DISABILITY-BASED DISPARITIES IN SOCIAL DETERMINANTS OF HEALTH AMONG WORKING-AGE ADULTS: EVIDENCE FROM THE 2018 NATIONAL HEALTH INTERVIEW SURVEYS

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INTRODUCING DISABILITY-BASED DISPARITIES AND SOCIAL DETERMINANTS OF HEALTH

> ***A health disparity is a particular type of health difference that is closely linked with social or economic disadvantage**. Health disparities adversely affect groups of people who have systematically experienced greater social or economic obstacles to health based on their racial or ethnic group, religion, socioeconomic status, gender, mental health, cognitive, sensory, or physical disability, sexual orientation, geographic location, or other characteristics historically linked to discrimination or exclusion.*
>
> *The Secretary's Advisory Committee on National Health Promotion and Disease Prevention: Phase 1 Report Recommendations for the Framework and Format of Healthy People 2020, p. 28*

The United Nations describes people with disabilities as "the world's largest minority."[1] However, US research agencies and foundations direct relatively little attention and resources to studying and addressing health disparities within this population.[2] The National Institutes of Health (NIH) designate the following minority groups as US health disparities populations: Blacks/African Americans, American Indians/Alaska Natives, Asian Americans, Native Hawaiians and other Pacific Islanders, Hispanics/Latinx, socioeconomically disadvantaged populations, sexual and gender minorities, and underserved rural populations. People with disabilities are notably absent from this list.[3]

The paucity of disability-based disparities research is likely due to the continuing influence of the biomedical model of disability in the clinical health sciences.[4] From a biomedical perspective, disability is viewed as a consequence of serious illness or injury, best addressed through appropriate medical treatment and rehabilitation.[5] Disability research in this paradigm is typically framed by clinical diagnosis.[6,7] In the language of health disparities research, disability is treated as a dependent or outcome variable, while other group attributes like race and ethnicity are treated as independent variables.[8]

In contrast, the sociopolitical model of disability recognizes that people with disabilities are a distinct minority group that is subject to pervasive social stigma and institutional discrimination.[9-11] The social status of a person with a disability as a minority group member is therefore conceptually distinct from their status as an individual with a chronic health condition or injury, though both attributes may contribute to observed disparities in health outcomes.[12] As with other minority group memberships, while some ***differences*** in health may be attributable to the underlying traits that are associated with group affiliation (such as the higher prevalence of sickle-cell anemia among African Americans), the observed ***disparities*** are, by definition, driven by the complex interaction of minority group status with a range of environmental factors called "social determinants of health."[13]

The Healthy People 2020 Initiative defines social determinants as "conditions in the environments in which people are born, live, learn, work, play, worship, and age, that affect a wide range of health, functioning, and quality-of-life outcomes and risks."[14] It organized social determinants of health into 5 domains:

> *The **economic stability domain** reflects the connection between a person's financial resources (e.g., income, cost of living, and socioeconomic status) and their health. This domain includes key issues such as poverty, employment, food security, and housing stability.*
>
> *The **education domain** reflects the connection between aspects of a person's education and their health and well-being. This domain includes key issues such as high school graduation, enrollment in higher education, language and literacy, and early childhood education and development.*
>
> *The **health and healthcare domain** reflects the connection between a person's access to and understanding of health services and their health. This domain includes key issues such as access to health care, access to primary care, and health literacy.*
>
> *The **neighborhood and built environment domain** reflects the connection between where a person lives (e.g., housing, neighborhood, and environment) and their health and well-being. This domain includes key issues such as access to healthy food, quality of housing, crime and violence, and environmental conditions.*
>
> *The **social and community context domain** reflects the connection between aspects of a person's social environment (e.g., social support, family circumstances, and community engagement) and their health and well-being. This domain includes key issues such as social cohesion, civic participation, incarceration, and discrimination.*
>
> *Healthy People 2020 Midcourse Review, p. 39-2*

While the public health field has acknowledged the influence of social, political and economic conditions on population health since the mid-19th century, the early 21st century has brought renewed research and policy attention to the health implications of social disadvantage for minority populations, including people with disabilities.[15] Recognizing that healthcare is only one of several domains concurrently affecting population health is obvious, but the policy and program implications for people with disabilities are profound.[16,17] To address chronic condition-specific disparities, healthcare systems must provide affordable, high-quality health and rehabilitation services appropriate to those conditions. But to ameliorate minority group-related disparities, policymakers and disability advocates must focus on all five domains listed above.

The objective of this report is to provide advocates and policymakers with current and comprehensive evidence on how people with disabilities experience relative disadvantages in terms of social determinants of health. We focus on working-age adults with disabilities because this is a politically and economically important but relatively understudied minority group that faces systematic and pervasive barriers to employment, education, housing, transportation, civic participation, and community integration.

Using data from the 2018 National Health Interview Survey, we first describe the rates of work limitation, activity limitation, functional limitation, and disability program participation among noninstitutionalized adults aged 18-64 in the US. Health outcomes for people with disabilities are also shaped by their membership in other marginalized groups. Therefore, we compare rates of disability in specific minority groups, suggesting that intersectionality[18] may help account for some of the observed health disparities in these populations. Next, we compare social determinants of health among working-age adults with and without disabilities. We end with a discussion of the public policy rationale for investing in a program of disability-based disparities research, and the potential of such a program to improve the health and independence of working-age adults with disabilities.

SECTION 1: POPULATION PROFILE OF WORKING-AGE ADULTS WITH DISABILITIES

DEFINING DISABILITY

In this report, we classify working-age adults (age 18 to 64) as disabled if they (or their proxy) report any of the following attributes:

- they are limited or unable to work due to a physical, mental, or emotional condition;
- they need the help of another person with self-care (i.e. activities of daily living) or routine chores (i.e. instrumental activities of daily living);
- they have difficulty walking without special equipment;
- they have difficulty remembering, or they experience periods of confusion; and/or
- they are enrolled in a federal disability program (i.e. Supplemental Security Income or Social Security Disability Insurance).

Figure 1. Work disability and limitation rates among working-age adults with a disability

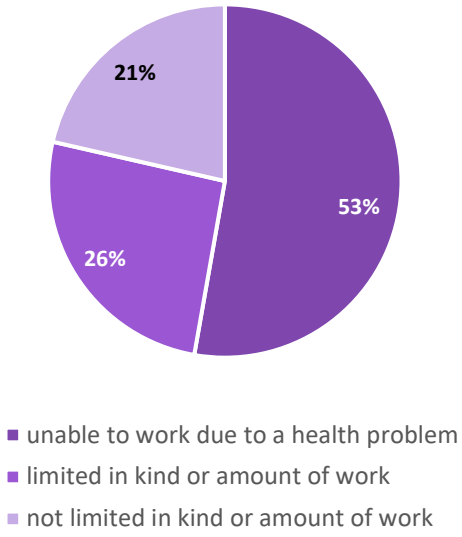
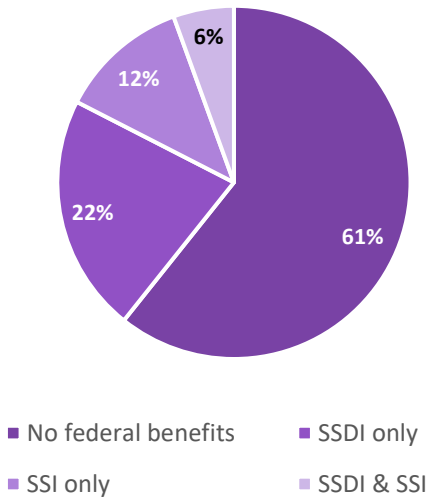


Figure 2. Disability program participation rates among working-age adults with a disability



Based on our analyses of the 2018 National Health Interview Survey (see appendix 1 for survey descriptions and analysis strategy), we estimate that approximately 25.2 million American adults between the ages of 18 and 64 meet this definition of disability (table 1). Many of the estimated 25.2 million working-age adults with disabilities report multiple disability attributes. For example, about 60% of those who reported needing assistance with ADLs also reported a mobility limitation (table 2).

About 56% of working-age adults with disabilities say they cannot work, and another 26% say they are limited in the type or amount of work they can do (figure 1), but less than 40% of working-age adults with disabilities receive federal disability benefits (figure 2).

Table 1. Disabilities and limitations among noninstitutionalized working-age adults

Disability and limitation indicators	Disability	
	est. N (millions)	%
Total number of adults age 18-64 with a disability	25.2	100%
Work disability		
work disability - unable to work due to a health problem	13.3	52.8%
work limitation - limited in kind or amount of work	6.5	25.8%
Disability program participation		
Supplemental Security Income (SSDI) only	5.5	21.8%
Supplemental Security Income (SSI) only	3.0	11.9%
both SSDI & SSI	1.4	5.6%
Activity limitation		
needs help with routine needs (IADLs)	6.1	24.2%
needs help with personal care (ADLs)	3.0	11.9%
Functional limitation		
mobility limitation - difficulty walking without equipment	6.6	26.2%
cognitive limitation - difficulty remembering or periods of confusion	5.2	20.6%

Source: 2018 National Health Interview Survey, Person file

Table 2. Overlap of disability measures among noninstitutionalized working-age adults

Disability measures	est. N (millions)	Work disability	Work limit	SSDI	SSI	IADL help	ADL help	Mobility limit	Cognitive limit
Work disability	13.3	100%							
Work limitation	6.5	0.0%	100%						
Receives SSDI	6.9	35.3%	14.0%	100%					
Receives SSI	4.4	21.7%	9.7%	20.9%	100%				
Needs IADL help	6.1	37.0%	13.7%	33.1%	31.4%	100%			
Needs ADL help	3.0	19.7%	3.8%	17.5%	19.1%	39.1%	100%		
Has mobility limitation	6.6	33.8%	18.1%	29.9%	26.5%	46.4%	59.5%	100%	
Cognitive limitation	5.2	28.9%	10.6%	22.1%	27.0%	35.8%	36.2%	27.8%	100%

Source: 2018 National Health Interview Survey, Person file

Table 3 lists the health conditions to which respondents attribute their limitations or disabilities. Back and neck pain was the most common cause of disability (24%), followed by depression, anxiety, or other emotional problems (21%), arthritis or rheumatism (15%), and musculoskeletal or connective tissue problems (14%).

