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Abstract

The purpose of this study is to examine the implications of using different approaches to estimating the U.S. working-age population with disabilities. The approaches compared are the traditional work-activity limitation question, the Census Bureau's newer six-question sequence that does not include a work-activity limitation question, and the combination of the two. With data from the Current Population Survey and the American Community Survey, the authors demonstrate that using the work-limitation question or the six-question sequence alone results in an underestimate of the size of the working-age population with disabilities (assuming the International Classification of Disability, Health, and Functioning conceptualization of disabilities). Furthermore, the authors show that using the sample of the working-age population with disabilities identified by the six-question sequence will lead to biased estimates of key social policy success parameters; in particular, it will overestimate their employment rates and underestimate the share that are receiving Social Security Disability Insurance or Supplemental Security Income–Disabled Adults benefits relative to the broader sample that includes a work-limitation question and the six-question sequence.

Keywords

work-activity limitation, employment, program participation, six-question sequence of disability, CPS

Designing and implementing a set of questions to identify a random sample of a vulnerable population in a nationally representative data set is a prerequisite for evidence-based policy analysis on that population. As Garth Graham, the current U.S. Department of Health and Human Services (USHHS) Director of Minority Health, states, “To fully understand and meet the needs of our communities, we must first thoroughly understand who we are serving” (USHHS, 2011). With respect to the population with disabilities, Graham's statement is consistent with the public policy objectives spelled out in the Census 2000 documentation that the disability sequence should be designed to identify a population consistent with legislative and programmatic needs, including, among other things, *generating data relevant to the Social Security disability programs* (U.S. Census, 2000). Two such nationally representative data sets are the Current Population Survey (CPS) and the American Community Survey (ACS).

Starting in 1981, the CPS-ASEC (Annual Social and Economic Supplement) began including a work-activity

limitation question that could plausibly be used to identify the working-age population with disabilities. (See Jette & Bradley, 2002, and Mathiowetz, 2002, for reviews of the conceptual and methodological issues in measurement of work disabilities.) However, this single work-activity limitation question is the subject of substantial controversy with respect to its validity in identifying a random sample of the working-age population with disabilities. In June 2008, when the CPS-BMS (Basic Monthly Survey) first began tracking the population with disabilities, it used a new six-question sequence that was similar to the new disability

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sequence in the ACS. Neither of these data sets' six-question sequence on disability includes a work-activity limitation question.

Here, we take advantage of the CPS program sample design to compare people who answered the six-question sequence in the CPS-BMS and a work-activity limitation question in the CPS-ASEC. Doing so provides a first look at how a disability population identified by the new six-question sequence differs from one using the work-activity limitation question and how both differ from a broader seven-question sequence that includes the current CPS-ASEC work-activity limitation question as well as the CPS-BMS six-question sequence.

We find that the lack of a work-activity limitation question in the six-question sequence 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. Finally, in a face validity test using the 2010 CPS, we show that only 63.3% of Social Security Disability Insurance (SSDI)/Supplemental Security Income (SSI)-Disabled Adults recipients were captured by the six-question sequence. Adding the work-activity limitation question population increases the percentage captured by 28.7 percentage points.

Echoing the views of Sallie Keller-McNulty, the then President of the American Statistical Association, who urged in 2006 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, we propose that the work-activity limitation question be reinstated into the CPS-BMS and ACS, at least until an acceptable alternative is found.

Method and Data

There is not universal agreement on the most appropriate definition of disability, although the most widely used is the World Health Organization's (WHO) International Classification of Disability, Health, and Functioning (ICF; WHO, 2001). This conceptual model 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 data sets (Swanson, Carrothers, & 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*.

Because the CPS is a broad socioeconomic survey that identifies a wide array of outcomes, the problem is how to operationally identify, in a few questions, a random sample of this complex conceptualization of the population with disabilities. One way to describe how the CPS does so is to imagine a square containing the entire population with health conditions. 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 (i.e., 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 and/or SSI-Disabled Adults benefits (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 subpopulation whose work 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 new six-question sequence in the ACS and the CPS-BMS is attempting to operationally achieve.

CPS. The CPS is a joint effort of the Bureau of Labor Statistics (BLS) and the Census Bureau, and is the primary source of monthly U.S. labor force statistics. The CPS, including the CPS-BMS, is fielded every month together with supplements, like the CPS-ASEC, which is fielded every March. The CPS uses a rotation system for its interviews. It follows each housing unit for 16 months—4 months in-sample, followed by 8 months out-of-sample, and 4 months in-sample—and then retired from the sample. In any month, one eighth of the samples are first-time interviewees, one eighth are second-time interviewees, and so on (CPS, 2006, pp. 3–13).

The CPS-ASEC began asking a work-activity limitation question in 1981 that has become the primary way researchers identify levels and long-term trends in the prevalence of disability and the social success indicators of the working-age population with disabilities.

However, due to the controversy surrounding the work-activity limitation question, the CPS-BMS began using a new sequence of six disability questions taken from the ACS in June 2008. The questions were informed by the broad ICF conceptualization of disability and inquire about physical, mental, or emotional conditions that cause serious difficulties with daily activities, including vision, hearing,

remembering/concentrating/making decisions, walking or climbing stairs, dressing or bathing, and going out of the house for errands.

The CPS asked this six-question sequence to all respondents in rotation in June 2008. Since then, all CPS respondents are asked these six questions in their 1st and 5th months in the sample (CPS, 2009b). Importantly, although the six-question sequence in the CPS-BMS does not include a work-activity limitation question, all CPS respondents continue to be asked this question in March when the CPS-ASEC is conducted together with the CPS-BMS.

ACS. The ACS is an annual survey that began in 2000. The Census Bureau designed it to replace the decennial census long form. Substantial testing occurred between 2000 and 2004, making it difficult to compare results across years, so we begin our analysis in 2005. In that year, the questions used to capture the population with disabilities included the work-activity limitation question as well as questions on physical, cognitive, and activity limitations discussed above except that the sensory question combined vision and hearing. In 2008, the vision and hearing questions were separated and the work-activity limitation question was dropped from the sequence. It is this revised ACS six-question sequence, without a work-activity limitation question, which is now used in the ACS and CPS-BMS.

