

An evaluation of the American Community Survey indicators of disability

Ancillary Material

The Work Limitation Question Solution - One of the suggested solutions for addressing the small difference between the persons identified by the ACS questions and those who report receipt of monetary benefits of SSI/SSDI but are not identified by the ACS questions is to add a question about work limitations to the ACS six question set^{9,10}. This ancillary material adds the work limitation questions to the analysis to see if they capture the missing SSI/SSDI population identified in the original paper.

Table 1A is organized to parallel the information in Table 2 in the text above but with the addition of work limitation as a defining indicator. The third column in Table 1A identifies the percent of the total population contributed by each of the combinations of measures using the ACS, SSI/SSDI and work limitation questions. Approximately 7.0% (3.4% plus 3.6%) of those identified by the ACS questions also reported work limitation. Adding those who were not identified by the ACS question but were identified by the work limitation question would increase the percent of the population with a disability by 3.6% (2.6% plus 1.0%). Of this 3.6%, 1.0% are also recipients of SSI/SSDI while the remaining 2.6% are not SSI/SSDI recipients. Finally there is an additional 0.4% of the total adult population who still only report receipt of SSI/SSDI. Stated differently, of the total 17.1% of the population identified as having a disability by the ACS, SSI/SSDI and work limitations questions, 0.4% are only identified by the receipt of SSI/SSDI benefits; 1% are identified by the combination of SSI/SSDI and work limitations only; 2.6% are identified only by the work limitation questions and the remaining 13.1% by the ACS alone or in combination with other indicators.

INSERT TABLE 1A

Those identified by the ACS questions, 27.6% (27.4% plus 0.2%) received SSI/SSDI benefits, and 53.3% had work limitation (25.9% plus 27.4%) . Among those identified by the SSI/SSDI questions (5.3% of the total population) 73.0% (67.3% plus 5.7%) were identified by the ACS questions and 85.8% (67.3% plus 18.5%) by the work limitation questions. There are still 8.5% of those who receive SSI/SSDI who are not captured by any of the other question sets. The combined work limitation questions, which have been added to improve the representation of SSI/SSDI recipients, capture 66% of the respondents who indicate ACS limitations (32.1% plus 33.9%). They also capture 43.2% of persons receiving SSI/SSDI (33.9% plus 9.3%). Focusing separately on the unable to work question and the limited in kind or amount of work question, we find that the two questions work very differently. Indication of being unable to work captures higher percentages of the ACS respondents, 75.6% (31.8% plus 43.8%) and of those receiving SSI/SSDI, 55.3% (43.8% plus 11.5%). However the limited in kind or amount of work question produces much lower percentages of the other measures, only 45.6% of respondents with ACS limitations (32.8% plus 12.8%) and even lower percentages of receipt of SSI/SSDI, 17.4% (12.8% plus 4.6%).

The last column shows how the combination of the ACS questions, the receipt of SSI/SSDI benefits and the addition of the work limitations questions capture the 9.8% of the population who receive SSI/SSDI benefits (see Table 2 in paper text). The ACS questions capture 76.5% of the population identified by any of the question sets (adding 34.0%, 19.8%, 20.9% and 1.8%). The work limitation questions add another 15.2% that are *not identified by ACS limitations nor receipt of SSI/SSDI*. The work limitation

questions do add another 5.7% of those who indicate receipt of SSI/SSDI, but 2.6% of the population are still captured only by the receipt of SSI/SSDI. Relative to the general population percentages (see column 3), the inclusion of the work limitation questions adds 1.0% of the SSI/SSDI recipients, but also adds an additional 2.6% to the population defined as having a disability and *this 2.6% does not respond positively to the ACS questions or the receipt of benefits raising further questions about the nature of the impairment/functional limitation involved.*

Health Characteristics Associated with Definitions of Disability - We have already established in Table 3 in the paper text that there are no biases in the health characteristics captured by the ACS questions in comparison with those captured by the indication of receipt of SSI/SSDI alone. Of interest in this next analysis is whether the population defined by those who indicate work limitations alone or in combination with SSI/SSDI benefits differ from the population captured by the ACS questions. Of particular interest is whether the different definitions vary in capturing psychological and cognitive difficulties since these are harder to capture in general population surveys. Table 2A describes the percent that report selected chronic conditions and specific types of basic action difficulties and complex activity limitations.

