

Association between Disability Measurement and Physical Inactivity— United States, 2011-2015

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Purpose

- To examine differences in prevalence of disability and inactivity across two sets of disability questions from the National Health Interview Survey (NHIS)
 - Department of Health and Human Services standard disability question set (HHSQ)
 - Basic Actions difficulty (BAQ) questions



Background

- 2008 Physical Activity Guidelines
 - All** adults should engage in the equivalent of at least 150 minutes of moderate-intensity aerobic physical activity per week.
 - All** adults should avoid inactivity.
- Individuals with disabilities are more likely to be inactive than those without a disability.
- Disability measurement is challenging at the population level and varies between surveys.
- Different definitions can influence estimates of disability, as well as estimates of health behaviors among this population



Methods

Data Source and Sample Characteristics

- National Health Interview Survey, 2011-2015.
- Adults age ≥18 years.
- Analytic sample: 84,757 (HHSQ) and 162,551 (BAQ).

Definitions:

Inactivity: doing no activity beyond baseline activities of daily living. Inactivity was operationalized as reporting no physical activity.

Disability: positive response to at least one question in each set:

HHSQ:

- Hearing: Are you deaf or do you have serious difficulty hearing?
- Vision: Are you blind, or do you have serious difficulty seeing, even when wearing glasses?
- Cognition: Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?
- Ambulation: Do you have serious difficulty walking or climbing stairs?
- Self-care: Do you have difficulty dressing or bathing?
- Independent living: Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?

BAQ:

- Movement: By yourself, and without using any special equipment, how difficult is it for you to: Walk a quarter of a mile—about 3 city blocks? Walk up 10 steps without resting? Stand or be on your feet for about 2 hours? Sit for about 2 hours? Stoop, bend, or kneel? Reach up over your head? Use your fingers to grasp or handle small objects? Lift or carry something as heavy as 10 pounds such as a full bag of groceries? (degree of difficulty)
- Emotion: During the past 30 days, how often did you feel: So sad that nothing could cheer you up? Nervous? Restless or fidgety? Hopeless? That everything was an effort? Worthless? (degree of difficulty and meeting a threshold)
- Vision: Do you have trouble seeing, even when wearing glasses or contact lenses?
- Hearing: Without the use of hearing aids or other listening devices, is your hearing excellent, good, a little trouble hearing, moderate trouble, a lot of trouble, or are you deaf?
- Cognition: Are you limited in any way because of difficulty remembering or because you experience periods of confusion?.

Analysis

- Disability and inactivity prevalence estimates calculated overall and by demographic characteristics.
- Pairwise & orthogonal polynomial contrasts for trends.
- All analyses conducted using SAS callable SUDAAN, version 9.2 (Research Triangle Institute, Research Triangle Park, NC)

Results

TABLE 1. Disability prevalence among U.S. adults by disability definition and selected characteristics

Characteristic	Prevalence of Disability			
	HHSQ n = 84,757		BAQ n = 162,551	
	% *	(95% CI)	% *	(95% CI)
Overall	17.5	(17.1, 18.0)	31.1	(30.6, 31.5)
Sex				
Female	17.8	(17.3, 18.3)	34.1	(33.6, 34.7)
Male	17.2	(16.7, 17.8)	27.8	(27.3, 28.3)
Age group (yrs)**				
18-44	7.6	(7.2, 8.0)	16.7	(16.3, 17.1)
45-64	19.6	(18.9, 20.3)	36.5	(35.8, 37.1)
65+	39.4	(38.4, 40.3)	59.6	(58.8, 60.4)
Race/ethnicity				
White, non-Hispanic	18.9	(18.3, 19.5)	33.5	(32.9, 34.0)
Black, non-Hispanic	19.3	(18.4, 20.3)	32.0	(31.0, 32.9)
Hispanic	13.0	(12.2, 13.7)	23.7	(22.9, 24.5)
Other race	12.1	(11.0, 13.2)	23.0	(22.0, 24.1)
Education level**				
Less than high school	30.8	(29.7, 32.1)	43.6	(42.5, 44.6)
High school graduate	21.0	(20.3, 21.8)	36.1	(35.3, 36.9)
Some college	16.2	(15.6, 16.8)	30.7	(30.1, 31.3)
College degree	9.6	(9.1, 10.1)	21.4	(20.9, 22.0)

