



Measuring Disability: An Evaluation of Differences Between the American Community Survey and Washington Group Short Set Questions

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the National Center for Health Statistics or the Centers for Disease Control and Prevention.

Background/Context

- The National Health Interview Survey has included items on functioning since its inception, with measures changing over time as methods and models of disability have evolved.
 - American Community Survey disability set (ACS-6): 2009-2017
 - Washington Group Short Set on Functioning (WG-SS): 2010-*current*
- In 2011 and 2012, both sets of questions were asked of a subset of adults
- Opportunity to assess the overlap or agreement in responses to two sets of disability questions

National Health Interview Survey: 2011-2012

- Multi-purpose household health survey
- In-person, CAPI interview (telephone follow-up, if necessary)
- Three main interview modules:
 - **Family** (ACS-6)
 - Sample child
 - **Sample adult** (WG-SS)
- Interviews conducted in ~35,000 households each year
- Analytic sample: 18,079 adults who responded to both family and adult modules

Comparing the Measures: The Question Stem

Vision

ACS: **Are you blind** or do you have **serious difficulty seeing** even when wearing glasses?

WG: Do you have **difficulty seeing**, even if wearing glasses?

Hearing

ACS: **Are you deaf** or do you have **serious difficulty hearing**?

WG: Do you have **difficulty hearing**, even if using a hearing aid?

Mobility

ACS: Do you have **serious difficulty walking or climbing stairs**?

WG: Do you have **difficulty walking or climbing stairs**?

Cognition

ACS: Because of a physical, mental, or emotional condition, does this person have **serious difficulty concentrating, remembering or making decisions**?

WG: Do you have **difficulty remembering or concentrating**?

Self-Care

ACS: Do you have **difficulty dressing or bathing**?

WG: Do you have **difficulty with self-care** such as washing all over or dressing?

Comparing the Measures: The Response Options

ACS-6 Response Options

1. Yes
2. No

WG-SS Response Options

1. No difficulty
2. Some difficulty
3. A lot of difficulty
4. Cannot do at all/unable to do

Research Questions 1-2

- What is the overall prevalence of disability produced by, and the agreement between, the WG-SS and ACS-6 (across the five common domains)?

WG-SS Disability

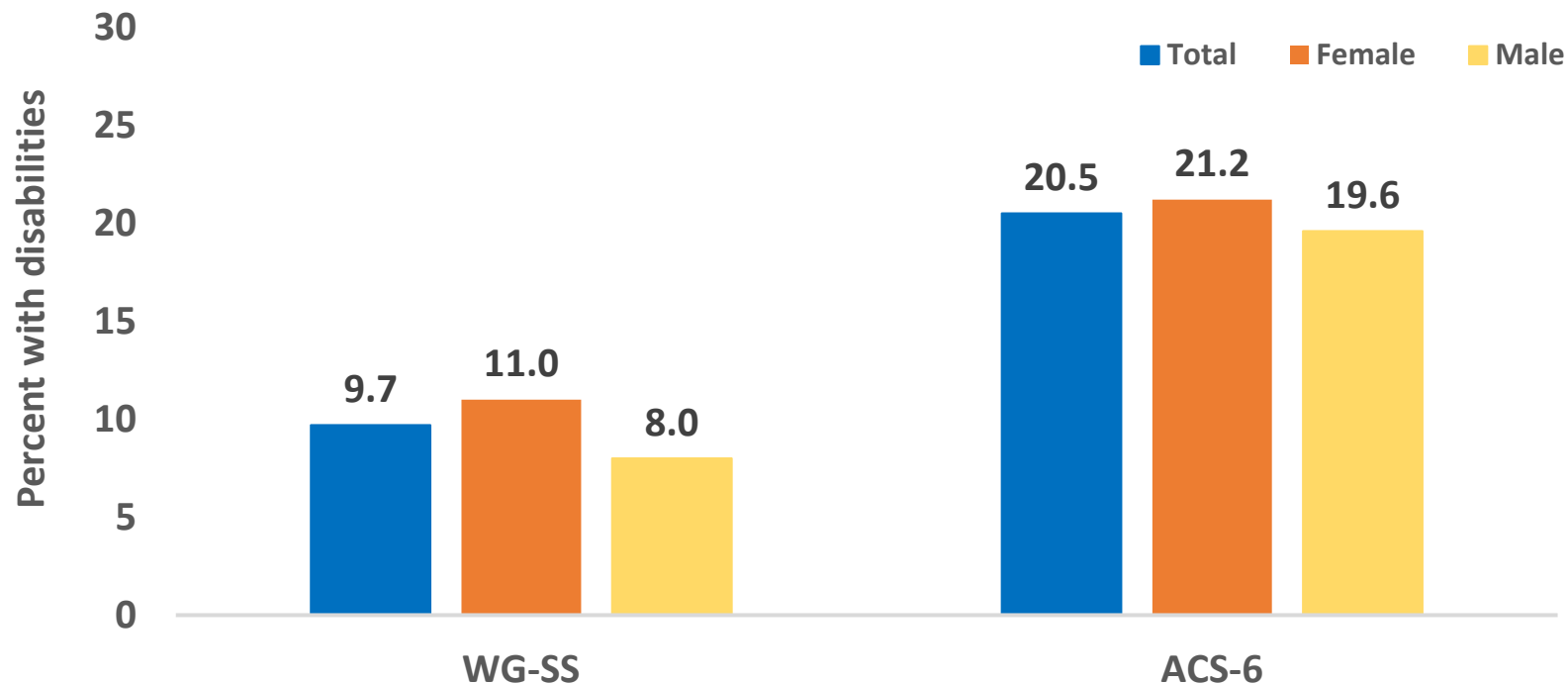
Any domain = a lot of difficulty or
cannot do at all

