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## Physicians' Perceptions Of People With Disability And Their Health Care

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### Abstract

Over 61 million Americans have disabilities, and increasing evidence documents that they experience health care disparities. While many factors likely contribute to these disparities, one little-studied but potential cause involves physicians' perceptions of people with disability. Our survey of 714 practicing U.S. physicians nationwide found that 82.4% reported that people with significant disability have worse quality of life than nondisabled people. Only 40.7% of physicians were very confident about their ability to provide equal quality care to patients with disability, just 56.5% strongly agreed they welcome disabled patients into their practices, and 18.1% strongly agreed that the health care system often treats these patients unfairly. More than 30 years after the Americans with Disabilities Act, these findings about physicians' perceptions of this population raise questions about ensuring equitable care to people with disability. Potentially biased views among physicians could perhaps contribute to persistent health care disparities affecting people with disability.

### Keywords

disability; physician attitudes; physician bias; disparities

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## Introduction

Released in 2000, *Healthy People 2010* was the first of these decennial reports delineating national public health priorities to identify people with disability as experiencing health care disparities, partially attributing these inequities to common misconceptions about this population.<sup>1</sup> Over the last two decades, increasing evidence has documented persistent disparities for people with disability, now including over 61 million Americans<sup>2</sup> – numbers that will grow in coming years with the aging population. Disparities include screening and preventive services,<sup>3,4</sup> cancer diagnosis and treatment,<sup>5,6</sup> reproductive and pregnancy care,<sup>7,8</sup> communication with health care professionals,<sup>9,10</sup> and satisfaction with care.<sup>11</sup> Many patient-level factors likely contribute to these disparities, such as patients' complex underlying health conditions,<sup>12</sup> disadvantages in social determinants of health,<sup>13,14</sup> and patients' preferences for care.<sup>11,6</sup> Systems-level factors also contribute, including inadequate training of health care professionals,<sup>15,16</sup> ineffective communication accommodations,<sup>17,9,10</sup> physical access barriers,<sup>18,19</sup> and inadequate knowledge among physicians about legal requirements to provide equitable care under the 1990 Americans with Disabilities Act (ADA).<sup>18,20</sup> Despite more than 30 years since this landmark civil rights legislation for people with disability, this population continues to experience inequitable health care on many levels.

One concern that has received relatively little empirical attention is the attitudes of physicians, specifically whether physicians have implicit or explicit biased views of people with disability. Over centuries, societies have stigmatized people with disability,<sup>21</sup> although the nature of these negative perceptions varies by disability type (e.g., persons with intellectual disability or serious mental illness are typically more marginalized than individuals with other types of disabilities). Limited research suggests that physicians can share these societal prejudices toward people with disability.<sup>22,23</sup>

A systematic review of studies investigating racial/ethnic implicit bias among physicians found that unconscious beliefs significantly affect treatment decisions, patients' outcomes, and other aspects of care.<sup>24</sup> If parallel effects hold for people with disability, physicians' bias toward disability could possibly contribute to health care disparities. We are unaware of other studies of how U.S. physicians, nationally and across specialties, perceive people with disability and whether they welcome them as patients. Better understanding of physicians' perceptions of people with disability and their care could inform efforts to improve quality of care and achieve equity for this large and growing population.

## Methods

The Massachusetts General Hospital/Partners Healthcare and University of Massachusetts-Boston Institutional Review Boards approved this study.

## Survey Development and Testing

No existing survey served our purpose. We therefore developed a single survey suitable for physicians serving adult patients and practicing in seven specialties: family medicine, general internal medicine, rheumatology, neurology, ophthalmology, orthopedic surgery, and

obstetrics-gynecology (OB/GYN). We chose the first six specialties because of the likely high prevalence of people with disability in their patient panels. We included OB/GYN because many women see gynecologists for routine care and prior research found high rates of physical access barriers in OB/GYN practices.<sup>18</sup>

