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Exploring Disability and Social Welfare Participation through the Lens of Food Insecurity

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Abstract

Households with disability (HWD) experience elevated rates of food insecurity compared to those without disability and represent a special case of need when it comes to addressing gaps in household well-being. HWD often face the dual challenge of a higher level of financial resources needed to meet an adequate standard of living and a higher administrative burden when accessing the array of social welfare programs that could help meet this need. This study examines the relationship between disability and social welfare program participation and explores how it differs by household-level need, as measured by food security status. This paper answers: 1) whether program participation differs for HWD; 2) how factors that influence selection into program participation vary across disability status; and 3) whether there is variation in participation by household food security status.

Although HWD participate in social welfare programs at significantly higher rates than households without disability, there are not meaningful differences across disability status in the theorized selection factors predicting social welfare program participation. Moreover, when stratifying participation by food security status, differences in participation rates across disability status become smaller and less significant for more severe levels of food insecurity. While unable to prove administrative burden as the cause, together with theory, results plausibly suggest that those with the greatest need for social welfare programs (i.e., very low food secure households with disability) may have more difficulty accessing certain social welfare programs than counterparts without disability or with higher food security.

Keywords: disability, social welfare participation, food insecurity, administrative burden

JEL codes: I31, I38, J14, Q18

Introduction

Across many metrics, households with disability experience disparities in well-being compared to those without disability. In trying to overcome this gap in well-being, households with disability often face the dual challenges of a higher level of financial resources needed to meet an adequate standard of living (Morris et al. 2022; She and Livermore 2007) and higher administrative burden when accessing the array of social welfare programs that could help meet this greater financial need (e.g., Deshpande and Li 2019; Wu and Meyer 2023). Food insecurity is a strong indicator of a gap in well-being, highlighting that a significant degree of need is not being met at the household level. Moreover, prior research has found ample evidence of food insecurity's persistence in households with disability (*see* Schwartz et al. 2019), even after controlling for household financial resources (Coleman-Jensen 2020). Thus, households with disability represent a special case of need when it comes to addressing disparities in well-being, with their food security status acting as a bellwether for the presence of need at the household-level. Participation in social welfare programs has been shown to alleviate or even keep households out of food insecurity and its associated financial precarity (*see* Bitler 2016; Borjas 2004; Hoynes et al. 2016; McKernan et al. 2021; Schmidt et al. 2016). Yet, despite this evidence, there has been very little research into how households with disability select into the multitude of programs available across the social welfare system (Houtenville and Brucker 2014) and even less on how this collective participation differs by food security status.

Complicating the understanding of how program participation can address gaps in well-being for households with disability are two long-standing and competing factors within the social welfare system: the tendency for households with greater need to participate at higher rates in social welfare programs (selection bias) and the significant barriers associated with the application and on-going enrollment processes inherent to participation in social welfare programs (administrative burden). Households with disability tend to be both eligible for and participate in more programs across the social welfare system than households without (Houtenville and Brucker 2014), but research has identified that a potentially outsized impact of the related administrative burden also falls on households with disability (Christensen et al. 2020; Fox, Feng, and Reynolds 2022; Herd 2015; Herd et al. 2023; Moynihan, Herd, and Harvey 2015). The extent to which households are able to access and piece together resources through social welfare program participation is important to understanding how the system as a whole relates to the level of need

as well as its ability to ultimately reduce disparities in household well-being between households with and without disability.

This study examines the relationship between disability and participation in social welfare programs in the United States and identifies how this relationship varies by level of need at the household, as operationalized by food insecurity. Through the competing frameworks of selection bias and administrative burden, this paper explores individual and collective rates of participation in seventeen social welfare programs across food security status for low-income, young-child households with disability. Program participation is compared to households without disability. Drawing upon the unique set of disability, social welfare participation, and food insecurity variables available in the Survey of Income and Program Participation (SIPP), this paper answers the following research questions: 1) how does participation in individual and multiple social welfare programs differ across household disability status?; 2) does selection into program participation differ between households with and without disability?; and 3) whether stratification of participation rates by food security status yields different results from the aggregated sample.

A critical motivation for conceptualizing food insecurity as an indicator of well-being and stratifying analyses by food security status for households with disability is due to food insecurity's ability to capture a broader status of well-being than other traditional economic measures of well-being, such as income or poverty. Although household food insecurity status is strongly related to income and poverty, as it is a condition that results from a lack of money needed to obtain the food necessary for an active, healthy life (Coleman-Jensen et al. 2022), it can also signal an increased risk of poorer health status or under-participation in welfare programs that provide cash and in-kind benefits. Moreover, food insecurity captures not only suboptimal household resources (e.g., income), but also suboptimal consumption of a critical input (i.e., food) at the household level, which can have particularly unique and adverse impacts for households with disability (Seligman and Schillinger 2010). Taking an intersectional lens and focusing specifically on how households with disability access and participate in social welfare programs across food security status allows for a greater exploration of the idiosyncratic relationship between need, resources, and well-being.

Heterogeneity of Disability

The experience of disability is heterogeneous, both at the individual and household level. Although there are multiple ways to measure disability, many national-level surveys attempt to capture the

heterogeneity of the disability experience across three areas of self-report disability: functional disability, work-limiting disability, and child disability. Functional disability relates to serious difficulties in six domains: hearing, vision, cognition, mobility, self-care, and/or independent living. Individuals can self-report their difficulty in any of these six domains on their own, or they can report overlapping difficulties across multiple domains. Working-age adults are able to further self-report whether their functional disability limits the kind or amount of work they are able to do, makes it difficult to find or keep a job, or prevents them from working altogether. Adults can also self-report disability on behalf of their dependents, identifying whether their child experiences either functional disabilities or delays in the ability to: play with others their own age, do regular school work, or participate in other "ordinary activity" (US Census Bureau 2021). Although individuals have the personal experience of disability, the social experience of disability can be experienced by all or multiple members of a household. A household with disability could consist of one member with many functional disabilities or it could consist of multiple members with only one functional disability. It could consist of a functional disability that does not impact the individual's ability to work, or it could consist of adults with no disability but whose child's disability makes working full-time difficult. Thus, self-reported disability measures in survey data allow individuals and households to self-categorize their disability in a multitude of ways that reflect a variety of experiences.

Although some studies have noted a discrepancy between self-reported and clinical measures of disability (Benítez-Silva et al. 2004; Harris et al. 1986), there are compelling reasons to utilize self-reported measures when researching the disability, including the ease of assessing disability, the nuance of the disability experience, and the barriers to accessing disability diagnoses. Firstly, self-reported disability is often easier, faster, and less expensive to assess than clinical measures of disability (Harris et al. 1986). Self-reported disability measurement does not rely upon the time and expertise of medical professionals and can be obtained directly from a survey respondent. Secondly, utilizing clinical measures of disability, which rely upon severity thresholds, may filter out individuals who still experience difficulties that impact their quality of life but whose conditions do not rise to the level of clinical disability. Lastly, people with disability face additional barriers to accessing the services they need within the healthcare system, such as communication failures with care providers, financial limitations, and transportation barriers (Clemente et al. 2022). Given that clinical measures of disability are contingent upon being able

to access healthcare systems that provide such diagnoses, relying solely upon these types of measures could result in an undercount of those who are unable to access the medical services needed to receive clinical diagnoses due to the additional healthcare barriers they face.

Prior Literature on the Intersection of Disability, Program Participation, and Food Insecurity

Compared to households with no disability, those with disability experience lower levels of well-being, including higher rates of food insecurity. The link between disability and food insecurity has been well-documented (Schwartz et al. 2019); households with disability experience between 1.18 and 5.21 greater odds of food insecurity than those without disability (Schwartz et al. 2019; *see also* Altman et al. 2020; Butrica et al. 2022; Coleman-Jensen 2020; Guo et al. 2019; C. M. Heflin et al. 2019). Moreover, this relationship holds even after controlling for resources at the household level. In fact, income appears to be less protective against food insecurity for households with disability than those without disability (Huang, Guo, and Kim 2010), perhaps due to the more severe liquidity trade-offs households with disability face when it comes to paying for higher food, healthcare, and other cost of living expenses. Research on the higher costs of living for households with disability has found that such households can require up to 29 percent more income to obtain the same standard of living as compared to households without disability (Morris et al. 2022), and up to three times more income to avoid food insecurity (She and Livermore 2007).

Prior research has primarily focused on social welfare program participation as the pathway through which the relationship between food insecurity and disability can vary. Households with disability typically have additional and varied needs above and beyond a comparable household without disability, implying that an extra level of assistance from the social welfare system may help to meet an adequate level of food security. A handful of studies have looked at the relationship of individual program participation with disability and food insecurity. A few investigate non-food assistance program participation (e.g., SSDI, Butrica et al. 2022, 2021; Medicare, Friedman 2021); however, the majority of this research focuses on SNAP. For example, descriptive work has found that, of low-income SNAP-participating households with a work-limiting disability, over 50 percent experience food insecurity (Coleman-Jensen and Nord 2013). Disparities in the odds of experiencing food insecurity between households with and without disability are more pronounced when households do not participate in SNAP (Samuel et al. 2023).

Although not examining households with disability, an important paper relevant to the causal role of multiple program participation on food insecurity looks at the combined impact of cash and food benefits from SNAP, TANF, SSI, Medicaid, National School Lunch Program (NSLP), Earned Income Tax Credit (EITC), and Women, Infants, and Children (WIC) (Schmidt, Shore-Sheppard, and Watson 2016). Findings suggest that raising a household's combined program benefit package by $1,000 reduces food insecurity by 1.1 percentage points. A more recent study by McKernan et al. (2021) finds comparable results, concluding that a 10 percentage point increase in participation in SNAP, TANF, or Medicaid/State Child Health Insurance Program (SCHIP) reduces the incidence of food insufficiency by 1.7 percentage points for low-to-moderate-income households with children.

Rather than looking at food insecurity rates for households with disability using the social welfare system, this paper looks at a slightly different question: how do households with disability participate and select into social welfare programs, both individually and collectively, compared to households without disability, and are there differences when stratifying by a household's level of need (i.e., food security status). To the best of this author's knowledge, there has been no other research that uses the framing of food insecurity as a stratum representing household-level need rather than an outcome when investigating program participation across the social welfare system for households with disability. Research by Houtenville and Brucker (2014) has come closest to answering this question. Using data from the Current Population Survey, the authors estimate social safety net participation rates for households with and without disability and find that for working age individuals with disability, 65 percent participated in a social safety net program, compared to 17 percent of those without disability (Houtenville and Brucker 2014).

Yet, an evidence gap remains in the literature with respect to how participation in various social welfare programs differs by disability status at the household level, particularly for low-income households with young children, and how such program participation varies by household level of need. Given that households with disability have a higher level of need than households without disability when trying to meet a comparable level of consumption and standard of living (Coleman-Jensen 2020; Huang, Guo, and Kim 2010; Morris et al. 2022; She and Livermore 2007), it is critical for research to separately unpack access to program participation across the entirety of the social welfare system, by both a household's disability status and its food security status, to truly understand the system's potential in addressing the gap in well-being for this population.

Administration Burden of Program Participation for Households with Disability

Social welfare programs are important tools for addressing the gap in well-being for households with disability, particularly those with higher levels of food insecurity. Research on selection bias suggests that households with disability, with their higher levels of need, should self-select into the social welfare system at higher rates. However, households attempting to access such programs are often faced with administrative burden. Administrative burden refers to the procedures through which an individual or group of individuals must navigate in order to access, receive, and utilize program benefits (Herd 2015). Administrative burden is theorized to create barriers for existing and would-be program participants via learning costs (e.g., knowing about the program, understanding who is eligible), psychological costs (e.g., stigma with participation, structural racism associated with welfare programs), and compliance costs (e.g., time and effort needed to document eligibility) (Herd 2015; Moynihan, Herd, and Harvey 2015). The administrative burdens associated with social welfare programs are distributional, meaning that they impact certain groups more than others (Christensen et al. 2020). Means-tested policies, such as the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or Supplemental Security Income (SSI), come with a higher administrative burden than more universal programs, such as Old Age and Survivors Insurance (OASI), due to their higher compliance costs associated with eligibility verification requirements. These requirements theoretically "maximize [a] social welfare function" (Nichols and Zeckhauser 1982, p. 372) by screening out those with high ability and high opportunity costs of time. However, in practice, this sorting mechanism comes with adverse participation effects: take-up rates by eligibility beneficiaries are significantly lower for means-tested programs (approximately 40–60 percent for SSI, 65 percent for SNAP, and 50–70 percent for Medicaid) than for non-means tested programs, such as OASI, which has a near-universal coverage for eligible beneficiaries (Herd 2015).

Due to the inherent nature of disability, households with disability often experience greater barriers than those without disability when trying to navigate the administrative burden of program participation, while at the same time being more likely to qualify for and be in need of the benefits provided by social welfare programs, (Herd 2015). This experience is likely due to the fact that the impact of administrative burden on program participation is moderated, at least in part, by the characteristics, abilities, knowledge, or skills an individual possesses. Such characteristics can

influence the ways a person is able to interact with administrative processes, making certain people or groups less able to cope with the administrative burden associated with social welfare participation (Christensen et al. 2020). Households with disability risk becoming stuck in a vicious cycle: they need the support of social welfare programs but are not able to access (or fully access) them because the characteristics related to their disability status make the administrative burden more onerous, which in turn results in an even greater need for social welfare programs because the historic lack of participation (or under participation) has further worsened their financial status or their experience of disability.

