount is $28,441 and the adjusted amount is $35,551.

Characteristics of Overpaid Beneficiaries

The results of a bivariate analysis show that beneficiaries in STW status who were overpaid in at least 1 month during 2010–2012 were statistically different from those in STW status and not overpaid, and these outcomes emerged for nearly every characteristic we analyzed (Table 3). Beneficiaries with overpayments differed from those in STW status but not overpaid in their distributions by sex, age, race, and education, as well as by primary impairment. Beneficiaries in STW status with and without overpayments also differed by programmatic factors including SSI receipt, use of a representative payee, monthly DI benefit amount, time elapsed since first STW month, level of benefit adjudication, medical improvement outlook, and SSA region.

Table 2.
Unadjusted and adjusted number of overpayment months and aggregate overpayment amounts in 2010–2012: Selected percentiles

	Overpayment months		Aggregate overpayment amounts ($)	
Percentile	Unadjusted	Adjusted	Unadjusted	Adjusted
5th	1	1	928	928
25th	3	4	3,166	4,221
50th (median)	7	9	7,219	9,282
75th	14	16	13,826	15,801
95th	24	30	28,441	35,551

SOURCE: Authors' calculations based on March 2016 DBAD.

NOTES: Unadjusted figures reflect observed months. Adjusted figures account for left-truncated and right-censored records.

Sample is restricted to beneficiaries with any overpayments during 2010–2012.

Sample size = 9,444.

Table 3.
Percentage distributions of beneficiaries in STW status, by selected characteristics and overpayment status, 2010–2012

Characteristic	Overpaid	Not overpaid	Difference (percentage points)	*p*-value of difference	Percentage in subgroup who were overpaid
Sex					
Men	49.7	53.5	-3.8	< 0.0001	69.5
Women	50.3	46.5	3.8	< 0.0001	72.6
Age					
39 or younger	38.4	33.5	4.9	< 0.0001	73.8
40–49	35.8	33.6	2.2	< 0.0001	72.3
50–54	15.6	18.3	-2.7	< 0.0001	67.7
55 or older	10.2	14.6	-4.4	< 0.0001	63.1
Race/ethnicity					
Asian	1.8	2.6	-0.8	< 0.0001	62.7
Black (non-Hispanic)	31.7	14.4	17.3	< 0.0001	84.4
Hispanic (any race)	8.8	6.7	2.1	< 0.0001	76.4
White (non-Hispanic)	54.6	72.7	-18.1	< 0.0001	64.8
North American Indian/other	1.7	1.8	-0.1	< 0.0001	69.0
Unknown/missing	1.4	1.8	-0.4	< 0.0001	65.9
Educational attainment					
Less than high school	10.4	7.0	3.4	< 0.0001	78.5
High school diploma or equivalent	27.7	27.4	0.3	< 0.0001	71.2
Some postsecondary school	15.3	17.2	-1.9	< 0.0001	68.6
College or above	8.9	16.0	-7.1	< 0.0001	57.7
Missing	37.7	32.4	5.3	< 0.0001	74.1
Primary impairment					
Neoplasms	5.2	11.6	-6.4	< 0.0001	52.5
Mental disorders	30.6	27.9	2.7	< 0.0001	72.8
Intellectual disability	10.1	6.5	3.6	< 0.0001	79.2
Injuries	5.1	7.6	-2.5	< 0.0001	62.2
Back or other musculoskeletal disorders	18.2	17.2	1.0	< 0.0001	72.2
Nervous system disorders	5.0	6.2	-1.2	< 0.0001	66.5
Circulatory system disorders	4.3	4.1	0.2	< 0.0001	71.9
Respiratory system disorders	1.4	1.4	0.0	< 0.0001	71.8
Severe visual impairments	1.8	1.4	0.4	< 0.0001	75.7
Digestive system disorders	1.6	2.7	-1.1	< 0.0001	58.7
Other impairments	16.8	13.5	3.3	< 0.0001	75.3
Benefit type					
DI only	88.1	91.0	-2.9	< 0.0001	70.4
Concurrent DI and SSI	11.9	9.0	2.9	< 0.0001	76.4
Months as DI beneficiary					
36 or fewer	24.7	23.6	1.1	< 0.0001	71.9
37–84	36.7	40.9	-4.2	< 0.0001	68.8
85 or more	38.6	35.5	3.1	< 0.0001	72.7
Use of representative payee					
Yes	9.4	7.3	2.1	0.0002	75.8
No	90.7	92.7	-2.0	0.0002	70.6