Employment and program participation in both data sets. We focus on working-age (25–61) civilians not living in group quarters, to minimize the influence of schooling and retirement. The employment variable is “employed in the reference period.” The program participation rate includes participation in SSDI and/or SSI-Disabled Adults. The ACS uses a single variable to capture all Social Security (Old-Age, Survivors and Disability Insurance) and SSI benefits. This single variable was also used in the CPS-ASEC prior to 2001. This gross Social Security benefit variable does not allow one to directly capture the specific program source of the benefit—Old Age, Survivors, Disability as well as SSI-Old Age, SSI-Disabled Adult, or SSI-Disabled Children. Beginning in 2001, the CPS used a multiquestion sequence that focused on the reason for receipt to separate SSDI and SSI income from other forms of Social Security program income. As we will see, this improvement in the program source for the Social Security benefits question sequence substantially improves the credibility of our face validity test outlined below—a test that depends on accurately capturing those who are currently receiving SSDI or SSI-Disabled Adults benefits.

In all cases when referring to CPS-ASEC income, the question is asked in March but the reference is to the previous year’s income. In contrast, respondents can be interviewed in any month in the ACS and their reference is to income from the previous 12 months. Because of this difference in how SSDI/SSI-Disabled Adults income is captured in the two data sets, we will show the sensitivity of our results to the use of either the gross or more precise

measure of SSDI and SSI benefits. We will also show how sensitive our results are to the inclusion or exclusion of imputed values, or values that are estimated because the actual value is not known, in the two data sets. In the CPS, this means dropping any imputed values of “reason for Social Security” or “reason for SSI.” In the ACS, this means dropping observations of Social Security or Supplemental Security Income benefits that have been “allocated.” We also look at the sensitivity of our results to whether respondents answered the work-activity limitation and six-question sequence at the same time (March vs. some other month) in the CPS as well as whether the questions reside in the same place in the questionnaire (ACS vs. CPS).

Results

In the absence of a broader set of questions, the CPS-ASEC work-activity limitation question has been used extensively in the economics literature to identify the working-age population with disabilities, its employment, public program use, and economic well-being, how these outcomes compare with those without disabilities, and the role public policy has played in these differences (see, for example, Acemoglu & Angrist, 2001; Burkhauser & Daly, 2011; DeLeire, 2000; Hotchkiss, 2004; Stapleton & Burkhauser, 2003)

In Figure 1, we report the prevalence of work-activity limitation-based disability on the working-age population over time. To capture business cycle conditions, we denote official National Bureau of Economic Research recession years with gray vertical lines. Using our work-activity limitation-based measure of disability, we show that over the period from 1981 to 2010, the prevalence of disability has hovered at around 8% with no discernable upward or downward trend. With the exception of the most recent recession, disability prevalence rates do not appear to be very sensitive to business cycles.

The long-run trends found in Figures 2 and 3 are much more controversial. Figure 2 reports the employment rate of working-age people with disabilities relative to their counterparts without disabilities over time, and Figure 3 shows the rate of SSDI/SSI-Disabled Adults receipt for those with disabilities, again using the CPS-ASEC work-activity limitation-based measure of disability. During the 1980s, the relative employment of those with disabilities rose following the major recession of 1981–1982 and reached a peak of just over 38% in 1989, the peak of the 1980s business cycle. However, this ratio began to fall as the economy moved into the recession of the early 1990s. Instead of increasing as the recession ended as it had during the previous decade, the relative employment of working-age people with disabilities continued to decline over the major growth years of the 1990s, and has continued to do so ever since. By 2010, the employment of working-age people with disabilities was only 21% of that of their counterparts without disabilities. Although the relative employment rate was dropping, the rate

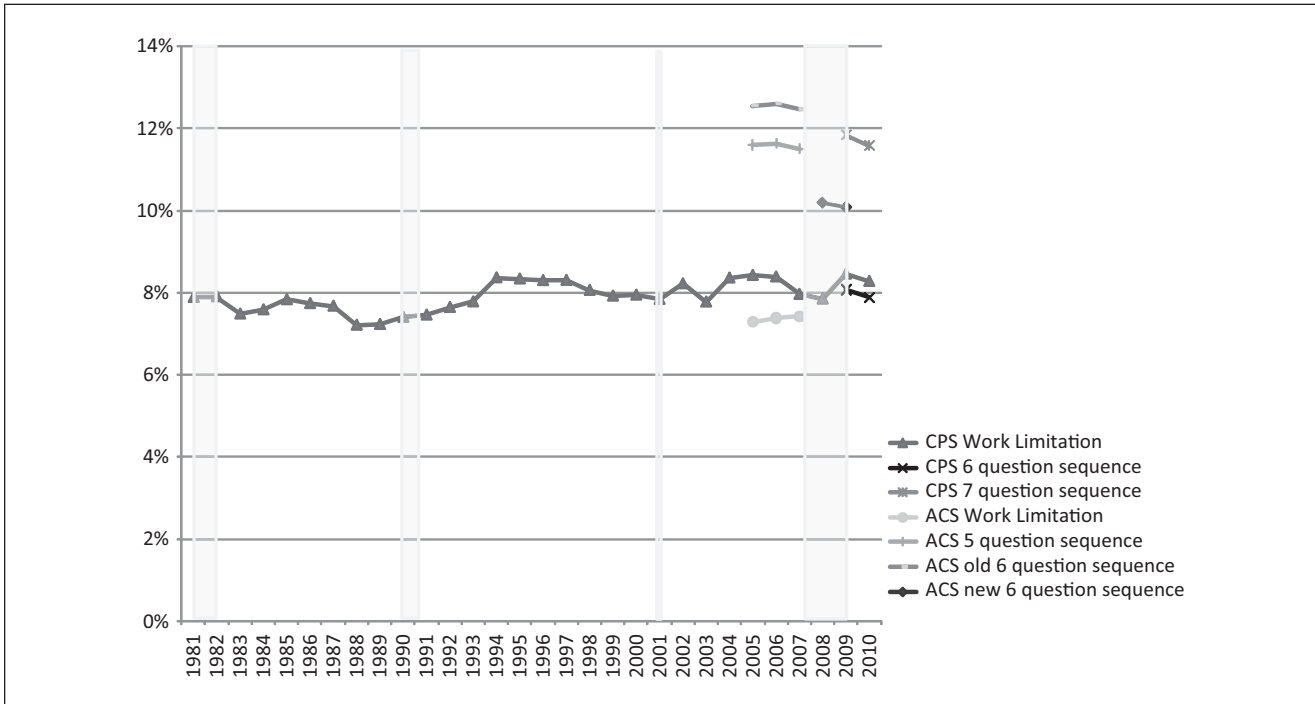


Figure 1. Disability prevalence, by disability type, civilian noninstitutionalized population, 25 to 61

Source: Authors' calculations using various years of CPS and ACS data.