ACS-6 Disability

Any domain = yes

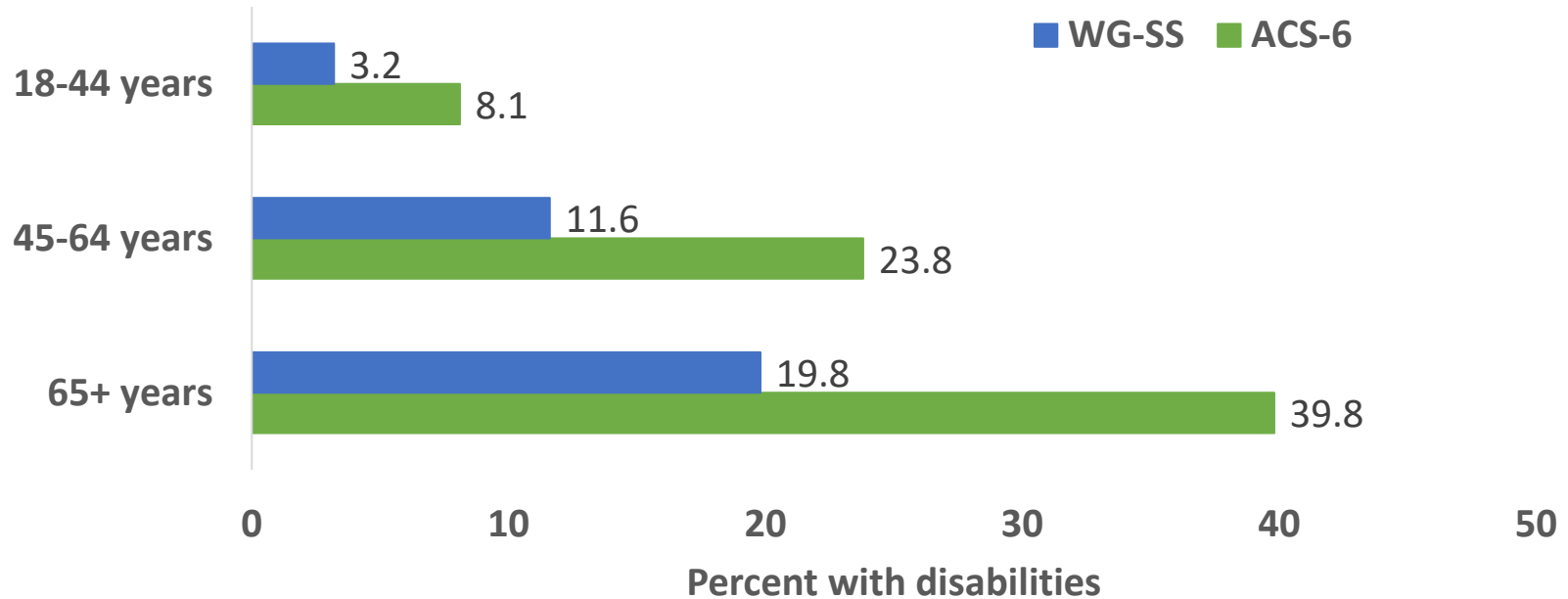
- Overall agreement; positive agreement; negative agreement; kappa; prevalence adjusted, bias adjusted kappa (PABAK)

Figure 1. Estimates of disability using the WG-SS and ACS-6 among respondents who answered both sets, 2011-2012 NHIS