Table 3. Health conditions identified as causing limitation or disability

Health conditions	Disability	
	est. N	%
Total number of adults age 18-64 with a disability	**25.2**	**100%**
Limit or disability attributed to:		
back or neck problem	6.0	23.8%
depression/anxiety/emotional problem	5.2	20.6%
arthritis/rheumatism	3.9	15.3%
musculoskeletal/connective tissue problem	3.6	14.2%
nervous system/sensory organ condition	3.2	12.8%
diabetes	2.3	9.1%
hypertension/high blood pressure	2.3	9.0%
fracture, bone/joint injury	2.2	8.6%
lung/breathing problem (e.g., asthma or emphysema)	2.0	7.8%
heart problem	1.9	7.6%
vision/problem seeing	1.9	7.7%
other injury	1.2	4.9%
weight problem	1.0	4.1%
cancer	1.0	3.9%
other mental problem/ADD/bipolar/schizophrenia	1.0	4.1%
stroke	0.9	3.7%
intellectual disability	0.9	3.8%
digestive system problem	0.8	3.0%
hearing problem	0.8	3.0%
circulation problems (including blood clots)	0.8	3.0%
genitourinary system problem	0.7	2.9%
other impairment/problem	0.7	2.9%
endocrine/nutritional/metabolic problem	0.7	2.9%
birth defect	0.6	2.5%

Source: 2018 National Health Interview Survey, Person file

Note: Respondents often identify more than one disabling condition, so rates sum to more than 100%

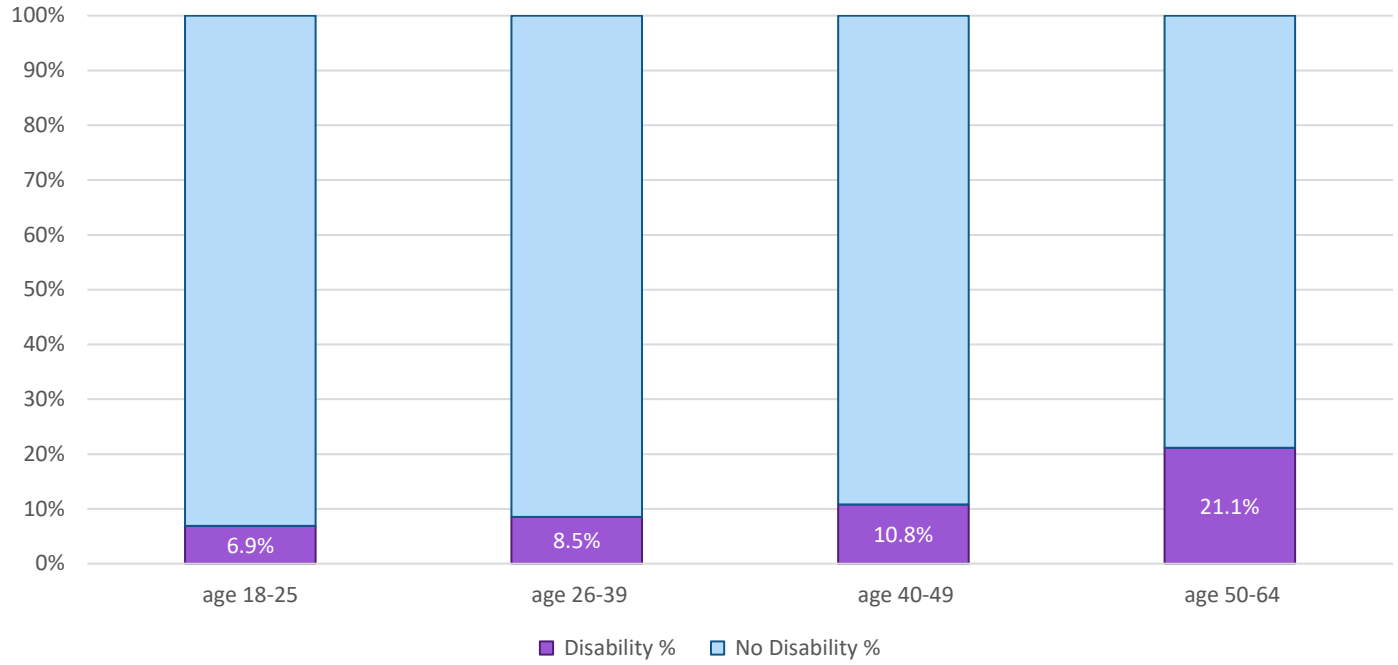
SECTION 2: DISABILITY RATES AMONG SELECT WORKING-AGE POPULATIONS

Decades of population health research[19-24] show that disability rates are higher in certain adult populations, including older adults, women, African Americans, and veterans. Many of these studies examine multiple interactions between two or more attributes, like gender and age,[25-28] or race and socioeconomic status.[29-31] A more recent body of research and commentary on intersectionality is drawing attention to the interactive impact of multiple minority group membership on social disadvantage and adverse health outcomes among adults with disabilities.[32-42] This section updates available information on disability prevalence rates among different populations of working-age adults.

AGE

The correlation between chronological age and the incidence and prevalence of disability is one of the most widely recognized and durable findings in epidemiology.[43-50] Even within the working-age population, rates of disability increase with age, rising from 7% for adults age 18 to 25 to 21% for adults age 50 to 64 (figure 3). This trend has implications for public policies like vocational training, since workers with disabilities nearing retirement may be less inclined to enter or return to the workforce.

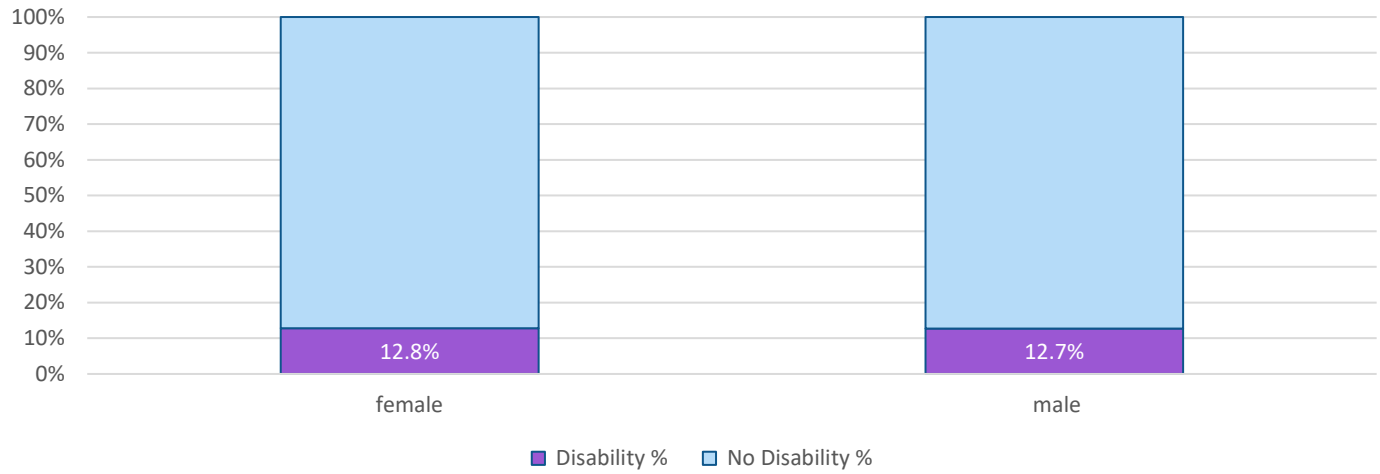
Figure 3. Rates of disability among working-age adults by age group



GENDER

There are no significant differences in overall rates of disability by gender among working-age adults (figure 4), though women over age 65 are more likely to be disabled because of their greater longevity.[51-55]. However, gender may still play a role in some of these intersecting disparity groups, e.g. women of color with disabilities.

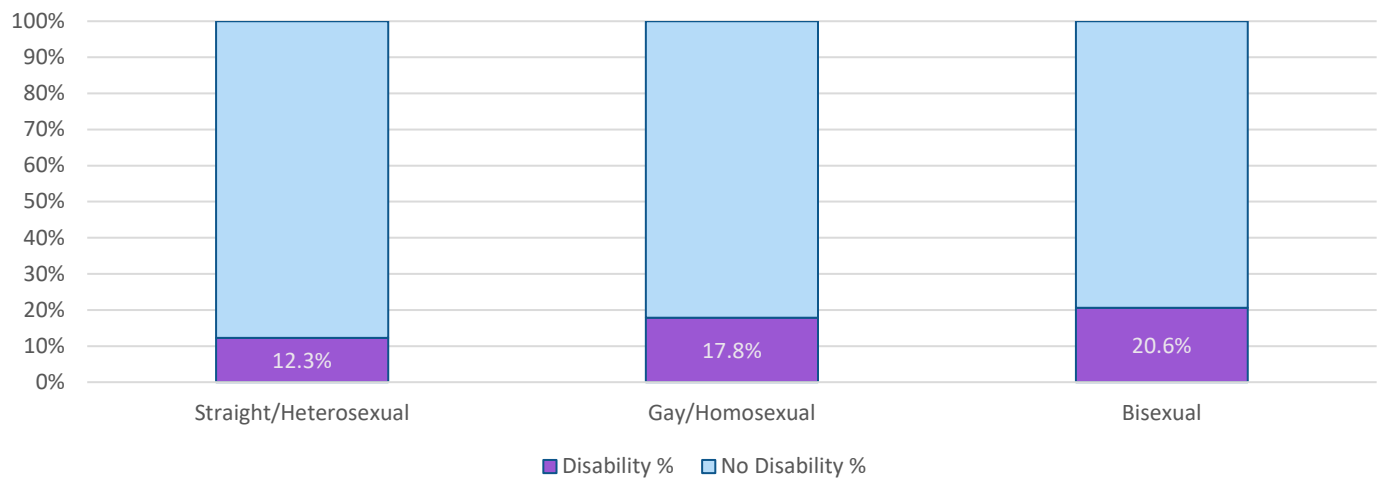
Figure 4. Rates of disability among working-age adults by gender



SEXUAL ORIENTATION

Consistent with other recent survey research,[54-58] rates of disability are significantly higher for working-age adults who are gay or lesbian (18%) or bisexual (21%) than for those who are heterosexual (12%) (figure 5).