Note: CPS = Current Population Survey; ACS = American Community Survey.

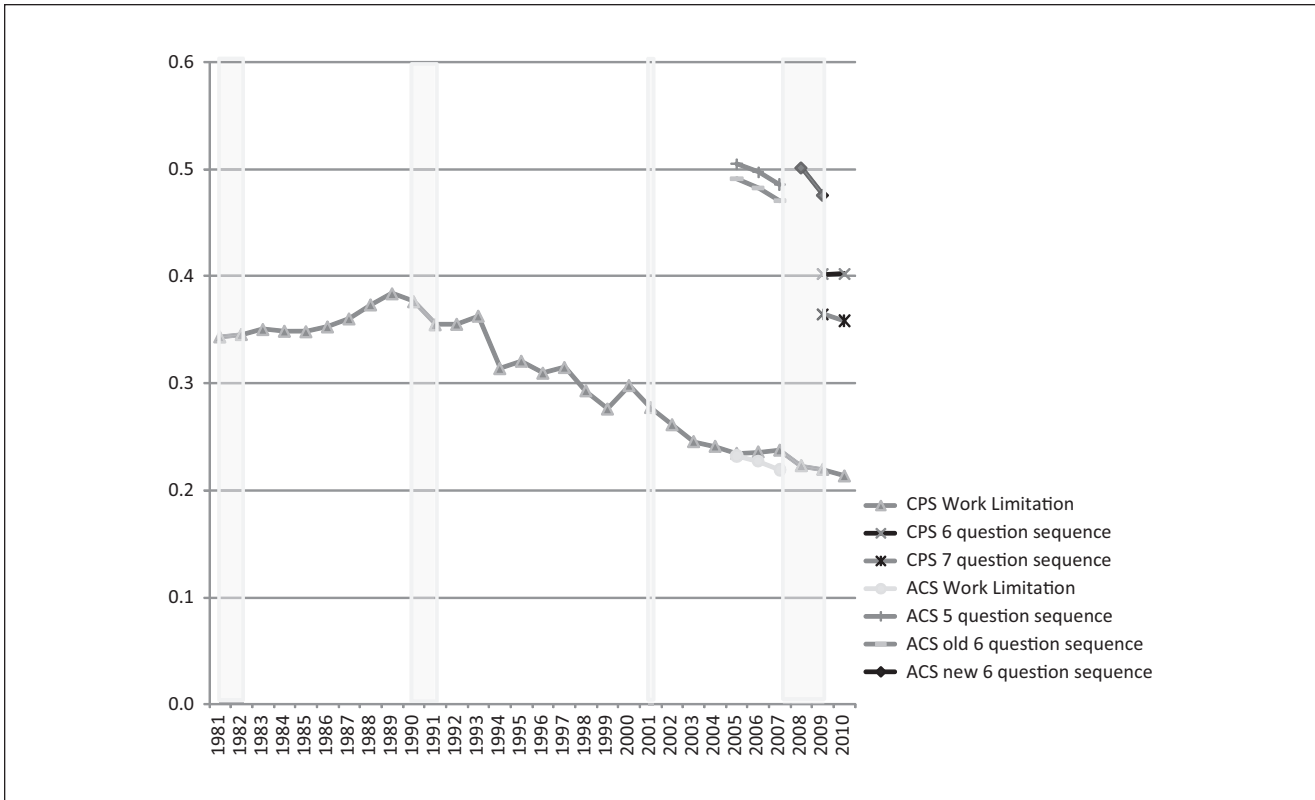


Figure 2. Disability/no disability employment rate ratios, by disability type, civilian noninstitutionalized population, 25 to 61

Source: Authors' calculations using various years of CPS and ACS data.

Note: CPS = Current Population Survey; ACS = American Community Survey.