(Continued)

Table 3.
Percentage distributions of beneficiaries in STW status, by selected characteristics and overpayment status, 2010–2012—*Continued*

Characteristic	Overpaid	Not overpaid	Difference (percentage points)	*p*-value of difference	Percentage in subgroup who were overpaid
Monthly DI benefit amount ($)					
Less than 1,000	57.5	36.0	21.5	< 0.0001	79.6
1,000–2,000	40.1	55.9	-15.8	< 0.0001	63.8
More than 2,000	2.4	8.2	-5.8	< 0.0001	41.3
First STW month					
Before 2010	49.0	67.9	-18.9	< 0.0001	63.9
In 2010	19.1	11.0	8.1	< 0.0001	81.1
In 2011	16.4	11.4	5.0	< 0.0001	77.9
In 2012	15.5	9.8	5.7	< 0.0001	79.5
Level of adjudication					
Initial decision	81.1	83.5	-2.4	0.0171	70.5
Reconsideration [a]	15.3	13.5	1.8	0.0171	73.6
Administrative law judge	0.4	0.3	0.1	0.0171	75.9
Other/unknown	3.2	2.7	0.5	0.0171	74.0
Medical improvement outlook					
Expected	6.9	11.2	-4.3	< 0.0001	60.2
Possible	54.9	54.6	0.3	< 0.0001	71.2
Not expected	23.2	20.9	2.3	< 0.0001	73.1
No information/missing	15.1	13.3	1.8	< 0.0001	73.6
SSA region					
Atlanta	18.2	12.8	5.4	< 0.0001	77.8
Boston	6.3	8.7	-2.4	< 0.0001	64.0
Chicago	14.5	14.3	0.2	< 0.0001	71.3
Dallas	15.5	12.7	2.8	< 0.0001	75.0
Denver	2.9	3.5	-0.6	< 0.0001	67.1
Kansas City	4.6	5.1	-0.5	< 0.0001	68.7
New York	9.6	12.0	-2.4	< 0.0001	66.1
Philadelphia	11.5	12.0	-0.5	< 0.0001	70.1
San Francisco	13.6	14.6	-1.0	< 0.0001	69.5
Seattle	3.4	4.4	-1.0	< 0.0001	65.6
Sample size	9,444	3,853	5,591	. . .	71.0

SOURCE: Authors' calculations based on January 2010 DBAD, March 2016 DBAD, and 2014 DAF.

NOTES: Rounded components of percentage distributions do not necessarily sum to 100.0.

. . . = not applicable.

a. Includes reconsideration hearing.

Table 3 also shows how the prevalence of overpayment differs across subgroups. Overpayment rates were highest for beneficiaries who were black, had less than a high school education, had a primary impairment of intellectual disability, or had monthly benefits of less than $1,000. More than 78 percent of beneficiaries in each of those subgroups were overpaid, compared with 71 percent of the entire sample. By contrast, less than 58 percent of beneficiaries in STW status who had a college degree, a primary impairment of neoplasm, or monthly DI benefits of more than $2,000 had overpayments.

The prevalence of overpayment was greater among beneficiaries whose first STW month occurred in 2010, 2011, or 2012 (about 80 percent for each group) than for those whose first STW month was before 2010 (64 percent). Some beneficiaries who were first at risk of overpayment before 2010 presumably accrued overpayments before 2010. SSA would have suspended benefit payments when overpayments were detected—perhaps making that subgroup less likely to have overpayments during 2010–2012 than were beneficiaries newly exposed to overpayment risk.

We expect covariation across beneficiary characteristics (such as education and monthly DI benefit amount) as well as covariation between beneficiary characteristics and variables related to program participation such as the first STW month. Bivariate analysis does not account for these relationships and, accordingly, we conducted a multivariate analysis to isolate the association between each particular characteristic and the likelihood of an overpayment, holding all other characteristics constant.