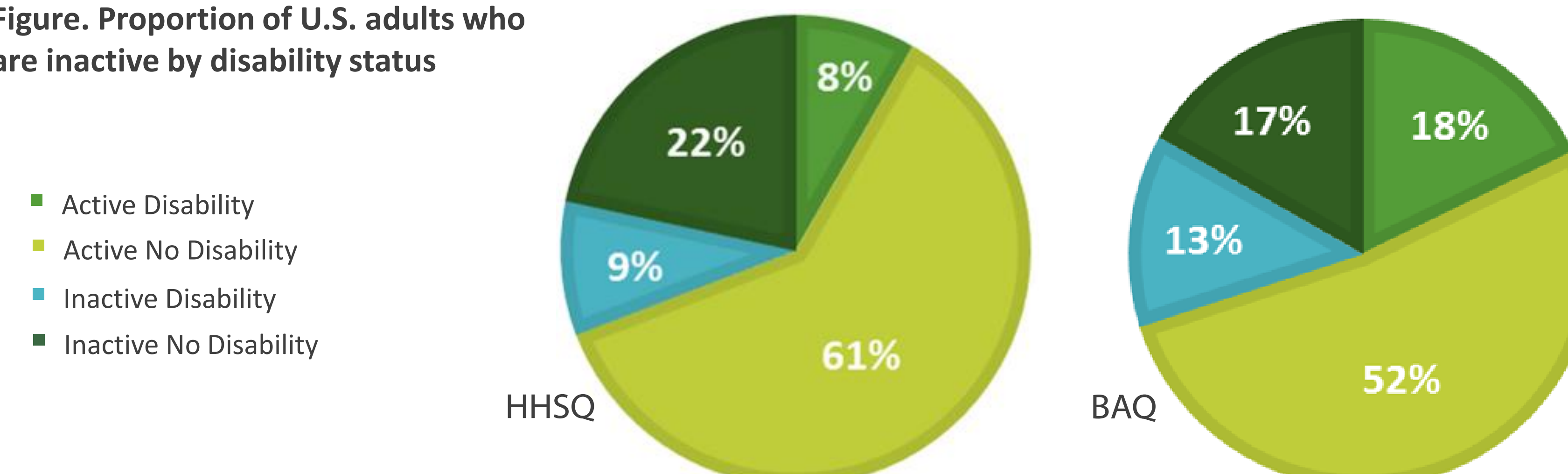
CI = confidence interval; *significant difference (P<.001) in disability prevalence by demographic group except between whites and blacks, and males and females for disability defined by HHSQ; Hispanic and other for both HHSQ and BAQ; **age and education demonstrate a linear trend (P<.001) and quadratic trend (P<.05) for HHSQ and BAQ disability prevalence

TABLE 2. Inactivity prevalence among U.S. adults by disability definition and selected characteristics

Characteristic	Inactivity Prevalence							
	HHSQ Disability n = 17,333		HHSQ No Disability n = 67,424		BAQ Disability n = 55,694		BAQ No Disability n = 106,857	
	% *	(95% CI)	%	(95% CI)	% *	(95% CI)	%	(95% CI)
Overall	52.5	(51.2, 53.7)	26.2	(25.6, 26.9)	42.9	(42.0, 43.7)	24.3	(23.7, 24.9)
Sex								
Female	55.7	(54.1, 57.3)	27.5	(26.8, 28.3)	44.4	(43.5, 45.4)	25.1	(24.4, 25.8)
Male	48.9	(47.3, 50.5)	24.8	(24.0, 25.6)	40.9	(39.8, 42.0)	23.5	(22.8, 24.3)
Age group (yrs)**								
18-44	39.3	(36.9, 41.7)	23.7	(22.9, 24.4)	32.6	(31.3, 33.9)	23.0	(22.4, 23.7)
45-64	53.7	(51.9, 55.5)	27.4	(26.5, 28.4)	43.1	(41.9, 44.3)	25.4	(24.6, 26.2)
65+	57.9	(56.2, 59.6)	33.1	(31.9, 34.4)	50.5	(49.4, 51.6)	28.0	(26.9, 29.2)
Race/ethnicity								
White, non-Hispanic	50.8	(49.3, 52.4)	22.8	(22.0, 23.6)	41.3	(40.3, 42.3)	20.3	(19.6, 21.1)
Black, non-Hispanic	59.3	(56.8, 61.8)	33.9	(32.5, 35.4)	50.2	(48.4, 51.9)	31.8	(30.7, 33.0)
Hispanic	57.6	(55.0, 60.3)	35.2	(33.9, 36.6)	47.5	(45.8, 49.2)	34.6	(33.4, 35.7)
Other race	46.6	(42.2, 51.0)	25.3	(23.5, 27.1)	37.8	(35.3, 40.2)	24.1	(22.6, 25.6)
Education level**								
Less than high school	63.5	(61.6, 65.4)	44.1	(42.7, 45.6)	59.1	(57.7, 60.6)	43.1	(41.7, 44.4)
High school graduate	57.4	(55.3, 59.5)	35.7	(34.6, 36.9)	49.8	(48.5, 51.0)	33.8	(32.8, 34.8)
Some college	47.6	(45.7, 49.5)	24.0	(23.1, 25.0)	37.7	(36.5, 38.9)	22.4	(21.5, 23.2)
College degree	34.6	(32.1, 37.1)	14.4	(13.8, 15.1)	25.8	(24.7, 26.9)	13.4	(12.9, 13.9)

CI = confidence interval; *inactivity prevalence significantly different (P<.001) between demographic groups with a disability except between white and other for BAQ (P<.01); and between black and Hispanic BAQ and between white and other for HHSQ (P<.05). No differences were noted between black and Hispanic for HHSQ; **age and education demonstrate a linear trend (P<.001) and quadratic trend (P<.05) for HHSQ and BAQ inactivity prevalence comparisons in those with a disability

Figure. Proportion of U.S. adults who are inactive by disability status



Limitations

- Data are self-reported
- Individual perception of disability may be inconsistent between and within respondents
- Adults living in institutional settings not included in the analysis

Strengths

- Large, nationally-representative sample
- Comparisons made within same survey



Conclusions

- 18% of adults reported disability as measured by HHSQ; 31% of adults reported disability as measured by BAQ
- 53% (HHSQ) and 43% (BAQ) of adults with disabilities were inactive
- Although magnitude of disability and inactivity differs between questions, patterns are similar
- Differences in inactivity are more likely due to differences in how disability is assessed

Implications

- Choice of disability questions does matter
- Questions can change the magnitude of the health problem which may affect intervention and policy prioritization

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