For most of the health characteristics investigated, the groups identified by the ACS questions had similar or greater percentages reporting each type of condition. The groups defined by both the ACS questions and the work limitations capture even greater percentages of many conditions than do those with work limitations alone or both with or without receipt of SSI/SSDI. For other conditions, such as injuries, heart related problems, and particularly mental health problems those defined by both the ACS

questions and work limitation questions have substantially higher prevalence than among those captured by work limitation only. The ACS questions also capture a higher percent or similar percent of all conditions compared to the population identified by the ACS questions, receipt of SSI/SSDI and work limitations. The ACS groups also have a significantly higher percent reporting difficulties with basic actions particularly having multiple difficulties in basic actions than does the group which has a work limitation only. The same can be said for social and leisure limitations and self-care limitations and for those with multiple problems with complex activities. Examining the level of severity of movement limitations, the results are consistent with what was reported in Table 4 with the group defined by the ACS questions having a higher percent with severe movement limitations than the group defined by the work limitation questions alone. The final column of Table 2A shows the percent reporting functional limitations for the group defined by the ACS questions and the work limitation questions associated with the proposal to address incomplete data on SSI/SSDI receipt. Once again we find that the measures very closely mirror those found among the respondents to the ACS question set by itself. The addition of the work limitation component does not capture any group in significantly greater proportions than is already captured by the ACS-six. If anything, the slightly higher percentages among the ACS group indicate that true to the intent of the development of the questions, the ACS group is picking up the population with greater representation of those with limitations in basic actions and particularly those with multiple basic action limitations.

INSERT TABLE 2A

Employment and poverty rates associated with the various measures of disability are shown in Table 3A. Those identified by the ACS questions with or without work limitations and/or receipt of SSI/SSDI were more likely not to have worked last year than those who reported only work limitations (52.5% compared to 42.9%). Those with work limitation and SSI/SSDI or SSI/SSDI only had the highest levels of not working in the past year, 86.7% and 84.8% respectively, in keeping with the requirement not to be working in order to receive SSI/SSDI.

We see a similar picture for poverty as with employment. Those identified by the ACS questions report similar levels of poverty to those found among the group reporting work limitations alone, work limitations and receipt of SSI/SSDI, or SSI/SSDI receipt only. Among those with ACS limitations, 25.6% live in poverty compared to 26.0% of those who indicate work limitations alone. Among those who receive SSI/SSDI only 35.0% live below the poverty level, compared to those with work limitations and receipt of SSI/SSDI where 28.2% are in poverty. However, there are no significant differences among any of the groups. These results show that the group identified by ACS questions is not biased in terms of poverty levels and that including a work limitation measure in the definition of disability will not result in large changes to the composition of the population with disabilities along these dimensions. At the same time, using the ACS questions to identify the population with a disability includes those who have been routinely excluded based on the focus on work limitation questions and receipt of financial benefits¹⁸.

INSERT TABLE 3A

This second major part of our analysis investigated including an additional measure of work limitation in the identification of the population with disability on identifying the SSI or SSDI recipients. The addition of the work limitation questions had a very small effect on the relationship between the ACS measures and the indications of receipt of SSI or SSDI. Adding work limitation questions to identify the population with disability increases the population with disability by 3.6%, but only 1.0% of that increase captures persons receiving SSI/SSDI benefits (see Table 1A). The additional 3.6% identified by the work limitation questions alone are predominantly persons who are limited in the kind or amount of work (table 1A) they can do as opposed to being unable to work. Even with the addition of the work limitation questions 0.4% of the population with SSI/SSDI were still not included.