Figure 5. Rates of disability among working-age adults who are sexual minorities

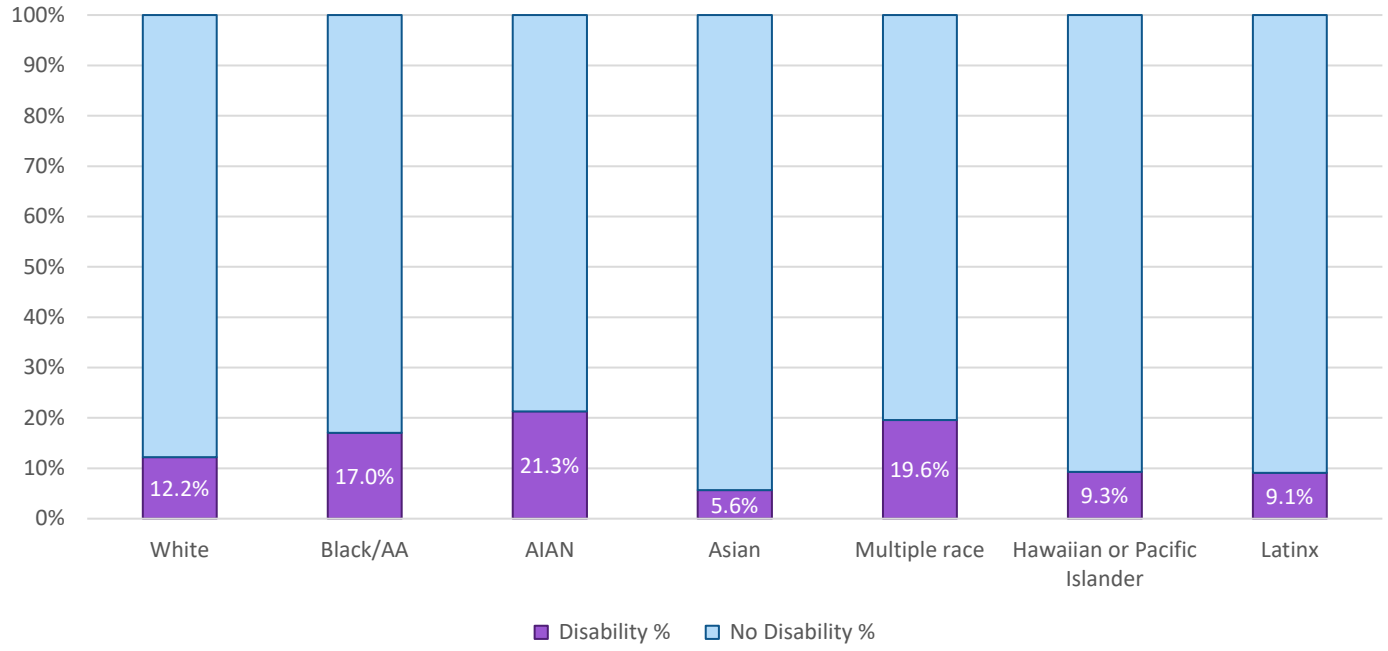


RACE AND ETHNICITY

Prior studies also show that, compared to white or Caucasian adults, members of minority groups subject to multi-generational racial discrimination and high rates of poverty, like Native Americans[59-61] and Blacks or African Americans[62-67] have higher rates of disability. In our analyses, about 21% of American Indians and Alaska Natives said they had a disability, as did 20% of respondents who identified with more than one racial group and 17% of Blacks/African Americans.

Previous studies of racial and ethnic differences have also found lower rates of disability among Hispanics,[68,69] Asian Americans,[70] and Native Hawaiians and Pacific Islanders.[71] We found similar results in our sample of working-age adults: about 6% of Asian Americans and 9% of Hispanic or Latinx adults reported having a disability in 2018 (figure 6). According to a special 2014 NHIS supplement, Native Hawaiians and Pacific Islanders also had relatively low rates of disability (9%).

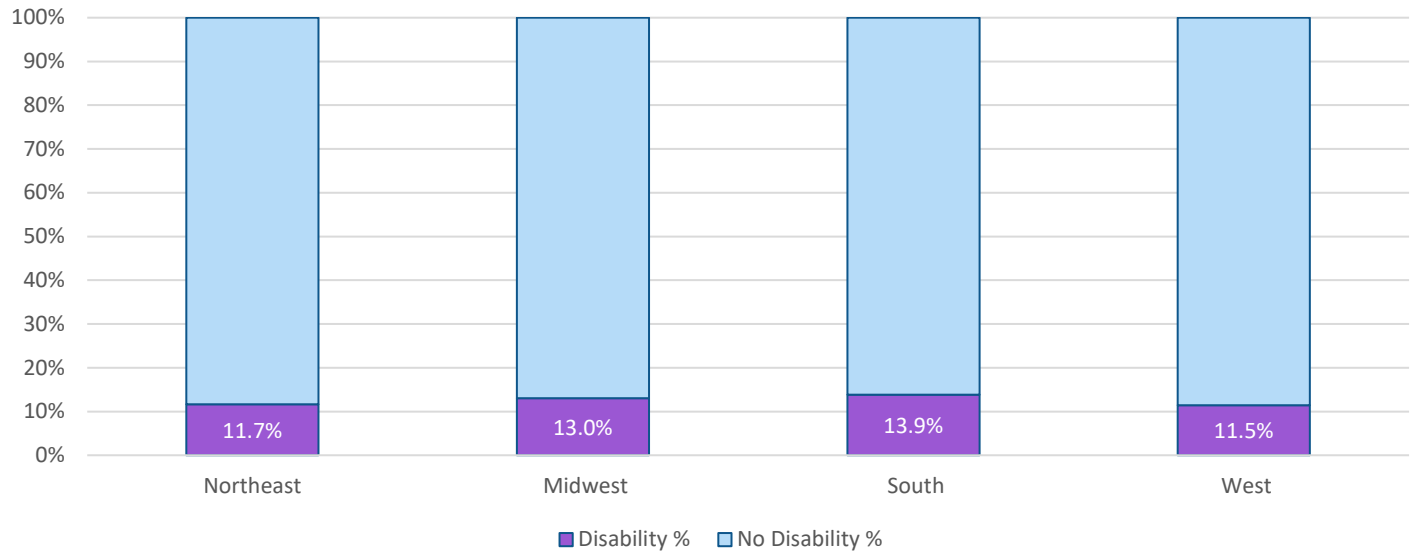
Figure 6. Rates of disability among working-age adults by race or ethnicity



REGION

Unfortunately, the NHIS public use files no longer include data on rural and urban residence.[72] However, other surveys indicate consistently higher rates of disabilities among adults who reside in rural communities.[73-78] There is also significant regional variation in disability prevalence[79-82] and disability program participation,[83-85] with higher rates in the southern US.[66] Indeed, some analysts have described a "disability belt" that includes Appalachia, the mid-South, and the Mississippi Delta regions.[83] Consistent with this premise, our findings show that disability rates are highest in the South (figure 7).

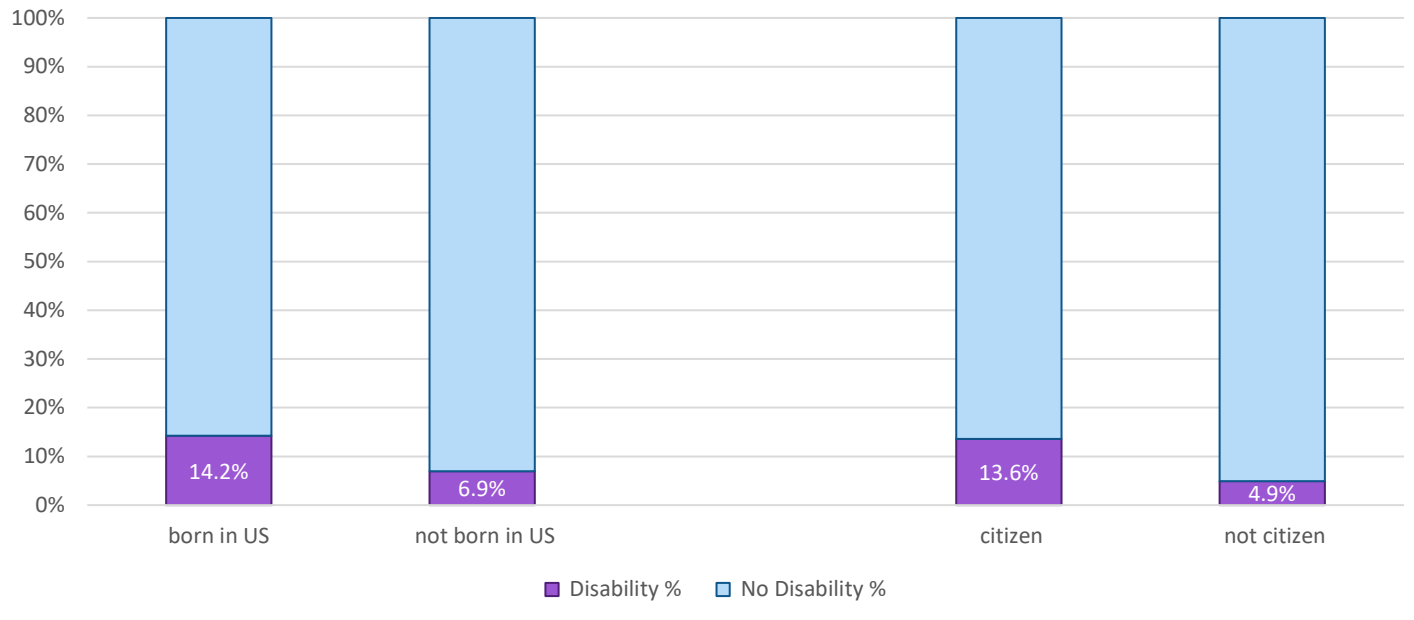
Figure 7. Rates of disability among working-age adults by US region



CITIZENSHIP AND NATALITY

A limited body of research finds lower rates of disability among immigrants and noncitizens,[86-88] and our analyses (figure 8) show that, among working-age adults, rates of disability among immigrants were half that of those born in the US (7% vs. 14%).