In the multivariate analysis, several of the demographic characteristics are statistically significant predictors of overpayment among beneficiaries in STW status during 2010–2012 (Table 4). Among those at risk, black and Hispanic beneficiaries were more likely to be overpaid than their white counterparts, by 17 percentage points and 7 percentage points, respectively. In addition, beneficiaries aged 54 or younger were more likely to be overpaid than were those aged 55 or older, holding other characteristics constant. Age may predict overpayments in part because work CDRs are processed by distinct SSA entities depending on beneficiary age. The centralized Office of Disability Operations in Baltimore, Maryland processes work CDRs for beneficiaries who are younger than 54 and regional processing centers conduct work CDRs for those aged 54 or older (GAO 2011). If the work CDR processing times differ between those entities, we would expect to see overpayment rates differ around the age cutoff.[10]

Several health-related factors were also statistically significant predictors of overpayment among those in STW status. Beneficiaries with a primary impairment of neoplasms, injuries, nervous system disorders, and digestive system disorders were less likely to be overpaid than were those in the baseline category of mental disorders (which does not encompass intellectual disability)—all other characteristics being equal. Although we hypothesized that characteristics associated with lower levels of mental functioning would be associated with an increased likelihood of overpayment, intellectual disability has no statistically significant difference from the baseline category of mental disorders in the probability of overpayment. Finally, beneficiaries in STW status for whom medical improvement is expected or possible were also less likely to be overpaid than were those for whom medical improvement was categorized as not expected.

The strong and significant associations between overpayments and both education and DI benefit amount may signal disparities in compliance with SSA rules among beneficiaries in STW status within those categories. Relative to those with a high school–level education, beneficiaries with less than a high school education were 4 percentage points more likely and those with at least a college degree were 6 percentage points less likely to be overpaid. Beneficiaries with a DI benefit amount of more than $2,000 per month were 23 percentage points less likely to be overpaid than were otherwise similar beneficiaries receiving DI benefits of less than $1,000 per month. These findings suggest that beneficiaries with higher levels of education and the skills and training associated with higher-paying occupations (which determine the DI benefit amount) may be more apt to comply with the SSA requirements for reporting earnings. These beneficiaries may be more likely to understand and adhere to SSA's reporting requirements for earnings, or to seek and receive appropriate guidance from SSA field offices, or to have less trepidation about reporting work activity because of a comparatively stable financial situation, among other possible explanations.

Several characteristics may be related to exposure to SSA earnings-reporting requirements, which are presumably predictive of lower likelihood of overpayment. For example, beneficiaries who were in STW status and were concurrently receiving DI and SSI benefits in January 2010 were significantly less likely than those receiving only DI benefits to be overpaid, holding other characteristics constant. (We observed the reverse relationship in the bivariate results presented in Table 3, which highlights the importance of controlling for beneficiary characteristics.) Unlike DI-only beneficiaries, recipients of concurrent benefits must also meet SSI's more stringent monthly earnings-reporting requirements. In addition, with all else being equal, beneficiaries whose STW status began during the analysis period were significantly more likely to be overpaid than were those whose first STW month occurred before 2010. The likely reason is that SSA has had a longer time to become aware of beneficiary earnings, complete a work CDR, and, if warranted, declare STW status and suspend benefits, thereby ending a spell of overpayments.

Finally, certain SSA regions were strong predictors of overpayment. Beneficiaries in the Boston and New York regions were respectively 8 percentage points and 10 percentage points less likely to be overpaid than their counterparts in the Atlanta region. There may be differences in awareness of reporting requirements for earnings or in the rate of SSA processing of work CDRs across geographic regions. Indeed, SSA

Table 4.
Multivariate predictors of overpayment among beneficiaries in STW status, 2010–2012