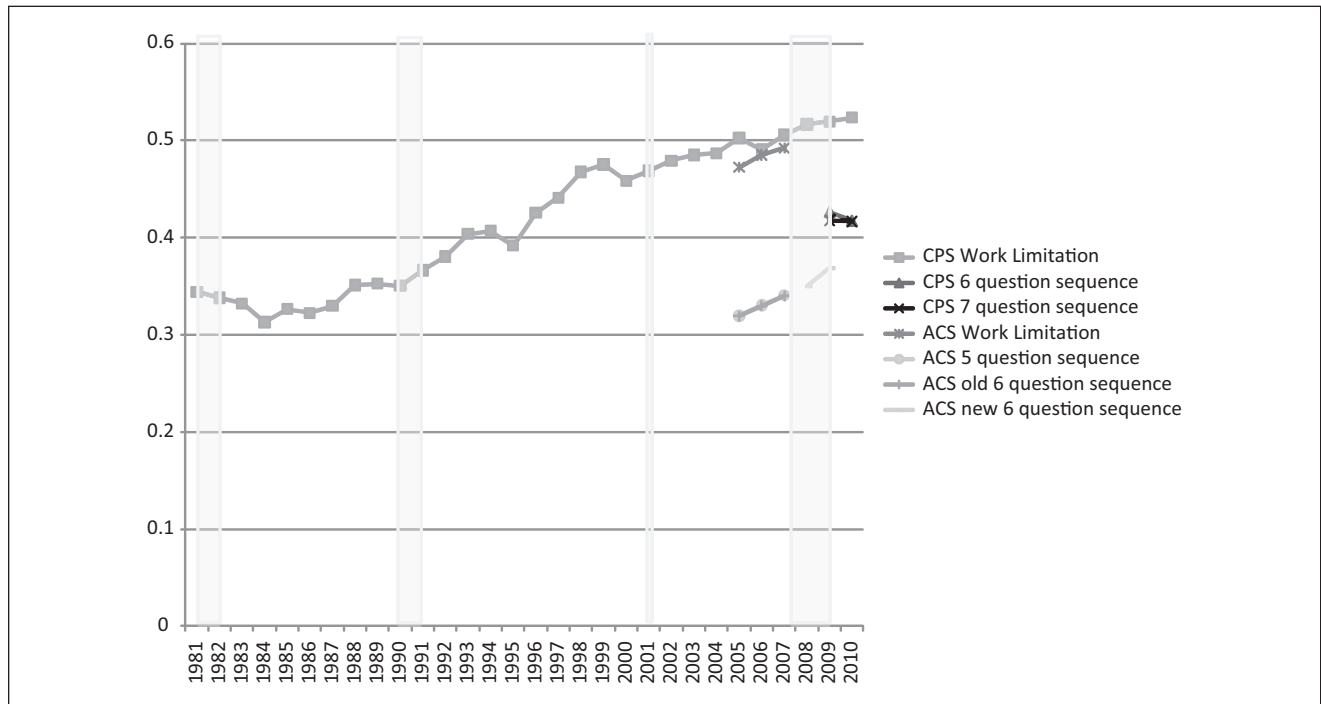


Figure 3. SSDI-SSI rates, by disability type, civilian noninstitutionalized population, 25 to 61

Source: Authors' calculations using various years of CPS and ACS data.

Note: SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income; CPS = Current Population Survey; ACS = American Community Survey.

of disability program receipt grew dramatically, from 35.1% in 1990 to 52.4% in 2010, using the gross measure of SSDI/SSI-Disabled Adults receipt for a consistent time series.

These grim findings with respect to levels and trends in the relative employment of working-age people with disabilities have been consistently found by those using the CPS-ASEC work-activity limitation question. (See Stapleton & Burkhauser, 2003, for a review of this literature.) However, the use of this question itself has been severely criticized and has been said to understate the population size as well as the employment of people with disabilities. Recalling the concentric circles discussed above, those reporting a work-activity limitation are only a subsample of the broader population with disabilities. It should be the case that the prevalence of disability is far larger using this broader conceptualization of disability. The work-activity limitation-based population should also be less likely to work than the population captured in this broader definition—because by definition, one must report a work-activity limitation to be included in this subpopulation. Hence, using this subpopulation to make inferences about the employment rate of the broader ICF-based population that also includes people with impairments or other activity limitations but who do not report a work-activity limitation is likely to understate these rates. However, even holding the severity of an impairment constant, some critics have said it

is likely that those reporting a work-activity limitation are less likely to be working, because those who are not working will be more likely to report that their impairment also affects their ability to work—or conversely, those currently working are less likely to report a work limitation (Anderson & Burkhauser, 1985; Hale, 2001; Kirchner, 1996).

Burkhauser, Daly, Houtenville, and Nargis (2002), using data from the National Health Interview Survey (NHIS), confirm these concerns about the work-limitation question. However, they also show that despite the fact that the work-activity limitation-based population with disabilities understates the prevalence of the impairment-based population with disabilities as well as its employment rate, the trends in these two disability populations between 1983 and 1996 (the last year that such detailed information on impairments and work-activity limitations was asked in the NHIS) were not significantly different. Therefore, the controversial decline in the relative employment rate of people with disabilities captured in Figure 2 using the work-activity limitation question in the CPS-ASEC is not significantly different from the decline found using the impairment question in the NHIS and can be used by researchers trying to explain trends in the employment of working-age people with disabilities.

Despite the existence of this evidence in support of the value of the work-activity limitation question, during the

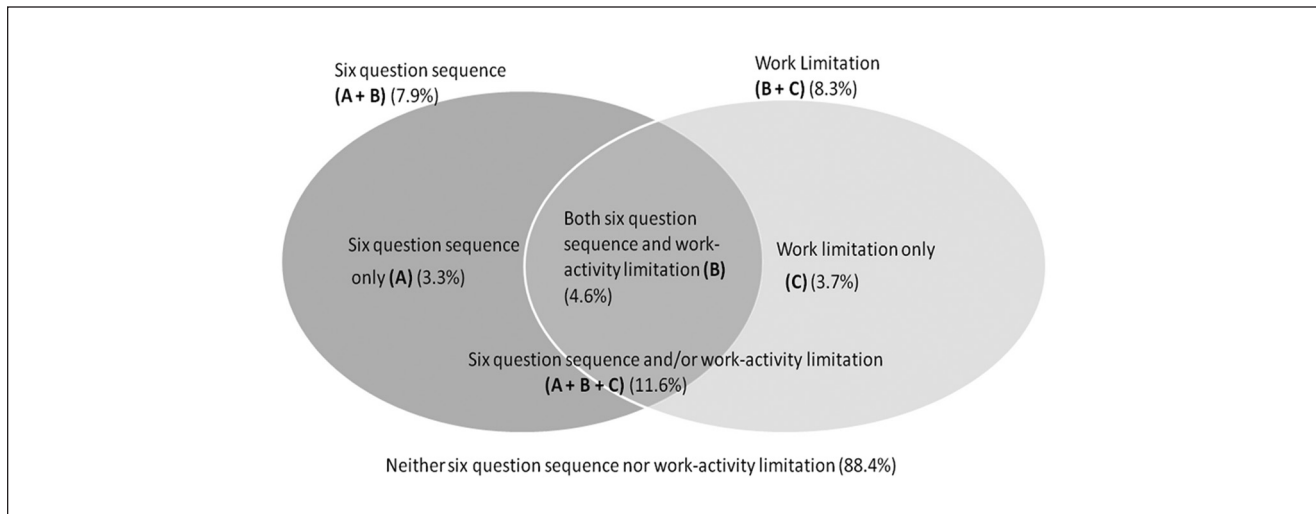


Figure 4. Prevalence rate of noninstitutionalized civilians ages 25 to 61, by disability type

Source: Authors' calculations using data from the 2010 CPS.

