Using the 2009 CPS-ASEC-SSA Matched Dataset to Show Who Is and Is Not Captured in the Official Six-Question Sequence on Disability

Richard V. Burkhauser
Cornell University and University of Melbourne

T. Lynn Fisher
Social Security Administration

Andrew J. Houtenville
University of New Hampshire

Jennifer R. Tennant
Ithaca College

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Abstract

The Patient Protection and Affordable Care Act of 2010 mandates the establishment of standards for the collection and dissemination of health statistics by disability status. In response, the U.S. Department of Health and Human Services recommended that the six-question disability sequence, first used in the American Community Survey and more recently in the Current Population Survey-Basic Monthly Survey, be the minimum data collection standard for survey questions on disability status (USDHHS, 2011); however, none of these six questions directly relates to work-activity limitations. Using recently released linked 2009 CPS-Annual Social and Economic Supplement/Social Security Administration records data, we find that this six-question sequence captures only 66.0 percent of those actually receiving SSDI/SSI-Disability income (a group that presumably should be captured as a subpopulation of any more general disability population), disproportionally under representing some diagnosis groups relative to others. When we add a work-activity limitation question to the six-question sequence, as recommended by Burkhauser, Houtenville, and Tennant (2012) based on their findings using self-reported measures of SSDI/SSI-Disability income receipt, we increase the SSDI/SSI-Disability population captured by 23.2 percentage points for a total of 89.2 percent, and more consistently capture the overall distribution of the diagnosis groups receiving SSDI/SSI-Disability income.

Introduction

The Americans with Disabilities Act of 1990 was the culmination of a decades-long effort to afford people with disabilities the same protections against discrimination as the Civil Rights Act of 1964 and subsequent civil rights legislation provided those facing discrimination based on race, national origin, sex, and age. Unlike these other protected classes, whose characteristics are immutable or relatively easy to determine, disability for most Americans is not an immutable characteristic. More importantly, it has proven to be a much more difficult characteristic to conceptualize and operationalize for purposes of affording civil rights protection and, more generally, for statistical purposes including the monitoring of the health, employment, and economic well-being of this protected class. (See Jette and Bradley, 2002, and Mathiowetz, 2002, for reviews of the conceptual and methodological issues in measurement of work disabilities.)

To provide the information for evidence-based public policymaking it is necessary for researchers both in and outside government to have sufficient data to capture the effect of current and future policies on the classes of citizens that, based on past discrimination or current circumstances, require targeted government actions. With respect to people with disabilities this has meant efforts by government statistical agencies to develop a set of questions that could, within more general national datasets, identify the population with disabilities in a manner similar to the questions used to identify people by race, ethnicity, gender and age.

In what is considered a milestone in the effort to determine a minimum standard for the set of questions required to identify disability in all national datasets, Section 4302 of the Patient Protection and Affordable Care Act (PPACA) of 2010 mandates the establishment of standards for the collection and dissemination of health statistics for five specific demographic sub-

populations: race, ethnicity, gender, primary language, and disability status. In response to this mandate, in October 2011, the U.S. Department of Health and Human Services (USDHHS) established new minimum data collection standards for these sub-populations, in which the new six-question sequence on disability (6QS) that was introduced in the American Community Survey (ACS) and is currently used in the Current Population Survey (CPS) was deemed "the data standard for survey questions on disability" (USDHHS, 2011). See Appendix Table 1 for the specific wording in each of these questions and other variables used here.

The 6QS is now included in the American Housing Survey (AHS), National Health Interview Survey (NHIS), the incoming rotations of the CPS-Basic Monthly Survey (CPS-BMS) and the American Time Use Survey (ATUS), and is being considered for inclusion in the core of the Survey of Income and Program Participation (SIPP). USDHHS cited use of the 6QS in other surveys and the Office of Management and Budget's encouragement of other federal agencies to use the 6QS because of the "extensive testing used in the development of these measures, including the findings that alternative measures did not test as well" (USDHHS, 2011).

Building on the work of Burkhauser, Houtenville and Tennant (2012) who evaluate Type 2 error (false negatives) in 6QS responses,[1] we examine the view as expressed in USDHHS (2011) and provide further evidence that the lack of a work-activity limitation question in the 6QS results in its inability to capture a substantial portion of the population with disabilities relevant to key U.S. disability policies and programs. More importantly, it also leads to biased measures of the employment and program participation of this population.

[1] They do not address Type 1 error (false positives) since there is not a convenient sample of individuals known to not have a disability, since individuals not receiving SSDI/SSI-Disability income may or may not have a disability.

In a face validity test using recently released linked 2009 CPS-ASEC (Annual Social and Economic Supplement)/Social Security Administration records data, we find that the 6QS captures only 66.0 percent of those receiving Social Security Disability Insurance and/or Supplemental Security Income-Disability (SSDI/SSI-Disability) income (a group that presumably should be captured as a subpopulation of any more general disability population). Furthermore, the composition of the subpopulation that receives SSDI/SSI-Disability income *and* report a 6QS disability differs from the composition of the subpopulation that receives SSDI/SSI-Disability income. For example, intellectual disability is a smaller portion of the subpopulation that receives SSDI/SSI-Disability income *and* report a 6QS disability than it is in the full population that receives SSDI/SSI-Disability income. When we add a work-activity limitation question to the 6QS, as recommended by Burkhauser, Houtenville, and Tennant (2012) based on their findings using self-reported measures of SSDI/SSI-Disability income receipt, we increase the SSDI/SSI-Disability population captured by 23.2 percentage points for a total of 89.2 percent, and more consistently capture the overall distribution of the diagnosis groups currently receiving benefits.

In 2006, Sallie Keller-McNulty, the then-President of the American Statistical Association, urged that research on technical and methodological adjustments to a work-activity limitation question continue so that it could be added to the ACS to improve the measurement of work disability (Keller-McNulty, 2006). We find that a work-activity limitation question in combination with the 6QS substantially improves the ability to identify the population with disabilities.

Concepts of Disability

There is no universal agreement on the most appropriate definition of disability, although the World Health Organization's International Classification of Disability, Health and Functioning (ICF) (WHO, 2001) is a commonly-used framework for defining disability. This conceptual framework recognizes disability as a dynamic process that involves the interaction of a person's health condition and personal characteristics with the physical and social environments. The emergence of the ICF as a systematic and comprehensive way of conceptualizing the population with disabilities has resulted in an international effort to use these classifications to better identify the population with disabilities in government-sponsored datasets (Swanson, Carrothers, and Mulhorn, 2003).