Survey design and testing involved several steps. First, we conducted 20 in-depth, open-ended individual interviews with physicians across the seven specialties practicing in Massachusetts to explore their experiences with caring for patients with disability.<sup>17,20,25,26</sup> Second, we conducted 3 videoconference focus groups with 22 total practicing physicians in the selected specialties from 17 states nationwide, identified through an online social network of physicians ([www.SERMO.com](http://www.SERMO.com)).<sup>27,28</sup> Third, based on this qualitative research, we constructed the survey instrument in an iterative fashion. Trained interviewers at the Center for Survey Research (CSR), University of Massachusetts-Boston, pretested the draft survey instrument with 8 cognitive interviews with practicing physicians. CSR formally pilot tested the revised survey with 50 subjects randomly selected from the sampling frame (see below). The final instrument included 75 questions grouped into 8 modules, including five addressing specific disability types (mobility, vision, hearing, and intellectual disability and serious mental illness), physicians' responsibilities under the Americans with Disabilities Act and views about people with disability and their quality of care, practice characteristics, and participants' characteristics (for survey instrument, see online Appendix Exhibit A1).<sup>29</sup> At the outset of each disability-specific module, we provided definitions of that disability type.

## Sampling

Using commercially available data from IQVIA, we identified all board-certified U.S. physicians in the seven specialties ( $n = 277,675$ ). From this list, we excluded physicians practicing in military or Veterans Affairs hospitals, all trainees (residents and fellows), locum tenens physicians, hospitalists, physicians with incomplete addresses or telephone numbers, and those board-certified both in medicine and pediatrics. These exclusions left 172,734 physicians in the sampling frame. Within each specialty, we selected simple random samples of physicians: 350 each in family practice and general internal medicine; and 140 physicians in each of the 5 specialties. This process yielded a total sample of 1,400 physicians (700 in primary care and 700 specialists). Because of budget constraints, we could not adequately power this survey to examine differences between each of the specialties.

## Survey Administration

CSR administered the surveys via priority mail in October 2019. CSR sent all sampled physicians a paper survey, a recruitment cover letter, information sheet, postage-paid return envelope, and up-front cash honorarium of \$50. Instructions asked respondents to complete the paper survey and return it to CSR in the postage-paid, addressed return envelope or to answer electronically using an individualized link indicated in the mailing. Both paper and electronic surveys contained a unique subject identification number, allowing CSR to conduct several follow up calls and send additional mailings (without the cash incentive) to non-respondents. CSR began reminder calls to all non-respondents three weeks after the

initial mailing. CSR sent a second mailing to 552 non-respondents in early January 2020; after again telephoning non-respondents, CSR sent the final mailing on March 5, 2020. Logistical concerns caused by the novel coronavirus pandemic extended the data collection; CSR officially closed the survey in June 2020.

The survey's first page contained screening questions to confirm sampled physicians met eligibility criteria: i.e., were board certified in one of the seven specialties, actively practiced in the U.S., and spent 10 hours weekly in direct patient care. Of the 1,400 sampled physicians, 175 (12.5%) were deemed ineligible based on their screening question responses or because they were residents or fellows, retired or had an inactive medical license, too ill or deceased, away from practice for study duration, had left the U.S., or CSR could not reach them via mail, phone, or internet. Of the 1,225 eligible physicians, 714 completed the survey. Of the respondents, 84.2% answered on paper surveys and 15.8% electronically. Using the American Association of Public Opinion Research response rate #3 for mailed surveys of specifically named persons, the weighted overall response rate was 61.0%.<sup>30</sup> Response rates by specialty were: family medicine, 61.1%; general internal medicine, 63.2%; rheumatology, 57.7%; neurology, 58.0%; ophthalmology, 63.0%; orthopedic surgery, 58.6%; and OB/GYN, 61.6%.

### Outcome and Predictor Variables

We asked physicians several questions to elucidate the factors underlying their perceptions of people with disability and their care. These questions addressed whether physicians welcome patients with disability into their practices, perceptions of fairness, the value of caring for patients with disability, confidence in caring for people with disability and the quality of life of people with disability. Below, we summarize specification of dichotomous outcome and predictor variables from survey questions.<sup>29</sup>

**Fairness, understanding patients, and welcoming patients.**—A multi-item battery began with, “To what extent do you agree or disagree with the following statements?” and then asked: (1) “Understanding my patients with disability is valuable to me as a physician”; (2) “People with disability are often treated unfairly in the health care system”; and (3) “I welcome patients with disability into my practice.” Response options were: “strongly disagree,” “somewhat disagree,” “somewhat agree,” and “strongly agree.” We created dichotomous variables for these three items, treating “strongly agree” as the positive outcome and all other responses as the negative outcome.