There are plenty of empirical examples of the impact of administrative burden on program participation in the literature, especially for means-tested programs (*see* Herd et al. 2023). One of the most recent papers on the topic uses a natural experiment created by a flawed rollout of Indiana's automated welfare application and renewal system in 2007 (Wu and Meyer 2023). During this time, 65 percent of the state's counties transitioned from in-person welfare offices to an online platform that erroneously denied or failed to process thousands of welfare applications. As a result, Indiana saw significant declines in enrollment in TANF (24 percent), SNAP (15 percent) and Medicaid (4 percent) in counties that had transitioned to the automated system compared to those that did not. Moreover, the new online welfare system was more likely to negatively impact program participation for households with higher levels of disability, highlighting the disproportionate impact administrative burdens can have on households with disability.

While means-tested programs have inherently higher administrative burden than non-means-tested programs due to the additional income eligibility verification requirements, even non-means-tested programs have learning costs and compliance costs that can make them harder to access. Program participation still requires a knowledge of the program's existence, an understanding of how to qualify for and access the benefit, and the time and ability to actually obtain the benefit. Deshpande and Li (2019) use exogenous variation in the closure of Social Security Administration field offices and conclude that the reduction in access to in-person disability application assistance significantly reduces both applications to and receipt of Social Security Disability Insurance (SSDI), a non-means-tested welfare program. Similar to patterns seen for means-tested programs, Deshpande and Li's (2019) results find that the impact of administrative burden on program participation is highest for those with the greatest need;

applicants with more severe disabilities experienced the greatest decline in disability insurance applications and receipts. This suggests that the sorting mechanism embedded within compliance costs, as proposed by Nichols and Zeckhauser (1982), is screening out the *lowest*-ability applicants rather than only high-ability applicants.

Another aspect of administrative burden that may disproportionately impact access for households with disabilities is operational barriers (Ragan 2003). Operational barriers occur on the service side of the social welfare system and include institutional choices that affect access, such as having program staff in different buildings, requiring separate applications for each eligible program, and not providing applicant support in the time, location, or modality needed by beneficiaries. These choices could have outsized implications for accessibility depending on disability type. For example, if program applications or eligibility appeals must be conducted in person, households with a disability that impacts mobility may experience a greater burden when having to travel to multiple program offices, especially if relying on public transportation. Even if programs are accessible online, they may not be designed with disability type in mind, which could make the process of navigating applications virtually particularly inaccessible for households with serious seeing or cognitive functional disabilities. There has been limited work on how social service integration across various welfare programs could reduce operational barriers and increase accessibility (Ragan 2003), although policy efforts, such as simplified reporting and broad-based categorical eligibility (BBCE) for enrollment across multiple means-tested programs, have helped reduced participation barriers for those living in states that have passed them (Herd 2015). However, on the whole, the ongoing administrative burden of program participation continues to reinforce existing inequalities in well-being for those groups with the greatest need for their benefits (Herd et al. 2023).

Research is only now starting to address the cumulative role of administrative burden on multiple program participation in the social welfare system (Fox, Feng, and Reynolds 2022), and is being highlighted as a key mechanism of inequality in the United States. (Herd et al. 2023). Not only are under-resourced households, such as households with disability, faced with higher upfront learning and psychological costs of understanding and accessing the multitude of programs for which they are eligible, they also face ongoing and cumulative compliance costs, such as for SNAP (Herd 2015), housing vouchers (DeLuca, Katz, and Oppenheimer 2023), WIC (Barnes, Halpern-Meekin, and Hoiting 2023), and subsidized childcare (Bouek 2023). Literature on the role of

multiple program participation can help contextualize the cumulative impact of administrative burden from social welfare participation. A foundational series of papers on multiple program participation by Weinberg (1985, 1987, 1991) outlines how government transfer and credit programs aim to reduce poverty by making up the difference between household income and the poverty level (i.e., filling the poverty gap). A critical takeaway of Weinberg's work is that the social welfare system was not designed as a whole, but rather each program was independently created to address specific problems, often for targeted populations and with unique eligibility requirements. This finding helps explain the fragmentation of the United States' welfare system, which was not created as an actual system and continues today as a cobbling of individual programs that often function separately. Weinberg's work is important to the understanding of administrative burden because it highlights the gaps in access to and eligibility for multiple programs collectively and provides context for why administrative burden remains so high, especially for multiple program participation.

More recent papers by Reese (2006), Houtenville and Brucker (2014), and Edwards and Schwam (2022) update and expand upon Weinberg's original conceptualization, finding that multiple program participation tends to be the exception rather than the rule (Edwards and Schwam 2022), occurring most often when programs share similar goals or target populations (Reese 2006) and at significantly higher rates for the working-age population with a disability compared to those without (Houtenville and Brucker 2014). Table 1 compiles and compares each of the programs included in the multiple program participation analyses of Weinberg (1985, 1987, 1991), Reese (2006), Houtenville and Brucker (2014), and Edwards and Schwam (2022). Although not all of these papers investigate multiple program participation specifically in the context of a household's disability status, they do provide insights into which social welfare programs to include when researching participation across the social welfare system and serve as baseline estimates to compare to the results of this study. Moreover, they offer a framework for understanding the fragmented nature of the US social welfare system and highlight how multiple program participation is a patchwork solution to addressing the social and economic needs of households.

Table 1. Comparison of Programs Included in Prior Multiple Program Participation Research

Category	Program	Weinberg (1985, 1987, 1991)	Reese (2006)	Houtenville & Brucker (2014)	Edwards & Schwam (2022)
Social Insurance Programs	Unemployment Insurance (UI)	X	X	X	X
	Old Age and Survivors (OASI)*	X	X		X
	Disability Insurance (SSDI)*	X	X	X	X
	Worker's Compensation (WC)	X		X	X
Food Supports	Supplemental Nutrition Assistance (SNAP)¤	X	X	X	X
	Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)		X	X	X
	National School Lunch and Breakfast Program (School Food)		X		X
Spending Subsidies	Public or subsidized housing (Housing)	X	X	X	X
	Low-income Housing Energy Assistance Program (Energy)				X
	Childcare Assistance (Childcare)				X
Public Health Insurance	Medicaid	X	X	X	X
	Medicare	X	X	X	X
Needs-based Cash Supports	Supplemental Security Income (SSI)	X	X	X	X
	Temporary Assistance to Needy Families (TANF)^	X	X	X	X
	General Assistance (GA)	X		X	X
Other Cash Payments	Veteran's benefits (VA)	X	X	X	X
Tax Credits	Earned Income Tax Credit (EITC)				X

Notes: *OASI and SSDI are considered jointly in Edwards and Schwam (2022) and Reese (2016) but separately here for clarity given the focus of this paper. ¤ Previously Food Stamps. ^Previously Aid to Families with Dependent Children (AFDC).

Hypotheses

Households with disability require higher financial resources to meet an adequate standard of living (Morris et al. 2022), making their need for social welfare program benefits greater than households without disability on average. Based on this stylized fact, as well as evidence from Houtenville and Brucker (2014), this paper hypothesizes that selection bias will result in households with disability selecting into both individual and multiple social welfare programs at higher rates, as compared to households with disability. However, due to this severity of need for households with disability compared to those without, selection bias may be masking the role that administrative burden plays when trying to access the social welfare system.

To try to separate the role of selection bias from that of administrative burden on program participation, this paper stratifies program participation estimates by food security status as a proxy for household-level need. This stratification allows for not only the exploration of selection bias through the comparison of households across disability status with the same level of need (i.e., same food security status), it also for the examination of administration burden through the comparison of participation estimates for households with disability across various levels of need (i.e., across food security statuses). To illustrate, while holding food security status constant, if households with disability have equal or lower program participation rates than households without disability, the administrative burden to accessing programs could be masking the high level of need households with disability inherently have for participation. When holding disability constant, if selection bias is the stronger factor in program participation, participation rates should decrease as level of food security status increases (i.e., moving from very low to high food security status). However, if administrative burden is a factor, then participation rates for higher levels of need (e.g., very low or low food security status) may be equal or less than those for higher levels of need (e.g., marginal or high food security status).

Methodology

Data & Analytic Sample

This paper uses data from the Survey of Income and Program Participation (SIPP) to investigate the relationship between disability, access to social welfare programs, and food insecurity. SIPP is a nationally representative, longitudinal survey conducted by the US Census Bureau that collects

individual and household-level data on food insecurity, social and economic well-being, and, most importantly for this research, government program participation over month- and annual-level reference periods (US Census Bureau 2022). Since its inception in 1983, SIPP has undergone several fundamental redesigns, with the most recent updates being in 2014 and 2018. In 2014, the survey introduced topical modules and began interviewing its four-year panel respondents annually instead of multiple times a year. In 2018, the survey began interviewing a new panel every year so that in any given year there will be four overlapping panels. In addition to the SIPP, this paper also employs administrative data on program benefits from the Bureau of Labor Statistics, United States Department of Agriculture, Department of Labor, Social Security Administration, Housing and Urban Development, Health and Human Services, Centers for Medicare and Medicaid Services, and Veterans Affairs, as well as state welfare benefits data compiled by the University of Kentucky's Center for Poverty Research, to help construct a selection model for program participation.

Although the SIPP is designed as a series of longitudinal panels, this study employs SIPP data cross-sectionally to increase sample sizes for households with disability. Additionally, although SIPP provides data for many variables in this study at the individual level, food insecurity and several of the program participation variables are measured at the household level. Thus, this paper designates households as the primary unit of analysis, aggregating monthly and individual-level data such that the analyses are conducted at the annual, household level. This assumes that everyone within a household shares or is impacted by the characteristics or statuses of other household members, including disability, program participation, and food security status.

To improve comparability across years and to eliminate any threats to validity introduced from changes in SIPP's design and survey questions, this study only uses SIPP data starting with the 2014 panel. Similarly, to avoid any potential confounders from the onset of the 2020 COVID-19 pandemic, no data collected after 2019 is used in the analyses. In total, there are seven years of data from the 2014 SIPP (collected from 2013–2016) and the 2018 SIPP (collected from 2017–2019).

The main analytic sample consists of all households with incomes below 200 percent of the federal poverty threshold and with a young child present (age<6 years old). Any individual-level characteristics, such as age, gender, or race and ethnicity, are measured for the head of household, even if there is variation amongst other household members. In a small number of

households (n=8), a household head is not assigned by SIPP. In these cases, households are first assigned a head-holder status if they are the only person listed in the household for that year (n=5). For the remaining unassigned households, the household head status is designated as the person with the lowest person number (n=3). Lastly, households with missing weights are dropped from the analysis (n=22), resulting in a final analytic sample of 8,343 households.

Measures

In this paper, disability is operationalized as binary variables constructed from an individual's self-reported disability experience, as collected by twelve disability questions in the SIPP. Six of these twelve questions relate to functional difficulties, three relate to work-limiting disabilities, and another three relate to child disability (US Census Bureau 2021). Table 2 summarizes the SIPP disability questions used in the construction of this study's household disability measure and organizes them by disability type. Since disability is measured at the individual level in SIPP but the unit of analysis of this paper is at the household, a household is assigned a value of 1 if any individual member in the household self-reports at least one of these three kinds of disability and a value of 0 if not.

Table 2. Types of disability reported in the SIPP

SIPP Variable	Question	Disability Type
ESEEING	Serious difficulty seeing	Adult disability
EHEARING	Serious difficulty hearing	Adult disability
ECOGNIT	Serious difficulty concentrating, remembering, or making decisions	Adult disability
EAMBULAT	Serious difficulty walking or climbing stairs	Adult disability
ESELFCARE	Difficulty dressing or bathing	Adult disability
EERRANDS	Difficulty going outside the home	Adult disability
EDISABL	Limited in the kind or amount of work they are able to do	Work disability
EFIND JOB	Difficulty finding or keeping a job	Work disability
EJOBCANT	Prevented from working	Work disability
EDDELAY	A developmental condition or delay that limits ordinary activity	Child disability
EPLAYDIF	Limited ability to play with other children of the same age	Child disability
ESKOOLWK	Limited ability to do regular schoolwork	Child disability

Notes: US Census Bureau, Survey of Income and Program Participation. Disability types are not necessarily mutually exclusive categories.

The main disability measure of this paper—referred to as "any disability"—is constructed by the presence of a functional, work-limiting, or child disability for any member of a household. A functional disability is determined by any individual in a household reporting serious difficulty seeing; hearing; concentrating, remembering, or making decisions; walking or climbing upstairs; dressing or bathing; or going outside of the home. If any of these difficulties are present by any household member, then the household is considered to have a functional disability. A work-limiting disability is determined by any household member reporting that their disability limits the kind or amount of work they are able to do; makes it difficult to find or keep a job; or prevents work altogether. A child disability is determined by a member of a household reporting that a dependent under the age of 18 has either a functional disability; a developmental condition or delay that limits ordinary activity; limited ability to play with other children the same age; or limited ability to do regular schoolwork.

Program participation includes participation across seventeen programs that represent the US social welfare system, including: social insurance, food supports, spending subsidies, public health insurance, need-based cash supports, tax credits, and other cash payments. The programs are included in the analysis based both on their inclusion in prior literature and their availability in SIPP. Measures of individual program participation are constructed at the annual household level. Participation is collected as monthly data for some welfare programs but as annual data for other programs. Monthly participation data is estimated at the annual level by aggregating to a twelve-month time period. Additionally, participation for some programs is collected at the household level, while for others is collected at the individual level; similarly, individual-level data is aggregated to the household level.