In the ICF framework, a *health condition* is a prerequisite for a disability. Examples of health conditions are listed in the International Classification of Diseases, Tenth Edition (ICD-10), and they encompass diseases, injuries, health disorders, and other health-related conditions. An *impairment* is defined as a significant deviation or loss in body function or structure resulting from a health condition. An *activity limitation* is defined as the difficulty an individual may have in executing activities. A *participation restriction* is defined as an issue that an individual may experience in a life situation, perhaps due to the physical or social environment. In the ICF framework, the term *disability* describes the health condition-based presence of an *impairment*, *activity limitation,* and/or *participation restriction*.

A major challenge is how to operationally identify a random sample of this complex conceptualization of the population with disabilities in a national survey where questionnaire space is highly constrained. One way to describe how the CPS-ASEC may be used to do so is to imagine a square containing the entire population with health conditions (see Figure 1). Within

the square are three concentric circles (i.e., in the shape of an archery target), with the outermost circle representing people with disabilities using ICF concepts (that is, having health condition-based impairments, activity limitations or participation restrictions), the middle circle representing those with work-activity limitations (a subset of the broader ICF-defined population), and the innermost circle representing people currently receiving SSDI/SSI-Disability income (a subset of the work-activity limited population whose limitations are severe enough to prevent them from performing "any substantial gainful activity"—that is, a sub-population whose work-activity limitations are severe enough to meet the eligibility criteria for this permanent and total disability program). We will argue that the outermost circle is the conceptualization of disability that the 6QS in the ACS and the CPS-BMS is attempting to operationally achieve. But we then show that rather than three concentric circles, the 6QS-based and work-activity limitation-based disability populations are best described by a Venn diagram with the majority of people who do not say "no" to both, (either responding "yes" to one of the six questions and "no" to the work-activity limitation question or vice versa) and only a minority responding "yes" to both. More importantly, as we will discuss in more detail, when we use SSA administrative records linked to the CPS data to determine more precisely who is currently receiving SSDI/SSI-Disability income, our Venn diagram of that population shows that only 66 percent of these beneficiaries are captured by the 6QS alone.

Data and Key Variables

Burkhauser, Houtenville and Tennant (2012) were the first to use data from the public-use CPS to show how sensitive the size and socioeconomic characteristics of the working-age population with disabilities are to the questions used to capture that population, and the first to propose a face validity test of the relative merits of each—how well they captured a

subpopulation that should be included in any formulation of working-age people with disabilities—current SSDI/SSI-Disability income recipients—a measure of Type 2 error.[2]

They based their conclusions on results using the 2010 public-use CPS data. Here we use two datasets: (1) the 2009 public-use CPS-ASEC and (2) 2009 public-use CPS-ASEC data matched to SSA administrative records, which is the most recent match available.

General Information about the CPS. The CPS is a joint undertaking of the Bureau of Labor Statistics (BLS) and the Census Bureau. It is a monthly survey of approximately 57,000 households and is the primary source of labor force information for the U.S. working-age (16 years and over), non-institutionalized population.[3] The CPS-BMS data contain labor force information and demographic information, and since June 2008 include a series of six disability questions—see Appendix Table 1. In June 2008, this six-question sequence (6QS) on disability was asked of all respondents in that month-in-sample. Thereafter it was asked in the respondents' first and fifth months-in-sample (CPS, 2009b). These new questions encompassed disabilities and limitations that affected vision, hearing, remembering/making decisions/ concentrating, physical matters like walking and climbing stairs, self-care and independent living in the form of being able to leave the house for an errand or doctor's appointment. The 6QS does not include a work-activity limitation question, although this subject is still included in the CPS-ASEC (a.k.a., March supplement).

The March supplement provides the usual monthly labor force data provided in the BMS, but also adds data on work experience, income, non-cash benefits and migration (CPS, 2009a). It also separates the many forms of household income, including SSDI and SSI.

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[2] They do not address Type 1 error (false positives) since there is not a convenient sample of individuals are known to not have a disability, since individuals not receiving SSDI/SSI-Disability income may or may not have a disability.
[3] Current Population Survey (2009a), page 2-1.

The CPS uses a rotation system for its interviews. Each housing unit is followed for a 16-month period—four months in-sample, eight months out-of-sample, and then four months in-sample. That is, a respondent in a selected housing unit is interviewed with respect to all persons living in that housing unit for four consecutive months. After eight consecutive months without being interviewed, a respondent in that housing unit is interviewed for another four consecutive months, after which the housing unit is retired from the CPS sample. In any sample month, one-eighth of the sample is being interviewed for the first time (month-in-sample, or MIS = 1), one-eighth is being interviewed for the second time (MIS = 2), and so on (CPS, 2006, p. 3-13). Because this is a housing unit-based survey rather than a person-based survey, not only can the respondent differ but some members of the household can also vary each month, and, in the extreme, all the original members of the housing unit can leave.

Because of the 4-8-4 rotation system described above, in the absence of any matching issues, a person who is in his first month-in-sample would be interviewed one year (12 months) later but would only be in his fifth month-in-sample.[4] The 2009 March CPS-ASEC was administered after the 6QS was in effect, so in that dataset, everyone is asked the work-activity limitation question in March, and the 6QS at some point before, or concurrently if March is the first or fifth month-in-sample for that particular household. So, the March 2009 CPS-ASEC dataset gives us the information we need to compare these two measures of disability.

Match Process of the Restricted Use File. For this study, we matched the 2009 CPS-ASEC public use file to the Social Security Account Number Identification (NUMIDENT),

[4] MIS = 2 and MIS = 6, MIS = 3 and MIS = 7, and MIS = 4 and MIS = 8 also create year-long matched samples.

Master Beneficiary Record (MBR), and Supplemental Security Record (SSR) files.[5] The NUMIDENT file contains information on all persons who have ever submitted an application for a SSN; the MBR file contains the records of the Old-Age, Survivors, and Disability Insurance (OASDI) program; the SSR file contains the records of SSI (Davies and Fisher, 2009).

Match Rate. SSA records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent.[6] This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to SSA records. From a population perspective, using the CPS-ASEC sample weights, SSA records were matched for 131,881,301 of the 152,003,928 non-institutionalized working-age (aged 25-61) United States population—a weighted match rate of 86.8 percent.