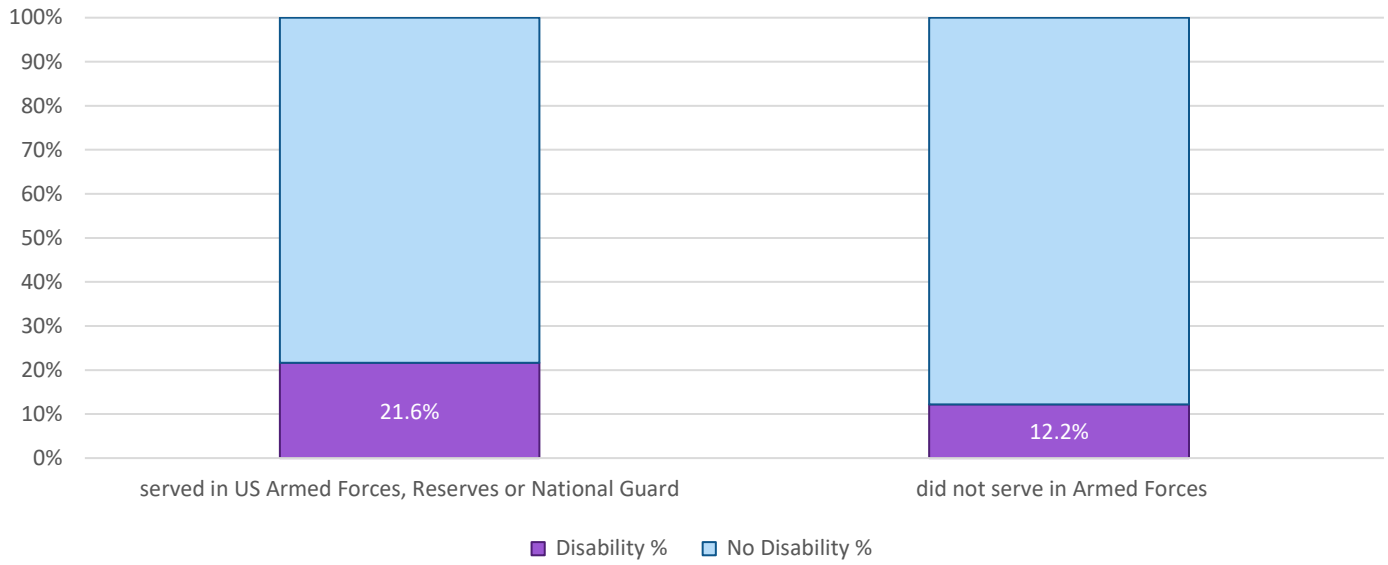
Figure 8. Rates of disability among working-age adults by nativity and citizenship



MILITARY SERVICE

Our analyses show that working-age adults with disabilities are more likely than those without disabilities to have served in the US Armed Forces, the Reserves, or the National Guard (figure 9). Veterans with disabilities have been a priority for US disability policy since the Civil War,[89] and high rates of disability among soldiers returning from combat in Iraq and Afghanistan suggest that this population will require relatively high levels of financial, medical and rehabilitative support for many decades.[90,91]

Figure 9. Rates of disability among working-age adults by military service



SECTION 3: SOCIAL DETERMINANTS OF HEALTH

As we note in the introduction of this report, multiple environmental factors contribute to health outcomes for people with disabilities and other minority groups. The World Health Organization states that "social determinants of health are mostly responsible for health inequities – the unfair and avoidable differences in health status seen within and between countries."[92] Using the classifications developed in the Healthy People 2020 and 2030 Initiatives, we present available NHIS data on disability-based disparities in the following 5 domains: economic stability; education; neighborhood and built environment; social and community context; and healthcare.[93]

ECONOMIC STABILITY

EMPLOYMENT

Low rates of employment among working-age adults with disabilities are a perennial challenge for policymakers and disability advocates.[94-96] Kennedy and Minkler[97] observe:

> *Persons with disabilities, insofar as their impairments limit or preclude workforce participation, present a challenge to the standard exchange relationships within the capitalist economic system. They are unable to sell their labor, and therefore unable to access the goods and services they need to survive. The modern state has traditionally responded to disability in the so-called "working-aged" population in one of two ways. It either compensates those deemed unable to participate in the workforce, or provides training and rehabilitation to prepare persons with disabilities to enter or re-enter the labor market… The challenge for the state is to ensure that only the most desperate take advantage of nonwork allocations – simultaneously maintaining a needs-based distributional system and an array of institutional and structural barriers designed to discourage its use.*
>
> *Disability Theory and Public Policy: Implications for Critical Gerontology, p. 763*

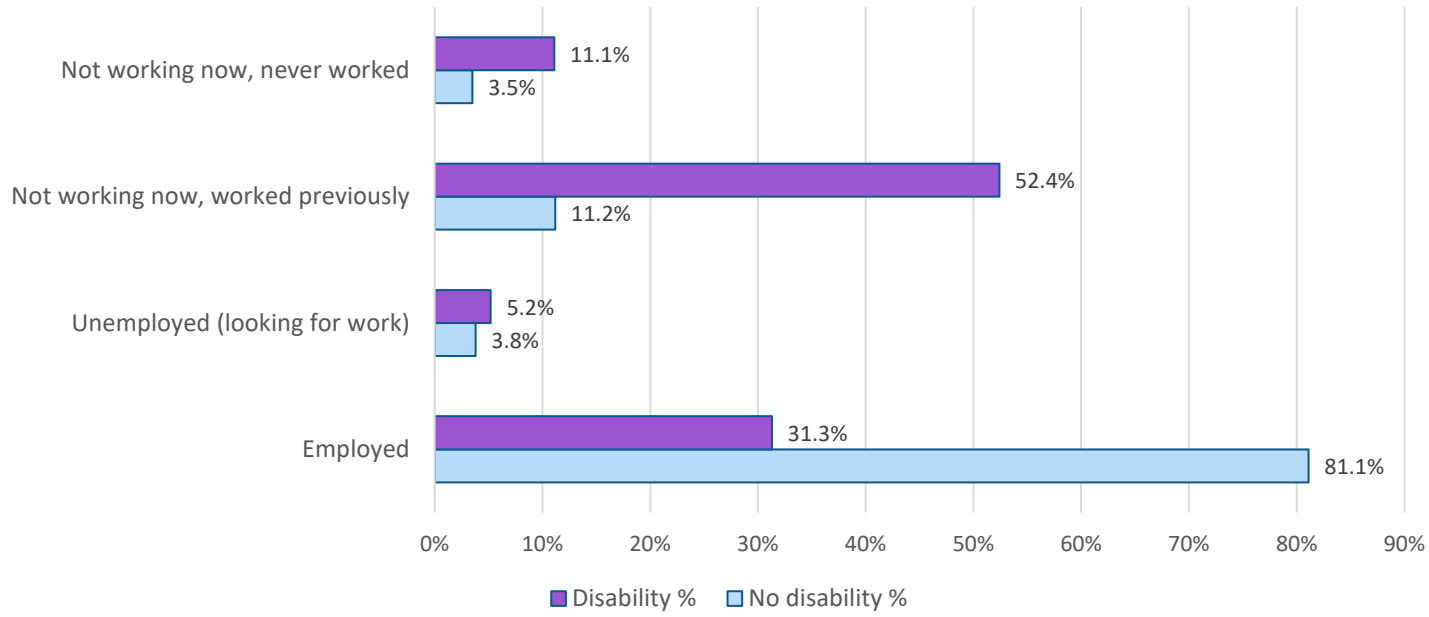
Thirty years after passage of the Americans with Disabilities Act, rates of employment remain low among working-age adults with disabilities.[98-102] Adults with disabilities, like other minority groups, are often the "last hired and first fired" in the business cycle.[103] Based on self-reported employment data from the 2018 NHIS, the proportion of adults with disabilities who worked in the previous year was less than half of those without disabilities (38% vs. 85%). Consistent with prior research,[104-108] adults with disabilities who did work reported much lower earnings than those without disabilities (table 4).

Table 4. Employment and annual earnings among working-age adults with and without disabilities

Employment and annual earnings	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
Any paid work in past year	9.6	38.1%	147.4	85.3%	***
Total earnings last year					***
$01-$4,999	1.1	4.5%	6.0	3.5%	
$5,000-$9,999	0.7	2.9%	6.0	3.5%	
$10,000-$14,999	0.8	3.2%	7.3	4.2%	
$15,000-$19,999	0.9	3.4%	7.4	4.3%	
$20,000-$24,999	0.6	2.5%	9.0	5.2%	
$25,000-$34,999	1.1	4.3%	16.8	9.7%	
$35,000-$44,999	0.7	2.7%	14.7	8.5%	
$45,000-$54,999	0.6	2.6%	12.7	7.4%	
$55,000-$64,999	0.4	1.8%	9.6	5.6%	
$65,000-$74,999	0.3	1.3%	7.6	4.4%	
$75,000 and over	0.8	3.3%	28.1	16.3%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Person file

Figure 10. Current employment and work history differences between working-age adults with and without disabilities



Looking at rates of current employment confirms that working-age adults with disabilities are much less likely to be working for a pay at a job or business than those without disabilities, but are more likely to be looking for work (figure 10, table 5). Those adults with disabilities who had jobs were significantly less likely to be working full-time than those without disabilities.

Table 5. Current employment status of working-age adults with and without disabilities

Current employment	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
any paid work in past year	9.6	38.1%	147.4	85.3%	***
working for pay at a job or business last week	7.0	27.7%	135.0	78.1%	***
with a job or business but not at work last week	0.7	2.8%	4.5	2.6%	
looking for work last week	1.3	5.3%	6.5	3.7%	
working last week, but not for pay, at a family business	0.2	0.9%	1.4	0.8%	
not working and not looking for work	16.0	63.4%	25.3	14.7%	
Employed	7.9	31.3%	140.1	81.1%	***
unemployed, looking for work	1.3	5.2%	6.5	3.8%	
not working now, *worked previously*	13.2	52.4%	19.3	11.2%	
not working now, *never worked*	2.8	11.1%	6.1	3.5%	
worked 1 - 19 hours last week	1.1	4.5%	6.7	3.9%	***
worked 0 - 39 hours last week	2.7	10.8%	28.2	16.3%	
worked 40 or more hours last week	4.3	17.2%	104.3	60.4%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Person file and Sample Adult file

HOUSEHOLD INCOME

Throughout the world, poverty is linked to disability.[109-114] Indeed, some analysts describe the interlocking systems of disadvantage surrounding employment and disability benefits as a "poverty trap."[115-117] In our 2018 comparisons, working-age adults with disabilities were more than three times as likely as those without disabilities to live in households with annual incomes below the federal poverty level (table 6).

Table 6. Annual household incomes of working-age adults with and without disabilities

Annual household income	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
income < FPL	6.5	25.6%	14.0	8.1%	***
income 100%-200% FPL	6.4	25.2%	24.8	14.3%	
income > 200% FPL	11.3	44.7%	127.4	73.7%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Person file

RECEIPT OF PUBLIC ASSISTANCE

Our analyses also show that, consistent with prior research,[118-120] working-age adults with disability were three times more likely than those without disabilities to receive food stamps (31% vs. 10%), and five times as likely to receive rental assistance (10% vs 2%) (table 7).