Note: CPS = Current Population Survey.

testing phases for the disability questions in the ACS, its use was severely criticized. In 2008, the ACS disability questions were substantially revised, splitting hearing and vision into separate questions and more controversially removing the work-activity limitation question. The scientific evidence for using the six-question sequence 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 nonrepresentative sample. The decision to remove the work-activity question in the ACS was made in the third round based on a small sample (Miller & DeMaio, 2006).

In an April 20, 2006, letter to the Census Bureau Director C. Louis Kincannon, Sallie Keller-McNulty, the 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). This advice was not followed and the work-activity limitation question was dropped from the set of six questions in the ACS in 2008. This same six-question sequence without a work-activity limitation question was also included in the CPS-BMS starting in June 2008.

Comparing alternative samples of the disability population. How successful have the new disability measures been in identifying an unbiased, representative sample of the working-age population with disabilities? Although the six-question sequence is based on an ICF conceptualization of the population with disabilities, Figure 4, using data from the 2010 CPS, shows that the concentric circle model described

above does not take place in practice. The work-activity limitation population (B + C in Figure 4) in this Venn diagram is not a subset of the respondents to the six-question sequence (A + B), but only partially overlaps with this group. Only when the seven-question sequence (A + B + C) is considered to be the outermost circle are we able to successfully operationalize our concentric circle conceptualization of disability. However, only 40% of the people in this broader disability category are the same people (i.e., have positively answered a question in the six-question sequence and the work-activity limitation question—B in the diagram). About 30% have answered positively to the six-question sequence but not the work-activity limitation question (A), and 30% have responded positively to the work-activity limitation question but not the six-question sequence (C). Hence, using either the six-question or the work-activity limitation question disability definitions will dramatically understate the population with disabilities identified by the seven-question sequence (A + B + C).

If the only negative outcome of using different definitions of disability was a population undercount, this could be solved with population-based weights. However, as Table 1 shows, these only partially intersecting populations identify disability populations with substantial differences in key public policy success outcomes.

Although the overall prevalence of disability using the six-question sequence is approximately the same as the prevalence of disability using a single work-activity limitation question, as are the broad demographic characteristics (age, race, gender, and education) of these populations, there are dramatic differences in these two populations' employment and program participation rates. Those who answer affirmatively to one of the six disability questions

Table 1. Population Size, Prevalence Rate, Demographics, Socioeconomic Outcomes and Program Participation of Noninstitutionalized Civilians Ages 25 to 61, by Disability Measure

	Work-activity limitation (B + C)	Six-question sequence (A + B)	Either six- question sequence or work-activity limitation (A + B + C)	Work- activity limitation subset (C)	Six- question subset (A)
Population size ^a	12,531,314	11,934,894	17,538,186	5,006,872	5,603,293
Prevalence rate ^a	8.3%	7.9%	11.6%	3.7%	3.3%
Male ^a	48.7%	48.6%	48.8%	49.3%	49.0%
25 to 29 years ^a	6.9%	6.6%	7.1%	8.1%	7.5%
White non-Hispanic ^a	65.2%	68.2%	66.4%	62.7%	69.5%
High school or equivalent ^a	37.7%	36.3%	36.7%	37.6%	34.1%
Percentage employed ^a	16.6%	30.8%	28.2%	22.8%	57.3%
Relative employment rate ^a	0.213	0.402	0.358	0.304	0.779
Percentage in the labor force ^a	20.6%	36.5%	33.7%	27.9%	66.5%
Percentage working at least 52 hr in the prior calendar year ^b	23.4%	37.9%	35.5%	30.5%	65.9%
Percentage that worked full-time, full-year in the prior calendar year ^b	7.5%	20.4%	17.4%	11.0%	42.3%
Median wages and salaries of full-time, full-year workers ^b	US\$32,120	US\$35,152	US\$35,000	US\$33,100	US\$36,500
Poverty rate ^b	30.1%	25.6%	26.5%	28.5%	17.5%
Median household size-adjusted income ^b	US\$19,486	US\$22,066	US\$21,779	US\$21,245	US\$30,235
Social Security Disability Insurance (SSDI) ^b	32.3%	25.5%	25.0%	23.9%	6.6%
Supplemental Security Income-Disabled Adults (SSI) ^b	20.8%	16.8%	16.5%	15.9%	5.9%
SSDI and/or SSI-Disabled Adults narrow definition ^b	49.2%	38.9%	38.5%	37.6%	11.6%
SSDI and/or SSI-Disabled Adults gross definition ^b	52.4%	41.8%	41.7%	41.4%	14.8%
Workers' compensation ^b	1.7%	1.1%	1.4%	2.1%	0.8%
Veterans disability ^b	3.8%	3.1%	3.2%	3.5%	1.7%
Any of the above programs ^b	53.1%	41.8%	41.9%	42.2%	13.8%

Source: Authors' calculations using March 2010 Current Population Survey.

Note: Sample weights are used to compute representative estimates.

^a2010.

^b2009.

(A + B) are much more likely to be employed as seen in row 7 (30.8 vs. 16.6%) and less likely to be receiving SSDI/SSI-Disabled Adults benefits as seen in row 17 (38.9 vs. 49.2%) than those identifying as having a work-activity limitation (B + C).

However, even more importantly, the 30% of the broader seven-question disability population who report a work-activity limitation only (C) are dramatically different in their employment and program participation than the 30% of this broader population who report one of the impairment/activity limitations captured by the other six questions but who do not have a work-activity limitation (A). For instance, as can be seen in row 7 of Table 1, the work-activity limitation only population has an employment rate of 22.8%, much lower than the 57.3% employment rate of the population who only reported having one of the six-question sequences of disabilities. Similarly, the work-activity limitation only population (C) in row 17 has a narrow program participation rate of 37.6%, much higher

than the 11.6% program participation rate for the six-question only population (A).

Thus, using either the six-question sequence (A + B) or the work-activity limitation population (B + C) will not only understate the larger population with disabilities captured by the seven-question sequence questions (A + B + C), but it is likely to create biased estimates of the employment and program participation rates of this overall population with disabilities as well.

Table 1 focused on data from the 2010 CPS. Going back to Figures 1, 2, and 3, we also find substantial differences in the levels of prevalence, employment, and SSDI/SSI participation across our definitions of disability for earlier years of the CPS and the ACS. However, we find little evidence of differences in their trends.