Sample Weights. Following the recommendation of Czajka, Mabli, and Cody (2008), we rescaled our sample population using the CPS-ASEC sample weights to reestablish population representativeness of matched records across 16 age-gender subpopulations (gender by eight age groups—25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, and 60-61).[7] We did so by multiplying an individual's sample weight by their rescaling factor for his/her age-gender subpopulation, where the rescaling factor is equal to the ratio of the subpopulation size of the full sample to the subpopulation size of the matched sample.

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[5] The matched data are available on a restricted basis to researchers with special sworn status from the Census Bureau, working on approved projects at restricted data sites, subject to the terms of an interagency agreement between the Census Bureau and SSA. All estimates were approved by SSA's Title 13 disclosure review board prior to distribution.

[6] The match rate is less than 100 percent due to several factors, including respondents not consenting to the match and the inability to determine the Social Security numbers of respondents who consented to the match.

[7] Czajka, Mabli, and Cody (2008) recommend that analysts rescale sample weights by demographic characteristics, as we have done.

Defining Receipt of SSDI/SSI-Disability Income. Matching CPS-ASEC and SSA records gives us a precise measure of whether an individual receives SSDI/SSI-Disability income. The receipt of SSDI income is based on whether an individual was (a) in the MBR file, (b) receiving benefits on the basis of disability (as opposed to retirement or survivorship), (c) had a current payment, and (d) is eligible based on his/her own contributions (as opposed to the contributions of his/her retired parent(s) or deceased spouse). The receipt of SSI income is based on whether an individual was (a) in the SSR file, (b) under age 65, and (c) has a current payment.

Results

The subfile of matched CPS data more precisely identifies those who are currently receiving SSDI/SSI-Disability income and also provides the diagnostic group of their primary medical condition. But the data may be problematic for making inferences about the entire CPS population if our subfile is not a random sample of the CPS population.

Comparing the 2009 March CPS and 2009 Matched CPS subfile. In Table 1 we provide some evidence that our reweighted matched data provides similar population counts of the working-age population and its subcomponents by sex, age, and race to that of the full 2009 public use March CPS. As can be seen in column 1 the weighted population counts using the 2009 matched CPS-SSA administrative records subfile are very close to those of the 2009 public use March CPS. The 100,000 difference in the total population (152,100,000 vs. 152,000,000) is due to rounding of the rescaling factor to the second decimal place.

The next seven columns can be thought of as various aspects of the Venn diagram created by the union of the 6QS-based and the work-activity limitation-based working-age populations with disability. A simple comparison of the prevalence of disability in the working-age population based on the 6QS (column 2) and work-activity limitation (column 3) disability

questions suggests that there is not much difference in the overall prevalence of disability either using the full 2009 March sample (8.0 vs. 8.4 percent) or the 2009 matched subsample (8.2 vs. 8.4 percent). But importantly this similarity is *not* because they capture the same population. As can be seen in column 7, the union of these two populations, in both the full 2009 March sample and 2009 matched subsample, is 11.8 percent. Only 4.7 percent of the population responds "yes" to at least one of the questions in the 6QS and "yes" to the work limitation question in the 2009 March sample, and only 4.8 percent do so in the 2009 matched sample (column 5).

A look at the prevalence of disability across the eight columns that make up components of the Venn diagram resulting from the union of the 6QS and work-activity limitation-disability populations shows that there is little difference between the full 2009 March CPS and the 2009 matched CPS/SSA data files in prevalence within demographic subgroups—gender, age, and race. For example, in the 2009 March CPS the 6QS (column 2) and the work-activity limitation (column 3) populations are similar with respect to gender but the work-activity limitation population is older and more likely to be black, non-Hispanic. The same is the case in the 2009 matched CPS.

Neither the 2009 March CPS nor the subfile of that data matched to SSA administrative records conform to the disability model of concentric circles. While the work-activity limitations population should be fully contained within the ICF conception of disability that the 6QS aspires to capture, a Venn diagram of overlapping circles is found in the CPS data.[8]

Table 2 shows that in the full March CPS sample using a 6QS-based measure of the working-age population with disabilities will understate a population with disabilities that also includes those who report a work-activity limitation—12.2 million (column 2) compared to 17.9

[8] See Brault, Stern, and Raglin (2007) for a discussion of the goals of the working groups that developed the 6QS.

million (column 7)—since the 5.7 million that only report a work activity limitation (column 6) are not included. Similarly, in the matched CPS/SSA sample, 5.48 million people that report a work-activity limitation disability would not be included in a population with disabilities identified by using a 6QS-based measure.

Economic Outcomes. In principle, the effects of an undercount on the estimation of population statistics would be lessened, if the 6QS captures at least a random sample of the working-age population with disabilities. Tables 1 and 2 suggest that this may be the case—while the work-activity limitation-based disability population is somewhat older and more likely to be black, non-Hispanic than the 6QS-based disability population, the differences in demographic characteristics are not substantial. However, Table 3 shows that this is not the case for three important economic characteristics—the labor force participation rate, the employment rate and the poverty rate—of these two disability populations. The labor force participation rate in the 6QS-based disability population (35.9 percent) is far higher than in the work-activity limitation-based population (21.3 percent) in the 2009 March CPS, as are the employment rates (31.1 vs. 17.3 percent) while the poverty rates are lower (25.9 vs. 29.2 percent). This same difference is found in the matched CPS subfile. The differences are starker when these economic outcomes are compared for those who report a 6QS-based disability but no work limitation (column 4) and those who report a work limitation but no 6QS-based disability (column 6) in both the 2009 March CPS and the matched CPS subfile. People who report a 6QS-based disability but no work limitation are of interest because they may have less severe conditions or perhaps are utilizing a form of accommodations. People who report a work limitation but no 6QS-based disability are important to consider since they are overlooked in analyses and government statistics that focus solely on the 6QS-based disability population.

A Face Validity Test. Prior to 2008, the American Community Survey (ACS) included a work-activity limitation question as part of its original 6QS. In 2008, the ACS disability questions were substantially revised, splitting hearing and vision into separate questions and removing the work-activity limitation question. In the matched 2009 CPS sample in Table 2, this change leads to "missing" 5.48 million working-age people who report having a work-activity limitation, affecting both the overall size of the working-age population with disabilities and its measured employment and economic well-being.