**Quality of life (QOL).**—We asked, “In general, compared to persons without disability, do you believe the overall quality of life of persons with significant disability is.... a lot better, a little better, the same, a little worse, a lot worse.” For analysis, we grouped responses into a dichotomous variable, combining the “a little worse” and “a lot worse” responses to identify participants who believe people with significant disability have worse overall QOL than nondisabled people.

**Confidence about caring for people with disability.**—We asked, “Overall, how confident are you in your ability to provide the same quality of care to patients with

disability as you provide to patients without disability ... very confident, somewhat confident, not very confident, and not at all confident.” For analysis, we created a dichotomous variable, with “very confident” representing a positive outcome and all other responses representing a negative outcome (i.e., not very confident).

**Race/ethnicity.**—Too few participants reported being Black or Hispanic for us to analyze these groups separately. We therefore combined them with people reporting “Other” race/ethnicity.

## Analyses

We performed all analyses using SAS 9.4 (SAS Institute, Cary, NC) and considered two-sided  $p < 0.05$  to be significant. We weighted the data to account for differences in the probability of selection and response rates within each specialty. The exhibits present unweighted n's, weighted percentages, and the statistical significance. We assessed the significance of differences in the group distributions with two-sided chi-square tests. We obtained adjusted odds ratios (ORs) and 95% confidence intervals (CI) from separate multivariable logistic regressions evaluating the relationship of the independent variables to the dichotomous outcomes defined above.

Our major outcome variable was whether physicians welcome people with disability into their practices; we were particularly interested in the association of this outcome with physicians' confidence in being able to provide the same quality care to people with disability. We fit 3 separate models for this outcome: Model 1 included independent variables representing the personal and practice characteristics of participants; Model 2 included all Model 1 variables and the 3 variables representing physicians' perceptions; and Model 3 added confidence about caring for people with disability to the Model 2 variables.

## Limitations

This study has important limitations. Because of budgetary constraints, we could not survey sufficient numbers of participants to compare findings across specialties. To maximize our response rate, we needed to develop a short survey (estimated 15-minute completion time), and yet we had many topics to cover. As noted above, 5 survey modules addressed specific disability types; however, the outcomes examined here cut across disabilities (i.e., asked about disability in general). Physicians may have responded differently to questions about particular disability types (e.g., mobility disability versus serious mental illness). We did not include questions that would explicitly link physicians' perceptions to their care decisions for patients with disability (e.g., ordering of Pap tests) or explore complex concepts, such as “confidence in providing care.” An online Implicit Association Test (IAT), similar to that for racial and ethnic minorities, is available,<sup>31</sup> but including this IAT in the survey protocol was infeasible. Although research has examined findings from diverse health care providers who chose to take this IAT,<sup>32</sup> future research should explore disability IAT results across random samples of physicians.

Research should also aim to understand better our significant findings relating to physicians' race and ethnicity. As expected, given the racial and ethnic distribution of U.S. physicians,

we had too few Black and Hispanic physicians to examine these issues fully. Finally, other physicians and specialties may have different perspectives on disability than our participants. We excluded physicians in the active military or Department of Veterans Affairs, who often see many patients with disability and make specific accommodations, beyond those in civilian practices, to support these patients. Similarly, we did not include physical medicine or rehabilitation specialists, who because of their training might provide an interesting comparison. In addition, we did not explore issues relating to caring for children with disability, whose accommodation needs frequently differ significantly from those of adults.

## Results

Exhibit 1 shows personal and practice characteristics of the 714 survey participants. Overall, 62.0% were male, 64.5% were white, 61.7% worked in private, community-based practices, and 36.2% reported that they or a family member had any significant disability. Only 25 participants indicated they require a disability accommodation to do their job (too few for detailed analysis).

### Perceptions of People with Disability and Their Care

Appendix Exhibit A2<sup>29</sup> shows the complete, non-collapsed responses to the 5 questions used to create our dichotomous predictor and outcome variables, and Exhibit 2 shows percentages for the dichotomous variables. Across participants: 79.8% “strongly agree” that understanding their patients with disability is “very valuable”; 18.1% “strongly agree” that patients with disability are “often treated unfairly in the health care system”; 82.4% of participants reported that people with significant disability have worse QOL than people without disability; 40.7% were “very confident” about being able to “provide the same quality of care” to disabled patients; and 56.5% “strongly agree” that they welcome patients with disability into their practices.