Figure 1 shows levels and trends of disability prevalence in the working-age population using the CPS-ASEC work-activity limitation question from 1981 to 2010 as well as the ACS work-activity limitation question, the old five-question

sequence (that does not include a work-activity limitation question) and the entire old six-question sequence from 2005 to 2007; the ACS new six-question sequence (that does not include a work-activity limitation question) from 2008 to 2009; and that same new six-question sequence in the CPS-BMS in 2009 and 2010.

The prevalence of work-activity limitations between 2005 and 2007 is quite similar in both data sets. In contrast, the prevalence rate over this period based on the old ACS five-question sequence is substantially above the prevalence rates based on the ACS work-activity limitation question. Importantly, the prevalence rate is even higher over this period based on the old ACS six-question sequence that includes the work-activity limitation question. Hence, the old ACS five-question sequence has the same problems of undercounting those who only report a work-activity question as we discovered in the 2010 CPS data discussed above.

The new CPS six-question sequence prevalence rates are about the same as those based on the CPS work-activity limitation question in 2009 and 2010. However, the prevalence rate based on the union of these two samples (the seven-question sequence—A + B + C—discussed in Figure 4) is substantially above either. These new CPS seven-question sequence prevalence rates for 2009–2010 are close to those found in the old ACS six-question sequence in 2005–2007, which also included a work-activity limitation question. This suggests that it is the difference in disability definitions rather than the difference in data sets that is driving the difference in prevalence levels reported in Figure 1. In all cases, however, we find little difference in the trends across data set or disability definition.

Figures 2 and 3 repeat the exercise undertaken in Figure 1, but instead focus on relative employment and SSDI/SSI-Disabled Adults program participation, respectively. In Figure 2, we see that no matter the disability definition or data set, the relative employment rate of working-age people with disabilities to those without disabilities has been falling. The relative employment levels of the new six-question sequence and the seven-question sequence are much higher than the relative employment levels of the population with work-activity limitations, but the trends are similar, consistent with the results in Burkhauser et al. (2002).

Figure 3 focuses on the share of the working-age population that receives SSDI/SSI-Disabled Adults benefits, using the gross measure of SSDI/SSI-Disabled Adults receipt discussed in the “Method and Data” section, to be consistent over time and data set. With respect to this important public policy success parameter, we find the same upward sloping take-up rate of SSDI/SSI-Disabled Adults by the CPS work-activity limitation population beginning around 1990 that is found by others in the literature. (See Stapleton & Burkhauser, 2003, and Burkhauser & Daly, 2011, for discussions of the literature on what is causing this upward trend.) We find this same upward

trend in SSDI/SSI-Disabled Adults take-up rates over time in our other disability populations, but the levels are much lower in the old ACS five-question disability sequence in 2005–2007, the new ACS six-question sequence in 2008–2009, and the new CPS six-question sequence in 2009–2010 that exclude those who only report a work-activity limitation.

The large differences in success outcomes when using the different disability definitions, shown in Figures 1, 2, and 3 and Table 1, as well as the intersecting populations shown in Figure 4, lead to two possible conclusions. Either the work-activity limitation question is not capturing people who have health-based impairments, activity limitations, and/or participation restrictions, or the new six-question sequence in the ACS and CPS is not fully capturing the entire ICF-based conceptualization of the population of those with health impairments, activity limitations, and participation restrictions and is systematically overstating its employment and understating its SSDI/SSI-Disabled Adults program participation. The face validity test we report below provides plausible evidence that it is the latter.

A face validity test. The SSDI and the SSI-Disabled Adults programs are targeted to working-age people with disabilities who are unable to perform any substantial gainful activity based on an impairment stemming from their health condition (these programs’ set of medical listings). 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.

Figure 5 is a Venn diagram that divides the population receiving SSDI or SSI-Disabled Adults benefits based on their responses to the 2010 CPS-ASEC seven-question disability sequence, using the narrow definition of SSDI/SSI receipt. The six impairment/activity limitation questions (A + B) are able to capture 63.3% of this population, missing the 28.7% of this population that only report a work-activity limitation (C). Likewise, although the work-activity limitation question (B + C) captures 84.1% of this population, it misses the 7.9% of the seven-question disability population that only reports one of the six impairment/activity limitations questions (A). Together, the broader seven-question measure (A + B + C) captures 92.0% of the SSDI/SSI-Disabled Adults population.

We find that despite its greater number of disability questions, the six-question sequence alone is less able to identify SSDI and SSI-Disabled Adults beneficiaries than the work-activity limitation question alone. This suggests that the failure to include some form of work-activity limitation question in a set of questions aiming to capture the broader disability population will substantially undercount the number of persons actually receiving SSDI or SSI-Disabled Adults benefits. Because the employment rates of these missing SSDI/SSI-Disabled Adults beneficiaries are