Characteristic	Marginal effect	*p*-value
Sex		
Men	0.0	0.98
Women (reference)	. . .	. . .
Age		
39 or younger	5.6	0.00
40–49	6.1	0.00
50–54	3.7	0.01
55 or older (reference)	. . .	. . .
Race/ethnicity		
Asian	-0.5	0.85
Black (non-Hispanic)	16.9	0.00
Hispanic (any race)	6.7	0.00
White (non-Hispanic) (reference)	. . .	. . .
North American Indian/other	2.1	0.45
Unknown/missing	1.3	0.64
Educational attainment		
Less than high school	3.6	0.02
High school diploma or equivalent (reference)	. . .	. . .
Some postsecondary school	-1.9	0.10
College or above	-5.7	0.00
Missing	2.4	0.03
Primary impairment		
Neoplasms	-10.8	0.00
Mental disorders (reference)	. . .	. . .
Intellectual disability	-1.0	0.60
Injuries	-7.0	0.00
Back or other musculoskeletal disorders	-1.5	0.20
Nervous system disorders	-5.1	0.00
Circulatory system disorders	-0.5	0.80
Respiratory system disorders	-1.4	0.66
Severe visual impairments	2.3	0.46
Digestive system disorders	-9.5	0.00
Other impairments	0.5	0.71
Benefit type		
DI only (reference)	. . .	. . .
Concurrent DI and SSI	-8.5	0.00
Months as DI beneficiary		
36 or fewer	-0.9	0.48
37–84	-0.8	0.39
85 or more (reference)	. . .	. . .
Use of representative payee		
Yes	-1.2	0.43
No (reference)	. . .	. . .
Monthly DI benefit amount ($)		
Less than 1,000 (reference)	. . .	. . .
1,000–2,000	-11.5	0.00
More than 2,000	-23.0	0.00
First STW month		
Before 2010 (reference)	. . .	. . .
In 2010	18.1	0.00
In 2011	14.0	0.00
In 2012	14.9	0.00
Level of adjudication		
Initial decision (reference)	. . .	. . .
Reconsideration [a]	1.0	0.42
Administrative law judge or other/unknown	1.7	0.45
Medical improvement outlook		
Expected	-6.3	0.00
Possible	-2.6	0.01
Not expected (reference)	. . .	. . .
No information/missing	-1.2	0.43
SSA region		
Atlanta (reference)	. . .	. . .
Boston	-8.3	0.00
Chicago	-5.1	0.00
Dallas	-3.1	0.03
Denver	-5.3	0.02
Kansas City	-4.8	0.01
New York	-9.9	0.00
Philadelphia	-6.6	0.00
San Francisco	-4.1	0.00
Seattle	-6.9	0.00

SOURCE: Authors' calculations based on January 2010 DBAD, March 2016 DBAD, and 2014 DAF.

NOTES: Data on race, education, concurrent DI and SSI receipt, level of adjudication, and medical improvement status are from DAF records for 9,442 beneficiaries with overpayments and 3,848 beneficiaries in STW status who are not overpaid. We retain non-DAF observations that do not match DAF records and code the corresponding DAF variables as "missing."

. . . = not applicable.

a. Includes reconsideration hearing.

took action to reduce the duration and size of overpayments in the New York region in 2010. This effort (described in the discussion section) may have reduced the prevalence of overpayments during the study period. That is, if overpayment spells are shorter, there is a lower likelihood that a given overpayment spell occurred within the 2010–2012 window.

Discussion

This analysis is the first to reliably quantify the prevalence of work-related disability benefit overpayments, the per-beneficiary duration and amount of such overpayments, and the estimated likelihood of receiving overpayments by selected beneficiary characteristics. Such statistics have been elusive because the SSA system that tracks overpayments is an operational tool structured to monitor the outstanding balance of overpayments rather than a research tool designed to generate beneficiary-level statistics. Previous analyses have produced approximate measures of overpayments using case reviews with relatively small samples, or created lower-bound estimates using earnings data without information on the use of DI work incentives such as the TWP. In this analysis, we use a 10 percent sample of DI beneficiaries meeting logical inclusion criteria, resulting in a sample size of nearly 500,000 beneficiaries. Our analysis is based on an administrative data algorithm that identifies work-related overpayments in a given month.

We analyze the 3-year period from January 2010 to December 2012. It is important to note that the U.S. economy was beginning to recover from the Great Recession throughout that period. The prevalence and size of overpayments may be affected by economic conditions, including the proportion of beneficiaries who work (and hence are at risk of an overpayment), and also by the resources with which SSA can process work CDRs and adjust benefits timely.

The algorithm we use may not capture all work-related overpayments. For example, because our algorithm is based on benefits due (the amount to which a beneficiary is entitled in a month based on work activity in that month), it will not capture any adjustments such as withholdings to repay previous overpayments or lump-sum transfers to reconcile underpayments. These circumstances could lead to errors in either direction in our estimates of overpayment amounts. Although beneficiary-level estimates may exhibit small differences from the official SSA overpayment calculations, we expect the aggregate statistics to be unbiased estimates. Indeed, SSA case reviews of 20 current-law beneficiaries' records with overpayments found that the algorithm estimated an overpayment amount within 0.3 percent of the SSA calculation (Hoffman and others 2017).