Table 7. Receipt of public assistance by working-age adults with and without disabilities

Receipt of public assistance	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
received food stamps/SNAP benefits in past year	2.6	10.4%	3.0	1.7%	***
received government rental assistance in past year	7.9	31.3%	16.4	9.5%	***
Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001					
Source: 2018 National Health Interview Survey, Person file					

FOOD INSECURITY

Like other recent studies,[121,122] our comparisons show that working-age adults with disabilities are also much more likely to report very low (15% vs. 3%) or low (17% vs. 6%) food security than those without disabilities (figure 11, table 8). New SNAP work requirements and eligibility restrictions appear to increase the risk of food insecurity for people with disabilities.[123-125]

Figure 11. Food security differences between working-age adults with and without disabilities

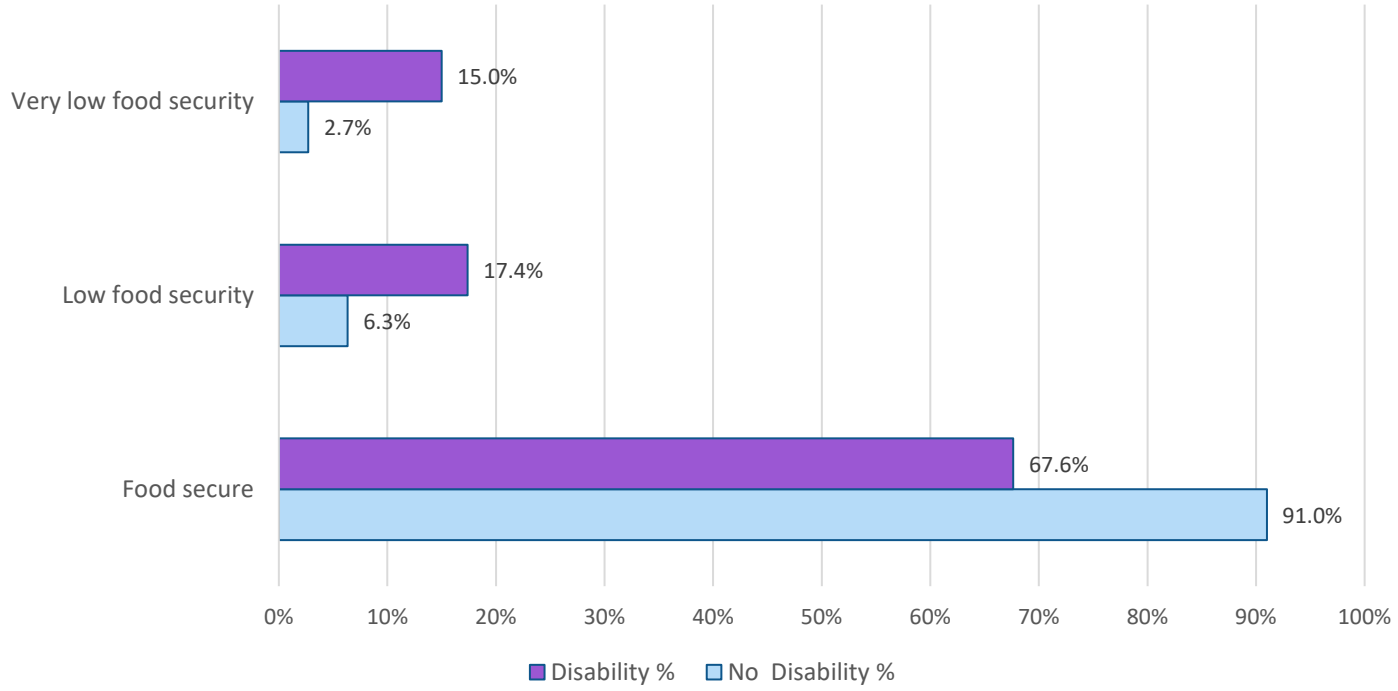


Table 8. Food security among working-age adults with and without disabilities

Food security in past 30 days	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
worried food would run out before got money to buy more					***
often true	3.2	12.9%	4.1	2.4%	
sometimes true	4.9	19.6%	13.6	7.9%	
never true	17.0	67.6%	155.0	89.7%	
food did not last before had money to get more					***
often true	2.7	10.7%	2.8	1.6%	
sometimes true	4.9	19.3%	12.1	7.0%	
never true	17.6	70.0%	157.9	91.4%	
could not afford to eat balanced meals					***
often true	2.9	11.4%	3.2	1.9%	
sometimes true	4.4	17.4%	9.9	5.7%	
never true	17.9	71.2%	159.6	92.4%	
because of lack of money					
cut size of meals or skipped meals	4.8	19.0%	6.6	3.8%	***
ate less than felt should	4.8	19.0%	7.4	4.3%	***
was hungry but did not eat	4.8	19.0%	7.4	4.3%	***
lost weight	2.1	8.2%	2.2	1.3%	***
did not eat for a whole day	1.5	6.1%	1.4	0.8%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Family file

GENERAL FINANCIAL CONCERNS

Given their low rates of employment and their high rates of poverty and food insecurity, it is not surprising that working-age adults with disabilities are much more likely to report worry over financial matters (like retirement, maintaining their standard of living, paying monthly bills, paying for housing, and making credit card payments) than those without disabilities (table 9). Other minority groups, including women, older adults, and racial and ethnic minorities, also experience disproportionate rates of financial worry.[126,127]

Table 9. General financial worries among working-age adults with and without disabilities

Worried right now…	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
about retirement					***
very worried	8.8	34.8%	27.0	15.6%	
moderately worried	5.7	22.8%	50.7	29.4%	
not too worried	3.9	15.6%	45.8	26.5%	
not worried at all	6.0	24.0%	46.0	26.6%	
about ability to maintain standard of living					***
very worried	7.3	29.1%	18.1	10.5%	
moderately worried	6.2	24.7%	40.1	23.2%	
not too worried	4.5	18.0%	54.9	31.8%	
not worried at all	6.5	25.7%	56.4	32.6%	
about not having enough money to pay monthly bills					***
very worried	5.6	22.2%	12.6	7.3%	
moderately worried	6.0	24.0%	29.1	16.8%	
not too worried	4.5	17.7%	49.0	28.4%	
not worried at all	8.5	33.5%	78.8	45.6%	
about not being able to pay rent, mortgage, or other housing costs					***
very worried	4.4	17.5%	11.0	6.4%	
moderately worried	4.8	19.0%	22.6	13.1%	
not too worried	4.4	17.5%	45.1	26.1%	
not worried at all	10.9	43.4%	90.8	52.6%	
about not being able to make minimum payments on credit cards					***
very worried	2.1	8.4%	6.9	4.0%	
moderately worried	2.2	8.6%	13.5	7.8%	
not too worried	2.3	9.1%	29.6	17.1%	
not worried at all	6.9	27.3%	81.5	47.2%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

EDUCATION

Despite the Individuals with Disabilities Education Act (IDEA), which requires public schools to provide free and appropriate education to all eligible children with disabilities in the least restrictive environment, children with disabilities are significantly less likely than those without disabilities to graduate from high school.[128-131] Likewise, despite the accessibility requirements codified in Section 504 of the Rehabilitation Act and Title II of the Americans with Disabilities Act, adults with disabilities are less likely to attend or graduate from college.[132-134] Our analyses of the 2018 NHIS confirmed the finding that working-age adults with disabilities are less likely to graduate from high school or college than their non-disabled counterparts (table 10).

Table 10. Differences in education among working-age adults with and without disabilities

Education level	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
did not graduate from high school	4.4	17.5%	16.3	9.4%	***
high school graduate or GED	8.0	31.7%	38.9	22.5%	
some college or associate's degree	8.4	33.3%	53.4	30.9%	
college graduate	2.9	11.6%	41.2	23.8%	
graduate education	1.2	4.9%	22.4	13.0%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Person file

NEIGHBORHOOD AND BUILT ENVIRONMENT

Public health research suggests that high neighborhood cohesion is associated with higher rates of physical activity[135,136] and lower rates of obesity,[137] hypertension[138] and depression.[139-141] However, our analyses (Table 11) show that working-age adults with disabilities are less likely than those without disabilities to describe their neighbors and neighborhoods as supportive or cohesive. The NHIS does not include any questions about the built environment, but we should note that there is an extensive body of theoretical and empirical work on how the accessibility of built environments influences the capacity of adults with disabilities to live, work and participate in their communities.[142-153] Linking specific attributes of the built environment to critical health and participation outcomes is a promising area for new disability-based disparities research.[154]

Table 11. Perceptions of neighborhood cohesion among working-age adults with and without disabilities

Neighborhood cohesion	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
people in this neighborhood help each other out					***
definitely agree	8.1	32.4%	65.8	38.2%	
somewhat agree	10.1	40.6%	74.0	43.0%	
somewhat disagree	2.8	11.3%	14.6	8.5%	
definitely disagree	2.8	11.3%	10.7	6.2%	
there are people I can count on in this neighborhood					***
definitely agree	10.7	43.0%	82.1	47.7%	
somewhat agree	7.2	29.0%	54.2	31.5%	
somewhat disagree	2.6	10.5%	15.5	9.0%	
definitely disagree	3.3	13.4%	13.7	8.0%	
people in this neighborhood can be trusted					***
definitely agree	9.0	36.1%	77.5	45.0%	
somewhat agree	8.4	33.5%	61.7	35.8%	
somewhat disagree	3.0	12.2%	14.9	8.6%	
definitely disagree	3.1	12.5%	10.9	6.3%	
this is a close-knit neighborhood					***
definitely agree	6.1	24.5%	45.9	26.6%	
somewhat agree	7.6	30.6%	61.4	35.6%	
somewhat disagree	4.9	19.5%	34.3	19.9%	
definitely disagree	5.3	21.4%	24.0	13.9%	
Time living in current neighborhood					
< 1 year	3.2	12.7%	25.3	14.7%	
1 - 3 years	5.5	21.9%	41.5	24.1%	
4 - 10 years	6.6	26.5%	45.1	26.2%	
11 - 20 years	4.8	19.2%	33.2	19.3%	
more than 20 years	4.7	18.8%	24.8	14.4%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

SOCIAL AND COMMUNITY CONTEXT

Social support is a widely used explanatory variable in health psychology research and theory.[155] Studies of adults with chronic conditions like schizophrenia,[156] chronic depression,[157] spinal cord injury,[158] and cancer[159] find that the quality and frequency of interactions with family and friends can moderate or "buffer" the severity of disease symptoms and their psychosocial impact. Unfortunately, recent releases of the NHIS have not included standard questions about social support, though earlier analyses of the NHIS found that higher levels of social integration (i.e. frequency of phone or face-to-face contacts with friends or family) are associated with higher rates of physical activity[160] and lower rates of mortality.[161] In this report, we contrast marital status and household composition, since spouses and other family members are primary sources of social support.