While the work limitation questions identify some additional persons receiving SSI/SSDI (1.0%), they also add a more substantial group that have a work limitation problem but do not have ACS limitations or receive SSI/SSDI (2.6%). The data show that the ACS measures captured higher proportions of all basic action and all complex activity limitations except work limitations (which is a requirement for receipt of SSDI). However, the group defined by the ACS questions also includes those with serious functional difficulties or independence problems who can still work (those who answer the ACS questions only). This has been a group of concern that has been omitted for years from employment data when it focuses only on the work limitation question¹⁸. These analyses do not support the specific Burkhauser et al. (2012a) prediction that persons who have work limitations but are not captured by the ACS questions would have higher levels of mental health or intellectual disability problems, again indicating that no such bias exists and were the work limitation measures included in the definition of disability the representation of causative conditions, functioning and even participation in complex activities would not be changed.

Table 1A: Percentages of those aged 18-64 identified as having a disability by ACS questions, receipt of SSI/SSDI questions, work limitation questions or a combination of all three

Indicators of Disability	Total Population	Total Population Percentages	Any ¹ ACS Questions Percentages	Any ² SSI/SSDI Questions Percentages	Any ³ Work Limitation Questions Percentages			Combination of ACS, SSI/SSDI and Work Limitation Percentages
					Combined Work Questions	Unable to Work	Limited (in Kind or Amount)	
Total Population	192,000,000	100%	25,100,000 13.1%	10,200,000 5.3%	20,200,000 10.5%			32,900,000 17.1%
					Combined Work Questions 10.5%	Unable to Work 7.2%	Limited (in Kind or Amount) 3.4%	
No Disability	159,200,000	82.9%						
All Disability Measures	32,900,000	17.1%	100%	100%	100%	100%	100%	100%
Any ACS	25,100,000	13.1%						
ACS Only	11,200,000	5.8%	44.4%	---	---	---	---	34.0%
ACS & Work Only	6,500,000	3.4%	25.9%	---	32.1%	31.8%	32.8%	19.8%
ACS, Work & SSI/SSDI	6,900,000	3.6%	27.4%	67.3%	33.9%	43.8%	12.8%	20.9%
ACS & SSI/SSDI (no Work Lim)	580,000	0.3%	0.2%	5.7%	---	---	---	1.8%
Work Lim Only	5,000,000	2.6%		---	24.6%	12.9%	49.8%	15.2%
Work Lim & SSI/SSDI Only	1,900,000	1.0%		18.5%	9.3%	11.5%	4.6%	5.7%
SSI/SSDI Only	870,000	0.4%		8.5%	---	---	---	2.6%

Source of data: 2011 National Health Interview Survey

¹ Any ACS represents all of the respondents who indicated a positive response to one or more of the ACS questions.

² Any SSI/SSDI represents all of the respondents who indicated a positive response to one or more of the SSI/SSDI questions.

³ Any Work limitation represents all of the respondents who indicated a positive response to one or the other of the work limitation questions.

Table 2A: Percentages of those aged 18-64 identified as having a disability by ACS questions, receipt of SSI/SSDI questions, work limitation questions or a combination of all three by selected conditions and functional difficulties

Disability Characteristics	Any ⁴ ACS	Both ACS and Work Limitation	Work Limitation ONLY ⁵ without ACS			SSI/SSDI ONLY ⁶	Combination of Any ACS, Any Work Limitation and Any SSI/SSDI
			All Work Limitation Only	Work Limitation without SSI/SSDI	Work Limitation & SSI/SSDI		
	13.1%	3.4%	3.6%	2.6%	1.0%	0.4%	17.1%
Type of Conditions							
Sensory Problems	11.7% (0.9)	14.8% (1.2)	---- ⁷	----	----	----	9.4%
Arthritis or Back Problems	53.9%+ (1.6)	56.5%+ (2.1)	44.9+ (2.7)	47.3% (3.0)	38.4% (5.5)	42.4% (7.7)	51.2%
Injuries	22.6%+ (1.4)	25.1%+ (1.7)	14.0+ (1.7)	15.3% (1.9)	10.6% (2.8)	----	20.4%
Heart Related Problems	22.3% (1.3)	28.9%+ (1.7)	17.0+ (2.1)	16.7% (2.4)	17.7% (4.2)	----	20.9%
Developmental Problems	6.9% (0.9)	9.7% (2.0)	----	----	----	----	5.9%

⁴ Any ACS represents all of the respondents who indicated a positive response to one or more of the ACS questions.