### Attitudes and Participants’ Personal and Practice Characteristics

Exhibit 2 shows bivariable associations between participants’ attitude measures and participants personal and practice characteristics. No individual characteristics are consistently statistically significantly associated with participants’ perceptions. Exhibit 3 shows multivariable logistic regression results; regression results including confidence intervals appear in online Appendix A3/A4).<sup>29</sup> Women were more likely than men – OR (95% CI) = 2.36 (1.35, 4.12) – to “strongly” value understanding their patients with disability. Compared with white physicians, Asian physicians were more likely to “strongly” value this understanding: OR = 2.04 (1.02, 4.09). Compared with white physicians, Asian and other non-white physicians were more likely to feel “very confident” in their ability to provide equal quality care to people with disability: Asian, OR = 1.73 (1.04, 2.89) and other non-white, OR = 1.77 (1.03, 3.04).

### Welcoming Patients with Disability into Practices

Exhibit 4 shows odds ratios for the major outcome variable: strong agreement about welcoming patients with disability into their practices. Multivariable Model 1 includes only participants’ personal and practice characteristics; Model 2 adds their responses to



3 perception questions; and Model 3 includes excluding confidence in caring for patients with disability to Model 2. In all models, female physicians had significantly higher odds ratios than males for “strongly” welcoming patients with disability. In addition to this gender effect, the full model found several significant associations: Asian physicians had significantly lower odds ratios than white physicians, 0.41 (0.23, 0.75); longer-serving physicians had significantly lower odds ratios than shorter-serving physicians, 0.58 (0.35, 0.97); physicians in private practice had significantly lower odds ratios (0.38 [0.19, 0.75]) than academic medical center physicians; physicians who valued understanding their disabled patients had higher odds ratios (5.46 [3.03, 9.83]) than other physicians; and physicians who were “very confident” in being able to provide the same quality care to people with disability had higher odds ratios (3.53 [2.20, 5.67]) than other physicians.

## Discussion

This national survey that examined perceptions of practicing U.S. physicians about caring for people with disability produced troubling findings. Only roughly half of physicians “strongly agree” that they would welcome patients with disability into their practices. More than four-fifths of physicians reported that people with significant disability have “worse” quality of life than nondisabled people, and only two-fifths reported feeling “very confident” in their ability to provide equal care to people with disability. Roughly one-fifth “strongly agree” that the health care system often treats disabled patients “unfairly.” Our findings suggest that large proportions of practicing U.S. physicians might hold biased or stigmatized perceptions of people with disability. Our survey did not assess whether participants appreciated that their perceptions are biased or instead believe their views are justified and therefore do not negatively affect the quality of care they provide to disabled patients.

We are unaware of prior studies where physicians express this level of bias towards other populations that also experience disparities in care (e.g., racial or ethnic minorities or persons who identify as lesbian, gay, bisexual, or transgender).<sup>33–36</sup> Rather, these sorts of studies generally confront concerns about participants providing socially desirable responses. It seems unlikely, for example, that more than four-fifths of physicians would assert that racial and ethnic minority patients have worse quality of life than do non-minority patients – or that nearly one-half of physicians would openly admit not strongly welcoming minority patients into their practices. Yet in our study, many physicians did not provide the socially desirable response.

Our multivariable findings suggest one potential explanation for the finding about not strongly welcoming disabled patients into their practices. Physicians expressing strong confidence in their ability to provide equal quality of care to people with disability had significantly higher odds of welcoming them into their practices. Medical schools generally do not include disability topics in their curricula.<sup>15,16,37,38</sup> Nevertheless, even physicians with more than 20 years of practice – who presumably should have extensive experience with this population – did not appear more likely to strongly welcome disabled patients into their practices.

Our study was not designed to test whether these perceptions translate directly into disparities in care. As noted earlier, studies of racial/ethnic implicit bias among physicians have found that these beliefs significantly affect treatment decisions, patients' outcomes, and other aspects of care.<sup>24</sup> It seems reasonable to expect that explicit bias would work similarly, with deleterious effects on care equity for people with disability.