FAMILY/HOUSEHOLD COMPOSITION

Consistent with prior research,[162,163] working-age adults with disabilities are less likely to live in households with children under 18 (23% vs. 44%), and more likely to live alone (27% vs. 15%) than those without disabilities (table 12). Parents or guardians with disabilities are less likely to live with a spouse or partner (14% vs 8%), compounding the challenges of parenting with a disability.[164-167]

Table 12. Family and Household composition of working-age adults with and without disabilities

Family/Household Composition	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
one adult, no children under 18	6.7	26.7%	25.4	14.7%	***
multiple adults, no children under 18	12.6	50.1%	71.4	41.3%	
one adult, 1+ child(ren) under 18	0.8	3.4%	6.0	3.4%	
multiple adults, 1+ child(ren) under 18	5.0	19.9%	70.1	40.6%	
households without children under 18					***
living alone	6.2	24.8%	21.9	12.7%	
living with roommate(s)	0.5	1.9%	3.5	2.0%	
married couple	4.6	18.4%	28.8	16.7%	
unmarried couple	1.0	4.0%	8.1	4.7%	
all other adult-only families	7.0	27.6%	34.5	19.9%	
households with children under 18					***
mother and child(ren) only	0.6	2.6%	4.8	2.8%	
father and child(ren) only	0.1	0.6%	1.0	0.6%	
all other single-adult and child(ren) families	0.1	0.2%	0.1	0.1%	
married or unmarried parents with child(ren)	1.4	5.4%	34.5	20.0%	
parent, stepparent, and child(ren)	0.4	1.5%	3.8	2.2%	
parent, cohabiting partner, and child(ren) only	0.3	1.0%	2.9	1.7%	
at least 1 parent and child(ren), other related adults	2.7	10.5%	26.5	15.3%	
no parent, other adults and child(ren)	0.4	1.4%	2.4	1.4%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Person file

MARITAL STATUS

Consistent with recent studies,[168-172] we found that working-age adults with disabilities are less likely to be married or cohabitating than those without disabilities (36% vs. 53%), and more likely to be divorced, widowed or never married, (table 13). In addition to implications for less social support, this situation could be particularly difficult for adults who need help with activities of daily living, because spouses are the most common source of such personal assistance.[173-178]

Table 13. Marital status of working-age adults with and without disabilities

Marital status	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
married	9.1	36.2%	91.9	53.2%	***
living with partner	1.9	7.4%	15.8	9.2%	
widowed	0.8	3.3%	2.2	1.3%	
divorced or separated	5.2	20.5%	15.0	8.7%	
never married	8.2	32.6%	47.7	27.6%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Person file

HEALTHCARE

Access to appropriate and affordable healthcare can literally be a matter of life or death, particularly for people with chronic health conditions.[179-184] While the ability to obtain healthcare is mediated by multiple factors, a systematic comparison of differences in health insurance coverage, health services access, and health services utilization is critical to understanding disability-based disparities in health status.[185] In the US, the passage and implementation of the Affordable Care Act (ACA) appear to have improved health insurance coverage and healthcare access for adults with and without disabilities, but coverage differences between the two groups remain stark.[186-191]

HEALTH INSURANCE COVERAGE

Our 2018 analyses confirm the findings of recent research on coverage disparities. Working-age adults with disabilities are less likely to receive employer-based private health insurance, in part because they are much less likely to be working full-time (table 14).[192-198] However, because of their relatively low incomes and disability program participation, they are much more likely to be categorically eligible for public health insurance programs like Medicaid and Medicare.[199-203] Consequently, uninsurance rates for working-age adults with disabilities are actually lower than those of their nondisabled counterparts (figure 12).[188,189,191]

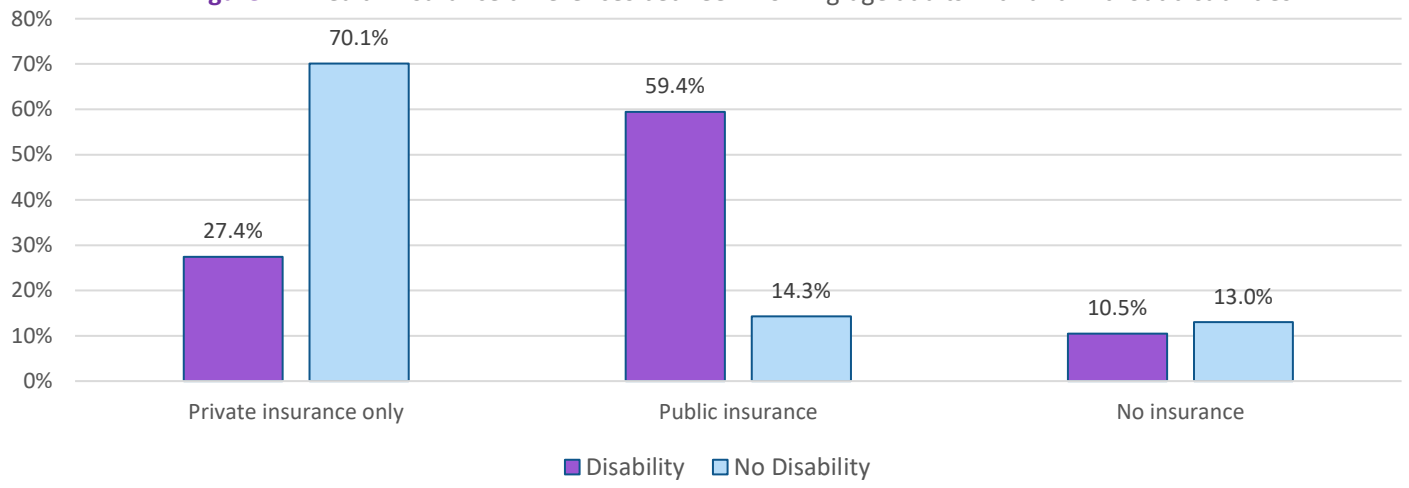
Table 14. Health insurance coverage among working-age adults with and without disabilities

Health insurance coverage	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
uninsured currently	2.7	10.7%	22.8	13.2%	***
uninsured for 12 months or more	0.8	3.2%	8.9	5.1%	*
private insurance	9.5	37.5%	127.1	73.6%	***
high-deductible plan ($1,300 or more per year for an individual)	7.5	29.9%	103.5	59.9%	***
health savings account	1.1	4.4%	21.9	12.7%	***
purchased through insurance exchange	1.0	4.0%	7.5	4.3%	ns
Medicare	6.7	26.4%	1.1	0.7%	***
Medicare Advantage	1.7	6.8%	0.2	0.1%	ns
Medicare Part D	3.4	13.3%	0.3	0.2%	ns
Medicaid	8.9	35.3%	15.7	9.1%	***
Medicare and Medicaid (Dual eligible)	2.4	9.4%	0.1	0.1%	***
Medicaid through insurance exchange	1.9	7.7%	5.9	3.4%	***
VA, CHAMP-VA or TRICARE	1.9	7.6%	6.3	3.7%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Person file

Figure 12. Health insurance differences between working-age adults with and without disabilities



USE OF OUTPATIENT, INPATIENT AND PREVENTIVE HEALTH SERVICES

Consistent with prior research,[204-209] we found that working-age adults with disabilities are more likely than those without disabilities to report interacting with healthcare providers of various types (table 15), with one notable exception – women with disabilities are less likely to see a gynecologist or obstetrician (17% vs. 24%). They also tend to visit their medical providers frequently – half have visited a physician's office or clinic more than 5 times in the past year, compared to 16% of those without disabilities (figure 13).

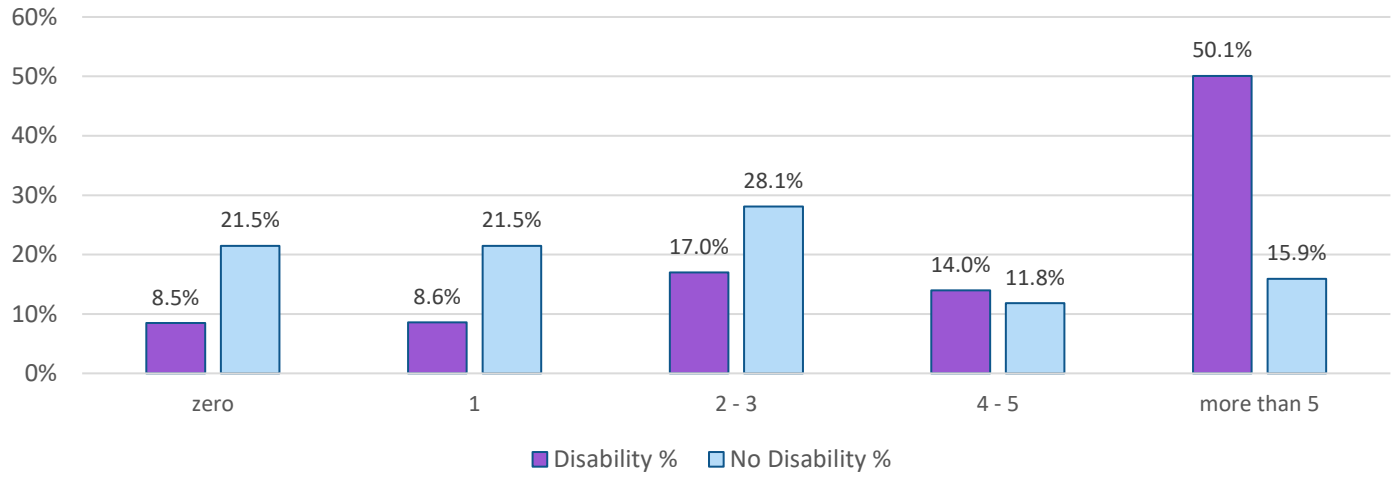
Table 15. Outpatient healthcare utilization among working-age adults with and without disabilities

Outpatient healthcare utilization	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Seen or talked to healthcare provider in past year					
MD in general practice, family medicine or internal medicine	20.3	80.4%	108.4	62.7%	***
optometrist or ophthalmologist	10.6	42.2%	65.5	37.9%	**
pediatrician or family medical practice	10.9	43.2%	55.3	32.0%	**
nurse practitioner, physician assistant or midwife	10.6	41.9%	43.1	24.9%	***
medical specialist	12.6	50.1%	35.5	20.6%	***
gynecologist or obstetrician	4.2	16.8%	41.4	24.0%	***
psychiatrist, psychologist, or clinical social worker	7.7	30.5%	14.1	8.2%	***
physical, speech, respiratory, or occupational therapist	6.3	25.1%	11.8	6.8%	***
Number of physician's office or clinic visits in past year					***
zero	2.1	8.5%	37.1	21.5%	
1	2.2	8.6%	37.1	21.5%	
2 – 3	4.3	17.0%	48.5	28.1%	
4 – 5	3.5	14.0%	20.4	11.8%	
more than 5	12.6	50.1%	27.5	15.9%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

Figure 13. Physicians' office or clinic visits for working-age adults with and without disabilities



A similar pattern is evident in emergency department, hospital, and surgery utilization – working-age adults with disabilities are more likely to use these services, and to use them more intensively, than those without disabilities (table 16). For example, figure 14 shows that working-age adults with disabilities are more likely to use emergency department services multiple times in the past year.