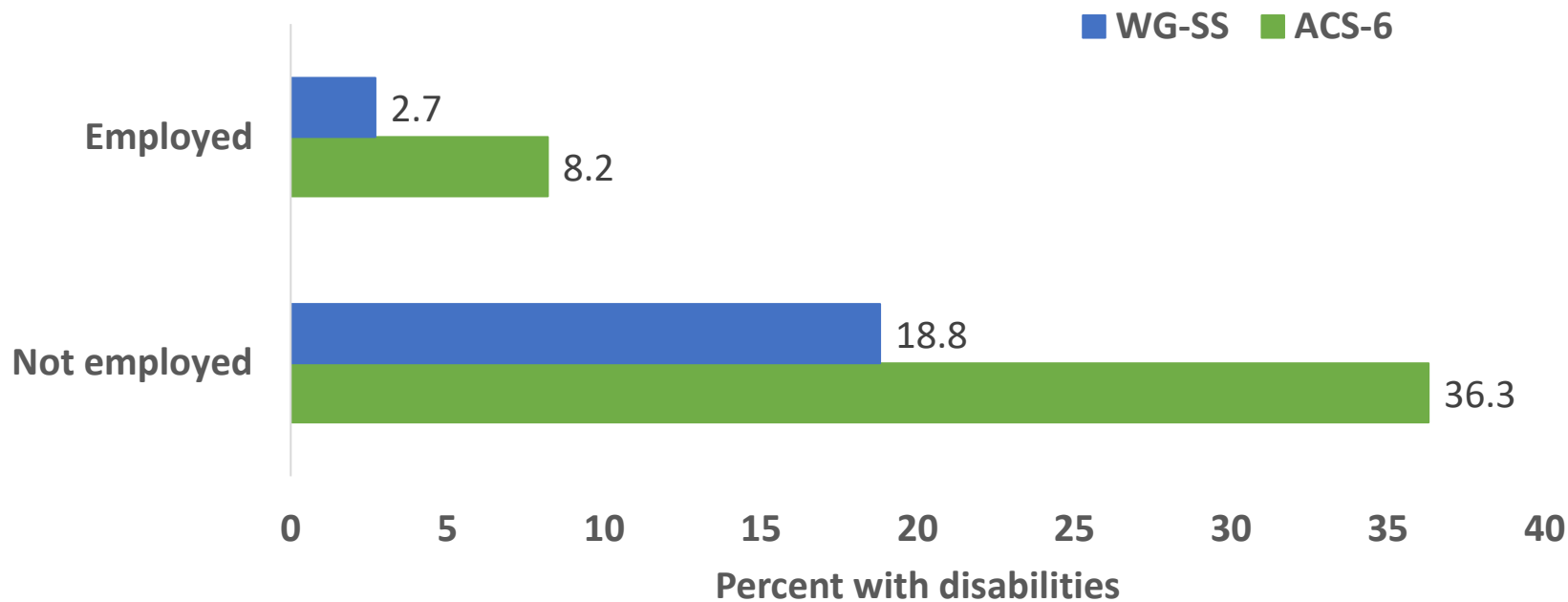
SOURCE: National Health Interview Survey, 2011-2012.

Figure 2. Estimates of disability using the WG-SS and ACS-6, by age group, among respondents who answered both sets, 2011-2012 NHIS



SOURCE: National Health Interview Survey, 2011-2012.

Figure 3. Estimates of disability using the WG-SS and ACS-6, by employment status, among respondents who answered both sets, 2011-2012 NHIS



SOURCE: National Health Interview Survey, 2011-2012.

Table 1. Overall agreement between dichotomous ACS-6 and WG-SS, among respondents who answered both sets, 2011-2012 NHIS

ACS-6	WG-SS		Total
	Yes	No	
Total	1,752	16,233	17,985
Yes	1,557 (8.66%)	2,125 (11.82%)	3,682
No	195 (1.08%)	14,108 (78.44%)	14,303

Overall agreement = 0.87

Kappa statistic: 0.50

Negative agreement = 0.92

Prevalence-adjusted bias-adjusted kappa: 0.74

Positive agreement = 0.57

SOURCE: National Health Interview Survey, 2011-2012.

Research Question 3

- Where does nonagreement occur when examining the ACS-6 responses and WG-SS expanded response options?
 - Examine the dichotomous ACS-6 responses across three WG-SS responses categories

Table 2. Overall agreement between ACS-6 (dichotomy) and WG-SS (trichotomy) among respondents who answered both sets, unweighted, 2011-2012 NHIS

ACS-6	WG-SS			
	A lot of difficulty or unable to do	Some difficulty	No difficulty	Total
Total	1,752	4,850	11,383	17,985
Yes	1,557	1,801	324	3,682
No	195	3,049	11,059	14,303

Of those with ACS-6 disability, 42.3% classified as with WG-SS disability (1557/3682).

Of those with ACS-6 disability but no WG-SS disability (the 1801+324=2125), 84.8% indicated “some” difficulty on WG-SS (1801/2125).