The scientific evidence for using the 6QS contained in the revised ACS was based on cognitive testing of how well respondents understood the questions and provided accurate answers. These tests were conducted over five rounds by the Census Bureau and National Center for Health Statistics (NCHS) using a small non-representative sample. The decision to remove the work-activity question in the ACS was made in the third round (Miller and DeMaio, 2006).

In an April 20, 2006, letter to the Census Bureau Director C. Louis Kincannon, Keller-McNulty (2006), the then-President of the American Statistical Association, urged that research on technical and methodological adjustments to a work-activity limitation question continue so that it could be added to the ACS to improve the measurement of work disability. This advice was not followed and the work-activity limitation question was dropped from the 6QS in the ACS in 2008. This same 6QS without a work-activity limitation question was also included in the CPS-BMS starting in June 2008.

Below we follow Burkhauser, Houtenville, and Tennant (2012) and offer a face validity test of the suitability of excluding a work-activity limitation question in a dataset that is meant to capture the population with disabilities and targeted for government services. For working-age

people, the SSDI and the SSI-Disability programs are intended for people with disabilities who are unable to earn significant income based on an impairment stemming from their health condition. The severity of the work-activity limitation required to enter these programs is clearly within the ICF conceptualization of disability. Hence, one face validity test of any sequence of questions used to capture the entire disability population is its ability to capture this part of the disability population since those currently receiving SSDI/SSI-Disability income would both be in the broad ICF measure of the disability population the 6QS was intended to capture and the work-activity limitation population contained within it.

The results in Table 4 are once again more supportive of a Venn diagram relationship between the 6QS-based and work-activity limitation-based populations than a concentric circle relationship. That is, when we compare the ability of the union of our 6QS- and work-activity limitation-based disability populations to capture the population who either report receiving SSDI/SSI-Disability income in the 2009 March CPS or who are identified as receiving them in the 2009 matched CPS subfile, we find that neither the 6QS- nor the work-activity limitation-based population fully captures the entire population receiving these benefits—a test of Type 2 error.

The first two sets of values reported in Table 4 are based on self-reported SSDI/SSI-Disability income receipt based on two alternative definitions of such benefits.[9] That is, these

[9] The first definition is based solely on a self-reported response to a question long available in the March CPS regarding receipt of Old-Age, Survivors, and Disability Insurance (OASDI) and/or SSI income. The second is based on this question and additional probing questions about the reason for receiving them, first asked in the March CPS in 2001. As discussed more fully in Burkhauser et al. (2012), researchers using March CPS data prior to 2001 had to use the first definition of benefit receipt since these earlier CPS questions didn't sufficiently distinguish between reported types of Social Security benefits. So while they mainly captured SSDI or SSI-disability benefits, they also contained benefits from other Social Security programs that did not require a disability as a qualification for benefits (e.g. widow benefits).

values look at all persons in the 2009 March CPS who report receiving these benefits and then show what percentage of this population is captured by the various components of the Venn diagram outcomes arrayed along the eight columns. As can be seen, a much larger share of this population (18.9 percent in row 1, column 8) is missed by the union of our 6QS and work-activity limitation populations using the old definition than is the case when we use the more precise definition of this benefit population (7.5 percent in row 4, column 8). This is the case because since 2001, the CPS asks respondents for the reason for receiving Social Security or SSI income, and disability and blindness are two of the options. Requiring a positive response to one of these two options separates out people who are receiving Social Security income for reasons not related to having a disability and hence appearing to be missed inappropriately in our disability populations based on the 6QS or our work-activity limitation question. We provide estimates for these two alternative definitions of SSDI/SSI-Disability income receipt in part to facilitate future research on long-term time trends in program participation.

In what follows we will focus on our results using a population based on the post-2001 definition of self-reported SSDI/SSI-Disability income receipt in the full March CPS sample with that same population in the matched CPS subfile, and finally, with the even more accurate measure of the SSDI/SSI-Disability income recipients based on administrative records in the matched CPS subfile. There is very little difference in our results based on the self-reported measure in the full March CPS or the matched subfile of this data. The 6QS is only able to capture 65.2 percent of this population in the full sample and 66.9 percent in the matched subfile. The work-activity limitation population on its own does a much better job of doing so, capturing 83.6 and 84.2 percent respectively. The union of these two disability populations captures 92.5 and 93.1 percent of self-reported SSDI/SSI-Disability income recipients.

When we turn to the more accurately measured SSDI/SSI-Disability income recipients based on administrative records in the matched CPS subfile, the results are similar. The 6QS is only able to capture 66.0 percent of this population. The work-activity limitation population on its own does a better job—78.0 percent. While this is somewhat less than when a self-reported population is used, it is still much better at capturing the SSDI/SSI-Disability income recipients than is the 6QS. The marginal increase in the share of that population captured is 23.2 percentage points. The union of these two disability populations thus captures 89.2 percent of SSDI/SSI-Disability income recipients.

Table 5 focuses solely on our 2009 matched CPS dataset that contains information not only on the 9.2 million beneficiaries who SSA administrative records show are currently receiving SSDI/SSI-Disability income, but also on the diagnosis group for their primary medical condition. As can be seen in all cases, the 6QS-based disability population (column 2) captures fewer of those in a given diagnosis group than the work-activity limitation-based disability population (column 3). That is, our face validity test consistently ranks the work-activity limitation-based disability population as superior to the 6QS-based disability population in capturing persons who are receiving SSDI/SSI-Disability income. This is a subset of the working-age population that should be completely captured in any ICF-based conceptualization of the working-age population with disabilities.