Qualitative research studies involving interviews with people with disability suggest that physicians often make erroneous assumptions about patients' values and preferences, limiting their health care options and compromising quality of care.<sup>6,39</sup> Examples include failures to provide Pap tests to women with disability or to discuss contraception options because of incorrectly assuming they are neither sexually active nor at risk of unintended pregnancy.<sup>39</sup> Another example involves physicians assuming that women with disability newly diagnosed with early-stage breast cancer prefer mastectomy to breast-conserving surgery, under the inaccurate presumption that these women care little about preserving their bodies and physical appearance like other women. Some physicians believe that they have superior technical knowledge about disabling conditions, but they can be wrong, taking actions that harm patients. An example is physicians incorrectly believing that all patients with spinal cord injury cannot feel pain below the level of their injury and therefore refusing to provide pain relief for procedures below that level (e.g., topical anesthetic during skin biopsy of the lower leg), thus causing these patients sometimes excruciating pain.<sup>39</sup>

Some patients with disability express frustration about physicians' lack of insight into the quality of their daily lives.<sup>39</sup> Yet, asking patients with disability to prove their quality of life to their physicians – to avoid inequitable treatment – is ethically unacceptable. Why should people with disability, unlike other patients, be compelled to justify how they value their lives to their physicians? More than 20 years ago, researchers investigated how perceptions of people with disability about their quality of life can diverge from societal assumptions. These inquiries identified a so-called “disability paradox”<sup>40</sup> – that many people with significant disability equilibrate to living with functional limitations and enjoy good quality of life. Under the disability paradox, “the general public, physicians and other health care workers perceive that persons with disabilities have an unsatisfying quality of life despite the fact that over 50% of these people report an excellent or good quality of life.”<sup>23</sup> More than three decades after the ADA, the disability paradox concept seems somewhat outdated, given its assumptions that people without disability have the authority to define what constitutes good quality life and that all people's lives must fit some preconceived notion of “normality.”

However, just as it did for racial and ethnic minorities, the COVID-19 pandemic has exposed long-standing aspects of U.S. health care that severely disadvantage people with disability.<sup>41</sup> As states promulgated Crisis Standards of Care (CSC) to guide decisions allocating scarce resources, like tests, intensive care unit beds, and mechanical ventilators,<sup>42</sup> some explicitly excluded people with disability.<sup>43</sup> Concerns that CSCs would discriminate against people with disability prompted the Office for Civil Rights, U.S. Department of Health and Human Services, on March 28, 2020, to warn: “persons with disabilities should not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person's relative ‘worth’ based on the presence or absence of disabilities.”<sup>44</sup> Our



study underscores that many physicians perceive worse quality of life for people with disability. The high prevalence of negative perceptions of living with disability raises questions about constituting the triage teams that make critical resource decisions when CSCs are invoked. Proactively assessing implicit and explicit biases toward disability among physicians involved in CSC decision-making is critically important.

## Conclusion

Sixty-one million Americans have some type of disability, and these numbers are growing.<sup>12</sup> All physicians and health care providers can expect to see increasing volumes of patients with disability. Our findings about physicians' willingness to welcome patients with disability, confidence in caring for these patients, and problematic perceptions of quality of life were therefore deeply concerning and have important implications for health care delivery in the U.S. Confidence in being able to provide equal quality of care was strongly associated with welcoming disabled patients. All levels of medical education should include more training about disability, including disability cultural competence<sup>26</sup> and etiquette.<sup>45</sup> Training that provides greater empathy about patients' daily lives, such as house calls<sup>46</sup> or standardized patients who have disability,<sup>37</sup> might offer important insights. Similarly to programs where trainees take online Implicit Association Tests relating to race and ethnicity,<sup>47</sup> educators could add an IAT disability module. Finally, situations where people with disability confront special vulnerability, like Crisis Standards of Care decision-making,<sup>43,44</sup> require heightened attention to ensure equitable care.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Exhibit 1:**