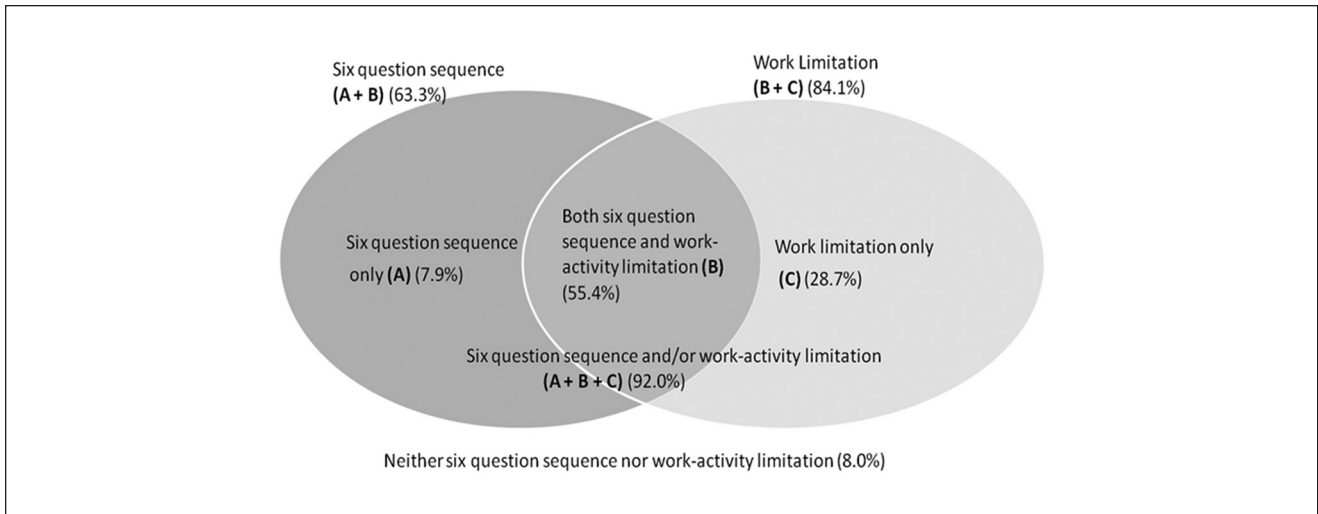


Figure 5. Number and percentage of the 7,337,059 noninstitutionalized civilians ages 25 to 61 receiving SSDI-SSI income who identify as having particular disabilities

Source: Authors' calculations using data from the 2010 CPS.

Note: SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income; CPS = Current Population Survey.

Table 2. Percentage of Noninstitutionalized Civilians Receiving SSDI-SSI Income, by Disability and Data set

	Both (B)	Five- or six-question only (A)	Work limitation only (C)	Entire sequence (A + B + C)	Neither
CPS, 2010, narrow SSDI-SSI definition	55.4	7.9	28.7	92.0	8.0
CPS, 2009, narrow SSDI-SSI definition	56.3	8.9	27.3	92.5	7.5
CPS, 2009, gross SSDI-SSI definition	47.5	9.0	24.6	81.1	18.9
ACS, 2007	65.8	11.3	6.2	83.3	16.7
CPS, 2009, narrow SSDI-SSI definition, no imputed values	60.0	9.1	24.7	93.8	6.2
ACS, 2007, no imputed values	69.0	11.4	6.2	86.6	13.5
CPS, 2009, narrow SSDI-SSI definition, just March	58.6	8.6	24.7	91.9	8.2
	B	A	C	A + B + C	

Source: Authors' calculations using various years of CPS and ACS data.

Note: SSDI-SSI = Social Security Disability Insurance-Supplemental Security Income; CPS = Current Population Survey; ACS = American Community Survey. *n* = 7,549,928 for ACS 2007; 9,222,050 for CPS 2009 gross definition; 7,505,824 for CPS narrow definition; 7,337,059 for CPS 2010 narrow definition; 6,452,959 for CPS 2009 no imputed values; and 1,866,592 for CPS 2009 just March respondents.

likely to be substantially lower than those of the rest of the working-age population with disabilities, their absence from the officially measured population with disabilities in the six-question sequence (A + B) is also likely to upwardly bias the employment rates of the true population with disabilities as well as downwardly bias its participation in SSDI/SSI-Disabled Adults programs.

Table 2 shows that within the CPS data, the face validity test results are not sensitive to choice of year, exclusion of imputations, or the month in which the six-question sequence is answered. There are, however, substantial differences in the results regarding type of variable used to capture the SSDI/SSI-Disabled Adults benefit population and between the ACS and CPS.

Column 2 reports the share of the SSDI/SSI-Disabled Adults program population captured by the six-question

sequence and the work-activity limitation sequence (B), column 3 provides the marginal contribution of the old five- or new six-question sequence (A), neither of which contain the work-activity question, column 4 does so for the work-activity limitation question (C), column 5 reports results if all questions are used (A + B + C), and column 6 reports the percentage missed by column 5.

Row 1 of Table 2 repeats the values found in Figure 5 for the 2010 CPS using the narrow definition. Row 2 shows similar results using the 2009 CPS, narrow definition. Row 3 also uses the 2009 CPS data but substitutes the gross measure of SSDI/SSI-Disabled Adults benefit receipt used in the CPS prior to 2001 and still used in the ACS data. As can be seen in column 6, because this gross measure fails to screen out those aged 25 to 61 who are receiving some other form of Social Security benefit not related to a

disability—for example, widow or mother benefits—the percentage of persons receiving SSDI/SSI-Disabled Adults benefits under this measure who are not captured in our disability sample more than doubles from 7.5% to 18.9%. The more detailed questions used to specifically capture the SSDI and the SSI benefit population in the CPS since 2001 yield a more accurate population of SSDI/SSI-Disabled Adults recipients. However, even when using this gross pre-2001 measure for our SSDI/SSI-Disabled Adults population in the CPS, the marginal gain from the work-activity limitation question (column 4) is still substantially greater than the marginal gain from the new six-question sequence of disability (24.6% vs. 9.0%).

Row 4 of Table 2 provides these same summary statistics, but for the 2007 ACS. This is the last year that the ACS included the work-activity limitation question as one of the questions in its six-question sequence, and merges together the sensory limitations.

Because the ACS only provides a gross measure of the SSDI/SSI-Disabled Adults population that we use for our face validity test, it is best to compare results in row 4 with the 2009 CPS data in row 3 using this same gross measure of the SSDI/SSI-Disabled Adults population. As can be seen in column 6, the use of this gross measure results in a much greater share of SSDI/SSI-Disabled Adults recipients not being captured in our disability samples, whether it is used in the 2009 CPS (18.9%) or in the 2007 ACS (16.7%).

As can be seen in column 2, a substantially larger percentage of the 2007 ACS gross SSDI-SSI-Disabled Adults population (65.8%) reports having an impairment/activity limitation covered by the old ACS five-question sequence and a work limitation (B) than is the case in the 2009 CPS gross SSDI/SSI-Disabled Adults population (47.5%). More importantly, the marginal contribution of the old ACS five-question sequence not only rises dramatically relative to the work-activity limitation (11.3% in the ACS vs. 6.2% in the CPS) but actually increases in its marginal contribution from 9.0% to 11.3%, whereas the marginal contribution of the work limitation falls from 24.6% to 6.2%.