Our results indicate that, during 2010–2012, 1.9 percent of all beneficiaries meeting our selection criteria were overpaid. This estimate is within the range of estimates produced by previous attempts to quantify the prevalence of overpayments over varying study periods, which range from 0.4 percent of beneficiaries in a 15-month period (GAO 2013) to 3.2 percent over a 10-year period (SSA 2015). Among beneficiaries who were in STW status during 2010–2012, we estimate that 71 percent were overpaid. The prevalence of overpayments among those whose first exposure to overpayment risk occurred within the study period is higher—approximately 80 percent. Previous OIG studies estimated that between 63 percent and 92 percent of beneficiaries who engaged in SGA were overpaid (SSA 2014, 2015). As we have noted, the estimates presented here are based on a different and presumably more reliable methodology. Our results definitively establish that, in the analysis period, overpayments were the norm for beneficiaries who engaged in SGA after the TWP and grace period.

When we adjusted our estimates to account for the entirety of the overpayment spells we observed, the median overpayment accruals were 9 months and $9,282. Between the 25th and 75th percentiles, adjusted estimates of accrued overpayments ranged from 4 months and $4,221 to 16 months and $15,801. These estimates are in line with an average 9-month duration and $8,114 overpayment amount identified in an OIG review of 275 cases involving beneficiaries with substantial earnings from 2007 to 2011 (SSA 2014). The overpayment amounts we estimate are lower than the $14,397 average amount identified during a 10-year OIG study that began in 2003, but that estimate was based on a small sample of 32 overpaid beneficiaries (SSA 2015). Additional sources of variation may include differences in methodology or sample composition, changes in the size of overpayments over time, or some combination of factors.

Our findings conform to the presumptive expectations that beneficiaries with little contact with the SSA disability programs are relatively more likely to receive work-related overpayments than are beneficiaries with more familiarity with SSA programs. Notably, beneficiaries who concurrently receive DI and SSI benefits are less likely to be overpaid than their DI-only counterparts, holding other characteristics

constant. This suggests that awareness of SSI's strict earnings-reporting requirements in addition to the DI program rules helps recipients of concurrent benefits to avoid overpayment situations. This is particularly notable because recipients of concurrent benefits are more likely to have lower levels of education and lower DI benefit amounts, which are significantly associated with a higher likelihood of overpayment. Hence, the requirements and monitoring in the SSI program may be effective for populations that are otherwise less likely to be in compliance.

We do not have earnings data for overpaid beneficiaries, making it difficult to assess the potential burden of repayment relative to their incomes. For expositional purposes, assume that a beneficiary was overpaid $9,282 over the course of 9 months and earned $1,500 (50 percent above the 2010 SGA amount) in each of those months. The beneficiary received $22,782 in earnings plus benefits over those 9 months, only to learn later that more than 40 percent of that income was owed back to SSA. The burden would be greater still for a beneficiary with earnings just above the SGA level; overpayments would in that case amount to more than half of total income for the period. SSA may allow repayment in installments to disperse the burden over an extended period, but such plans are not always granted. Previous studies have reported beneficiary frustration and other negative reactions to overpayment notifications (Gubits and others 2013; O'Day and others 2016; Hoffman and others 2017).

Although the average estimated overpayment amount among all beneficiaries in our sample is modest—$82 in 2010—it implies an aggregate overpayment amount of $402 million among the 4,901,930 DI beneficiaries who met our sample selection criteria in 2010. SSA (2013a) reports more than twice that amount ($831 million) for 2010. This difference is expected, in large part because SSA calculations are based on all DI beneficiaries—numbering approximately 9.4 million—a population almost twice as large as that represented by our sample. In fact, the SSA statistics imply an average overpayment of about $88 among all DI beneficiaries, similar to the $82 per beneficiary we estimate for our sample. The composition of our sample differs from that of all DI beneficiaries and may contribute to the minor differences in the per-beneficiary overpayment amount. In addition, the SSA figure reflects overpayments detected in 2010, the first year of our 3-year study period, which may include overpayment months in several calendar years (in or before 2010). Our analysis focuses on overpayments incurred in the analysis period and detected thereafter (through December 2016).