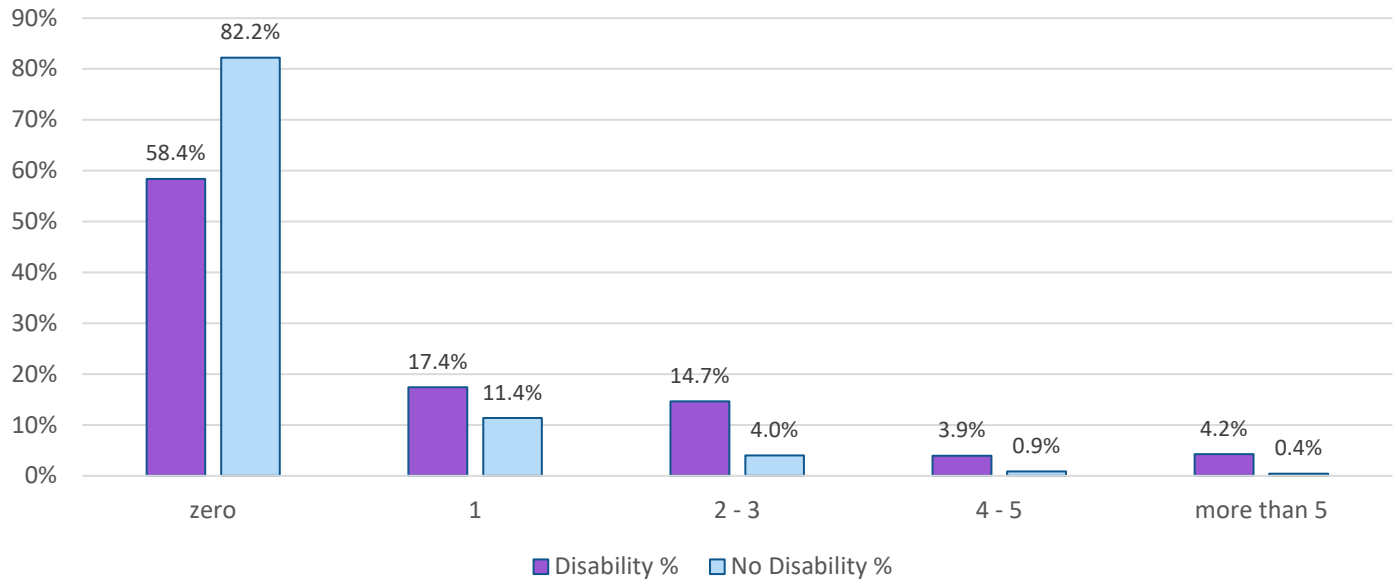
Table 16. Emergency department, hospital, and surgery utilization among working-age adults with and without disabilities

Emergency department, hospital, and surgery utilization	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Number of ED visits					***
zero	14.7	58.4%	142.1	82.2%	
1	4.4	17.4%	19.6	11.4%	
2 – 3	3.7	14.7%	6.9	4.0%	
4 – 5	1.0	3.9%	1.5	0.9%	
more than 5	1.1	4.2%	0.7	0.4%	
Been in hospital overnight in past 12 months	3.2	12.7%	8.1	4.7%	***
Number of nights					***
1	0.8	3.1%	2.3	1.3%	
2	0.7	2.7%	2.0	1.2%	
3	0.6	2.2%	1.5	0.9%	
4	0.5	1.9%	0.8	0.5%	
5-9	1.2	4.9%	1.0	0.6%	
10 or more	1.4	5.6%	0.5	0.3%	
Had surgery in the past year	5.5	21.7%	15.9	9.2%	***
Number of surgeries					***
1	3.6	14.5%	13.7	8.0%	
2	1.1	4.2%	1.8	1.1%	
3 or more	0.8	3.0%	0.3	0.2%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

Figure 14. Differences in number of emergency department visits between working-age adults with and without disabilities



Prior studies suggest that adults with disabilities generally use more preventive health services than those without disabilities, though this varies depending on the services used, the definition of disability, and the control variables specified.[26,210-214] Our analyses show that working-age adults with disabilities are more likely to receive annual health screenings for high blood pressure, cholesterol and diabetes, as well as annual influenza vaccines and pneumonia vaccines (table 17). However, they less likely to have received a hepatitis A or B vaccine.

Table 17. Preventive healthcare utilization among working-age adults with and without disabilities

Preventive healthcare utilization	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Health screenings received in past year					
blood pressure check	22.4	89.0%	137.3	79.5%	***
cholesterol test	18.6	73.8%	99.0	57.3%	***
A1C test	13.9	55.2%	72.4	41.9%	***
Vaccinations					
flu (past year)	11.0	43.6%	63.6	36.8%	***
pneumonia (ever)	7.4	29.5%	19.0	11.0%	***
hepatitis B (ever)	8.3	33.0%	66.7	38.6%	***
hepatitis A (ever)	3.9	15.4%	35.5	20.6%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

ACCESS TO HEALTHCARE

Our analyses show that working-age adults with disabilities are more likely to report difficulty with finding a doctor (6% vs. 3%) but are also more likely to have a usual source of routine or preventive care (85% vs. 75%) and a place to obtain medical care when sick (91% vs. 82%) than those without disabilities (table 18). This pattern presumably reflects the higher level of health service need among adults with disabilities.[31,215,216]

Table 18. Usual sources of healthcare among working-age adults with and without disabilities

Usual source of care	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
Had difficulty finding doctor	1.5	6.0%	4.6	2.6%	***
Has usual source of routine/preventive care	21.3	84.5%	130.2	75.3%	***
Has usual place to obtain medical care when sick	22.9	90.9%	141.8	82.1%	***
Doctor's office	14.6	58.0%	96.9	56.1%	***
Clinic or health center	6.7	26.6%	37.5	21.7%	
Hospital emergency room	0.5	2.0%	2.0	1.1%	
Hospital outpatient department	0.5	2.1%	2.0	1.1%	
Some other place	0.3	1.2%	1.9	1.1%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Sample Adult file

We found that average family out-of-pocket healthcare costs are actually lower for working-age adults with disabilities than for those without disabilities (table 19), presumably because this population is much more likely to be enrolled in subsidized public insurance programs. However, adults with disabilities are significantly more likely to report problems with paying their medical bills (35% vs. 23%), and to be paying these bills off over time (19% vs. 6%), which is particularly challenging for those with low incomes.

Table 19. Family out-of-pocket costs and payment for healthcare among working-age adults with and without disabilities

Family healthcare costs and bills	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Annual family out-of-pocket costs for healthcare					***
None	4.7	18.7%	21.6	12.5%	
less than $500	7.4	29.4%	51.2	29.6%	
$500-$1,999	6.1	24.2%	50.8	29.4%	
$2,000-$2,999	2.1	8.3%	17.3	10.0%	
$3,000-$4,999	1.7	6.7%	13.3	7.7%	
$5,000 or more					
Problems paying, or unable to pay, any medical bills	8.7	34.5%	40.3	23.3%	***
Medical bills being paid off over time	4.7	18.7%	10.9	6.3%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Family file

Table 20 confirms that working-age adults with disabilities are more likely to be very worried about paying for healthcare after a serious illness or injury, as well as more likely to be very worried about paying for regular medical costs.

Table 20. Healthcare financial worries among working-age adults with and without disabilities

Worried right now…	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100**	**172.8**	**100**	
about not being able to pay for a serious illness or injury					***
very worried	8.2	32.5%	30.3	17.5%	
moderately worried	4.9	19.5%	42.9	24.8%	
not too worried	3.8	14.9%	43.9	25.4%	
not worried at all	7.7	30.5%	52.5	30.4%	
about not being able to pay regular medical costs					***
very worried	5.8	22.9%	16.6	9.6%	
moderately worried	4.4	17.3%	28.1	16.3%	
not too worried	4.5	17.8%	49.3	28.5%	
not worried at all	10.0	39.5%	75.5	43.7%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Sample Adult file

The heightened cost concerns make adults with disabilities more likely than those without disabilities to delay or forgo needed health services.[188-191,205,217-223] In our analyses, working-age adults with disabilities were more likely to not get needed medical care, dental care, prescription medications, prescription eyeglasses, or mental health services than those without disabilities (table 21). They were also more likely to delay getting medical care because of cost and because of time and access constraints (table 22).

Table 21. Not getting needed healthcare due to cost among working-age adults with and without disabilities

Healthcare access	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Did not get needed healthcare due to cost…					
dental care	6.5	25.7%	16.1	9.3%	***
medical care	4.7	18.7%	9.7	5.6%	***
prescription medications	4.5	17.7%	8.3	4.8%	***
eyeglasses	4.1	16.1%	8.3	4.8%	***
mental healthcare or counseling	1.9	7.5%	3.0	1.7%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001
Source: 2018 National Health Interview Survey, Sample Adult file

Table 22. Reasons for delaying needed healthcare among working-age adults with and without disabilities

Healthcare access	Disability		No Disability		P
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
Delayed getting needed medical care because…					
cost of care	5.9	23.4%	15.8	9.1%	***
couldn't get an appointment soon enough	4.4	17.4%	12.1	7.0%	***
once you got to the office, the wait was too long	2.4	9.5%	7.0	4.1%	***
clinic/office wasn't open when you could get there	2.1	8.2%	6.3	3.6%	***
couldn't get through on telephone	2.0	8.0%	4.3	2.5%	***
you didn't have transportation	2.5	9.9%	2.0	1.2%	***

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

SATISFACTION WITH HEALTHCARE

Given the relatively high rates of service use among working-age adults with disabilities and the associated cost concerns and access problems encountered, it is not surprising that this population is less satisfied with the care they receive than those without disabilities (table 23, figure 15).[205,221,224-227]

Figure 15. Differences in satisfaction with healthcare received between working-age adults with and without disabilities