## Distribution of Characteristics of Survey Participants

	N <sup>b</sup>	%
<b>Personal Characteristics</b>		
<i>Gender</i>		
Male	451	62.0
Female	248	38.0
<i>Race/Ethnicity</i>		
White	440	64.5
Asian	138	17.3
Hispanic	43	6.7
African American	37	5.9
Native American	2	0.2
Pacific Islander	6	0.9
Other	30	4.5
<i>Self or family member has any significant disability</i>		
Yes	244	36.2
No	449	63.8
<b>Professional and Practice Characteristics</b>		
<i>Primary specialty</i>		
Primary care	357	64.1
Specialty care <sup>a</sup>	357	35.9
<i>Years since graduating medical school</i>		
< 20	222	33.5
20	460	66.5
<i>Practice type</i>		
Academic teaching hospital	127	16.5
Private practice in the community	438	61.7
Other	130	21.8
<i>Number of physicians in practice</i>		
Very Small (1–3)	226	33.2
Small (4–11)	314	47.4
Large (12+)	150	19.4
<i>Number of patients seen per week</i>		
Low (< 60)	221	31.1
Medium (60–80)	224	33.6
High (81)	262	35.3
<i>Percent of patients with Medicaid and/or Uninsured</i>		
Non-safety net provider (< 35%)	440	68.0

	N <sup>b</sup>	%
Safety net provider ( 35%)	176	32.0

Source: Author's analysis of data from "Caring for Patients with Functional Limitations: National Survey Funded by the NIH," 2019–2020.

<sup>a</sup>Specialties include rheumatology, neurology, ophthalmology, orthopedics, and obstetrics/gynecology

<sup>b</sup>Do not sum to total participant number (n = 714) because of missing data

**Exhibit 2:**

Bivariable Associations Between Perceptions about People with Disability (PWD) and Their Care and Survey Participant Characteristics

Characteristic	Strongly agree that understanding PWD is valuable to them as MD		Strongly agree that PWD are treated unfairly in health system		Rates quality of life for PWD as worse		Very confident about providing equal quality of care for PWD	
	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>
<i>All participants</i>	544	79.8	116	18.1	569	82.4	283	40.7
<b>Gender</b>	***						**	
Male	325	75.5	72	17.8	365	83.3	194	43.7
Female	208	86.2	43	18.6	193	80.7	81	34.9
<b>Race/Ethnicity</b>	***						**	
White	326	76.3	73	18.7	356	83.3	163	36.4
Asian	107	83.9	24	18.4	113	84.9	53	44.0
Hispanic/African American/Other	97	87.1	18	15.9	89	78.9	58	52.1
<b>Self or family member has any significant disability</b>								
Yes	185	79.4	40	19.4	194	84.0	88	35.8
No	344	79.8	75	17.7	360	81.7	183	42.3
<b>Primary specialty</b>	*						**	
Primary care	282	81.9	62	18.1	275	81.8	129	37.7
Specialty care	262	76.2	54	18.0	294	83.6	154	46.2
<b>Years since graduating medical school</b>	**						*	
<20	155	75.3	44	20.2	180	84.4	71	34.6
20	368	82.5	69	17.3	367	81.7	195	43.1
<b>Practice type</b>			**				***	
Academic teaching hospital	94	77.5	33	28.1	102	79.6	35	26.7
Private practice in the community	338	79.3	63	16.2	357	82.7	194	45.7
Other	108	83.2	19	15.5	105	83.3	53	37.5
<b>Number of physicians in practice</b>							*	
Very Small (1–3)	181	81.0	36	17.9	183	81.3	106	47.3
Small (4–11)	239	79.4	49	16.6	257	83.7	114	38.4
Large (12+)	116	79.3	30	22.5	121	82.1	60	36.1
<b>Number of patients seen per week</b>			***				**	
Low (< 60)	154	78.8	47	26.1	173	85.2	71	33.5
Medium (60–80)	179	79.7	37	16.9	181	81.3	88	39.7
High (81+)	204	80.3	31	12.7	209	81.2	120	47.0



Characteristic	Strongly agree that understanding PWD is valuable to them as MD		Strongly agree that PWD are treated unfairly in health system		Rates quality of life for PWD as worse		Very confident about providing equal quality of care for PWD	
<i>Percent of patients with Medicaid and/or Uninsured</i>					**			
Non-safety net provider (< 35%)	339	78.9	72	18.6	372	86.1 <sup>c</sup>	173	39.7
Safety net provider (≥ 35%)	137	79.8	29	16.2	136	78.6 <sup>c</sup>	74	41.8

Source: Author's analysis of data from "Caring for Patients with Functional Limitations: National Survey Funded by the NIH," 2019–2020.