SSA has undertaken several initiatives to reduce the frequency and size of overpayments. For example, the agency prioritized work CDRs and allocated staff to process the oldest cases in 2010 and enhanced those efforts in 2011. Also beginning in 2010, SSA piloted a predictive model in the New York region's processing center, which prioritizes work CDRs for beneficiaries most likely to have large overpayments (SSA 2011a). In June 2011, SSA expanded the program to include three processing centers covering 60 percent of cases with unreported earnings (SSA 2014). The pilot yielded a reduction in work-related overpayment amounts, and the agency implemented the practice nationwide in June 2013 (SSA 2013b). Although the efforts appear to be effective in reducing overpayment amounts, they are unlikely to reduce overpayment incidence.

SSA continues to explore ways to reduce both the size and likelihood of overpayments. Until 2016, SSA detected beneficiary earnings predominantly from IRS data. However, those data are not available to SSA until the following calendar year, sometimes 18 to 24 months after the beneficiary earned the wages. In 2017, SSA implemented a nationwide program called Work Smart that entails quarterly earnings checks based on a Department of Health and Human Services' Office of Child Support Enforcement database called the National Directory of New Hires (SSA 2018). In addition, SSA is working to establish exchanges with payroll data providers to get faster access to wage data. These efforts are likely to reduce delays in identifying unreported earnings, which could in turn reduce the likelihood and amount of overpayments.

The complexity of DI rules governing earnings—and limited beneficiary awareness of those rules and requirements—may contribute to work-related overpayments (GAO 2015). Although SSA promotes beneficiary education with agency-funded work-incentive counselors and through other means, the low rate at which beneficiaries report earnings suggests that there is room for improvement.

One potential option for reducing overpayments is to enhance SSA communication with beneficiaries. The availability and clarity of information could be improved and targeted to beneficiaries with characteristics associated with the likelihood of overpayment. Presently, SSA informs beneficiaries about the earnings-reporting requirements during the initial claim process, with written documentation when the claim is initially approved, and in an annual letter

announcing the cost-of-living benefit adjustment. The reporting requirements—along with other information—are available online and on request, but beneficiaries may not be aware of these resources. Our analysis found substantial variation in the likelihood of overpayment by race, education, primary impairment, and DI benefit amount, among other factors. The differences we observed in overpayment incidence by education may indicate that beneficiaries with lower education levels are less likely than their better-educated peers to read, understand, or remember the written material they received. Revising the printed materials or conducting outreach by phone may provide more effective communication with this population, and may facilitate understanding among beneficiaries more broadly. Increased beneficiary awareness and understanding of the reporting requirements may translate into increased compliance and thus a lower overpayment incidence.

Another option is to institute more accessible and monitored reporting requirements for DI, similar to those used in the SSI program. As noted earlier, beneficiaries who concurrently receive DI and SSI benefits are less likely to be overpaid than are those who receive DI only. We hypothesize that the SSI reporting requirements and processes are more effective than those for the DI program (or that their combination with the DI requirements instills a broader knowledge of reporting requirements among recipients of concurrent DI-SSI benefits). Several elements of SSI reporting that may be beneficial for the DI program include consistent wage reporting during the first 6 days of the month and e-mail and text reminders to report wages. SSI recipients also have the option of using a smartphone wage-reporting application. In September 2017, SSA implemented an electronic earnings-reporting system for DI beneficiaries, which is expected to improve reporting.

This article presents beneficiary-level statistics on work-related disability benefit overpayments and provides information that may advance efforts to reduce the incidence, duration, and dollar amount of overpayments. However, many questions about overpayments remain unanswered. Further research into the effects of overpayment on the nature of the beneficiary experience, SSA operations, and program finances is necessary to inform reasonable expectations and offer context for our findings. Longitudinal studies might track changes in the size and frequency of overpayments that may result from recent and pending SSA efforts and may point to additional areas for improvement. In addition, the implications of overpayments are unknown. Future research should consider the consequences of work-related overpayments for beneficiary employment and well-being. Without additional research, the prevalence and magnitude of documented negative beneficiary reactions to work-related overpayments cannot be reliably quantified.