Individual program participation is measured with binary variables. For any given program, a value of 1 is assigned to a household if any member of the household participated in the program in the last year and a 0 if no members of the household participated in the program in the last year. Multiple program participation is operationalized as both continuous and binary measures. First, this paper looks at the average number of programs a household participated in the last calendar year. Next, it looks at a top-coded continuous count of the number of social welfare programs in which a household participated, ranging from zero to nine or more programs due to sample sizes. Finally, drawing upon the approach of Edwards and Schwam (2022), this paper looks at two binary measures of multiple program participation. These multiple program participation measures take

a value of 1 if a household collectively participates in either three or more programs or in five or more programs. Table 3 provides a summary with names and descriptions of the individual programs and categories included in the construction of the multiple program participation variables.

An important consideration when estimating participation rates is whether the universe consists of every household, regardless of their eligibility for a program, or if it only consists of households eligible for a program. This paper wants to consider rates of program participation for households that are ostensibly eligible for a given program. While it is impossible to be certain that only eligible households are included in the construction of the analytic sample, there are a number of steps taken to ensure that likely-eligible households are included. First, only households with incomes less than 200 percent of the federal poverty level, equivalent to less than 63,000 dollars a year for a family of four, are included in the sample. Second, only households with young children are included, due to the fact that many social welfare programs apply solely to households with children (e.g., subsidized childcare; school food programs) or have wider eligibility options for households with children (e.g., WIC; SNAP; TANF). Finally, SIPP assigns households a missing value if they are never asked about their participation in a particular program. Generally, although not always, not being asked about participation status in the SIPP implies that the respondent was flagged as ineligible for the program in question. Thus, households with a 0 or 1 value for a given participation variable are assumed to be in the universe of eligibility, while those with a missing value are assumed to be ineligible. This results in participation variables that reflect participation of households that are likely eligible for a given program instead of participation rates for all households regardless of eligibility.

Household food insecurity stratifies the analytic sample by level of need above and beyond disability status using the United States Department of Agriculture's four mutually exclusive categories of household food security status: high food security (HFS), marginal food security (MFS), low food security (LFS), and very low food security (VLFS). Food security status variables are binary. Households with HFS are assigned a value of 1 if a household has no reported indications of food-access problems or limitations and a value of 0 if they do. Households with MFS are assigned a value of 1 when they report one or two indications of food-access problems or limitations but little or no indication of change of diet. Households with LFS are assigned a value of 1 if they report reduced quality, variety, or desirability of diet, but typically with little or

no indication of reduced food intake. Finally, households with VLFS take on a value of 1 when they report multiple indications of disrupted eating patterns and reduced food intake (USDA 2022).

Table 3. Summary of Programs Included in Multiple Program Participation Measures

Category	Program	Description
Support for Old-Age and Disability	Old Age & Survivors Insurance (OASI)	Provides monthly benefits designed to replace, in part, the loss of income due to retirement or death.
	Disability Insurance (SSDI)	Provides monthly benefits designed to replace, in part, the loss of income due to disability.
	Medicare	Provides health coverage to adults 65 years or older.
Support for Workers	Unemployment Insurance (UI)	State-regulated insurance programs that provide benefits for loss of unemployment while looking for a new job.
	Worker's Compensation (WC)	State and federal insurance programs that provide cash benefits and/or medical care for workers who are injured or become ill as a direct result of their job.
	Earned Income Tax Credit (EITC)	Provides a credit to low to moderate-income workers and families to reduce annual taxes owed.
Food Supports	Supplemental Nutrition Assistance (SNAP)	Provides in-kind benefits to low-income families to purchase the nutritious foods essential to health and well-being.
	Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	Provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age 5 who are found to be at nutritional risk.
	National School Lunch and Breakfast Program (School Food)	Provides nutritionally balanced, low-cost or free breakfasts and lunches to children each school day.
Needs-based Cash Supports	Supplemental Security Income (SSI)	Provides monthly payments to people with disabilities and older adults who have little or no income or resources.
	Temporary Assistance to Needy Families (TANF)	Provides states and territories with flexibility in operating programs designed to help low-income families with children achieve economic self-sufficiency. States use TANF to fund monthly cash assistance payments to low-income families with children, as well as a wide range of services.
	Medicaid	Provides health coverage to eligible low-income adults, children, pregnant women, elderly adults, and people with disabilities.
Living Subsidies	Public or subsidized housing (Housing)	Public housing provides subsidized rental housing for eligible low-income families, the elderly, and persons with disabilities. Housing vouchers provide financial benefits to very low-income families, the elderly, and the disabled to pay for housing.
	Low-income Housing Energy Assistance Program (Energy)	Provides assistance to reduce the costs associated with home energy bills, energy crises, weatherization, and minor energy-related home repairs.
	Childcare Assistance (Childcare)	Childcare vouchers provide childcare financial assistance to help families with low-income pay for childcare so they can work or attend school.
Other Cash Payments	Veteran's benefits (VA)	Provides financial and other forms of assistance to veterans and their dependents.
	General Assistance (GA)	Provides aid to needy individuals or families who do not qualify for major assistance programs and to those whose benefits from other assistance programs are insufficient to meet basic needs.

Notes: Adapted and modified from Edwards and Schwam (2022).

Analytic Approach

This paper begins by estimating rates of household participation in social welfare programs, including continuous and binary measures of program participation for households with any disability and with no disability. Participation rates are compared across disability status, testing for significant differences in proportions for binary measures and differences in means for continuous measures.

A barrier to interpreting individual and multiple program participation differences between households with and without disability is the selection bias that is inherent to program participation and the endogenous nature of its relationship to disability. Households with disability are more likely to participate in programs, particularly means-tested programs, and especially when they face hardships such as food insecurity (McKernan, Ratcliffe, and Braga 2021). Additionally, participation in multiple programs is potentially a reflection of the depth of need to address such hardships, with households with disability more likely to be eligible for multiple programs.

A selection model can help identify whether the determinants for program participation differ for households with disability compared to households without disability, and can help shed light on the extent of selection bias in explaining program participation. Heckman and Smith (2004) posit that participation in any given program is based upon: being eligible for the program, knowing about the program, applying and being accepted to the program, and formally enrolling in the program. Incorporating at least one variable to represent each of Heckman and Smith's (2004) factors of program participation, this paper estimates the probability of program participation separately for households and without disability the following equation:

$$PP_{hst} = \varphi_0 + \varphi_1 \boldsymbol{e}_{hst} + \varphi_2 \boldsymbol{k}_{st} + \varphi_3 \boldsymbol{a}_{st} + \varphi_4 \boldsymbol{r}_{st} + \varphi_5 \boldsymbol{x}_{hst} + \varphi_6 \boldsymbol{s}_{st} + \rho_p + \pi_s + \omega_t + \partial_{hst}, \quad (1)$$

where PP_{hst} represents the individual or multiple program participation variables for household h from state s in year t. $\boldsymbol{e}_{hst}$ is a vector of determinants for eligibility in a program and includes a continuous age and age-squared variables; dummy variables for race of household head (Black, Asian, and multiple/other race; White-households omitted); a dummy variable for Hispanic-headed households; a dummy variable for female-headed households; dummy variables of household income-to-poverty ratio (0–50 percent, 50–100 percent, 100–150 percent of FPL; 150–200 percent omitted); a dummy variable for household marital status (married/not married); a dummy variable for a senior member (65+ years old) present in the household; dummy variables for two, three, and four or more children present in the households; a continuous variable for

number of adults in the household; and a dummy variable for metropolitan status of the household (Heckman and Smith, 2004). $\boldsymbol{k}_{st}$ represents the knowledge of programs and is measured by SNAP outreach spending per person with income less than 125 percent of the federal poverty line (McKernan, Ratcliffe, and Braga 2021). $\boldsymbol{a}_{st}$ is a vector of indices addressing the accessibility of applying and likelihood of being accepted into a program, including the SNAP Program Access Index (USDA 2023) and a Medicaid generosity index (Fox, Feng, and Reynolds 2022).[1] $\boldsymbol{r}_{st}$ is a vector of determinants for official enrollment in a program, which Heckman and Smith (2004) hypothesize is highly influenced by the incentive of the benefit of the program. To capture this incentive, measures representing an average benefit of each program in the analysis are included in the model, either individually (e.g., average number of weeks of unemployment insurance for a model predicting selection into UI), or collectively (e.g., average benefits for all programs included for models predicting the count of programs and multiple programs).[2] π_s and ω_t are the state and year fixed effects, respectively. ∂_{hpst} is the random error term. Standard errors are clustered at the state level.

Finally, a main motivation of this paper is to understand differences in accessing and participating in programs for households with disability across differing levels of need. Thus, in order to investigate the potential tradeoff between selection bias and administrative burden, rates of household participation in individual and multiple programs are re-estimated using the methods outlined above, but stratified across each food security status (i.e., very low, low, marginal, and high food security status).

Findings

Program Participation by Disability Status

Table 4 presents rates of the number of social welfare programs in which households with a young child and income below 200 percent of the federal poverty line participate. Participation in social welfare programs is high for all households, which is not surprising given that this analytic sample is comprised of households with high economic precarity. 97.88 percent of households with any

[1] SNAP PAI is a measure that captures the degree to which low-income people have access to SNAP benefits and indexes the average monthly number of SNAP participants to the number of people with incomes less than 125 percent of the poverty line (USDA 2023). The Medicaid generosity index that codifies the burden of Medicaid program rules across the learning, compliance, and psychological costs associated with administrative burden.
[2] Excludes WIC, School Food, and GA benefits. WIC does not have state-level estimations of benefits over time and not all states offer GA benefits.

Table 4. Counts and multiple program participation rates by disability status

	Any Disability *n=3,781*	**No Disability** *n= 4,562*		
	Rate	Rate	Difference	(s.e)
Any program	0.9788	0.9228	0.056***	0.0049
0 programs	0.0212	0.0772	-0.056***	0.0049
1	0.0692	0.1319	-0.0627***	0.0067
2	0.1220	0.1931	-0.0711***	0.0081
3	0.1829	0.2369	-0.054***	0.0090
4	0.1979	0.1677	0.0302***	0.0085
5	0.1941	0.1159	0.0782***	0.0079
6	0.1204	0.0588	0.0616***	0.0062
7	0.0545	0.0147	0.0399***	0.0039
8+	0.0377	0.0038	0.0340	0.0024
3 or more	0.7876	0.5978	0.1898***	0.0017
5 or more	0.4067	0.1932	0.2135***	0.0102
Average #	4.0478	2.9656	1.0822***	0.0373

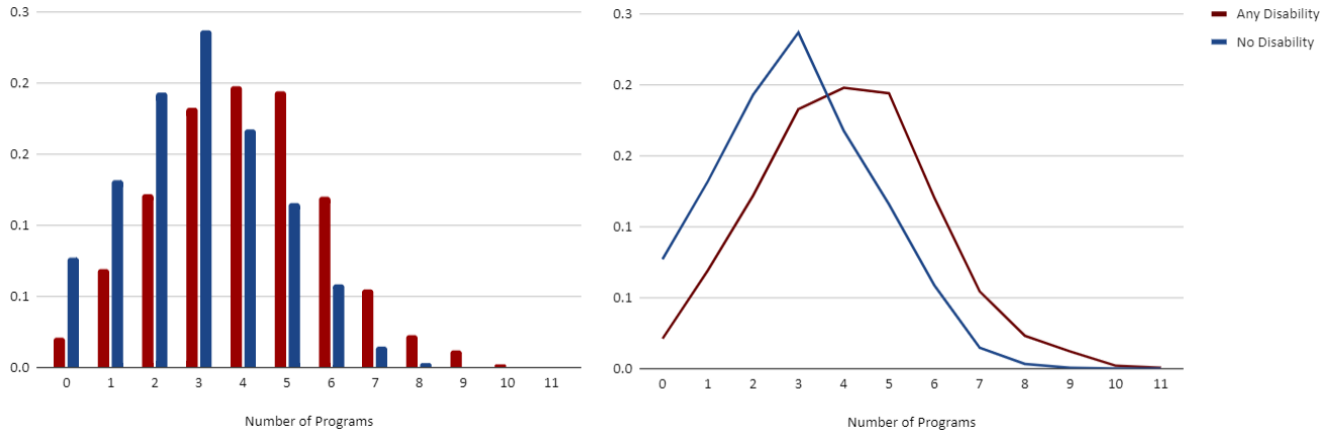
Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income of less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households without disability are defined as no members reporting a functional, work-limiting, or child disability. Unconditional participation looks at any participation, while conditional participation calculates the rates of participation given that a household participates in at least one program. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). *p<0.05, **p<0.01, ***p<0.001.

type of disability participate in at least one social welfare program. In comparison, only 92.28 percent of households with no disability participate in any social welfare program (difference=5.60 p.p., p<0.001). Households with any disability participate in a significantly higher number of programs (4.05) compared to households with no disability (2.97), although, on average, this translates into households with any disability only participating in roughly one more program than households with no disability (difference=1.08 p.p., p<0.001). While participation increases steadily with each additional program up to three programs for both households with any and with no disability, households with no disability participate at higher rates in zero, one, two, and three

programs than those with any disability. However, starting at four programs, rates begin to decrease for households with no disability but continue increasing for households with any disability. Participation rates in four programs for households with any disability (19.79 percent) surpass those of households with no disability (16.77 percent). While participation rates also begin declining for households with any disability starting at five programs, the elevated participation rates in five to nine or more programs remain higher than for households with no disability.

Figure 1 plots the distribution of the count of program participation for households with any disability and with no disability. The shapes of the distributions are roughly normal for both groups, with the mean of households with any and no disability (4.05 and 2.97, respectively) being equivalent to the median and mode (4 and 3, respectively). The distribution for households with any disability has a wider range and is slightly broader in its shape, suggesting that there is more variation in participation around the mean number of programs than for households with no disability. The distribution for households with any disability also has a slightly longer and more positive tail, further indicating that households with disability make up a larger share of participation in a higher count of programs than those without disability.