Table 6 uses the same data but slightly alters the way it is presented to better focus on the relative ability of the 6QS-based and the work-activity limitation-based disability populations to capture different diagnosis groups. Column 1 shows the overall shares across diagnosis group of the 9.2 million beneficiaries who SSA administrative records matched to the survey show are currently receiving SSDI/SSI-Disability income. Column 2 shows the shares across diagnosis

group of the 6.0 million beneficiaries who SSA administrative records show are currently receiving SSDI/SSI-Disability income that are captured by the 6QS. Of the seven named diagnosis groups reported, the 6QS does a reasonably good job of matching the overall shares distribution reported in column 1. That is, while it misses the levels of those receiving SSDI/SSI-Disability income, it does fairly accurately report the proportions receiving this income. Although, the composition of the subpopulation that receive SSDI/SSI-Disability income *and* report a 6QS disability has a smaller proportion of those whose primary medical condition is an intellectual disability—6.5 percent compared to 7.0 percent of the subpopulation that receive SSDI/SSI-Disability income. Conversely, the composition of the subpopulation that receive SSDI/SSI-Disability income *and* report a 6QS disability has a larger proportion of those whose primary medical condition is a nervous system or sense organs—10.4 percent compared to 8.4 percent of the subpopulation that receive SSDI/SSI-Disability income. This is not surprising given that two of the questions in the 6QS specifically ask about difficulties related to sense organs: "Is anyone deaf or does anyone have serious difficulty hearing?" and "Is anyone blind or does anyone have serious difficulty seeing even when wearing glasses?"

Column 3 shows the shares across diagnosis group of the 7.2 million beneficiaries who SSA administrative records show are currently receiving SSDI/SSI-Disability income who are captured by the work-activity limitation question. The values in this column are more closely aligned to the overall shares across diagnosis group in column 1 than is the 6QS—the work-activity limitation-based population reports a 6.8 percent share for intellectual disability vs. 6.5 percent in the 6QS distribution and 7.0 percent in the overall distribution. It does even better for the nervous system and sense organs diagnosis group, reporting 8.7 vs. 10.4 percent in the 6QS distribution and 8.4 in the overall distribution.

Column 7 shows the shares across diagnosis group of the 8.2 million beneficiaries who SSA administrative records show are currently receiving SSDI/SSI-Disability income who are captured by the union of the 6QS-based and work-activity limitation-based disability populations. This seven question sequence (7QS) not only comes closer to capturing the total population currently receiving SSDI/SSI-Disability income—although still missing about a million individuals (10.8 percent)—but generally comes somewhat closer to capturing its shares across diagnosis group.

Conclusion

The Patient Protection and Affordable Care Act of 2010 mandates the establishment of standards for the collection and dissemination of health statistics by disability status. In response, the U.S. Department of Health and Human Services recommended that the 6QS, first used in the ACS and more recently in the CPS, be the minimum data collection standard for survey questions on disability status (USDHHS, 2011), however, none of these six questions directly relates to work-activity limitations. Building on the work of Burkhauser, Houtenville and Tennant (2012) in this paper we examine the consensus view as expressed in USDHHS (2011) and provide further evidence that the lack of a work-activity limitation question in the 6QS results in its inability to capture a substantial portion of the population with disabilities relevant to key U.S. disability policies and programs. More importantly, it also leads to biased measures of the employment and program participation of this population.

Using recently released linked 2009 CPS-ASEC/SSA records data, we find that this 6QS captures only 66.0 percent those actually receiving SSDI/SSI-Disability income (a group that presumably should be captured as a subpopulation of any more general disability population). Furthermore, the composition of the subpopulation that receive SSDI/SSI-Disability income *and*

report a 6QS disability differs from the composition of the subpopulation that receive SSDI/SSI-Disability income; for example, intellectual disability is a smaller portion of the subpopulation that receive SSDI/SSI-Disability income *and* report a 6QS disability than it is in the subpopulation that receive SSDI/SSI-Disability income. When we add a work limitation question to the 6QS, as recommended by Burkhauser, Houtenville, and Tennant (2012) based on their findings using self-reported measures of SSDI/SSI-Disability income receipt, we increase the SSDI/SSI-Disability population captured by 23.2 percentage points for a total of 89.2 percent, and more consistently capture the overall distribution of the diagnosis groups receiving benefits.

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Figure 1. A Framework for Operationally Identifying Working-Age People with Disabilities

