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Brief Report

Food insecurity of people with disabilities who were Medicare beneficiaries during the COVID-19 pandemic



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ABSTRACT

Background: During the COVID-19 pandemic, 54 million people in the United States were food insecure (2020). People with disabilities (PWD) who were Medicare beneficiaries were especially vulnerable to food insecurity prior to the pandemic.

Objective: The aim of this study was to explore COVID-19 pandemic food insecurity among PWD who were Medicare beneficiaries.

Methods: We conducted a secondary analysis of the United States Census Bureau *COVID-19 Household Pulse Survey* data about the food security of 70,171 PWD who were Medicare beneficiaries (under 65), and a comparison group of 1.1 million non-Medicare beneficiaries (under 65). Data were weighted using frequency person-weights.

Results: Only 44.3% of PWD who were Medicare beneficiaries had enough of the foods they wanted to eat during the pandemic. Reasons for food insecurity included: could not afford to purchase more food (56.9%); stores did not have the food they wanted (31.4%); afraid to go out to get more food (30.0%); could not get out to get more food (21.5%); and could not get food delivered (8.5%). PWD who were Medicare beneficiaries were more likely to be food insecure than non-Medicare beneficiaries. There were also disparities in food insecurity among PWD who were Medicare beneficiaries themselves with household size, Medicaid beneficiaries, gender, race, education, marital status, household income, and Supplemental Nutrition Assistance Program (SNAP) all impacting food security.

Conclusions: A multipronged approach that addresses not only food-related public health, but also other systems and structures is critical to end food insecurity.

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Food insecurity – limited or uncertain access to food – includes when people have disrupted eating patterns and reduced food intake.^{1,2} Food insecure people have a lower quality diet and less varied diet.¹ Food insecurity is a social determinant of health, negatively hindering people's physical and mental health outcomes.^{1–7} For example, food insecurity leads to increases in health care expenditures, emergency department visits, medications, and inpatient care.^{3,5} Food insecurity increases malnutrition and chronic diseases, which can then turn into functional limitations.^{1,5,8–11} Food insecurity is also associated with increased stress, depression, and other mental health impacts.^{7,10,11}

Prior to the COVID-19 pandemic, food security was steadily decreasing in the United States (US; 2011–2018), with 11% of households food insecure in 2018.¹ During the pandemic, 54 million people in the US were food insecure (2020).^{12,13} While less

is known about people with disabilities¹ (PWD's) pandemic food insecurity, prior to the pandemic they were more likely to be food insecure than nondisabled people.^{1,4,5,8,10} In fact, while US food insecurity decreased between 2011 and 2018, the food insecurity of PWD was stagnant.¹

As a result of systemic and social inequities, increased likelihood of living in congregate settings, personal support needs, having certain medical conditions, having chronic health conditions, and barriers to healthcare, COVID-19 represented a significant risk to PWD.^{15–19} Yet, less attention has been drawn to the impact of the pandemic on the disability community.²⁰ For example, despite widespread increases in food insecurity in the general population, less is known about PWD's food insecurity during the pandemic. In

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¹ Disability “results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis” (n.p.).¹⁴

particular, PWD who are Medicare beneficiaries were especially vulnerable to food insecurity during the pandemic as they were more likely to be food insecure and lower income, which can exacerbate food insecurity, prior to the pandemic.^{21,22} People younger than 65 are eligible for Medicare if they receive Social Security disability benefits; a wide variety of disabilities qualify for Social Security disability benefits, including physical disabilities, developmental disabilities, psychiatric disabilities, sensory disabilities, and chronic illnesses.²³ Foote and Hogan found 18% of Medicare beneficiaries under 65 had 'severe mental illness,' 17% had intellectual disabilities, 3% had dementia, 42% had 'other' disabilities with less than 2 activity of daily living (ADL) limitations, and 21% had 'other' disabilities with 2 or more ADL limitations.²¹

A greater understanding of PWD who are Medicare beneficiaries' needs is necessary not only to identify risk factors, but also to identify, and remedy unmet needs. Therefore, the aim of this study was to explore COVID-19 pandemic food insecurity among PWD who were Medicare beneficiaries. To do so, we conducted a secondary analysis of US Census Bureau *COVID-19 Household Pulse Survey* data about the food security of 1.2 million people, 70,171 of which were PWD who were Medicare beneficiaries.