Figure 1. Distribution of participation rates for the number of social welfare programs in which a household participates, by households with any and with no disability



Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019).

The pattern of higher participation for households with any disability is also clearly observed in the multiple program participation measures of participating in three or more and in five or more programs. As presented in Table 4, almost 79 percent of households with any disability participate in at least three programs, while over 40 percent participate in at least five programs. By contrast, less than 60 percent of households with no disability participate in three or more programs and only 19 percent participate in five or more, representing an approximately 20 percentage point difference from households with any disability.

Table 5. Program participation rates in individual social welfare programs by disability status

	Any Disability *n=3,781* Rate	**No Disability** *n= 4,562* Rate	Difference	(s.e)
UI	0.0511	0.0402	0.0109*	0.0046
OASI	0.0905	0.0177	0.0728***	0.0048
SSDI	0.1148	0.0031	0.1117***	0.0050
WC	0.0227	0.0089	0.0138***	0.0027
SNAP	0.6290	0.4322	0.1968***	0.0119
WIC	0.5095	0.4763	0.0332**	0.0119
School Food	0.5380	0.4472	0.0908***	0.0114
Housing	0.0530	0.0413	0.0117*	0.0046
Energy	0.1516	0.0857	0.066***	0.0070
Childcare	0.1111	0.1093	**0.0018**	0.0069
Medicaid	0.8758	0.7598	0.116***	0.0086
Medicare	0.2467	0.0610	0.1857***	0.0077
SSI	0.1780	0.0227	0.1553***	0.0064
TANF	0.0839	0.0504	0.0335***	0.0059
GA	0.0327	0.0149	0.0178***	0.0036
VA	0.0347	0.0119	0.0227***	0.0032
EITC	0.5234	0.5401	**-0.0167**	0.0110

Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). *p<0.05, **p<0.01, ***p<0.001. Bolded estimates indicate that participation rates by households with disability are statistically lower or equivalent to rates by households with no disability.

Table 5 displays participation rates by disability status for each of the seventeen individual social welfare programs included in this study. Households with any disability tend to participate in individual social welfare programs at significantly higher rates than households with no

disability. Participation rates are highest for households with any disability in Medicaid (87.58 percent), SNAP (62.90 percent), and school food programs (53.80 percent). Programs with the lowest rates of participation for household with any disability are Worker's Compensation (2.27 percent), GA (3.27 percent), and VA (3.47 percent). For households with no disability, participation rates are highest for Medicaid (75.98 percent), EITC (54.01 percent), and WIC (47.63 percent), while rates are lowest for SSDI (0.31 percent), GA (1.49 percent), and VA (1.19 percent). The absolute differences in participation rates between households with any and with no disability are highest for SNAP. SNAP participation rates for households with any disability are 19.68 percentage points higher than rates for households with no disability ($p<0.001$). After SNAP, participation rate differences are greatest for Medicare (18.57 p.p., $p<0.001$) and SSI (15.53 p.p., $p<0.001$). Differences in rates between households with any and no disability are smallest for EITC (-0.0167 p.p., $p>0.05$), childcare (0.0018 p.p., $p>0.05$), and UI (0.019 p.p., $p<0.05$), with participation in EITC and childcare being statistically equivalent for households with any and with no disability.

Selection Models for Program Participation

Table 6 contains summary statistics for covariates included in the regression models predicting selection into social welfare program participation. Across disability status, there are not significant differences between the shares of White- and Black-headed households, but households with any disability have significantly lower shares rates of participation Asian and Hispanic-headed households and significantly higher shares of female household heads or heads of multiple or other races. Households with any disability tend to be poorer, with a higher share of more severe income to poverty ratio (IPR) than households with no disability. Households with any disability also tend to be smaller compared to households without disability, with fewer children living in the household and with the household head being less likely to be married; however, on average, households with disability have more adults present and have higher rates of senior living in the household. Households with any disability live in metropolitan areas at lower rates than households with no disability and are approximately five years older than households with no disability, on average. With respect to state-level factors across disability status, there do not appear to be significant differences in: SNAP outreach spending person; average weeks of unemployment

Table 6. Means of household and state-level characteristics by disability status

	Any Disability *n=3,781*	**No Disability** *n=4,562*
Very low food security status	0.145 (0.352)	0.059 (0.236)
Low food security status	0.185 (0.388)	0.118 (0.323)
Marginal food security status	0.173 (0.379)	0.198 (0.398)
High food security status	0.497 (0.500)	0.625 (0.484)
White-headed household	0.697 (0.460)	0.689 (0.463)
Black-headed household	0.217 (0.412)	0.224 (0.417)
Asian-headed household	0.025 (0.157)	0.048 (0.214)
Multiple or other race-headed household	0.061 (0.240)	0.039 (0.194)
Hispanic-headed household	0.264 (0.441)	0.358 (0.480)
Female-headed household	0.668 (0.471)	0.628 (0.483)
Income to poverty ratio (IPR): 0–50% of FPL (%)	0.292 (0.455)	0.216 (0.412)
Income to poverty ratio (IPR): 50–100% of FPL (%)	0.216 (0.412)	0.210 (0.408)
Income to poverty ratio (IPR): 100–150% of FPL (%)	0.267 (0.442)	0.288 (0.453)
Income to poverty ratio (IPR): 150–200% of FPL (%)	0.225 (0.418)	0.286 (0.452)
Married (%)	0.471 (0.499)	0.537 (0.499)
Households with senior (65+) present (%)	0.096 (0.295)	0.021 (0.142)
1 child present in household (%)	0.219 (0.413)	0.266 (0.442)
2 children present in household (%)	0.307 (0.462)	0.323 (0.467)
3 children present in household (%)	0.227 (0.419)	0.236 (0.425)
4 children present in household (%)	0.214 (0.410)	0.163 (0.369)
Number of adults in household (%)	2.157 (1.036)	1.850 (0.757)
Households living in metropolitan area (%)	0.751 (0.433)	0.807 (0.395)
Annual SNAP outreach spending per person < 125% of FPL ($)	1,950.052 (2,186.110)	2,006.693 (2,203.784)
SNAP program access index	0.733 (0.117)	0.727 (0.122)
Medicaid generosity index	55.944 (11.204)	56.703 (11.317)
Average # of weeks of UI	21.692 (3.918)	21.672 (3.909)
Average annual OASI benefit per beneficiary ($)	1,315.747 (84.359)	1,313.542 (83.888)
Average annual SSDI benefit per beneficiary ($)	1,049.374 (54.763)	1,049.992 (54.596)
Average annual WC transfers per person ($)	0.038 (0.041)	0.040 (0.047)
Average months until SNAP recertification for earners	9.913 (2.847)	9.897 (2.848)
Average annual public housing benefit per household ($)	7,884.844 (1,989.489)	7,985.318 (2,013.699)
Average annual energy benefit per household ($)	210.022 (99.778)	206.976 (96.985)
Average annual childcare copay per single-parent household of 3 ($)	736.839 (615.787)	715.688 (663.306)
Average annual Medicare payment per beneficiary ($)	10,331.240 (1,234.189)	10,294.078 (1,240.312)
Average annual Medicaid payment per beneficiary ($)	6,923.710 (1,539.639)	6,842.161 (1,481.118)
Average annual SSI benefit per beneficiary ($)	569.322 (30.959)	570.715 (32.778)
Maximum annual TANF benefit per household of 4 ($)	6,150.977 (2,772.822)	6,280.605 (2,791.074)
Average annual VA benefit per veteran ($)	8,441.965 (4,740.243)	8,396.524 (4,812.031)
State EITC Rate as Percentage of Federal Credit	0.110 (0.204)	0.120 (0.222)

Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Means are weighted to the household head. The sample is stratified by disability status. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. HFS is when

a household has no reported indications of food-access problems or limitations. MFS is when a household reports one or two indications of food-access problems or limitations but little or no indication in change of diet. LFS is when a household reports reduced quality, variety, or desirability of diet, but typically with little or no indication of reduced food intake. VLFS is when a household reports multiple indications of disrupted eating patterns and reduced food intake (USDA, 2022). Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Standard errors in parentheses.

insurance; and average benefits for OASI, SSDI, WC, energy, childcare, Medicare, and VA. While there are statistically significant differences between households with any and with no disability in SNAP program access and Medicaid generosity indices, average public housing, Medicaid, SSI, and TANF benefits, as well as state EITC rate as percentage of the federal EITC credit, the magnitude of these differences is quite small.

Table 7 reports coefficients and robust standard errors for selection into the number of programs and into multiple program participation (three or more and five or more programs) for households with any and with no disability, separately. Overall, the size and significance of the coefficients suggest that of the selection factors theorized by Heckman and Smith (2004) to predict program participation, the individual and household-level factors representing eligibility into a program tend to have a stronger relationship with selection into participation than the state-level factors representing knowledge of, application and acceptance to, and enrollment in a program. For this reason, as well as for brevity, Table 7 only presents coefficients for individual and household-level selection factors. Results for state-level factors can be found in the Appendix Table A1. Table 7 shows that coefficients for Black-headed households, married households, households with income-to-poverty ratios less than 150 percent of the federal poverty line (FPL), and households with two or more children are statistically significant at predicting multiple program participation for households with any disability and with no disability. Although the signs of the coefficients for these selection factors are the same across disability status, the magnitudes differed substantially for some of these characteristics. For example, having a Black head of household for households with any disability is, on average, associated with participation in 0.46 more programs than households with non-Black heads. This is compared households with no disability, for which having a Black head of household is associated with participation in 0.77 more programs than non-Black-headed households. Similarly, for households with any disability, having more than one child is associated with a higher number of programs and with an increased probability of participation in multiple programs than for households with no disability. For households with any disability, having the lowest IPR (0 to 50 percent of the FPL) is associated

Table 7. Selection factor coefficients on program counts and multiple program participation for households with any disability and households with no disability

	Any Disability			No Disability		
	(1) Count of Programs	(2) Three+ Programs	(3) Five+ Programs	(4) Count of Programs	(5) Three+ Programs	(6) Five+ Programs
Selection Factors:						
Black HHH	0.4644**	0.0722**	0.0782*	0.7658***	0.1655***	0.1395***
	(0.1343)	(0.0232)	(0.0324)	(0.0968)	(0.0304)	(0.0222)
Asian HHH	-0.7402**	-0.0702	-0.0990	0.0683	-0.0031	-0.0041
	(0.2544)	(0.0791)	(0.0715)	(0.1363)	(0.0430)	(0.0223)
Other race HHH	0.1067	0.0303	0.0138	0.3425**	0.0952*	0.0546
	(0.1389)	(0.0272)	(0.0488)	(0.1262)	(0.0429)	(0.0361)
Hispanic HHH	0.0173	0.0441	-0.0342	0.4829***	0.1478***	0.0219
	(0.1231)	(0.0246)	(0.0372)	(0.1117)	(0.0299)	(0.0188)
Female HHH	0.3902***	0.0748***	0.1180***	0.2969***	0.0794***	0.0541***
	(0.0739)	(0.0156)	(0.0237)	(0.0506)	(0.0188)	(0.0060)
Age of HHH	0.0048	-0.0048	0.0033	-0.0630***	-0.0205***	-0.0026
	(0.0215)	(0.0035)	(0.0053)	(0.0172)	(0.0055)	(0.0045)
Age-Squared	0.0001	0.0001	-0.0000	0.0007**	0.0002**	0.0000
	(0.0002)	(0.0000)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
IPR: 0-50%	0.6750***	0.1247***	0.1605***	0.4956***	0.1157***	0.1302***
	(0.0937)	(0.0253)	(0.0227)	(0.0786)	(0.0216)	(0.0186)
IPR: 50-100%	0.6038***	0.1356***	0.1336***	0.7569***	0.1843***	0.1593***
	(0.1018)	(0.0229)	(0.0238)	(0.0776)	(0.0233)	(0.0162)
IPR: 100-150%	0.3527***	0.0887***	0.0900***	0.3693***	0.0824***	0.0797***
	(0.0916)	(0.0211)	(0.0236)	(0.0573)	(0.0234)	(0.0139)
Married status	-0.5021***	-0.0816***	-0.0959***	-0.7022***	-0.1673***	-0.0951***
	(0.0869)	(0.0180)	(0.0218)	(0.0926)	(0.0232)	(0.0128)
Senior (65+)	0.7190***	0.0990***	0.1581***	0.7246*	0.1502	0.1208
	(0.1440)	(0.0199)	(0.0343)	(0.3109)	(0.0764)	(0.0797)
2 children in HH	0.6382***	0.0830***	0.1622***	0.6597***	0.1343***	0.1406***
	(0.0809)	(0.0201)	(0.0220)	(0.0674)	(0.0185)	(0.0138)
3 children in HH	0.7417***	0.1359***	0.1453***	0.8641***	0.1953***	0.1645***
	(0.1101)	(0.0201)	(0.0329)	(0.0739)	(0.0221)	(0.0185)
4 children in HH	0.8708***	0.1247***	0.2064***	1.0874***	0.2603***	0.1814***
	(0.1214)	(0.0255)	(0.0291)	(0.0898)	(0.0296)	(0.0193)
Adults in HH	0.2061***	0.0388***	0.0323**	0.0825*	0.0181	0.0051
	(0.0344)	(0.0108)	(0.0108)	(0.0365)	(0.0134)	(0.0098)
HH metro status	-0.2026	-0.0337	-0.0392	-0.2481*	-0.0385	-0.0411
	(0.1220)	(0.0221)	(0.0312)	(0.1183)	(0.0301)	(0.0222)
State F.E.	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X
Observations	3,732	3,732	3,732	4,504	4,504	4,504