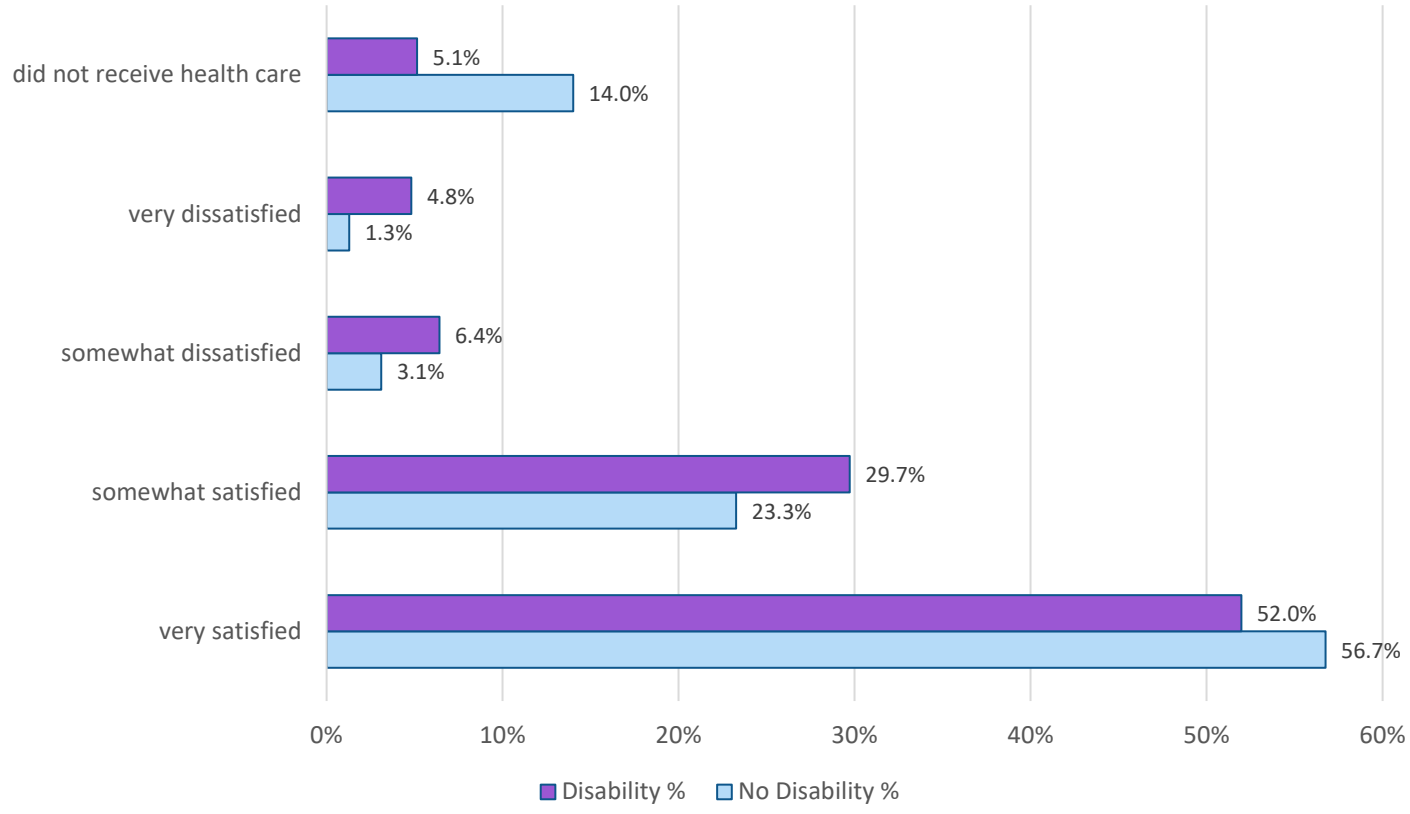


Table 23. Satisfaction with healthcare received in the past year by working-age adults with and without disabilities

How satisfied are you with the healthcare you received in the past 12 months?	Disability		No Disability		p
	est. N	%	est. N	%	
Total	**25.2**	**100%**	**172.8**	**100%**	
very satisfied	13.1	52.0%	98.1	56.7%	***
somewhat satisfied	7.5	29.7%	40.2	23.3%	
somewhat dissatisfied	1.6	6.4%	5.4	3.1%	
very dissatisfied	1.2	4.8%	2.2	1.3%	
did not receive healthcare	1.3	5.1%	24.2	14.0%	

Rao-Scott X^2 tests: ns=not significant; *=p <.01; **=p <.001; ***=p <.0001

Source: 2018 National Health Interview Survey, Sample Adult file

RESEARCH AND POLICY IMPLICATIONS

> *Disability consciousness starts with an acknowledgment that disability is a universal part of human experience, and that having a disability is a valid way of life that can be both rich and complex. From this foundation, we can understand that society plays a critical role in defining disability and determining its consequences. We can recognize that the growing minority-group identity of people with disabilities who, like members of other minority groups, assert that systemic social barriers — such as employment discrimination, social and economic devaluation and blocked access to the mainstream — are far more troubling than individual biological differences.*
>
> *MacArthur Foundation: 100&Change Inclusion Guidelines, pp. 1-2*

This report shows how working-age adults with disabilities experience systemic disadvantages in terms of healthcare and other social determinants of health relative to their nondisabled peers. Approximately 25 million American adults age 18-64 have disabilities, and this is a diverse and complex population. Many have multiple disabilities, but less than half receive federal disability benefits. Disability is more common among certain working-age adult populations, including older workers; racial and ethnic minorities; gay, lesbian, or bisexual adults; veterans; and people residing in the southern region of the US. However, disability is less prevalent among migrants and noncitizens.

Working-age adults with disabilities are much less likely to be employed, and less likely to graduate from high school or college than those without disabilities. They are more likely to live in households with annual incomes below the federal poverty level, and more likely to be food-insecure. They are more likely to live alone, less likely to live with children, and less likely to be married. They are more likely to rely on public insurance programs like Medicare and Medicaid. They use significantly more healthcare services than working-age adults without disabilities, and are more likely to report difficulties in obtaining and paying for their healthcare services. They also are more likely to report poor mental and/or physical health.

Individually, none of these survey findings are particularly groundbreaking, but together they reveal a large and consistent pattern of health disparities that is not fully acknowledged by most public health researchers, funders, and policymakers. It is clear from this analysis that working-age adults with disabilities constitute a distinct minority group that is disadvantaged in every domain of social determinants of health. We hope that this report will lay the groundwork for further and more sophisticated analyses in disparities research by offering a consistent and up-to-date set of reference points for how these social determinants of health and health status indicators play out within the same recent sample of people with disabilities.

Today, people with disabilities are a distinct minority group recognized not only in civil rights laws, but in the dominant discourse around health outcomes. This understanding corresponds with the minority model of disability preferred by the disability community itself. However, many published research studies and many funding opportunities still conceptualize disability solely according to the medical model, wherein disability is a health outcome rather than an identity. Although reducing the long-term effects of injuries and illnesses is a worthy goal, the medical model cannot provide the sole or even the primary understanding of disability in the health research world. Rather, disability must be understood as an important population attribute that overlaps significantly with other disadvantaged population groups and is associated with pervasive disparities.

We conclude this report with two targeted calls to action:

1. To create inclusive research that accurately depicts the intersecting effects of multiple marginalized identities, researchers in the field of health and healthcare disparities must engage with disability as more than an outcome measure. We call for researchers to use disability as a predictor variable, rather than solely as an outcome. Additionally, we call for researchers to adhere to the disability rights principle of "nothing about us without us" by engaging whenever possible with members of the disability community, both laypeople and other researchers. Finally, disability must always be understood in terms of its intersections with other factors that predict health, including membership in other disadvantaged groups. Whenever possible, research should involve people of multiply marginalized identities that include disability, rather than focusing only on disability.

2. To support a better and more equitable health system, Congress and the National Institutes of Health must explicitly support research that treats people with disabilities as a marginalized and disadvantaged population. We call for significant investment in a program of research on disability-based disparities, as well as revision of statutory language to acknowledge that people with disabilities not only constitute a minority group, but that nearly every other minority group of interest to Congress and the NIH (such as people in rural areas, socioeconomically disadvantaged people, racial and ethnic minorities, and people of marginalized gender and sexual identities) are disproportionately over-represented among the disability community.

Creating an equitable and effective health system requires acknowledging the areas in which our current system is neither equitable nor effective. While the early 21st century has brought renewed research and policy attention to the health implications of social disadvantage for minority populations, our understanding of these populations and how they interact is still developing. One of the largest and most disadvantaged groups, people with disabilities, is still missing from many areas of research. Investing in a program of disability-based disparities research has the potential to significantly improve the health and healthcare experiences of working-age adults with disabilities, thereby improving overall population health, increasing patient satisfaction, and lowering per capita costs.

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APPENDIX 1: STUDY METHODOLOGY

DATA SOURCE

This report uses data from the 2018 National Health Interview Survey (NHIS). The NHIS is a cross-sectional household survey of the noninstitutionalized[1] US population, conducted by the National Center for Health Statistics (NCHS). It is generally considered the most comprehensive and current source of population data on health in the US. NHIS surveys, codebooks and data are available for download on the NCHS website at http://www.cdc.gov/nchs/nhis.htm.

DATA COLLECTION

Interviewing for the NHIS is done throughout the year. Survey staff generally conduct face-to-face interviews, but participants may request a phone survey, or interviewers may also conduct phone interviews if travel distances or weather conditions make it difficult to schedule a face-to-face interview. All interview responses are entered into a handheld or desktop computer that codes conditional responses and performs real-time consistency checks.

The interviewer first asks questions about the composition of the household, then asks about family structure and food security (responses included in the Family file). Information about each household member is then collected, including sociodemographic and socioeconomic attributes, health insurance coverage, health, and disability status (the Person file). Finally, more detailed questions are asked about a randomly selected adult and child in the household (the Sample Adult and Sample Child files). The Sample Adult file includes questions about healthcare access and utilization, health behaviors, and health-related quality of life.

SAMPLE SIZE AND RESPONSE RATES

The full 2018 NHIS sample contains data from 72,831 persons in 30,309 families, with a household response rate of 64.2% The Sample Adult file is comprised of 25,417 persons aged 18 or older. We restrict our analyses to the 18,120 adults aged 18 to 64. Within this subgroup, 2,705 individuals were determined to have a disability, and 15,415 were not.

[1] Those residing in long-term care institutions or prisons are not included in the NHIS sample, though these institutional residents have relatively high rates of disability. US nationals living in foreign countries are also omitted from the NHIS, as are most active-duty military personnel.

SAMPLE WEIGHTING METHODS

The NHIS sample is based on over 300 clusters of addresses located in well-defined geographic areas within single states. The sampling frame has two parts – the unit frame (purchased from a vendor) and an area frame (for counties that do not have city-style addresses or other resources).

STATISTICAL ANALYSIS

To correct for potential bias from stratification and clustering in the NHIS sample, we used the SAS SURVEYFREQ procedure for all comparisons, reporting significant group differences with Rao-Scott Chi Square tests. Relative standard errors for population estimates are not included in these tables, but are available from the CHRIL on request. To simplify the results tables, multi-level categorical variables were compared. However, pairwise risk estimates were also calculated for each variable, and are available on request.