Methods

Data and participants

Data were obtained from the US Census Bureau.²⁴ During the COVID-19 pandemic, the Census Bureau administered the *COVID-19 Household Pulse Survey* to examine the impact of the pandemic on people in the US, including related to education, employment, health, housing, spending, and food security. The Census Bureau randomly selected addresses to determine who would participate in the survey. Between April 23, 2020 and March 29, 2021, a total of 2.3 million people completed the survey.

While the *Pulse Survey* did not ask if participants had disabilities – which relates to the larger problem of pandemic data not being collected about PWD²⁵ – it did ask people about health insurance coverage, including Medicare. We used Medicare beneficiary status of those under 65 as way to examine the experiences of a subset of PWD related to food insecurity.

In the *Pulse Survey*, 1.3 million detailed their health insurance coverage; people that did not complete this question and duplicates were removed. We utilized insurance information to determine which participants were Medicare beneficiaries under 65, resulting in a final sample of 70,171 Medicare beneficiaries under 65, and a comparison group of 1.1 million people under 65 who were not Medicare beneficiaries. The Census Bureau's²⁴ frequency person-weights, which adjusted for nonresponses and population demographics, were applied using SPSS27 complex samples.

Demographics are presented in [Table 1](#). Compared to people under 65 who were not Medicare beneficiaries, PWD who were Medicare beneficiaries were slightly older, lived with more people, more female, less White, less Hispanic ethnicity, less educated, lower income, more SNAP recipients, and more Medicaid beneficiaries. For example, 55.6% of PWD who were Medicare beneficiaries were also Medicaid beneficiaries, while only 14.8% of non-Medicare beneficiaries were Medicaid beneficiaries.

Variables

The *Pulse Survey* asked participants: In the last 7 days, which of these statements best describes the food eaten in your household? Answer options were: (1.) Enough of the kinds of food (I/we) wanted to eat; (2.) Enough, but not always the kinds of food (I/we) wanted to eat; (3.) Sometimes not enough to eat; or, (4.) Often not

enough to eat. If participants selected answers 2–4, they completed a follow-up question: Why did you not have enough to eat (or not what you wanted to eat)? Answer options were (participants could select multiple): (1.) Couldn't afford to buy more food; (2.) Couldn't get out to buy food (e.g., didn't have transportation, or had mobility or health problems that prevented you from getting out); (3.) Afraid to go or didn't want to go out to buy food; (4.) Couldn't get groceries or meals delivered to me; and, (5.) The stores didn't have the food I wanted. In addition, as part of the section on food security, participants were asked: How confident are you that your household will be able to afford the kinds of food you need for the next four weeks? Answer options were: (1.) not at all confident; (2.) somewhat confident; (3.) moderately confident; or (4.) very confident. These three questions regarding food security and demographic questions were used as the study's variables.

Analyses

We first analyzed PWD who were Medicare beneficiaries' food security using descriptive statistics and compared the demographics of PWD who were Medicare beneficiaries and non-Medicare beneficiaries using chi-square and t-tests. Next, we used complex samples binary and multinomial logistic regression models to examine differences in food security (dependent variables) for PWD who were Medicare beneficiaries and people who were not Medicare beneficiaries (independent variable); in doing so, we controlled for all participant sociodemographics (covariates). Finally, we used complex samples binary and multinomial logistic regression models to examine food security disparities among PWD who were Medicare beneficiaries themselves. Sociodemographic variables served as the independent variables for all models; the dependent variables were the past food sufficiency questions (each dependent variable was run in a separate model).