Because we do not have a controlled experiment, it is not possible to know with certainty why the 2007 ACS results are so different in this regard from the 2009 CPS results. However, one possibility is the substantial differences in the placement of the work-activity limitation question in the two data sets. In the CPS, the work-activity limitation question is part of the ASEC sequence and is asked in a completely different part of the questionnaire than it is in the six-question sequence. In contrast, between 2005 and 2007, the work-activity limitation question was asked as the last question in the old six-question sequence. It may be that, other things being equal, it is less likely for someone to say “yes” to a work limitation when they have just said “no” five times in a row to questions related to impairments or

other activity limitations. Alternatively, it may be the case that the survey enumerator might ask the respondent about the previous five questions again, to confirm that he or she only has a work limitation and not one of the other five types of impairment/work-limitation questions in the old ACS six-question sequence. If so, it would explain why in the 2007 ACS a greater share of the SSDI/SSI-Disabled Adults beneficiary population reports having one of the old five-question impairment/activity limitations and a work-activity limitation-based disability. It would also explain why the marginal value of the old five-question impairment/activity limitation rises, whereas the marginal value of the work-activity limitation falls.

We also investigate the effect of question placement by limiting our sample to the 25% of respondents in the 2009 March CPS who also answer the CPS-BMS new six-question sequence concurrently because it is their 1st or 5th sample month. Unlike in the ACS, the work-activity limitation question and the six-question sequence are in different parts of the CPS questionnaire series and therefore unlikely to influence each other. Row 7 shows that when limiting the sample to those who answered both the work-activity limitation question and the six-question sequence in March, the share of SSDI/SSI-Disabled Adults beneficiaries and the share of those reporting both a work-activity limitation and an affirmative six-question response rise slightly. This is consistent with an improvement in the precision of our face validity test when the questions are asked concurrently but the marginal importance of the work-activity limitation question continues to dominate that of the six-question sequence.

Conclusion

The work-activity limitation question in the CPS-ASEC and the new six-question disability sequence in the ACS and CPS-BMS not only miss a large part of the ICF-based conceptualization of the population with disabilities but also, if used alone, will create biased samples of that population. Using either alone in the 2009 or 2010 CPS dramatically understates the population with disabilities captured by the broader seven-question sequence that includes them both (A + B + C in Figure 4). More importantly, the population reporting a work-activity limitation but missed by the six-question sequence (C) are substantially different in their employment and program participation than the population who report having one of the impairment/activity limitations in the new six-question sequence in the ACS or CPS-BMS but missed by the work-activity limitation question (A). Thus, using either the subsample based on the six-question sequence (A + B) or the work-activity limitation question (B + C) will substantially differ from the population values found in the overall

(A + B + C) and create biased estimates of employment and program participation relative to the overall population with disabilities.

Although the work-activity limitation question is not without flaws, dropping it without a proper substitute has led to another set of problems. Based on our face validity test, we find plausible evidence that when used without some work-activity limitation question, the six-question disability sequence-based population will overstate the employment rates and understate the SSDI and SSI-Disabled Adults program participation of the true working-age population with disabilities. In 2010, the CPS six-question sequence missed one third of SSDI/SSI-Disabled Adults recipients, people who should be included in any ICF-based conceptualization of the population with disabilities or in a data set *generating data relevant to the Social Security disability programs* (U.S. Census, 2000). We propose that the work-activity limitation question be reinstated into the CPS-BMS and ACS, at least until an acceptable alternative is found.

Authors' Note

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References

- Acemoglu, D., & Angrist, J. (2001). Consequences of employment protection? The case of the Americans With Disabilities Act. *Journal of Political Economy*, 109, 915–957.
- Anderson, K., & Burkhauser, R. (1985). The retirement-health nexus: A new measure for an old puzzle. *Journal of Human Resources*, XX, 315–330.
- Burkhauser, R., & Daly, M. (2011). *The declining work and welfare of people with disabilities: What went wrong and a strategy for change*. Washington, DC: American Enterprise Institute Press.
- Burkhauser, R., Daly, M., Houtenville, A., & Nargis, N. (2002). Self-reported work-limitation data: What they can and cannot tell us. *Demography*, 39, 541–555.
- Current Population Survey. (2009b). *Frequently asked questions about disability data*. Retrieved from: http://www.bls.gov/cps/cpsdisability_faq.htm
- DeLeire, T. (2000). The wage and employment effects of the Americans With Disabilities Act. *Journal of Human Resources*, 35, 693–715.
- Hale, T. (2001). The lack of a disability measure in today's current population survey. *Monthly Labor Review*, (June), 38–41.
- Hotchkiss, J. L. (2004). A closer look at the employment impact of the Americans With Disabilities Act. *Journal of Human Resources*, 39, 887–911.
- Jette, A. M., & Badley, E. (2002). Conceptual issues in the measurement of work disability. G. S. Wonderlich, D. P. Rice, & N. L. Amado. In *The dynamics of disability: Measuring and monitoring disability for social security programs* (pp. 183–210). Washington DC: National Academy Press.
- Keller-McNulty, S. (2006). American community survey and disability (Letter to Dr. Lewis Kincannon, Director, U.S. Census Bureau). Reproduced in *AmStat News*, June 2006, p. 4.
- Kirchner, C. (1996). Looking under the street lamp: Inappropriate uses of measures just because they are there. *Journal of Disability Policy Studies*, 7, 77–90.
- Mathiowetz, N. A. (2002). Methodological issues in the measurement of work disability. In G. S. Wonderlich, D. P. Rice, & N. L. Amado (Eds.), *The dynamics of disability: Measuring and monitoring disability for social security programs* (pp. 211–240). Washington DC: National Academy Press.
- Miller, K., & DeMaio T. (2006). *Report of cognitive research on proposed American community survey disability questions*. Washington, DC: U.S. Census Bureau.
- Stapleton, D., & Burkhauser, R. (Eds.). (2003). *The decline in employment of people with disabilities: A policy puzzle*. Kalamazoo, MI: W. E. UpJohn Institute for Employment Research.
- Swanson, G., Carrothers, L., & Mulhorn, K. (2003). Comparing disability survey questions in five countries: A study using ICF to guide comparisons. *Disability and Rehabilitation: An International Multidisciplinary Journal*, 25, 665–675.
- U.S. Department of Health and Human Services. (2011). *Affordable Care Act to improve data collection, reduce health disparities*. News Release. June 29, 2011.
- World Health Organization. (2001). *International classification of disability, health and functioning*. Geneva, Switzerland: Author.