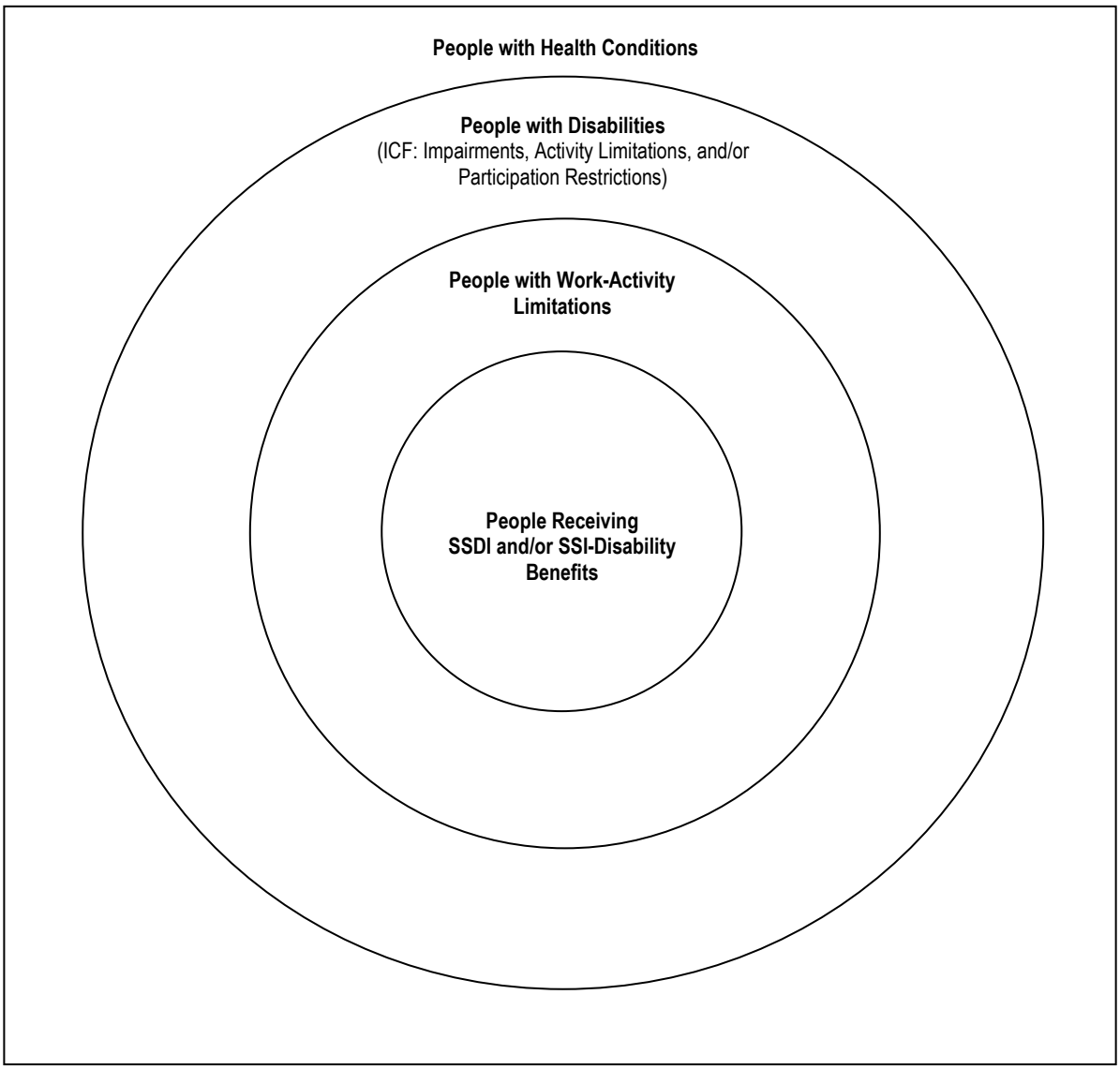

Table 1. Population size and disability prevalence rate of non-institutionalized persons ages 25-61, by data source, demographics, and disability type

Source and demographic	Total population	Prevalence rate: Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
2009 Public-Release CPS-ASEC								
Total population	152,000,000	8.0	8.4	3.4	4.7	3.8	11.8	88.2
Men	75,200,000	8.0	8.4	3.3	4.6	3.8	11.7	88.3
Women	76,800,000	8.1	8.4	3.4	4.7	3.7	11.8	88.2
Ages 25-29	21,300,000	4.5	4.1	2.4	2.1	2.0	6.5	93.5
Ages 30-34	19,300,000	4.0	4.0	2.3	1.8	2.2	6.3	93.7
Ages 35-39	20,400,000	5.2	5.4	2.4	2.8	2.6	7.8	92.2
Ages 40-44	20,900,000	6.3	6.8	2.6	3.7	3.1	9.4	90.6
Ages 45-49	22,700,000	8.9	9.6	3.4	5.4	4.1	13.0	87.0
Ages 50-54	21,700,000	10.7	11.3	4.5	6.2	5.0	15.8	84.2
Ages 55-59	18,800,000	13.8	14.8	4.9	8.9	5.9	19.7	80.3
Ages 60-61	7,000,000	16.2	17.9	6.2	10	7.9	24.1	75.9
White only, non-Hispanic	101,100,000	8.1	8.4	3.5	4.6	3.8	11.9	88.1
Black only, non-Hispanic	17,900,000	11.2	12.7	3.8	7.4	5.3	16.5	83.5
Hispanic	22,600,000	5.9	6.0	2.7	3.2	2.7	8.6	91.4
Other race/ethnicity	10,300,000	6.2	6.4	2.7	3.5	2.9	9.1	90.9
2009 Matched SSA/CPS-ASEC[1]								
Total population	152,100,000[2]	8.2	8.4	3.4	4.8	3.6	11.8	88.2
Men	75,300,000	8.2	8.4	3.3	4.8	3.6	11.8	88.2
Women	76,900,000	8.2	8.4	3.4	4.8	3.6	11.8	88.2
Ages 25-29	21,200,000	4.8	4.2	2.6	2.3	2.0	6.8	93.2
Ages 30-34	19,300,000	4.2	3.9	2.3	1.9	2.0	6.2	93.8
Ages 35-39	20,400,000	5.4	5.3	2.5	2.9	2.5	7.8	92.2
Ages 40-44	20,900,000	6.5	6.8	2.7	3.8	3.0	9.5	90.5
Ages 45-49	22,700,000	8.9	9.6	3.3	5.6	4.0	12.9	87.1
Ages 50-54	21,700,000	10.7	11.2	4.3	6.4	4.8	15.5	84.5
Ages 55-59	18,800,000	14.1	14.8	4.9	9.1	5.7	19.8	80.2
Ages 60-61	7,000,000	16.0	17.5	6.1	9.9	7.6	23.6	76.4
White only, non-Hispanic	106,200,000	8.0	8.1	3.5	4.6	3.6	11.6	88.4
Black only, non-Hispanic	17,700,000	11.5	12.8	3.8	7.7	5.0	16.6	83.4
Hispanic	18,400,000	6.8	6.9	2.8	4.0	2.9	9.7	90.3
Other race/ethnicity	9,900,000	6.4	6.5	2.7	3.6	2.9	9.2	90.8

1. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates.
2. The 100,000 person difference from the full CPS-ASEC sample is due to the rounding of the rescaling factor to the second decimal place.

Table 2. Population size and share distribution of non-institutionalized persons ages 25-61, by data source, demographics, and disability type