Results

Access to food during the pandemic

Only 44.3% of the PWD who were Medicare beneficiaries in the study reported having enough of the foods they wanted to eat within 7 days of taking the survey ([Table 2](#)). Meanwhile, 35.3% of PWD who were Medicare beneficiaries had enough to eat but not the kinds of foods they wanted to eat, 15.4% sometimes did not have enough to eat, and 5.0% often did not have enough to eat. Controlling for all sociodemographics, compared to non-Medicare beneficiaries, PWD who were Medicare beneficiaries were more likely to have enough but not the kinds of food they wanted to eat (Odds Ratio (OR) = 1.08; 95% confidence interval (CI) = 1.02–1.15), sometimes not enough to eat (OR = 1.03; CI = 0.95–1.13), and often not enough to eat (OR = 1.15; CI = 1.00–1.31), rather than having enough of the kinds of foods they wanted to eat.

Of those PWD who were Medicare beneficiaries that did not have enough to eat, the majority (56.9%) explained they could not afford to purchase more food. Almost one-third of PWD who were Medicare beneficiaries also did not have enough to eat because the stores did not have the food they wanted (31.4%), and/or they were afraid to go out or did not want to go out to buy more food (30.0%). Approximately one quarter of PWD who were Medicare beneficiaries said they could not get out to buy food (21.5%). In addition, 8.5% of PWD who were Medicare beneficiaries said they could not get groceries or food delivered to them. Controlling for all sociodemographics, compared to non-Medicare beneficiaries, PWD who were Medicare beneficiaries were more likely to lack food because they could not get out to buy food (OR = 1.55; CI = 1.43–1.69), were afraid to go out or did not want to go out to buy food (OR = 1.21;

Table 1
Demographics.

Characteristic	PWD who were Medicare beneficiaries % (weighted)	Not Medicare beneficiary % (weighted)	p
Age (in years)	49.3 (12.5)*	40.7 (12.7)*	<0.001
Number of people in household	3.7 (2.0)*	3.6 (1.7)*	0.01
Sex			
Male	45.6%	49.1%	<0.001
Female	54.4%	50.9%	
Race			
White, alone	66.7%	74.3%	<0.001
Black, alone	18.4%	13.0%	
Asian, alone	6.3%	6.0%	
Another race alone, or multiracial	8.6%	6.7%	
Ethnicity: Hispanic			
Hispanic	18.1%	19.0%	0.04
Not Hispanic	81.9%	81.0%	
Highest level of education			
Less than high school	4.0%	2.2%	<0.001
Some high school	9.6%	5.5%	
High school graduate or equivalent	38.9%	28.0%	
Some college	21.5%	22.1%	
Associate's degree	10.0%	9.8%	
Bachelor's degree	9.7%	19.1%	
Graduate degree	6.3%	13.2%	
Marital status			
Now married	48.3%	53.3%	<0.001
Widowed	4.5%	1.3%	
Divorced	17.6%	10.1%	
Separated	3.9%	2.4%	
Never married	25.8%	33.0%	
2019 total household income before taxes			
Less than \$25,000	34.1%	14.6%	<0.001
\$25,000 - \$34,999	15.5%	11.0%	
\$35,000 - \$49,999	13.3%	12.3%	
\$50,000 - \$74,999	15.4%	17.4%	
\$75,000 - \$99,999	8.6%	13.5%	
\$100,000 - \$149,999	7.8%	15.9%	
\$150,000 - \$199,999	2.9%	7.3%	
\$200,000+	2.5%	8.0%	
Anyone in household receives Supplemental Nutrition Assistance Program (SNAP) or the Food Stamp Program			
Yes	30.0%	11.6%	<0.001
No	70.0%	88.4%	
Medicaid beneficiary			
Yes	55.6%	14.8%	<0.001
No	44.4%	85.2%	

Note. * = M (SD). Data from the COVID-19 Household Pulse Survey. Unweighted n = 1.2 million.

CI = 1.12–1.30), and they could not get groceries/food delivered (OR = 1.46; CI = 1.28–1.67). PWD who were Medicare beneficiaries were less likely to say they could not afford to buy food (OR = 0.88; CI = 0.82–0.95) and less likely to say stores did not have the food they wanted (OR = 0.92; CI = 0.86–0.99) compared to non-Medicare beneficiaries.