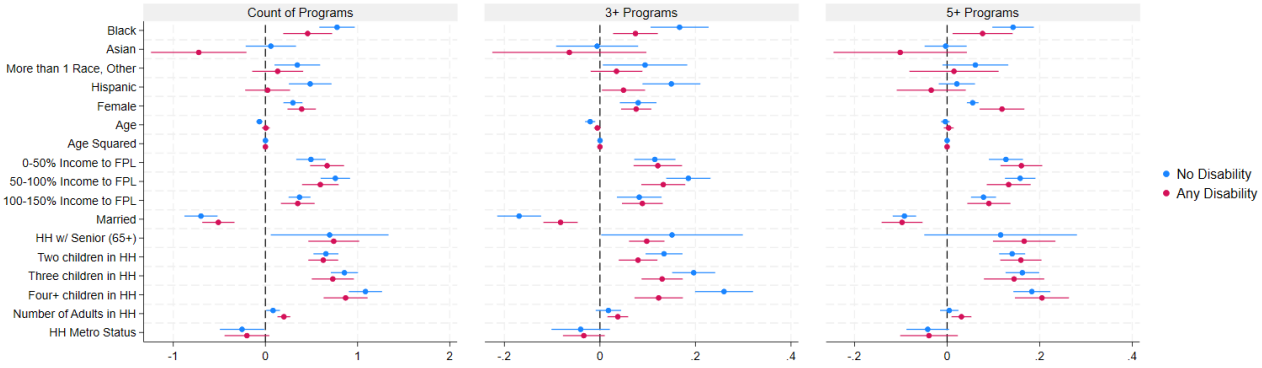
Notes: Households (HH) are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. State-level are dropped from table for clarity and can be found in the Appendix Table A1. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001.

with larger percentage point increases to multiple program participation, while for households with no disability, higher IRPs (50 to 100 percent and 100 to 150 percent of the FPL) are associated with equivalent or higher increases to program participation. Female-headed households are associated with a higher multiple program participation for both disability statuses, while married households are associated with significantly lower in participation for both households with any and with no disability.

There are also differences in significance levels of certain selection factors across disability status. Although the coefficient is statistically insignificant for households with no disability, having an Asian-head household with any disability is significantly associated with participation in 0.74 fewer programs. Conversely, for households with no disability, being headed by a Hispanic member is associated with participation in 0.34 more programs and a 14.78 percentage point increase in the probability of participating in three or more programs compared to households with non-Hispanic heads. Having a senior member is associated with 9.90 and 15.81 percentage point increases in the probability of participating in three or more and in five or more programs, respectively, for households with any disability, but is statistically unrelated for households with no disability. Having more adults in the household is also associated with increased participation in the number of programs and in multiple programs for households with any disability, but is only associated with the number of participated programs for households with no disability. Living in metropolitan areas is significantly associated with a 0.25 decrease in the number of participated programs for households with no disability but has no significant associations for multiple program participation for households with any disability.

To help highlight significant differences in the selection factors between households with any and with no disability, Figure 2 plots the coefficients of individual and household-level selection factors on the probability of the number of programs in which a household participates and of participation in three or more and five or more programs. The count of the number of participated programs sees significant differences in predicted probability by disability status for Asian- and Hispanic-headed households, with such households having lower predicted probabilities of participating in a higher number of programs. Having a married household and having four or more children in the household differentially predict selection into three or more programs across households with any and with no disability, while having a female-headed

Figure 2. Comparison of a subset of selection factor coefficients for count of and multiple program participation, by households with any disability and no disability



Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). ^Indicates programs where participation is statistically equivalent between households with any and with no disability.

household differentially predicts probability of participating in five or more programs for households with any disability compared to households with no disability.

Table 8 and Table 9 present results of regression models using the same selection factors as Table 7 but look at selection into a subset of the individual programs in the social welfare system separately for households with any disability and households with no disability.[3] Similar to the models for count of programs and multiple program participation, individual and household-level selection factors were more significantly associated with selection into individual program participation than were the state-level factors.[4]

For households with any disability (Table 8), the selection factor that was most often significantly associated with the most programs was an IPR of 0 to 50 percent of the FPL, which is associated with an increased probability of program participation in SSDI (4.52 p.p.), Medicare (7.23 p.p.), Medicaid (10.41 p.p.), SSI (4.86 p.p.), TANF (8.40 p.p.), and SNAP (35.21 p.p.), but associated with a decreased probability of participation in EITC (-19.45 p.p.). Having a senior in a household is the selection factor with the largest coefficient for households with any disability

[3] Results for the remaining programs not included in Tables 8 and 9 can be found in the Appendix Tables A2 & A3.
[4] Like Table 7, Tables 8 and 9 only include results of the individual- and household-level selection factors. Results for state-level factors can be found in the Appendix Tables A2 & A3.

Table 8. Selection factor coefficients on participation in programs for households with any disability

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
Selection Factors:									
Black HHH	-0.0001	0.0128	0.0312	0.0451**	0.1016***	-0.0013	0.1054**	0.0384**	-0.0472*
	(0.0160)	(0.0322)	(0.0267)	(0.0141)	(0.0250)	(0.0223)	(0.0324)	(0.0140)	(0.0227)
Asian HHH	-0.0704**	-0.1295***	-0.1007	-0.0067	0.0122	-0.0720**	0.0052	-0.0675**	-0.0694
	(0.0242)	(0.0353)	(0.0558)	(0.0585)	(0.0488)	(0.0268)	(0.0962)	(0.0247)	(0.0920)
Other race HHH	-0.0224	0.0061	-0.0123	0.0465*	0.0784**	-0.0221	0.0105	-0.0173	-0.0330
	(0.0172)	(0.0332)	(0.0323)	(0.0195)	(0.0275)	(0.0413)	(0.0406)	(0.0306)	(0.0440)
Hispanic HHH	-0.0233*	-0.0457*	-0.0645***	0.0430*	-0.0249	0.0076	0.0235	-0.0061	-0.0802*
	(0.0102)	(0.0193)	(0.0172)	(0.0185)	(0.0246)	(0.0185)	(0.0336)	(0.0197)	(0.0376)
Female HHH	0.0029	-0.0099	-0.0336	0.0598***	0.0338	0.0366**	0.1292***	-0.0116	0.0510*
	(0.0065)	(0.0139)	(0.0224)	(0.0146)	(0.0203)	(0.0135)	(0.0234)	(0.0123)	(0.0234)
Age of HHH	-0.0172***	0.0139***	0.0028	-0.0057	0.0134**	0.0029	-0.0074	-0.0008	-0.0007
	(0.0034)	(0.0037)	(0.0043)	(0.0029)	(0.0040)	(0.0026)	(0.0041)	(0.0029)	(0.0050)
Age-Squared	0.0002***	-0.0001*	0.0000	0.0001	-0.0001**	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
IPR: 0–50%	-0.0048	0.0452*	0.0723***	0.1041***	0.0486*	0.0840***	0.3521***	-0.0043	-0.1943***
	(0.0091)	(0.0207)	(0.0191)	(0.0226)	(0.0207)	(0.0147)	(0.0247)	(0.0197)	(0.0285)
IPR: 50–100%	-0.0064	0.0223	0.0406	0.0798**	0.0442	0.0262	0.2827***	-0.0029	-0.0284
	(0.0150)	(0.0193)	(0.0206)	(0.0236)	(0.0239)	(0.0148)	(0.0271)	(0.0205)	(0.0271)
IPR: 100–150%	0.0043	-0.0046	-0.0102	0.0797***	0.0165	0.0005	0.1911***	-0.0010	0.0259
	(0.0131)	(0.0180)	(0.0159)	(0.0174)	(0.0179)	(0.0158)	(0.0273)	(0.0173)	(0.0232)
Married status	-0.0140	0.0082	-0.0235	-0.0996***	-0.0958***	-0.0495**	-0.1468***	-0.0162	-0.0103
	(0.0075)	(0.0155)	(0.0172)	(0.0125)	(0.0148)	(0.0170)	(0.0220)	(0.0123)	(0.0300)
Senior (65+)	0.4476***	-0.0556*	0.4435***	-0.0277	0.0093	-0.0263	-0.0238	0.0127	-0.0022
	(0.0566)	(0.0271)	(0.0438)	(0.0230)	(0.0419)	(0.0222)	(0.0220)	(0.0224)	(0.0526)
2 children in HH	0.0035	-0.0205	-0.0344	0.0256	0.0076	0.0234	0.0250	0.0719***	0.0950***
	(0.0131)	(0.0237)	(0.0211)	(0.0193)	(0.0220)	(0.0227)	(0.0259)	(0.0165)	(0.0251)
3 children in HH	0.0086	-0.0730**	-0.0712*	0.0494	-0.0110	0.0250	0.0379	0.0420**	0.1160***
	(0.0149)	(0.0225)	(0.0297)	(0.0261)	(0.0230)	(0.0213)	(0.0251)	(0.0153)	(0.0314)
4 children in HH	-0.0018	-0.0989***	-0.0680*	0.0737**	0.0387	0.0711*	0.0494	0.0312	0.1317***
	(0.0133)	(0.0258)	(0.0275)	(0.0243)	(0.0259)	(0.0297)	(0.0292)	(0.0177)	(0.0270)
Adults in HH	0.0055	0.0176	0.0194	0.0352***	0.0275**	-0.0061	0.0845***	-0.0038	0.0146
	(0.0055)	(0.0088)	(0.0120)	(0.0060)	(0.0098)	(0.0056)	(0.0103)	(0.0067)	(0.0136)
HH metro status	-0.0092	-0.0280	-0.0234	-0.0180	-0.0330	-0.0130	-0.0244	-0.0062	0.0301
	(0.0079)	(0.0209)	(0.0232)	(0.0216)	(0.0237)	(0.0151)	(0.0340)	(0.0214)	(0.0210)
State F.E.	X	X	X	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X	X	X	X
Observations	3,745	3,745	3,745	3,745	3,745	3,184	3,184	3,732	3,745

Notes: Households (HH) with any disability are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, is not missing a weight value, and has any members reporting a disability. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. State-level are dropped from table for clarity and can be found in the Appendix Table A2. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001

and is associated with 44.76 and 44.35 percentage point increases in the probability of participation in OASI and Medicare. Other notable selection factor results for households with any disability include: having an Asian head of household, which is associated with significant reduction in the probability of participating in OASI (-7.04 p.p.), SSDI (-12.95 p.p.), TANF (-7.20 p.p.), and childcare (-6.75 p.p.); having a Black head of household, which is associated with increased probability of participating in Medicaid (4.51 p.p.), SSI (10.16 p.p.), SNAP (10.54 p.p.), and childcare (3.84 p.p.) but decreased probability of participating in EITC (-4.72 p.p.); and having Hispanic-headed households, which is associated with significant decreases in the probability of participating in OASI (-2.33 p.p.), SSDI (-4.57 p.p.), and Medicare (-6.45 p.p.), but increased probability of participating in Medicaid (4.30 p.p.).

For households with no disability (Table 9), marital status and having a female-headed household are the selection factors that are most often significant at predicting participation into social welfare programs. Being married significantly decreases probability of participation, including Medicaid (-15.72 p.p.), SSI (-1.84 p.p.), TANF (-5.36 p.p.), SNAP (-19.51 p.p.), childcare (-3.61 p.p.), and EITC (-5.70 p.p.), while having a female head of household significantly increases probability of participation in OASI (0.87 p.p.), Medicaid (4.78 p.p.), SSI (0.89 p.p.), TANF (1.89 p.p.), SNAP (11.32 p.p.), and childcare (3.92 p.p.). Like households with any disability, the selection factor with the largest coefficient across any program is having a senior present in the household, which is associated with a 37.26 and a 39.11 percentage point increase in the probability of participation in OASI and Medicare, respectively. Other significant selection factor coefficients include: having an Asian-headed household, which is associated with a 9.91 percentage point increase in the probability of participation in Medicaid but a 9.03 percentage point decrease in the probability of participating in EITC; having a Hispanic-headed household, which is associated with a 19.57 percentage point increase in Medicaid participation; and living in a metropolitan area, which is associated with a 3.02 decrease in participation in subsidized childcare.