⁵ Only work limitation represents the respondents who indicate a positive response to one of the work limitation questions without an indication of an ACS limitation.

⁶ Only SSI/SSDI represents the respondents who indicate a positive response to receipt of SSI or SSDI without an indication of an ACS Limitation.

⁷ RSE greater than 30%

Disability Characteristics	Any ⁴ ACS	Both ACS and Work Limitation	Work Limitation ONLY ⁵ without ACS			SSI/SSDI ONLY ⁶	Combination of Any ACS, Any Work Limitation and Any SSI/SSDI
			All Work Limitation Only	Work Limitation without SSI/SSDI	Work Limitation & SSI/SSDI		
Mental Health Problems	27.8%+ (1.4)	34.1%+ (1.8)	19.2%+ (2.3)	15.5%* (2.4)	28.8%* (5.2)	----	25.3%
Lung Problems	12.0% (1.1)	17.8%+ (2.0)	9.0%+ (2.3)	7.3% (1.6)	13.5% (4.0)	----	11.1%
Cancer	2.6% (0.4)	4.4% (1.0)	5.0% (1.2)	----	----	----	
Nervous System Problems	14.1% (1.1)	19.9%+ (2.1)	12.6%+ (2.0)	12.2% (2.4)	13.5% (3.3)	----	13.6%
Genitourinary	1.9% (0.4)	2.8% (0.7)	---	----	----	0	2.3%
Diabetes/Metabolic /disorders	15.1% (1.1)	18.2% (1.7)	13.6% (2.0)	11.7% (2.0)	18.4% (4.7)	----	14.6%
Musculoskeletal	19.8% (1.2)	20.4% (2.0)	15.0% (2.0)	15.3% (2.3)	17.6% (4.3)	----	18.6%
Weight Problem	8.7%+ (0.9)	10.4%+ (1.7)	3.2%+ (0.9)	----	----	----	7.3%
Other	6.9% (0.8)	9.6% (1.7)	6.8% (1.4)	5.2% (1.2)	----	----	6.9%
Types of Basic Action Difficulties							

Disability Characteristics	Any ⁴ ACS	Both ACS and Work Limitation	Work Limitation ONLY ⁵ without ACS			SSI/SSDI ONLY ⁶	Combination of Any ACS, Any Work Limitation and Any SSI/SSDI
			All Work Limitation Only	Work Limitation without SSI/SSDI	Work Limitation & SSI/SSDI		
Seeing Difficulty	33.8%+ (1.2)	34.0%+ (1.8)	12.1%+ (1.8)	12.5% (2.1)	---	---	28.4%
Hearing Difficulty	18.2%+ (1.1)	15.1%+ (1.3)	5.2%+ (1.2)	5.1% (1.3)	---	---	15.0%
Movement Difficulty	66.6%+ (1.4)	85.2%+ (1.4)	56.9%+ (2.7)	52.9% (3.1)	67.4% (5.5)	42.0%+ (6.8)	64.0%
Emotional Difficulty	17.5%+ (1.0)	25.1%+ (1.7)	7.8%+ (1.4)	8.7% (1.7)	---	---	15.1%
Cognitive Difficulty	17.7%+ (1.1)	30.9%+ (1.7)	7.8%+ (1.6)	7.0 (1.7)	---	---	15.2%
More than one Action							
Multiple Problems	45.0%+ (1.4)	61.5%+ (2.4)	19.4%+ (2.2)	18.3% (2.5)	22.3% (4.6)	---	36.1%
Types of Complex Activities Limitations							
Work Limitations	53.3% (1.4)	100%	100%	100%	100%	---	61.7%
Social/Leisure Limitations	35.5%+ (1.5)	53.6%+ (2.0)	18.5%+ (2.2)	17.2% (2.4)	22.1% (4.9)	---	31.1%
Self Care Limitations	20.2%+ (1.2)	36.4%+ (1.9)	11.5%+(2. 0)	8.5% (2.0)	19.4% (5.0)	----	17.9%