In terms of how confident participants felt about their household's future food sufficiency, almost half of PWD who were Medicare beneficiaries – 48.5% – felt not at all confident (16.8%) or somewhat confident (31.7%) that they would be able to afford the kinds of food they needed in the next four weeks. Only 28.4% of PWD who were Medicare beneficiaries felt very confident and 23.1% were moderately confident they would be able to afford food in the next month. Controlling for all sociodemographics, PWD who were Medicare beneficiaries' confidence did not differ from non-Medicare beneficiaries; however, when no control variables were in place, PWD who were Medicare beneficiaries were significantly less confident than non-Medicare beneficiaries.

Disparities among Medicare eligible people with disabilities

There were many differences in food sufficiency among PWD who were Medicare beneficiaries (see Table 3). Controlling for all

other variables, PWD who were Medicare beneficiaries who were also Medicaid beneficiaries (dual eligible) had less to eat, often because they could not afford to buy food and could not get out; they also had less confidence about future food access. Larger households had less to eat and expected to have trouble accessing food in the future. Compared to males, females had less of the kinds of foods they wanted to eat; they were also less confident about their future access to food. Compared to White people, Black people and people from 'another' race/multiracial people had less to eat and were less confident about future food sufficiency. While Asian people did not always have less to eat, they were more afraid to go out to buy food and stores did not have what they wanted to eat. People with less education were more food insecure, largely because they could not afford to buy food and stores did not have the food they wanted. People with less education were also more concerned about their future food security. People who were now separated were less food secure than people that were never married, commonly because they could not afford to buy food and because they could not get out to buy food; they were not confident in their ability to future food access either. People with lower household incomes were more food insecure than people from higher household incomes. They were less likely to be able to afford food and more likely to experience stores not having the food they

Table 2
Differences in Food Sufficiency.

Variable	PWD who were Medicare beneficiaries % (weighted)	Not Medicare beneficiary % (weighted)	O.R. [95% C.I.]
Food eaten in household during the last 7 days			
Enough of the kinds of food wanted to eat	44.3%	57.7%	ref
Enough, but not always the kinds of food wanted to eat	35.3%	29.8%	1.08** [1.02–1.15]
Sometimes not enough to eat	15.4%	9.9%	1.03 [0.95–1.13]
Often not enough to eat	5.0%	2.7%	1.15* [1.00–1.31]
Why not enough: Couldn't afford to buy food			
Yes	56.9%	55.0%	0.88*** [0.82–0.95]
No	43.1%	45.0%	ref
Why not enough: Couldn't get out to buy food			
Yes	21.5%	13.7%	1.55*** [1.43–1.69]
No	78.5%	86.3%	ref
Why not enough: Afraid to go/didn't want to go out to buy food			
Yes	30.0%	30.1%	1.21*** [1.12–1.30]
No	70.0%	69.9%	ref
Why not enough: Couldn't get groceries/food delivered			
Yes	8.5%	7.3%	1.46*** [1.28–1.67]
No	91.5%	92.7%	ref
Why not enough: Stores didn't have food I wanted			
Yes	31.4%	36.0%	0.92* [0.86–0.99]
No	68.6%	64.0%	ref
Household will be able to afford kinds of food needed for next 4 weeks			
Very confident	28.4%	43.6%	ref
Moderately confident	23.1%	22.4%	0.99 [0.90–1.08]
Somewhat confident	31.7%	24.3%	1.03 [0.95–1.13]
Not at all confident	16.8%	9.7%	1.01 [0.90–1.12]

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. All binary and multinomial logistic regression models (ref: not Medicare beneficiaries) control for all sociodemographic variables (i.e., Medicaid; age; number of people in household; sex; race; ethnicity; education; marital status; household income; and SNAP in household). Data from the COVID-19 Household Pulse Survey. Unweighted $n = 1.2$ million.

wanted. Lower income households were also significantly more likely to be concerned about future food access. For example, people with household incomes of <\$25,000 were 28.6 times (CI = 11.68–69.87) more likely than household incomes of \$200,000+ to be not at all confident about future food sufficiency. Compared to households without SNAP, SNAP households were more likely to have enough but not the kinds of foods they wanted, and have sometimes not enough to eat, rather than having enough of the kinds of foods they wanted to eat.