Figure 3 plots the coefficients of the individual- and household-level selection factors into program participation for households with any and with no disability to help clarify significant differences by disability status. For participation in OASI, TANF, and EITC, there are no significant differences between households with any and with no disability in the selection factors that predict probability of participation. Unsurprisingly given the sample definitions of households

Table 9. Selection factor coefficients on participation in programs for households with no disability

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
Selection Factors:									
Black HHH	-0.0155*	-0.0004	0.0135	0.1154***	0.0187	0.0515***	0.1864***	0.0759***	-0.0043
	(0.0062)	(0.0017)	(0.0177)	(0.0290)	(0.0108)	(0.0142)	(0.0421)	(0.0131)	(0.0226)
Asian HHH	-0.0068	-0.0049***	0.0418	0.0991*	0.0137	-0.0021	0.0484	0.0210	-0.090266*
	(0.0137)	(0.0013)	(0.0351)	(0.0417)	(0.0125)	(0.0149)	(0.0483)	(0.0213)	(0.0376)
Other race HHH	-0.0032	-0.0048**	0.0262	0.0664	0.0193	0.0535**	0.1147*	-0.0105	-0.0039
	(0.0098)	(0.0015)	(0.0201)	(0.0331)	(0.0152)	(0.0195)	(0.0540)	(0.0219)	(0.0408)
Hispanic HHH	-0.0068	-0.0015	0.0079	0.1957***	-0.0057	0.0001	0.0527	0.0123	-0.0600
	(0.0052)	(0.0013)	(0.0108)	(0.0321)	(0.0068)	(0.0099)	(0.0265)	(0.0120)	(0.0302)
Female HHH	0.0087*	-0.0016	-0.0190	0.0478*	0.0089*	0.0189*	0.1132***	0.0279**	0.0048
	(0.0036)	(0.0017)	(0.0098)	(0.0194)	(0.0043)	(0.0092)	(0.0160)	(0.0101)	(0.0164)
Age of HHH	-0.0161***	-0.0019	-0.0188***	-0.0173***	0.0029	0.0002	-0.0174**	0.0063	-0.0054
	(0.0032)	(0.0016)	(0.0031)	(0.0038)	(0.0020)	(0.0030)	(0.0052)	(0.0041)	(0.0053)
Age-Squared	0.0002***	0.0000	0.0003***	0.0002**	0.0000	0.0000	0.0002*	-0.0001	0.0001
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0001)
IPR: 0–50%	-0.0077	0.0029	0.0089	0.1205***	0.0094	0.0660**	0.2562***	0.0054	-0.1538***
	(0.0053)	(0.0023)	(0.0140)	(0.0283)	(0.0086)	(0.0223)	(0.0284)	(0.0121)	(0.0272)
IPR: 50–100%	-0.0016	-0.0010	0.0028	0.1839***	-0.0089	0.0286*	0.2721***	0.039197*	0.0036
	(0.0053)	(0.0017)	(0.0148)	(0.0227)	(0.0053)	(0.0139)	(0.0203)	(0.0150)	(0.0300)
IPR: 100–150%	-0.0077	0.0027	-0.0040	0.1260***	-0.0071	0.0050	0.1144***	0.0211	0.0319
	(0.0047)	(0.0024)	(0.0161)	(0.0247)	(0.0053)	(0.0076)	(0.0224)	(0.0113)	(0.0302)
Married status	-0.0142	-0.0062	-0.0031	-0.1572***	-0.0184**	-0.0536***	-0.1951***	-0.0361**	-0.0570*
	(0.0087)	(0.0031)	(0.0105)	(0.0198)	(0.0054)	(0.0104)	(0.0273)	(0.0104)	(0.0264)
Senior (65+)	0.3726***	-0.0016	0.3911***	0.0146	0.1028	0.0701	0.0016	-0.0070	-0.1515
	(0.0788)	(0.0093)	(0.0768)	(0.0338)	(0.0572)	(0.0653)	(0.0743)	(0.0298)	(0.0772)
2 children in HH	0.0026	0.0061*	0.0039	0.0249	0.0117*	-0.0076	0.0666**	0.0211	0.1094***
	(0.0056)	(0.0024)	(0.0086)	(0.0193)	(0.0054)	(0.0116)	(0.0242)	(0.0146)	(0.0203)
3 children in HH	0.0041	0.0011	0.0139	0.0075	0.0185*	-0.0022	0.1319***	0.0234	0.1184***
	(0.0045)	(0.0021)	(0.0100)	(0.0188)	(0.0078)	(0.0144)	(0.0270)	(0.0142)	(0.0302)
4 children in HH	0.0124	0.0039	0.0231	0.0588**	0.0276**	-0.0009	0.1586***	0.0358*	0.1350***
	(0.0093)	(0.0037)	(0.0160)	(0.0213)	(0.0084)	(0.0134)	(0.0298)	(0.0169)	(0.0237)
Adults in HH	0.0011	0.0052	0.0002	0.0483***	0.0030	0.0049	0.0187	-0.0217***	0.0047
	(0.0045)	(0.0034)	(0.0100)	(0.0095)	(0.0036)	(0.0052)	(0.0150)	(0.0057)	(0.0105)
HH metro status	-0.0046	-0.0032	-0.0171	-0.0183	-0.0057	-0.0118	-0.0131	-0.0302*	-0.0481
	(0.0049)	(0.0026)	(0.0123)	(0.0337)	(0.0089)	(0.0122)	(0.0286)	(0.0134)	(0.0279)
State F.E.	X	X	X	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X	X	X	X
Observations	4,522	4,522	4,522	4,522	4,522	3,811	3,811	4,504	4,522

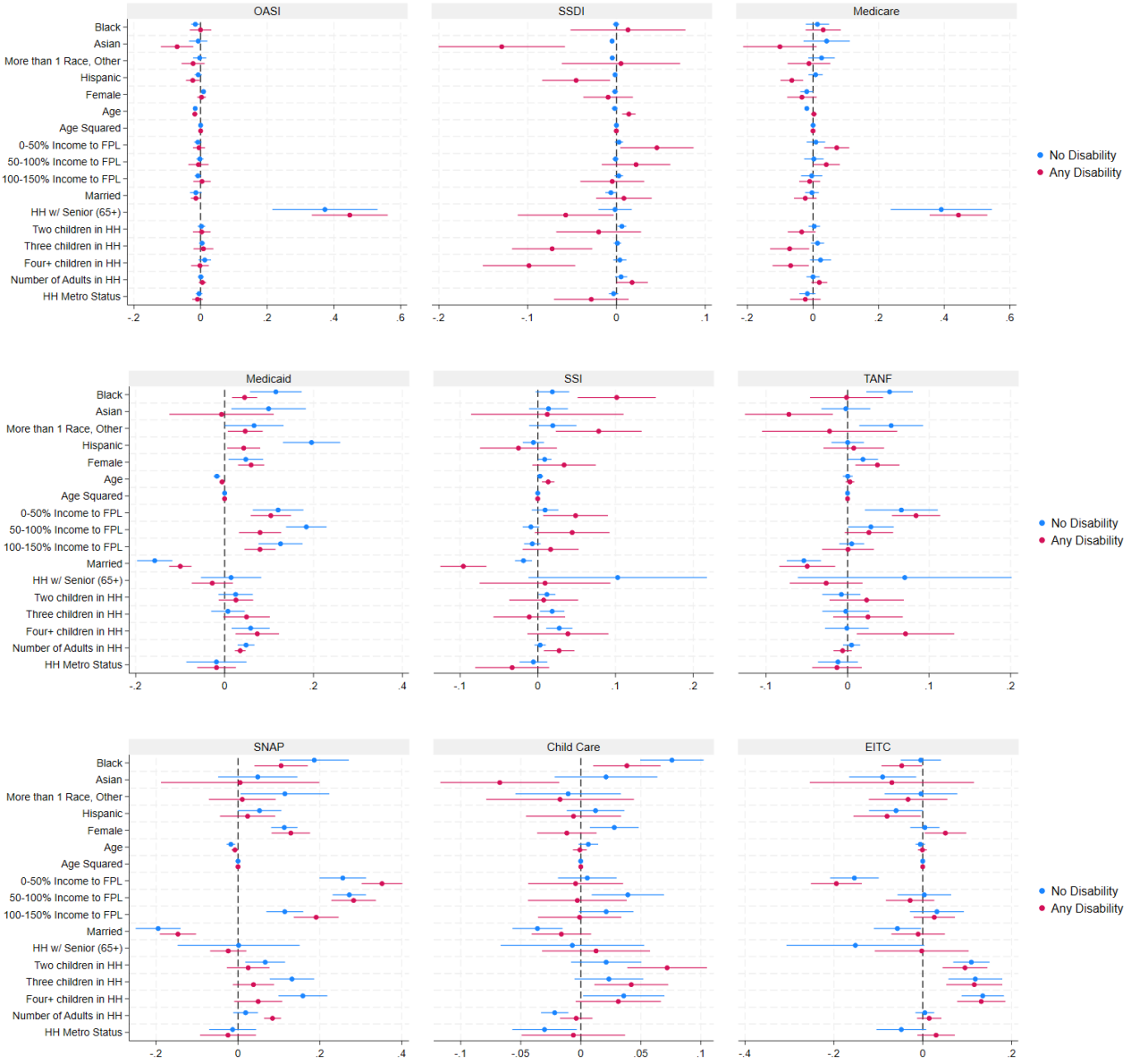
Notes: Households (HH) with no disability are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, is not missing a weight value, and has no members reporting a disability. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. State-level are dropped from table for clarity and can be found in the Appendix Table A3. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001

with any and with no disability, SSDI sees the most selection factors with significant differences across disability status, including having an Asian- or Hispanic-headed household, having three or four children in the household, and age. Medicare sees similarly significant selection factor differences for households with any disability and with no disability, although differences in the probability of participation are no longer significant for Asian-headed households. Medicaid sees significant differences by disability status in the predicted probability of selecting into participation for Hispanic-headed households and households with an IPR of 50 to 100 percent of the FPL. Having a Black-headed household and having a married household differentially predicts selection in SSI for households with any and with no disability, while having an Asian-headed household and a female-headed household differentially predicts probability of participating in subsidized childcare. Finally, coefficients for having four children in the household and for the number of adults in the household are statistically different when predicting the probability of participating in SNAP for households with any and with no disability. In most cases where there are statistical differences in selection factor coefficients across disability status, magnitude and sign of the coefficients suggest that the probability of participation is lower for households with any disability compared to those without. The exceptions are the coefficients for age on probability of participation in SSDI and Medicare, Black-headed households on the probability of participation in SSI, and the number of adults in a household on the probability of SNAP participation, all of which indicate an increased probability of participation for households with any disability compared to those without.

Program Participation Rates across Disability Status, Stratified by Food Insecurity

The final set of analyses incorporates food insecurity as a proxy for understanding additional levels of need at the household level, above and beyond disability. Figure 4 presents the rates of program participation for households with high, marginal, low, and very low food security status to capture differences in the material food need present in a household separately for households with any and with no disability (*see also* Table 10). For households with any disability (Panel A), rates of the number of programs in which a household participates peak at four programs for households with high food security status and at five programs for households with marginal, low, and very low food security status. Participation for all food security statuses decreases after five programs

Figure 3. Comparison of a subset of selection factor coefficients for individual program participation, by households with any disability and no disability



Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019).

but distinctly declines more sharply for marginal, low, and very low food security status households. While households with high and marginal food security are less likely to participate in a higher count of programs than households with low and very low food security status,

participation patterns for marginal food security status more closely mirror patterns of households with low and very low food security status than those of households with high food security status. Surprisingly, marginal food security participation in five or more programs exceeds both low and very low food secure household participation.

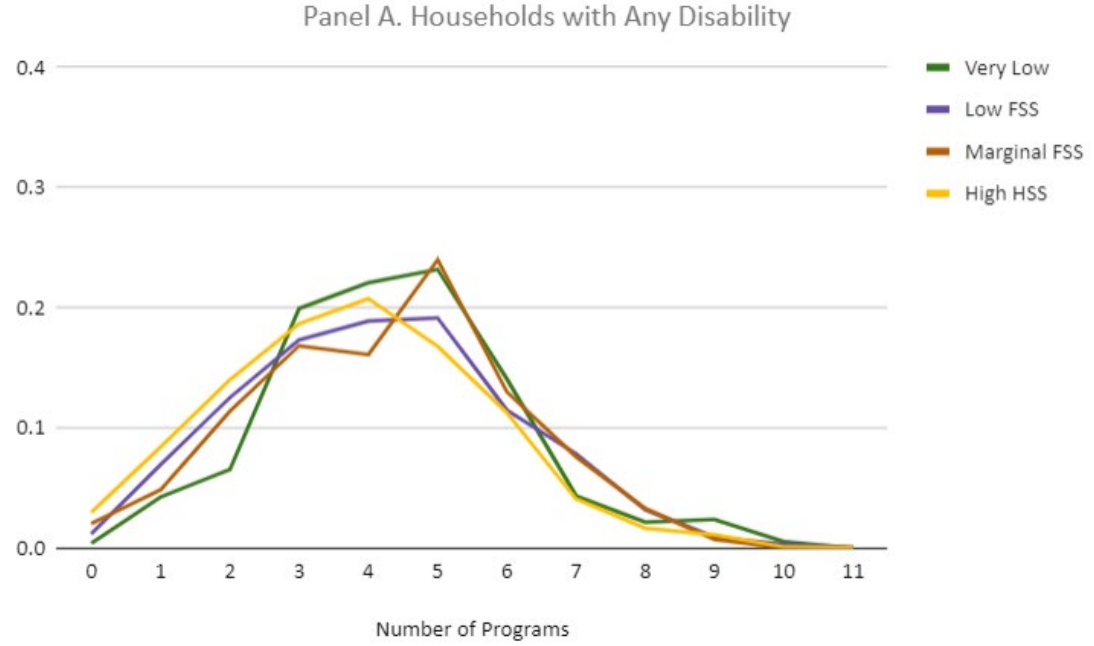
For households with no disability (Panel B), participation peaks for all four food security statuses at three programs. Moreover, patterns of participation across high, marginal, low, and very low food secure households are very similar in shape, with peak participation ranging from about 20 to 30 percent, and sharp declines in participation after three programs. Looking specifically at the magnitude of participation, low food secure households participate at higher rates in three, four, and five programs than households with very low food security, with the two food security statuses' participation levels converging starting at six programs. Starting with four programs, participation levels for marginal food secure households also converge with very low food secure households and then with low food secure households at six programs. Very few households participate in more than six programs, and none participate in more than nine programs. In comparing households with any and with no disability, the range of the number of participated programs is much narrower for households with no disability, and with sharper increases and decreases in participation rates around the peak. For households with any disability, the distribution of the number of participated programs is slightly wider, although there are still sharp declines after peak participation for households with marginal, low, and very low food security.