<sup>a</sup>Row percentages

Notes: :

\*  
p < 0.10,

\*\*  
p < 0.05,

\*\*\*  
p < 0.01

**Exhibit 3:**

Multivariable Associations Between Perceptions about People with Disability (PWD) and Their Care and Survey Participant Characteristics

Characteristics	Strongly agree that PWD are valuable to them as physicians	Strongly agree that PWD treated unfairly in health system	Rates quality of life for PWD as worse	Very confident about providing equal quality of care for PWD
	<b>AOR (95% CI)</b>			
<b>Gender</b>	***		**	
Male	REF	REF	REF	REF
Female	2.36 (1.35,4.12)	0.95 (0.55,1.63)	0.58 (0.33,1.01)	0.98 (0.63,1.52)
<b>Race/Ethnicity</b>	**			**
White	REF	REF	REF	REF
Asian	2.04 (1.02,4.09)	0.95 (0.50,1.81)	1.33 (0.64,2.77)	1.73 (1.04,2.89)
Hispanic/African American/Other	2.01 (0.96,4.20)	1.01 (0.50,2.03)	1.11 (0.56,2.20)	1.77 (1.03,3.04)
<b>Self or family member has any significant limitations</b>				
No	REF	REF	REF	REF
Yes	0.98 (0.60,1.61)	1.13 (0.69,1.88)	1.17 (0.69,1.98)	0.92 (0.61,1.40)
<b>Primary specialty</b>				*
Primary care	REF	REF	REF	REF
Specialty care	0.75 (0.47,1.20)	1.14 (0.70,1.86)	1.23 (0.71,2.13)	1.40 (0.94,2.07)
<b>Years since graduating medical school</b>	***			
< 20	REF	REF	REF	REF
20	2.20 (1.33,3.64)	0.86 (0.50,1.48)	0.76 (0.42,1.37)	1.35 (0.86,2.10)
<b>Practice type</b>				
Academic teaching hospital	REF	REF	REF	REF
Private practice in the community	1.07 (0.55,2.08)	0.58 (0.28,1.20)	1.42 (0.65,3.10)	2.01 (1.05,3.85)
Other	1.30 (0.60,2.83)	0.65 (0.29,1.47)	1.74 (0.72,4.19)	1.73 (0.83,3.58)
<b>Number of physicians in practice</b>				
Solo (0–2)	REF	REF	REF	REF
Small (3–10)	0.84 (0.49,1.47)	0.80 (0.45,1.43)	1.03 (0.57,1.87)	0.83 (0.53,1.31)
Large (11+)	0.96 (0.48,1.89)	0.90 (0.43,1.87)	1.18 (0.52,2.68)	0.80 (0.45,1.44)
<b>Number of patients seen per week</b>		**		
Low (< 60)	REF	REF	REF	REF
Medium (60–80)	1.24 (0.69,2.23)	0.64 (0.36,1.15)	0.78 (0.39,1.56)	1.18 (0.70,1.98)
High (≥ 81)	1.28 (0.69,2.37)	0.42 (0.21,0.85)	0.53 (0.27,1.05)	1.45 (0.86,2.44)
<b>Percent of patients with Medicaid and/or Uninsured</b>			*	
Non safety net provider (< 35%)	REF	REF	REF	REF
Safety net provider (≥ 35%)	0.94 (0.56,1.58)	0.78 (0.46,1.33)	0.59 (0.34,1.03)	1.00 (0.65,1.56)
<b>C-statistic</b>	<b>0.68</b>	<b>0.62</b>	<b>0.61</b>	<b>0.63</b>

Source: Author's analysis of data from "Caring for Patients with Functional Limitations: National Survey Funded by the NIH," 2019–2020.