Discussion

A large number of PWD who were Medicare beneficiaries in this study faced food insecurity during the pandemic, including at greater rates than non-Medicare beneficiaries. In addition to being more likely to live in poverty, PWD face barriers such as inaccessible stores, restaurants, neighborhoods, and transportation which make access to food difficult.^{10,21,26} Due to COVID-19 representing a significant risk for PWD,^{15,16} it was riskier for PWD to go out to get food. They may also have mobility impairments which makes accessing or preparing food more challenging.^{1,10} But relying on others can reinforce stigma about eating practices, and can reduce control over the food received,¹⁰ which may be especially problematic if PWD have dietary restrictions. In addition, while social supports and relationships can reduce food insecurity,¹⁰ many PWD, especially dual eligible PWD, have fewer social supports.²⁷

While household income significantly impacts food security, income is not the only cause of food insecurity, especially for PWD.^{1,5,6,10,28} Factors that increased food insecurity both in our study of PWD who were Medicare beneficiaries during the pandemic, and in the literature with other populations during and before COVID-19, include being dual eligible, from a larger household, female, Black, another race or multiracial, and having less

education.^{1,2,5,7,9,10,29–31} The pandemic reinforced existing disparities, and intensified them for marginalized groups, including when it comes to food insecurity. For example, due to ableism and racism, research suggests Black PWD were more likely to be food insecure regardless of income prior to the pandemic^{30,32}; they were also more likely to contract and die of COVID-19.¹⁹ We also believe the rise in anti-Asian racism during the pandemic could be one reason why Asian PWD in our study did not have enough food because they were afraid to go out. While poverty is an important factor in food insecurity, attention must also be drawn to these disparities.

Limitations

As this was a secondary data analysis, we could not add additional variables or ask follow-up questions. Medicare benefits were used in this study because disability was not collected as a demographic variable. We were unable to determine which Medicare disability eligibility categories participants fell into; we were also not able to explore differences across disabilities. PWD who are Medicare beneficiaries are a subgroup of the disability community, and thus, their experience during the pandemic and with food insecurity may differ. As not all PWD are Medicare beneficiaries, the comparison group also contains PWD; given PWD are more food insecure than nondisabled people, this may have inflated the comparison group values. It is unclear what steps the Census Bureau took to make administration accessible for PWD; as such, it is unknown if people with higher support needs were able to participate directly or through proxies. We did not explore interactions.

Conclusion

Our study suggests a significant proportion of PWD who were

Table 3
Differences in Food Sufficiency Among People with Disabilities who were Medicare Beneficiaries: Odds Ratios.