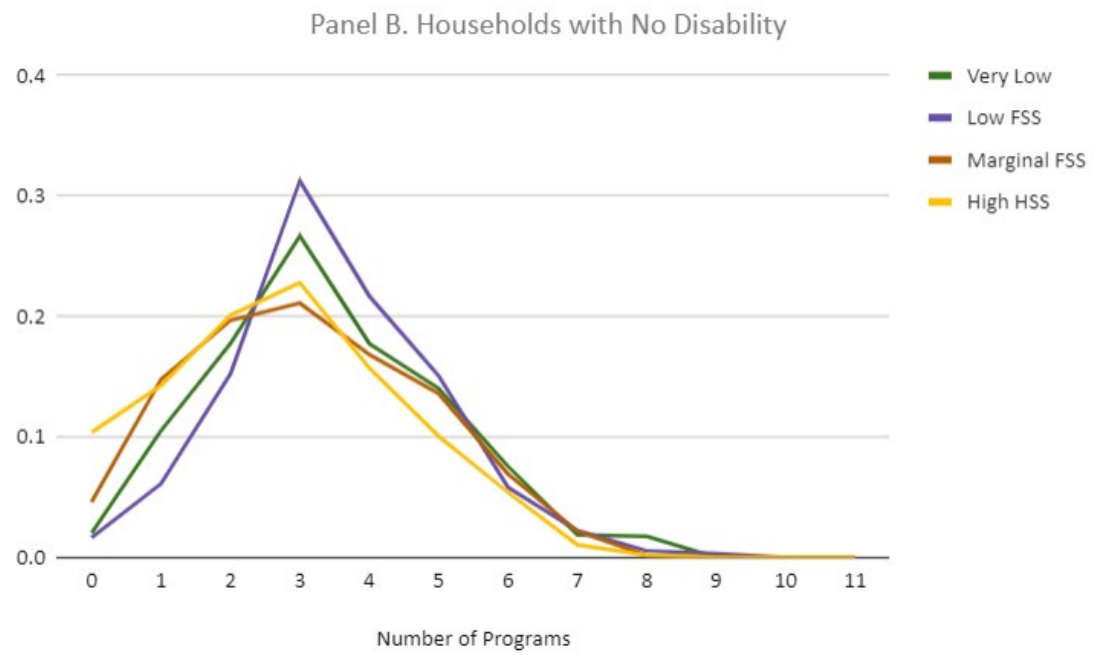
Figure 5 compares individual program participation rates between households with any disability and with no disability, stratified by household food security status (see also Table 11). As in the aggregated analysis, the programs with the highest participation rates for both any and no disability households are Medicaid, SNAP, school food, WIC, and EITC. For households with any disability (Panel A), participation in Medicaid and SNAP is highest for households with very low food security (94.6 percent and 78.9 percent respectively), with rates linearly decreasing as the level of food need in the household improves. Participation rates in WIC, school food, and EITC follow non-linear patterns across food security status. For example, participation in school food programs is lower for households with very low (51.9 percent) and marginal food security (57.2 percent) than for low (57.2 percent) and high food security households (53.9 percent). WIC participation rates are highest for households with very low food security status (57.3 percent) and do decrease as households improve their food security status up to marginal food security;

however, households with high food security participate in WIC at a slightly higher rate (49.2 percent) than households with marginal food security (48.3 percent). Lastly, of the programs with the highest participation rates, participation in EITC only increases as household food security increases up to marginal food secure status, rising from 49.5 percent for households with very low food security up to 63.6 percent for households with marginal food security, but decreases back down to 48.4 percent for households with high food security.

There are a few other programs in which households with any disability either increase or decrease their participation as level of household food need improves. Like EITC, participation patterns in subsidized childcare and housing increases as food security status increases but then drops for households with high food security to levels similar to those of households with very low food security. Participation in UI and OASI also increases as food security status improves, with high food secure households' participation rates remaining equal to or higher than lower levels of food security. Conversely, patterns of participation rates in SSDI and SSI show slight decrease as level of need improves beyond very low food security, with rates leveling off for households with higher food secure statuses. Participation is relatively constant and low for WC (~2 percent), GA (~3 percent), and VA (~3 percent) for households with any disability.

Figure 4. Distribution of the number of social welfare programs in which households with any and with no disability participate, by food security status.

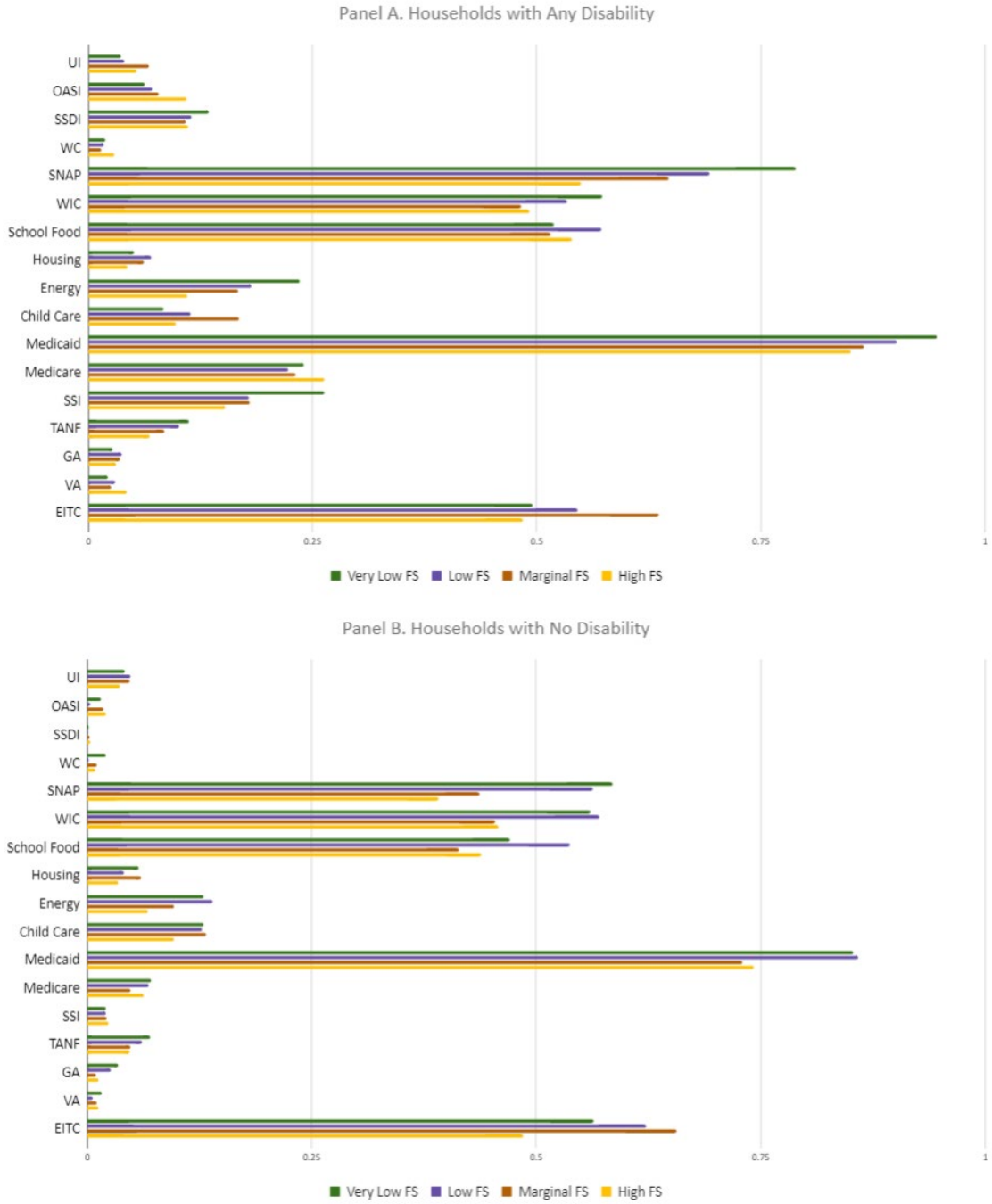




Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019).

For households with no disability (Panel B), participation rates in Medicaid, SNAP, and WIC are similar for very low and low food secure households (~85, 57, and 56 percent, respectively), as well as for marginal and high food secure households (~73, 40, 42 percent, respectively). School food participation rates are the highest for low food secure households (53.7x percent) followed by very low food secure households (47.1x percent) and high food secure households (43.9x percent), with marginal food secure households participating at the lowest rates (41.4x percent). Participation patterns for EITC linearly increase from households with very low food security (56.4x percent) to those with marginal food security (65.7x percent), before dropping back down to 48.5x percent for households with high food security. Participation appears to primarily decrease as food security status improves for TANF and GA, while participation in housing, energy, OASI, WC, and VA fluctuates across the levels of food need, although overall participation rates in the latter three programs are very low no matter a household's food security status. Participation in UI, childcare, Medicare and SSI are relatively level across food security status.

Figure 5. Comparison of individual program participation rates between households with any and with no disability, by food security status.



Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019).

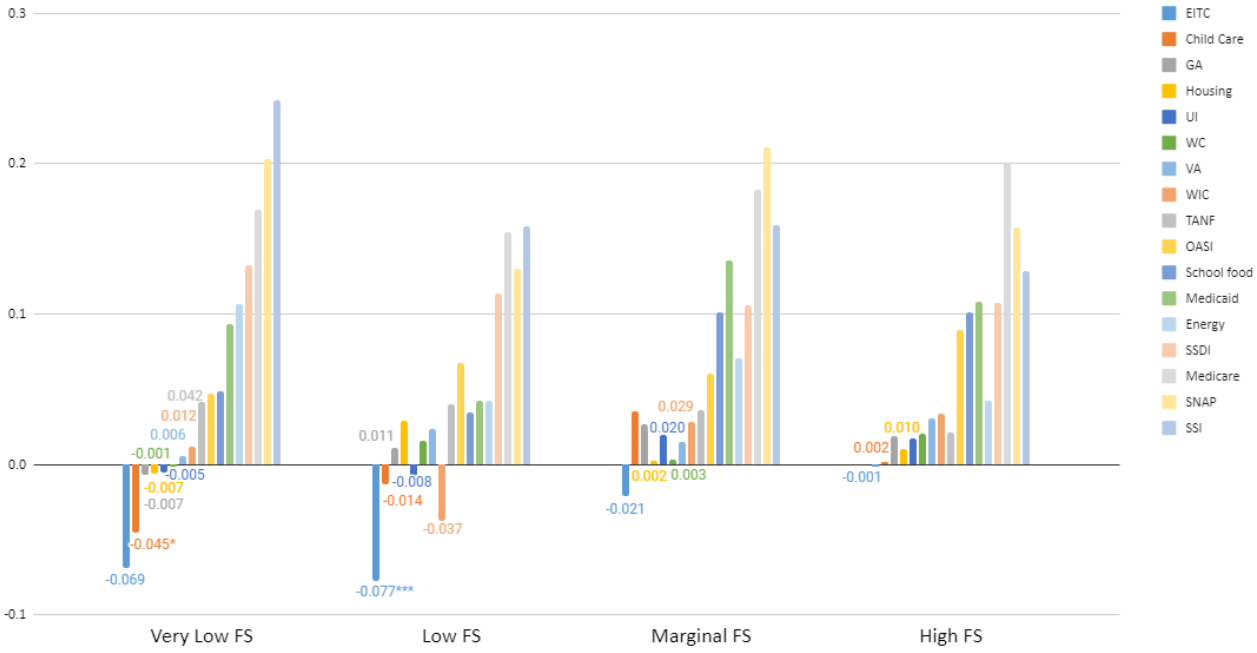
Comparing participation rates stratified by food security across disability status, program participation in any given program is generally higher overall for households with any disability compared to no disability. Holding food security status constant, Figure 6 illustrates this finding by plotting the percentage point differences between households with any and with no disability (see Table 11 for numeric differences) for households with very low, low, marginal, and high food insecurity. Percentage point differences are positive when households with any disability participate more in a given program at a higher rate than those with no disability, while differences are negative when households with no disability participate at a higher rate than those with any disability. The largest participation gaps between households with any and with no disability tend to be in SSI, SNAP, and Medicare across all food security statuses, although the order and magnitude differ depending on the level of food need in the household.

While the gaps in participation between households with any and with no disability can be quite large, they are not unexpected under a theory of selection bias. On the other hand, when differences in participation rates for households with disability are statistically equivalent to zero or even negative compared to households with no disability, it may be indicative of under-participation relative to need. There are two significant, negative differences in program participation between households with any and with no disability. The first and the largest is a -7.72-percentage point difference ($p<0.001$) in participation rates in EITC for low food secure households with any disability (54.6 percent) and with no disability (62.3 percent). The second significant difference in participation across disability status is a -4.53-percentage point ($p<0.05$) gap in subsidized childcare participation for households with very low food security (8.4 percent versus 13.0 percent).