Disability Characteristics	Any ⁴ ACS	Both ACS and Work Limitation	Work Limitation ONLY ⁵ without ACS			SSI/SSDI ONLY ⁶	Combination of Any ACS, Any Work Limitation and Any SSI/SSDI
			All Work Limitation Only	Work Limitation without SSI/SSDI	Work Limitation & SSI/SSDI		
More than one limitation							
Multiple Problems	35.1%+ (1.4)	65.7%+ (2.5)	25.8%+ (2.5)	21.6% (2.6)	36.9% (5.5)	0	38.6%
Levels of Severity for Those with Movement Limitations							
Least Severe	9.1%+ (0.9)	5.0%+ (0.9)	13.6%+ (1.8)	12.9% (2.0)	15.5% (4.1)	----	9.6%
Level 2	14.0%+ (0.9)	15.0%+ (1.4)	20.7%+ (2.2)	22.7% (2.7)	15.3% (3.7)	----	13.9%
Level 3	19.9% (1.2)	25.6%+ (1.7)	15.8%+ (1.9)	12.9% (1.8)	23.6% (4.8)	15.4%+ (4.5)	20.0%
Level 4	15.1%+ (1.1)	24.9%+ (1.7)	5.2%+ (1.1)	3.2% (0.9)	----	----	14.5%
Most Severe	8.5% (0.7)	14.6% (1.3)	----	----	----	0	7.8%
No Movement Limits	33.4% (1.4)	14.8% (1.4)	57.4% (6.8)	47.3% (3.1)	32.9% (5.5)	57.4% (6.8)	34.1%

Source of data: 2011 National Health Interview Survey

+ Represents .05 significant difference (or better) between respondents with both ACS and work limitations and respondents with work limitations only. * Represents a .05 significant difference (or better) between respondents who report only work limitations and those who report work limitations and SSI/SSDI only

Table 3A: Employment and Poverty Status Percentages of the Population 18-64 Identified by ACS Questions Compared to Those Identified Only by Work Limitations, or Receipt of SSI/SSDI Only or a Combination of the Two

Indicators of Disability		Employment/ Labor Force Participation Rates			Poverty Rates			
		Total Population	Had Job Last Week	Had Job Past Year	No Job Past Year/Never Worked	Below 100% Poverty Rate	100% - Less 125%	125% - 200%
No Disability	82.9%	76.5% (0.5)	7.7% (0.33)	15.9% (0.42)	12.1% (0.4)	16.7% (0.4)	29.2% (0.6)	42.0% (0.7)
All Disability Measures	17.1%							
Any ACS	13.1%	38.9% (1.4)	8.6% (0.79)	52.5%+ (1.4)	25.6% (1.2)	23.7% (1.3)	28.0% (1.3)	22.6% (1.3)
Work Lim Only	2.6%	44.2% (3.2)	12.9% (2.0)	42.9%+ (3.1)	26.0% (2.8)	20.8% (2.7)	30.5% (2.8)	22.7% (2.8)
Work Lim & SSI/SSDI Only	1.0%	---- ⁸	----	86.7%+ (4.5)	28.2% (4.2)	35.3% (5.4)	19.0% (4.7)	17.6% (5.0)
SSI/SSDI Only	0.4%	----	----	84.8%+ (4.6)	35.0% (6.2)	33.2% (6.5)	18.6% (5.4)	----

Source of data: 2011 National Health Interview Survey

+ Represents .05 significant difference (or better) between respondents defined by ACS measures and those with Work limitations only, Work limitations and SSI/SSDI only or SSI/SSDI only

⁸ Relative error greater than 30%