SOURCE: National Health Interview Survey, 2011-2012.

Research Question 4

- What are the factors associated with nonagreement?
 - Overall nonagreement: binomial logistic regression
 - Agreement (ref)
 - Specific nonagreement: multinomial logistic regression
 - Agreement (ref): ACS=No / WG=No , ACS=Yes / WG=Yes
 - **ACS=Yes / WG=No**
 - **ACS=No / WG=Yes**

Covariates			
Sociodemographics:	Age	Sex	Race, Hispanic origin
	Education	Employment status	Poverty status
Health measures:	Cognitive difficulties	Reported health status	Multiple chronic conditions

Table 3. Multivariate logistic regression of nonagreement between ACS-6 and WG-SS among respondents who answered both sets, unweighted, 2011-2012 NHIS

Covariate	Overall nonagreement	Specific nonagreement	
		ACS=No / WG=Yes	ACS=Yes / WG=No
Age (Ref=18-44 years)			
45-64 years	1.58*	1.48	1.59*
65 years and older	1.96*	1.81*	1.98*
Sex (Ref=male)			
Female	0.90*	1.48*	0.85*
Race and Ethnicity (Ref=White, non-Hispanic)			
Hispanic	0.95	1.09	0.94
Black, non-Hispanic	0.91	1.06	0.90
Other, non-Hispanic	0.77*	0.86	0.77*

SOURCE: National Health Interview Survey, 2011-2012.

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Covariate	Overall nonagreement	Specific nonagreement	
		ACS=No / WG=Yes	ACS=Yes / WG=No
Education (Ref=Bachelors or beyond)			
Less than high school	1.44*	2.70*	1.37*
High school/GED	1.21*	1.76*	1.17
Some college/AA degree	1.35*	2.07*	1.30*
Employment status (Ref=Employed)			
Not employed	1.63*	1.49*	1.64*
Poverty status (Ref=400% FPL or more)			
Less than 100% FPL	1.23*	0.97	1.26*
100 ≤ 199% FPL	1.10	0.89	1.12
200 ≤ 399% FPL	1.07	1.24	1.05

SOURCE: National Health Interview Survey, 2011-2012.

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Covariate	Overall nonagreement	Specific nonagreement	
		ACS=No / WG=Yes	ACS=Yes / WG=No
Cognitive difficulty (Ref=No)			
Yes	1.82*	0.51	1.96*
Serious psychological distress in past 30 days (Ref=No)			
Yes	1.11	1.62	1.08
Reported health status (Ref=very good/excellent)			
Poor/fair	2.55*	1.78*	2.65*
Good	1.99*	1.79*	2.01*
Multiple chronic conditions (Ref=No)			
Yes	1.47*	2.05*	1.43*

SOURCE: National Health Interview Survey, 2011-2012.

Research Question 5

- How does each measure correlate with participation outcomes known to be associated with disability?
 - Examine strength of association between ACS and WG-SS and:
 - Not employed
 - Less than high school
 - Less than 100% federal poverty level
 - Rents home
 - Odds of each outcome for those with disability compared to those without

Table 4. Bivariate logistic regressions of experiencing outcomes, by disability measure, among respondents who answered both sets, 2011-2012 NHIS

Outcome	ACS	WG-SS		
	Yes vs. No	A lot/Unable vs. Some/No Difficulty	Some vs. No Difficulty	A lot/Unable vs. No Difficulty
Unemployed (18-64 years)	5.40 (4.88-5.98)	7.43 (6.35-8.68)	1.97 (1.80-2.15)	8.94 (7.62-10.47)
≤ H.S. education (25+ years)	2.48 (2.25-2.72)	2.64 (2.36-2.94)	1.75 (1.58-1.93)	3.22 (2.85-3.63)
≤ 100% FPL	1.73 (1.58-1.89)	1.82 (1.63-2.04)	1.18 (1.08-1.28)	1.91 (1.70-2.15)
Rents home	1.18 (1.09-1.28)	1.46 (1.31-1.62)	0.89 (0.83-0.95)	1.41 (1.26-1.57)

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Summary/Conclusions

- Overall agreement between the two sets of questions is fairly high, driven largely by agreement among those reporting no disability on both sets.
- Overall nonagreement is higher for those with lower SES status (lower levels of education, not employed, and in poverty).
- WG-SS includes more people likely at higher risk for social participation restrictions: WG-SS group has lower SES compared to ACS-6 group.
- Odds of being classified as with disability by ACS-6, but not the WG-SS, increases with age and cognitive difficulty.
- Nearly half (48.9%) of the ACS-6 with disability group answered “some difficulty” on WG-SS.
- WG-SS appears to identify a more homogenous group with higher levels of functional difficulty.



Thank You

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