Notes: :

\*  
 $p < 0.10,$

\*\*  
 $p < 0.05,$

\*\*\*  
 $p < 0.010$

**Exhibit 4:**

Multivariable Associations Between Welcoming People with Disability (PWD) in Their Practices and Survey Participant Characteristics, Perceptions of PWD and Their Care, and Confidence in Providing Same Quality Care

Characteristics	Model 1: participant characteristics	Model 2: Model 1 + three perceptions indicators	Model 2: Model 2 + confidence in providing same quality care
	<b>AOR (95% CI)</b>		
<b>Gender</b>	****	***	***
Male	REF	REF	REF
Female	2.42 (1.53,3.80) <sup>a</sup>	2.05 (1.27,3.31)	2.29 (1.40,3.76)
<b>Race/Ethnicity</b>	*	**	**
White	REF	REF	REF
Asian	0.66 (0.38,1.18)	0.51 (0.29,0.90)	0.41 (0.23,0.75)
Hispanic/African American/Other	1.57 (0.89,2.78)	1.32 (0.71,2.47)	1.15 (0.61,2.19)
<b>Self or family member has any significant limitations</b>			
No	REF	REF	REF
Yes	1.12 (0.74,1.71)	1.11 (0.71,1.73)	1.15 (0.72,1.85)
<b>Primary specialty</b>		*	
Primary care	REF	REF	REF
Specialty care	1.35 (0.89,2.06)	1.49 (0.95,2.32)	1.39 (0.88,2.19)
<b>Years since graduating medical school</b>		*	**
< 20	REF	REF	REF
20	0.84 (0.54,1.31)	0.64 (0.39,1.05)	0.58 (0.35,0.97)
<b>Practice type</b>		*	***
Academic teaching hospital	REF	REF	REF
Private practice in the community	0.54 (0.29,0.98)	0.49 (0.25,0.94)	0.38 (0.19,0.75)
Other	0.58 (0.30,1.15)	0.50 (0.25,1.01)	0.42 (0.21,0.86)
<b>Number of physicians in practice</b>			
Solo (0–2)	REF	REF	REF
Small (3–10)	0.71 (0.44,1.13)	0.69 (0.41,1.14)	0.71 (0.42,1.23)
Large (11+)	0.78 (0.43,1.42)	0.74 (0.40,1.37)	0.80 (0.41,1.54)
<b>Number of patients seen per week</b>			
Low (< 60)	REF	REF	REF
Medium (60–80)	0.80 (0.48,1.32)	0.70 (0.41,1.20)	0.69 (0.40,1.17)
High (≥ 81)	1.26 (0.75,2.13)	1.13 (0.65,1.99)	1.09 (0.62,1.91)
<b>Percent of patients with Medicaid and/or Uninsured</b>			
Non safety net provider (<35%)	REF	REF	REF
Safety net provider (≥ 35%)	1.01 (0.65,1.57)	1.03 (0.65,1.63)	1.01 (0.63,1.63)

Characteristics	Model 1: participant characteristics	Model 2: Model 1 + three perceptions indicators	Model 2: Model 2 + confidence in providing same quality care
<i>Understanding patients with disability is valuable to me as a physician</i>		*****	*****
Not strongly agree	NA	REF	REF
Strongly Agree	NA	6.19 (3.49,10.97)	5.46 (3.03,9.83)
<i>Patients with disability treated unfairly in health system</i>			
Not strongly agree	NA	REF	REF
Strongly Agree	NA	0.85( 0.48,1.49)	0.96 (0.54,1.70)
<i>Quality of Life PWD</i>			
Worse	NA	REF	REF
Not worse	NA	1.12 (0.63,1.99)	1.31 (0.72,2.38)
<i>Quality of Care for PWD</i>		*****	*****
Not very confident	NA	NA	REF
Very confident	NA	NA	3.53 (2.20,5.67) <sup>a</sup>
<b>C-statistic</b>	<b>0.64</b>	<b>0.73</b>	<b>0.77</b>
<b>-2 Log Likelihood</b>	<b>136278.5</b>	<b>125215.0</b>	<b>118333.8</b>
<b>Degrees of Freedom</b>	<b>13</b>	<b>16</b>	<b>17</b>

Source: Author's analysis of data from "Caring for Patients with Functional Limitations: National Survey Funded by the NIH," 2019–2020.

\*  
p < 0.10,

\*\*  
p < 0.05,

\*\*\*  
p < 0.01,

\*\*\*\*  
p < 0.001,

\*\*\*\*\*  
p < 0.0001

<sup>a</sup>Variable not included in model