Source and demographic	Total population	Prevalence rate: Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
2009 Public-Release CPS-ASEC								
Total population	152,000,000	12,200,000	12,800,000	5,100,000	7,100,000	5,700,000	17,900,000	134,100,000
Men	49.4	48.3	49.4	48.9	47.8	51.6	49.3	49.4
Women	50.5	50.0	50.7	51.1	49.3	52.5	50.8	50.4
Ages 25-29	14.0	7.7	6.8	10.1	6.1	7.7	7.7	14.8
Ages 30-34	12.7	6.3	6.0	8.6	4.7	7.8	6.7	13.5
Ages 35-39	13.4	8.6	8.6	9.6	7.9	9.6	8.9	14.0
Ages 40-44	13.7	10.6	11.1	10.7	10.6	11.8	11.0	14.1
Ages 45-49	14.9	16.3	17.0	15.3	16.9	17.1	16.5	14.7
Ages 50-54	14.2	18.7	19.1	19.0	18.5	19.9	19.1	13.6
Ages 55-59	12.3	20.9	21.7	18.1	22.8	20.2	20.7	11.2
Ages 60-61	4.6	9.2	9.8	8.5	9.6	10.1	9.5	4.0
White only, non-Hispanic	66.5	66.2	66.7	69.0	64.2	70.0	67.3	66.4
Black only, non-Hispanic	11.8	16.2	17.8	13.5	18.1	17.4	16.6	11.2
Hispanic	14.8	10.7	10.5	11.9	9.9	11.3	10.9	15.4
Other race/ethnicity	6.8	5.2	5.1	5.5	4.9	5.4	5.2	7.0
2009 Matched SSA/CPS-ASEC[1]								
Total population	152,100,000[2]	12,419,339	12,784,924	5,114,505	7,304,834	5,480,090	17,899,429	134,230,000
Men	49.5	49.4	49.6	49.3	49.6	49.6	49.5	49.5
Women	50.5	50.6	50.4	50.7	50.4	50.4	50.5	50.5
Ages 25-29	13.9	8.3	7.0	10.7	6.5	7.6	8.1	14.7
Ages 30-34	12.7	6.5	5.8	8.8	4.9	7.0	6.7	13.5
Ages 35-39	13.4	8.9	8.5	10.0	8.1	9.2	9.0	14.0
Ages 40-44	13.8	11.0	11.1	11.0	11.0	11.3	11.1	14.1
Ages 45-49	14.9	16.3	17.1	14.7	17.5	16.6	16.4	14.7
Ages 50-54	14.3	18.7	19.0	18.4	18.9	19.0	18.8	13.7
Ages 55-59	12.3	21.2	21.8	18.1	23.4	19.6	20.7	11.2
Ages 60-61	4.6	9.1	9.6	8.4	9.6	9.7	9.3	4.0
White only, non-Hispanic	69.8	68.5	67.4	71.6	66.2	68.9	68.6	69.9
Black only, non-Hispanic	11.6	16.4	17.7	13.1	18.7	16.3	16.4	11.0
Hispanic	12.1	10.1	9.9	10.0	10.1	9.6	9.9	12.4
Other race/ethnicity	6.5	5.1	5.0	5.2	4.9	5.2	5.1	6.7

1. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates.

2. The 100,000 person difference from the full CPS-ASEC sample is due to the rounding of the rescaling factor to the second decimal place.

Table 3. Economic outcomes of non-institutionalized persons ages 25-61, by data source, economic outcome measure, and disability type

Data source and economic outcome measure	All persons	Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
2009 Public-Release CPS-ASEC								
Labor force participation rate	79.9	35.9	21.3	66.5	13.8	30.5	34.2	86.0
Employment rate	73.4	31.1	17.3	58.3	11.5	24.5	29.0	79.3
Poverty rate	10.5	25.9	29.2	18.6	31.2	26.9	26.2	8.4
2009 Matched SSA/CPS-ASEC[1]								
Labor force participation rate	81.3	36.8	22.2	68.9	14.3	32.7	35.5	87.4
Employment rate	74.7	31.9	18.0	60.5	11.9	26.1	30.2	80.7
Poverty rate	9.3	24.9	28.9	16.9	30.5	26.7	25.5	7.1

1. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates. Some of the difference between the results from the Public CPS-ASEC sample and results from the Matched SSA/CPS-ASEC sample may be due to the rounding of the rescaling factor to the second decimal place.

Table 4. Population size and disability prevalence rate of non-institutionalized persons ages 25-61, by data source, program participation measure, and disability type

Data source and program participation measure	Population size	Percentage						
		Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
2009 Public-Release CPS-ASEC								
Self-report, old definition[1]								
DI and/or SSI	9,200,000	56.5	72.1	9.0	47.5	24.6	81.1	18.9
DI	6,400,000	55.0	70.6	8.5	46.5	24.1	79.1	20.9
SSI	3,600,000	60.6	77.1	9.7	50.9	26.2	86.8	13.2
Self-report, new definition[2]								
DI and/or SSI	7,500,000	65.2	83.6	8.9	56.3	27.3	92.5	7.5
DI	4,900,000	66.1	85.2	8.3	57.8	27.5	93.6	6.4
SSI	3,300,000	64.2	81.9	9.7	54.6	27.3	91.5	8.5
2009 Matched SSA/CPS-ASEC[3]								
Self-report, old definition[1]								
DI and/or SSI	9,000,000	59.5	74.7	8.8	50.7	24.0	83.5	16.5
DI	6,100,000	58.7	73.7	8.6	50.1	23.7	82.3	17.7
SSI	3,600,000	62.2	78.3	9.0	53.1	25.2	87.3	12.7
Self-report, new definition[2]								
DI and/or SSI	7,600,000	66.9	84.2	8.9	58.1	26.2	93.1	6.9
DI	4,900,000	67.7	85.3	8.6	59.1	26.2	93.9	6.1
SSI	3,300,000	66.0	83.2	9.1	56.9	26.3	92.3	7.7
Administrative Definition[4]								
DI and/or SSI	9,200,000	66.0	78.0	11.2	54.8	23.2	89.2	10.8
DI	6,800,000	66.4	79.1	10.9	55.6	23.5	89.9	10.1
SSI	3,400,000	64.9	75.2	12.7	52.2	22.9	87.9	12.1

1. The "Old Definition" is based on CPS-ASEC self-reported information with respect to whether a person received SSI and OASDI income, in the prior calendar year.

2. The "New Definition" (available since 2001) is based on CPS-ASEC self-reported information on the reasons a person received SSI and OASDI income in the prior calendar year.

3. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates. Some of the difference between the results from the Public CPS-ASEC sample and results from the Matched SSA/CPS-ASEC sample may be due to the rounding of the rescaling factor to the second decimal place.

4. SSDI status is based on whether an individual was (a) in the MBR file, (b) receiving benefits on the basis of disability (as opposed to retirement or survivorship), (c) had a current payment, and (d) eligible based on his/her own contributions (as opposed to the contributions of his/her retired parent(s) or deceased spouse). SSI status is based on whether an individual was (a) in the SSR file, (b) under age 65, and (c) has a current payment.