Appendix A

We estimate the duration of overpayment spells by deriving the distribution of overpayment time (that is, the survival curve) using the PROC PHREG command in SAS v9.4. The distribution of overpayment time can be used to determine the proportion of a population that will remain overpaid beyond a certain window. To arrive at the distribution, this nonparametric method calculates, for each month in the observation window, the proportion of beneficiaries who exited overpayment status in that month, relative to all beneficiaries with observable overpayment data in that month. The censoring indicator reflects whether or not the beneficiary was observed to have exited overpayment status in December 2012. In this way, the partial information known for right-censored individuals (that is, that they remained overpaid at least through and possibly beyond December 2012) is factored in by including individuals in the calculations for as long as they were observed. In a typical Cox model analysis, only the time to the *first* event would be analyzed and recurrent events would be ignored. As a simplifying assumption, we consider all episodes to be contiguous. More than three-quarters of overpaid beneficiaries in the analysis sample had just one overpayment spell.

In addition to accounting for right-censoring, we account for the length of unobserved left-truncation time (that is, the time beneficiaries were overpaid prior to 2010) among those who were overpaid in January 2010 and also had a consecutive spell of STW months leading up to January 2010. To do so, we start by counting the total number of consecutive STW months prior to January 2010 (necessarily including STW status in December 2009). We multiply the number of consecutive pre-2010 months by an estimate of the expected proportion of overpayment months.[11] This expected proportion is estimated from the sample of beneficiaries whose STW status began in the 2010–2012 window; among this sample, we count the number of STW months before December 2012 and the number of those months for which beneficiaries were overpaid, and divide the latter by the former to obtain the expected proportion of overpayment

months. In sensitivity analyses, we tested other proxies for the number of pre-2010 overpayment months, but found that the predicted 5th-, 25th-, 50th-, and 75th-percentile values were unchanged and that there were only small changes at the 95th percentile.

We use the estimated distribution (the survival curve) of adjusted overpayment *months* described in the previous paragraph (accounting for right-censoring and left-truncation) to estimate the distribution of adjusted overpayment *amounts*. First, we calculate the unadjusted monthly overpayment amount by dividing the total unadjusted overpayment amount by the unadjusted overpayment length. We then multiply this value by the adjusted number of overpayment months (accounting for truncation and censoring) to arrive at the adjusted overpayment amount.

Notes

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[1] The threshold for SGA can vary depending on the beneficiary's circumstances. In most cases, SSA determines whether a DI claimant or beneficiary is engaging in SGA based on the beneficiary's wages or self-employment earnings; but the agency also offers a wide variety of work incentives that may reduce a beneficiary's countable earnings to a level that is lower than the SGA threshold and thereby allow continued benefit eligibility.

[2] In rare instances, work-related overpayments occur because a new DI beneficiary returns to SGA within 12 months of disability onset.

[3] The 10 reasons are (1) conditional payment status, (2) technical entitlement, (3) pending determination of continuing disability, (4) work (outside the United States), (5) work (inside the United States), (6) pending provision of accurate current address, (7) prisoner suspension, (8) SGA suspension during the EPE, (9) refusal of vocational rehabilitation services, and (10) payee not determined.

[4] Beneficiaries aged 59 or younger in January 2010 were thus younger than 62 in December 2012.

[5] SSA does not directly identify whether a beneficiary in the EPE or a subsequent benefit termination phase meets the STW criteria in its administrative data. Therefore, we must determine a beneficiary's STW status by collecting and assessing various data elements in combination. We use an algorithm developed for the DAF to identify STW status.

[6] SSA no longer publishes statistics by race because of inconsistencies in data collection and racial category definitions over time. For more information, see Martin (2016).

[7] Although our analysis excludes overpayments occurring during the IRP, their inclusion would not change the overall prevalence (1.2 percent).

[8] SSA recognized that the other 34.8 percent met the STW criteria in real time and discontinued their benefit payments before issuing any overpayments.

[9] We ran several models to account for left-truncation in addition to the model on which we base the main results. One alternative was to account for pre-2010 overpayment months during any pre-2010 STW months, even if they were not consecutive to January 2010. This alternative specification produced an average of 2.8 consecutive pre-2010 overpayment months and the adjusted estimates it generated are identical to those of our proxy.

[10] Note that the age cutoff we use in Table 4 (between 54 and 55) differs by 1 year from SSA's cutoff for assigning work CDRs to the central processing center or a regional one (between 53 and 54).

[11] An alternative approach would be to directly calculate the consecutive overpayment months used in the left-truncation adjustment. That approach, however, would exceed the scope and resources of this research.

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