Variable	Food sufficiency last 7 days (ref: Enough of kinds of food wanted to eat)			Why not enough: Couldn't afford to buy (ref: no)	Why not enough: Couldn't get out to buy (ref: no)
	Enough, but not always kinds of food wanted	Sometimes not enough to eat	Often not enough to eat		
Medicaid eligible (ref: no)	1.21** [1.08–1.36]	1.46*** [1.25–1.72]	1.69*** [1.30–2.21]	1.16* [1.01–1.34]	1.38*** [1.19–1.61]
Age (in years)	1.01 [1.00–1.01]	1.00 [0.99–1.01]	0.99 [0.98–1.00]	0.99 [0.99–1.00]	0.99*** [0.98–0.99]
Number of people in household	1.08*** [1.04–1.12]	1.15*** [1.10–1.20]	1.14*** [1.06–1.23]	1.03 [0.99–1.07]	0.93** [0.89–0.97]
Female (ref: male)	1.23*** [1.10–1.36]	1.15 [0.99–1.33]	0.85 [0.66–1.08]	0.98 [0.86–1.12]	1.04 [0.89–1.21]
Race (ref: White alone)					
Black, alone	1.22** [1.05–1.43]	1.24* [1.03–1.50]	1.34 [0.97–1.86]	0.92 [0.78–1.09]	0.90 [0.74–1.10]
Asian, alone	1.08 [0.85–1.37]	0.78 [0.53–1.13]	0.42* [0.21–0.82]	0.65* [0.46–0.91]	0.83 [0.58–1.18]
Another race alone, or multiracial	1.31* [1.05–1.63]	1.48** [1.13–1.94]	1.14 [0.80–1.61]	1.14 [0.89–1.45]	1.48** [1.16–1.90]
Ethnicity: Hispanic (ref: not Hispanic)	1.01 [0.85–1.20]	1.05 [0.84–1.30]	0.66* [0.46–0.96]	0.84 [0.69–1.02]	0.84 [0.68–1.04]
Education (ref: graduate school)					
Less than high school	1.24 [0.80–1.92]	2.42*** [1.52–3.85]	4.76*** [2.40–9.44]	1.71* [1.09–2.69]	0.54* [0.33–0.89]
Some high school	1.62** [1.23–2.14]	1.82** [1.25–2.65]	1.98* [1.11–3.51]	0.79 [0.58–1.19]	0.78 [0.54–1.11]
High school graduate/equivalent	1.19* [1.00–1.41]	1.59*** [1.22–2.08]	1.58* [1.05–2.36]	1.16 [0.93–1.43]	0.68** [0.53–0.86]
Some college	1.40*** [1.20–1.64]	1.76*** [1.36–2.28]	1.89** [1.27–2.81]	1.12 [0.92–1.37]	1.03 [0.82–1.29]
Associate's degree	1.27** [1.07–1.51]	1.84*** [1.40–2.43]	1.71* [1.11–2.63]	1.12 [0.90–1.40]	0.89 [0.69–1.15]
Bachelor's degree	1.16 [0.99–1.36]	1.24 [0.93–1.66]	1.31 [0.85–2.02]	1.03 [0.83–1.28]	1.09 [0.85–1.40]
Marital status (ref: never married)					
Now married	1.19* [1.02–1.39]	1.16 [0.94–1.43]	1.14 [0.79–1.65]	1.14 [0.94–1.36]	0.90 [0.73–1.10]
Widowed	1.15 [0.90–1.48]	1.34 [0.98–1.83]	1.47 [0.94–2.29]	1.19 [0.90–1.57]	1.19 [0.88–1.61]
Divorced	1.23* [1.04–1.45]	1.30* [1.04–1.61]	1.33 [0.95–1.85]	1.18 [0.98–1.42]	0.86 [0.70–1.05]
Separated	1.46* [1.04–2.05]	2.52*** [1.73–3.66]	3.02*** [1.72–5.32]	1.52* [1.07–2.17]	1.54* [1.06–2.23]
Household income (ref: \$200,000+)					
Less than \$25,000	7.20*** [5.29–9.80]	26.89*** [11.63–62.15]	17.61*** [4.74–65.42]	5.20*** [2.93–9.22]	1.47 [0.82–2.62]
\$25,000 - \$34,999	6.40*** [4.70–8.72]	20.88*** [9.02–48.34]	8.16** [2.18–30.46]	4.92*** [2.78–8.73]	1.10 [0.61–1.97]
\$35,000 - \$49,999	5.86*** [4.31–7.97]	12.74*** [5.47–29.66]	7.01** [1.88–26.18]	3.64*** [2.05–6.47]	1.18 [0.66–2.12]
\$50,000 - \$74,999	4.37*** [3.25–5.87]	7.33*** [3.16–17.00]	3.46 [0.92–12.92]	2.89*** [1.64–5.11]	1.15 [0.64–2.05]
\$75,000 - \$99,999	3.36*** [2.47–4.58]	6.76*** [2.85–16.04]	1.55 [0.41–5.91]	2.33** [1.28–4.23]	1.25 [0.68–2.29]
\$100,000 - \$149,999	2.49*** [1.82–3.41]	2.04 [0.84–4.95]	1.21 [0.30–4.92]	2.00* [1.08–3.68]	0.91 [0.48–1.72]
\$150,000 - \$199,999	1.61* [1.12–2.31]	1.13 [0.42–3.00]	0.44 [0.08–2.45]	1.30 [0.67–2.54]	1.34 [0.64–2.79]
Anyone in household receives SNAP/Food Stamps (ref: no)	1.19* [1.04–1.36]	1.29** [1.09–1.52]	1.21 [0.93–1.57]	0.98 [0.84–1.14]	1.23* [1.04–1.45]

Note. Binary and multinomial logistic regression models. **p* < 0.05. ***p* < 0.01. ****p* < 0.001. Data from the COVID-19 Household Pulse Survey. Unweighted *n* = 70,171.