Table 5. Prevalence rates of non-institutionalized program participants (as defined by the administrative definition[1]), by the ages 25-61, by diagnosis group and disability type, using the 2009 Matched SSA/CPS-ASEC[2]

Diagnosis group	Total	Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
All	9,189,590	66.0	78.0	11.2	54.8	23.2	89.2	10.8
Diagnosis groups								
Endocrine, nutritional, metabolic	300,818	66.3	82.9	8.2	58.1	24.7	91.1	8.9
Mental disorders other than intellectual disability	2,186,058	65.7	78.0	11.7	54.0	24.0	89.7	10.3
Intellectual disability	642,665	61.5	75.7	11.3	50.3	25.5	87.0	13.0
Nervous system and sense organs	769,431	82.1	80.8	12.6	69.4	11.4	93.5	6.5
Circulatory system	615,507	64.8	77.5	10.8	54.0	23.5	88.3	11.7
Musculoskeletal system	1,870,424	66.3	78.5	10.8	55.5	23.0	89.3	10.7
Injuries	377,003	67.1	82.9	10.4	56.7	26.2	93.3	6.7
Other	1,025,656	60.6	76.9	10.6	50.0	26.9	87.5	12.5
Blank/invalid code	1,402,028	63.3	75.4	11.7	51.6	23.9	87.2	12.8

1. SSDI status is based on whether an individual was (a) in the MBR file, (b) receiving benefits on the basis of disability (as opposed to retirement or survivorship), (c) had a current payment, and (d) eligible based on his/her own contributions (as opposed to the contributions of his/her retired parent(s) or deceased spouse). SSI status is based on whether an individual was (a) in the SSR file, (b) under age 65, and (c) has a current payment.

2. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates.

Table 6. Share distribution by diagnostic group among non-institutionalized program participants (as defined by the administrative definition[1]), by the ages 25-61, by disability type, using the 2009 Matched SSA/CPS-ASEC[2]

Diagnosis group	Total	Six question sequence (A+B)	Work limitation (B+C)	Six question sequence only (A)	Both six question sequence and work limitation (B)	Work limitation only (C)	Six question sequence and/or work limitation (A+B+C)	Neither six question sequence nor work limitation
All	9,189,590	6,062,762	7,168,667	1,030,486	5,032,277	2,136,390	8,199,153	990,437
Diagnosis groups								
Endocrine, nutritional, metabolic	3.3	3.3	3.5	2.4	3.5	3.5	3.3	2.7
Mental disorders other than intellectual disability	23.8	23.7	23.8	24.8	23.4	24.6	23.9	22.7
Intellectual disability	7.0	6.5	6.8	7.0	6.4	7.7	6.8	8.4
Nervous system and sense organs	8.4	10.4	8.7	9.4	10.6	4.1	8.8	5.1
Circulatory system	6.7	6.6	6.7	6.4	6.6	6.8	6.6	7.3
Musculoskeletal system	20.4	20.4	20.5	19.6	20.6	20.2	20.4	20.2
Injuries	4.1	4.2	4.4	3.8	4.2	4.6	4.3	2.5
Other	11.2	10.3	11.0	10.6	10.2	12.9	10.9	12.9
Blank/invalid code	15.3	14.6	14.8	16.0	14.4	15.7	14.9	18.2

1. SSDI status is based on whether an individual was (a) in the MBR file, (b) receiving benefits on the basis of disability (as opposed to retirement or survivorship), (c) had a current payment, and (d) eligible based on his/her own contributions (as opposed to the contributions of his/her retired parent(s) or deceased spouse). SSI status is based on whether an individual was (a) in the SSR file, (b) under age 65, and (c) has a current payment.

2. The 2009 CPS-ASEC file was matched to the SSA Numident file. Numident records were matched for 90,001 of the 102,726 persons ages 25-61 in the 2009 CPS-ASEC sample—a match rate of 87.6 percent. This means that 12,725 (12.5 percent of) persons ages 25-61 in the 2009 CPS-ASEC sample were not matched to Numident records. The CPS-ASEC sample weight was rescaled based on gender and age to account for non-matching sample and reestablish population size estimates.

Appendix Table 1. Disability, employment, and program participation questions in the Current Population Survey

Question (Survey)	Question wording
Disability question	
Hearing difficulty (CPS-BMS)	Is anyone deaf or does anyone have serious difficulty hearing?
Vision difficulty (CPS-BMS)	Is anyone blind or does anyone have serious difficulty seeing even when wearing glasses?
Mental difficulty (CPS-BMS)	Because of a physical, mental, or emotional condition, does anyone have serious difficulty concentrating, remembering or making decisions?
Physical difficulty (CPS-BMS)	Does anyone have serious difficulty walking or climbing stairs?
Self-care difficulty (CPS-BMS)	Does anyone have difficulty dressing or bathing?
Independent living difficulty (CPS-BMS)	Because of a physical, mental or emotional condition, does anyone have difficulty doing errands alone such as visiting a doctor's office or shopping?
Work-activity limitation (CPS-ASEC)	Does anyone in this household have a health problem or disability which prevents them from working or which limits the kind or amount of work they can do?
Employment question	
Currently employed (CPS-BMS)	Last week, did [person] do any work for either pay or profit?
Worked at least 52 hours in the prior calendar year (CPS-ASEC)	Work hours >= 52.To construct this variable, use the following two questions: (1) During [the previous calendar year] in how many weeks did [person] work even for a few hours? Include paid vacation and sick leave as work, and (2) In the weeks that [person] worked [the previous calendar year], how many hours did [person] usually work per week?
Worked full-time, full-year in the prior calendar year (CPS-ASEC)	Work hours per week >= 35 and work weeks per year >= 50. To construct this variable, use the following two questions: (1) During [the previous calendar year] in how many weeks did [person] work even for a few hours? Include paid vacation and sick leave as work, and (2) in the weeks that [person] worked [the previous calendar year], how many hours did [person] usually work per week?
Program participation question	
Social Security Disability Insurance, Old definition (CPS-ASEC)	Did (you/name) receive Social Security? And age 25 to 61 to minimize the miscoding of retirement and survivor beneficiaries.
Supplemental Security Income, Old definition (CPS-ASEC)	Did (you/name) receive SSI? And age 25 to 61 to minimize the miscoding of person's receiving SSI on the basis of being age 65 or older.
Social Security Disability Insurance, New definition (available 2001 onward) (CPS-ASEC)	Did (you/name) receive Social Security? [If yes] what were the reasons (you/name)(was/were) getting Social Security income last year? [retired; disabled (adult or child); widowed; spouse; surviving child; dependent child; on behalf of surviving, dependent, or disabled child(ren); other (adult or child). Respondents were allowed two reasons.
Supplemental Security Income, New definition (available 2001 onward) (CPS-ASEC)	Did (you/name) receive SSI? [If yes] what were the reasons (you/name) (was/were) getting Supplemental Security Income last year? [disabled (adult or child); blind (adult or child); on behalf of a disabled child; on behalf of a blind child; other (adult or child)]. Respondents were allowed two reasons.