Variable	Why not enough: Afraid to go/didn't want to go out to buy (ref: no)	Why not enough:		Food sufficiency next 4 weeks (ref: very confident)		
		Why not enough: Couldn't get delivered (ref: no)	Why not enough: Stores didn't have food I wanted (ref: no)	Moderately confident	Somewhat confident	Not at all confident
Medicaid eligible (ref: no)	1.08 [0.93–1.25]	1.13 [0.87–1.46]	1.08 [0.93–1.24]	1.16 [0.96–1.39]	1.48*** [1.24–1.76]	1.62*** [1.30–2.03]
Age (in years)	1.00 [1.00–1.01]	0.83 [0.66–1.03]	1.00 [1.00–1.01]	1.00 [0.99–1.01]	1.00 [0.99–1.01]	1.01 [1.00–1.02]
Number of people in household	0.96 [0.93–1.01]	0.98*** [0.97–0.99]	1.01 [0.97–1.05]	1.09** [1.03–1.15]	1.08** [1.02–1.15]	1.10** [1.02–1.17]
Female (ref: male)	1.10 [0.96–1.26]	0.99 [0.92–1.07]	1.00 [0.87–1.15]	1.27** [1.09–1.49]	1.36*** [1.16–1.59]	1.29* [1.06–1.58]
Race (ref: White alone)						
Black, alone	0.91 [0.76–1.08]	0.67** [0.50–0.90]	1.68*** [1.39–2.03]	1.13 [0.90–1.42]	1.60*** [1.28–1.99]	1.32* [1.00–1.74]
Asian, alone	2.29*** [1.64–3.22]	0.86 [0.42–1.78]	2.40*** [1.72–3.36]	1.19 [0.84–1.69]	1.20 [0.83–1.75]	1.43 [0.90–2.29]
Another race alone, or multiracial	0.97 [0.77–1.22]	1.30 [0.91–1.85]	0.92 [0.71–1.18]	0.99 [0.69–1.43]	1.19 [0.86–1.64]	1.07 [0.75–1.54]
Ethnicity: Hispanic (ref: not Hispanic)	1.45*** [1.19–1.77]	1.12 [0.79–1.58]	1.32** [1.08–1.63]	1.22 [0.93–1.61]	1.26 [0.97–1.64]	1.11 [0.82–1.52]
Education (ref: graduate school)						
Less than high school	0.53* [0.31–0.92]	0.36** [0.18–0.71]	1.64* [1.02–2.63]	1.23 [0.60–2.53]	2.51** [1.26–5.00]	2.56* [1.18–5.55]
Some high school	0.89 [0.64–1.24]	0.52* [0.27–0.98]	1.35 [0.96–1.90]	1.48 [0.95–2.29]	2.19*** [1.45–3.30]	1.67* [1.02–2.74]
High school graduate/equivalent	0.70** [0.56–0.87]	0.59** [0.41–0.84]	1.43** [1.14–1.79]	1.47** [1.14–1.89]	1.87*** [1.47–2.38]	1.30 [0.93–1.82]

(continued on next page)

Table 3 (continued)

Variable	Why not enough: Afraid to go/didn't want to go out to buy (ref: no)	Why not enough: Couldn't get delivered (ref: no)	Why not enough: Stores didn't have food I wanted (ref: no)	Food sufficiency next 4 weeks (ref: very confident)		
				Moderately confident	Somewhat confident	Not at all confident
Some college	0.85 [0.70–1.04]	0.77 [0.55–1.09]	1.24* [1.01–1.53]	1.53*** [1.22–1.91]	1.87*** [1.50–2.33]	1.27 [0.94–1.72]
Associate's degree	0.74** [0.60–0.93]	0.80 [0.54–1.20]	1.23 [0.98–1.55]	1.51** [1.18–1.93]	1.92*** [1.49–2.47]	1.45* [1.05–2.01]
Bachelor's degree	0.99 [0.80–1.23]	0.78 [0.55–1.11]	1.15 [0.92–1.45]	1.30* [1.04–1.63]	1.44** [1.15–1.81]	0.86 [0.63–1.16]
Marital status (ref: never married)						
Now married	0.79* [0.65–0.94]	0.67* [0.49–0.91]	1.08 [0.89–1.31]	0.89 [0.70–1.14]	1.17 [0.92–1.48]	1.26 [0.94–1.68]
Widowed	0.77 [0.57–1.03]	1.28 [0.84–1.97]	1.34 [0.99–1.82]	0.70 [0.46–1.06]	0.86 [0.58–1.27]	1.28 [0.82–2.00]
Divorced	0.80* [0.66–0.96]	0.84 [0.63–1.13]	1.14 [0.93–1.40]	0.92 [0.72–1.19]	1.25 [0.98–1.61]	1.49** [1.12–2.00]
Separated	0.67* [0.48–0.93]	1.09 [0.61–1.95]	1.42 [0.94–2.16]	1.73* [1.00–3.00]	1.45 [0.88–2.38]	3.19*** [1.89–5.41]
Household income (ref: \$200,000+)						
Less than \$25,000	0.95 [0.57–1.61]	0.79 [0.36–1.73]	3.26*** [1.96–5.43]	6.62*** [4.31–10.16]	16.35*** [9.63–27.75]	28.57*** [11.68–69.87]
\$25,000 - \$34,999	1.06 [0.63–1.79]	0.70 [0.31–1.55]	2.44*** [1.46–4.06]	7.97*** [5.12–12.42]	13.87*** [8.18–23.51]	19.70*** [8.06–48.19]
\$35,000 - \$49,999	1.16 [0.69–1.96]	0.56 [0.25–1.26]	1.87* [1.12–3.12]	5.86*** [3.86–8.89]	10.18*** [6.07–17.08]	13.77*** [5.69–33.35]
\$50,000 - \$74,999	1.28 [0.76–2.15]	0.49 [0.21–1.13]	1.81* [1.09–3.01]	4.58*** [3.10–6.76]	6.39*** [3.88–10.51]	8.04*** [3.36–19.20]
\$75,000 - \$99,999	1.30 [0.74–2.27]	0.59 [0.25–1.37]	1.58 [0.93–2.68]	4.27*** [2.84–6.42]	4.24*** [2.55–7.07]	4.14** [1.72–9.95]
\$100,000 - \$149,999	1.31 [0.76–2.27]	0.67 [0.28–1.60]	1.40 [0.82–2.41]	2.21*** [1.49–3.28]	2.21** [1.32–3.69]	2.54 [0.94–6.88]
\$150,000 - \$199,999	1.28 [0.66–2.46]	0.82 [0.29–2.35]	1.08 [0.58–2.02]	1.60 [0.99–2.57]	1.89* [1.06–3.37]	0.65 [0.21–1.97]
Anyone in household receives SNAP/Food Stamps (ref: no)	1.14 [0.98–1.33]	1.11 [0.87–1.41]	0.90 [0.77–1.05]	1.09 [0.87–1.36]	1.16 [0.93–1.45]	1.27 [0.98–1.64]

Table3 (continued). Differences in Food Sufficiency Among People with Disabilities who were Medicare Beneficiaries: Odds Ratios

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. Data from the COVID-19 Household Pulse Survey. Unweighted $n = 70,171$.

Medicare beneficiaries experienced food insecurity during the pandemic. While food insecurity negatively harms the physical and mental health of everyone,^{1–7} it may be particularly harmful for PWD who were Medicare beneficiaries who are already vulnerable, underserved, and have multiple chronic conditions.^{26,27,33–37} A multipronged approach to food insecurity that addresses public health and other systems and structures, ranging from disability services to discrimination, is critical.^{2,38}

Conflicts of interest

None.

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