In addition to these two significantly negative differences in participation rates between households with any and no disability, there are several programs for which differences are statistically equivalent to zero. This suggests that participation in these programs does not differ across disability status within a given food security status. Moreover, statistically equivalent program participation more frequently occurs in households with a higher level of need (i.e., very low and low food secure households compared to marginal and high food secure households). For households with a very low food security status, differences in participation rates between households with any disability and no disability are statistically equal to zero ($p>0.05$) for eleven of the seventeen social welfare programs: EITC (-6.9x p.p.), childcare (-4.5 p.p.), GA (-0.7 p.p.),

housing (-0.7 p.p.), UI (-0.5 p.p.), WC (-0.1 p.p.), VA (0.6 p.p.), WIC (1.2 p.p.), TANF (4.2 p.p.), and school food (4.8 p.p.). As well as participating in EITC at statistically lower rates, differences in participation rates for low food secure households with any disability and with no disability are equivalent to zero in an additional five programs: WIC (-0.37 p.p.), childcare (0.14 p.p.), UI (-0.08 p.p.), GA (1.1 p.p.), and school food (3.5 p.p.). There are only five programs for which differences in participation is statistically equivalent to zero across disability status for marginally food secure households: EITC (-2.1 p.p.), housing, (0.2 p.p.), WC (0.3 p.p.), UI (2.0 p.p.), and WIC (2.9 p.p.). Lastly, for high food secure households, the percentage point differences between households with any and no disability are only insignificant for EITC (-0.1 p.p.), childcare (0.2 p.p.), and housing (1.0 p.p.).

Figure 6. Differences in individual program participation rates between households with any and with no disability, by food security status



Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. Counts are based on household participation. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households with no disability are defined as households with no members reporting any of these three kinds of disability. Programs with labeled differences are equivalent across disability status. *p<0.05, **p<0.01, ***p<0.001. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019).

Discussion

Of economically precarious households with young children, those with any disability make up a larger share of participation in the social welfare system than those with no disability present. This is true both of participation in the overall number of programs and in multiple programs concurrently within a given year, as well as of participation within each of the individual programs that make up the social welfare system. Compared to the 2.97 average number of programs participated in by households with no disability, households with any disability participate in 4.05 programs. While 60 percent of households with no disability participate in three or more programs, only 19 percent participate in five or more. This is in contrast with households with any disability, of which almost 79 participate in at least three programs and over 40 participate in five or more programs. For individual social welfare programs, participation in Medicaid has the highest rates for both households with any disability (87.58 percent) and for those with no disability (75.98 percent), while participation is lowest in worker's compensation for households with any disability (2.27 percent) and in SSDI for households with no disability (0.31 percent). Differences in participation rates between households with any and with no disability are largest for SNAP (19.68 p.p.). Participation rates in EITC and subsidized childcare are statistically equivalent across disability status.

Results from this study share patterns to prior work on participation across the social welfare system. For example, Houtenville and Brucker (2014) find that approximately 65 percent of working age persons with disability participate in one or more programs, with that rate increasing to 76 percent if the sample is limited to low-income. The results of this analysis find even higher rates of participation for households; 97.77 percent of households with any disability participate, with this rate increasing up to 99.6 percent for very low food secure households with any disability. The higher magnitude of participation in the current study is unsurprising given the restrictions on the analytic sample to include only low-income households with children younger than six years old, which ostensibly unlocks eligibility for more means-tested or child-specific programs. Moreover, like the results of this paper, Houtenville and Brucker (2014) find higher participation rates in Medicaid, Medicare, and SNAP compared to other social welfare programs. Notably, Houtenville and Brucker (2014) find larger rates of participation in SSDI for households with any disability (22.05 percent) than those found in this paper (11.17 percent). This is likely driven by differences in the analytic samples. Houtenville and Brucker focus their main analytic

sample on working-age (25–61 years old) individuals, while the current paper estimates participation at the household level for low-income heads of all ages. For individuals that are deemed eligible for SSDI, once they reach full retirement age (65–67 years old, depending on year of birth), they are automatically transitioned to OASI, which could help explain why results of this study find lower SSDI participation rates. Additionally, because this paper's analytic sample is more economically precarious than Houtenville and Brucker (2014), it is possible that the sample in this study has a lower employment history, which could lead to ineligibility in SSDI or, at the very least, a lower overall benefit value. This could disincentivize participation if the burden of applying is too high relative to the value of participation.

Even though at the aggregate level households with any disability participate in the social welfare system at higher rates, it should be underscored that overall, households with any disability only participate in one program more, on average, than households with no disability. This is despite being eligible for at least one more program (i.e., SSDI), and potentially more depending on other individual and household-level conditions (e.g., SSI, Medicare, Medicaid). The selection models presented in this paper are intended to help identify why households differ by disability status. Although several significant factors theorized by Heckman and Smith (2004) to predict program participation are significant for both households with any and with no disability, there are not many instances where the comparison of these coefficients differs significantly across disability status. Moreover, differences in coefficients are primarily for SSDI, Medicare, Medicaid, and SSI—in other words, for programs whose eligibility is always or often directly related to disability status. Thus, except for programs for which disability status is endogenous, the selection factors in this study's models do not differ by disability status. This implies that some other underlying, perhaps even unobservable, factors are driving differences in social welfare program participation for programs not tied to disability status. Unpacking why this participation differs is an important question that this paper has begun to explore through selection models, but that remains ripe for further investigation.

Looking at results stratified by food security status can offer additional insights into whether the use of social welfare programs differs across the levels of non-income, material need in the household. The difference in the average number of programs between households with any and with no disability is smaller for those with very low or low food insecurity than for those with marginal and high food security. This finding appears to be driven primarily by low food secure

households with no disability who are participating in three or four programs at notably higher rates than their any disability counterparts with very low, marginal, and high food security status. This could indicate that there is something fundamentally different about the ability of households with no disability to access more programs at a high (but not the highest level) of need. For example, it may be that low food secure households with no disability have low enough economic resources to make them eligible for more means-tested programs than marginal or high food secure households, while at the same time not facing the same economic or social precarity as very low food secure households that could make accessing programs difficult, such as unreliable transportation or inconsistent work schedules.

There is an even clearer picture of participation by level of need across disability status when looking at individual programs that make up the social welfare system: differences in participation rates between households with any disability and households with no disability are smaller and less significant in the presence of greater household need. For those with very low food security, participation rates of more than half of social welfare programs for households with any disability are greater than or indistinguishable from those for households with no disability, compared to only three programs for households with high food secure households. Selection bias would suggest the households with disability should be selecting into program participation at higher rates, which they generally are at the aggregate. However, when holding material need constant and comparing households across disability status with the same level of food security status, the results of this paper find differences to be smaller and less significant when level of need is highest. Based on prior literature finding that households with disability have higher levels of need for social welfare programs on average, it would be expected that they should be participating at higher rates than their counterparts without disability. Thus, it appears that factors stronger than selection bias are influencing program participation, at least when household food insecurity is high. While unable to prove that administrative burden is the cause of this under participation, together with theory, the results plausibly suggest that those with the greatest needs for social welfare programs (i.e., very low food secure households with any disability) may have more difficulty accessing certain social welfare programs than their counterparts without disability or with higher food security.

Limitations

There are some important limitations to this paper. First and foremost, the design of the SIPP's questions about program participation means that this paper can only make reasonable assumptions about a household's eligibility for any given program. Although great lengths are taken to ensure that only eligible households are included in the universe of each program or bundle of programs, it is likely not perfectly representative of reality. If eligibility is systematically misestimated for households with any disability compared to households with no disability or vice versa, then the participation rate estimates could be biased in either direction. Moreover, the timing and duration of employment status and work history are not explored in this paper, but results of this study find lower rates of participation for households with any disability in programs closely connected to labor (e.g., EITC, UI, WC, subsidized childcare). Given this finding, additional analysis is important to determine whether these differences are truly due to the theorized administrative burden hindering access to participation, or if a disconnection to the labor force is driving the gaps in participation. The temporality of participation data is also not uniform across all programs included in this analysis of the social welfare system. Multiple program participation is defined as participation in a set of programs at any point over the previous year. While it seems unlikely at face value given the economic composition of the analytic sample, it is possible that multiple program participation could occur consecutively rather than concurrently, which could theoretically shift the interpretation of administrative burden on program participation.

The cross-sectional use of the data also means that this paper is unable to untangle the causal direction of the relationship between disability, program participation, and need. For example, the results of this study find that households with any disability participate at higher rates in the social welfare system than households with no disability. This finding points to the presence of selection bias, as it is difficult to imagine a scenario where participating in social welfare programs causes a household to experience a disability, or conversely when not participating causes a household to not experience a disability. However, the causal pathway is a little trickier to decipher when looking at food security status as a proxy for household-level need. Differences in program participation when stratified by food security status could suggest that, of those with any and with no disability, households with lower need (e.g., high food security status) are participating at lower rates than those with greater need (e.g., very low food security) because they do not have to rely on social welfare programs to achieve food security. However, this could be

because such households are fundamentally different in their ability to meet their food security and that unobserved difference is also related to their use of program assistance. Without a causal research design, this paper is unable to draw conclusions about which of these pathways is true, but future research can use the findings of this paper to further explore the causal mechanisms of program participation effects on households with disability across various levels of need.

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Appendix

Table A1. Selection factor coefficients on program counts and multiple program participation for households with any disability and households with no disability

	Any Disability			No Disability		
	(1) Count of Programs	(2) Three+ Programs	(3) Five+ Programs	(4) Count of Programs	(5) Three+ Programs	(6) Five+ Programs
Selection Factors:						
Black HHH	0.464405**	0.072240**	0.078219*	0.765764***	0.165478***	0.139513***
	(0.1343)	(0.0232)	(0.032434)	(0.0968)	(0.0304)	(0.022164)
Asian HHH	-0.740171**	-0.0702	-0.099013	0.0683	-0.0031	-0.004082
	(0.2544)	(0.0791)	(0.07147)	(0.1363)	(0.0430)	(0.022252)
Other race HHH	0.1067	0.0303	0.013789	0.342460**	0.095203*	0.054613
	(0.1389)	(0.0272)	(0.048776)	(0.1262)	(0.0429)	(0.03612)
Hispanic HHH	0.0173	0.0441	-0.034219	0.482932***	0.147793***	0.021906
	(0.1231)	(0.0246)	(0.037239)	(0.1117)	(0.0299)	(0.018775)
Female HHH	0.390208***	0.074805***	0.117955***	0.296852***	0.079404***	0.054114***
	(0.0739)	(0.0156)	(0.023651)	(0.0506)	(0.0188)	(0.006049)
Age of HHH	0.0048	-0.0048	0.003286	-0.062980***	-0.020529***	-0.002575
	(0.0215)	(0.0035)	(0.005323)	(0.0172)	(0.0055)	(0.004548)
Age-Squared	0.0001	0.0001	-0.000016	0.000693**	0.000226**	0.000035
	(0.0002)	(0.0000)	(0.000057)	(0.0002)	(0.0001)	(0.000059)
IPR: 0-50%	0.675012***	0.124723***	0.160507***	0.495587***	0.115722***	0.130162***
	(0.0937)	(0.0253)	(0.022667)	(0.0786)	(0.0216)	(0.018648)
IPR: 50-100%	0.603825***	0.135588***	0.133595***	0.756902***	0.184271***	0.159309***
	(0.1018)	(0.0229)	(0.023811)	(0.0776)	(0.0233)	(0.016188)
IPR: 100-150%	0.352730***	0.088728***	0.090022***	0.369318***	0.082424***	0.079700***
	(0.0916)	(0.0211)	(0.023552)	(0.0573)	(0.0234)	(0.013917)
Married status	-0.502060***	-0.081552***	-0.095911***	-0.702199***	-0.167260***	-0.095094***
	(0.0869)	(0.0180)	(0.021822)	(0.0926)	(0.0232)	(0.012798)
Senior (65+)	0.719011***	0.099037***	0.158139***	0.724648*	0.1502	0.120809
	(0.1440)	(0.0199)	(0.034295)	(0.3109)	(0.0764)	(0.079716)
2 children in HH	0.638169***	0.083033***	0.162168***	0.659666***	0.134304***	0.140617***
	(0.0809)	(0.0201)	(0.02202)	(0.0674)	(0.0185)	(0.013814)
3 children in HH	0.741724***	0.135871***	0.145268***	0.864099***	0.195327***	0.164460***
	(0.1101)	(0.0201)	(0.032869)	(0.0739)	(0.0221)	(0.018488)
4 children in HH	0.870818***	0.124690***	0.206362***	1.087436***	0.260261***	0.181437***
	(0.1214)	(0.0255)	(0.029073)	(0.0898)	(0.0296)	(0.019319)
Adults in HH	0.206119***	0.038822***	0.032323**	0.082489*	0.0181	0.005087
	(0.0344)	(0.0108)	(0.010768)	(0.0365)	(0.0134)	(0.009835)
HH metro status	-0.2026	-0.0337	-0.039175	-0.248101*	-0.0385	-0.041116
	(0.1220)	(0.0221)	(0.031191)	(0.1183)	(0.0301)	(0.022235)
SNAP spending	0.0001**	0.000001**	0.000001	-.00001	0.0001	-0.000001
	(0.0000)	0.0000	(0.000001)	(0.0000)	(0.0000)	(0.000001)
SNAP PAI	-0.1578	-0.2251	-0.0031	-0.6030	0.1324	-0.265512*
	(0.7564)	(0.1934)	(0.185814)	(0.4664)	(0.2043)	(0.119352)
MGI	0.0119	0.007628*	0.000606	0.0036	0.0008	-0.002198
	(0.0128)	(0.0030)	(0.003469)	(0.0088)	(0.0027)	(0.001872)
UI benefit	0.0036	0.0027	0.002799	0.0025	0.0082	-0.000845
	(0.0168)	(0.0035)	(0.004261)	(0.0122)	(0.0057)	(0.002797)
OASI benefit	0.0061	-0.0010	0.003749	0.0070	-0.0013	0.002774
	(0.0080)	(0.0021)	(0.002396)	(0.0062)	(0.0018)	(0.001501)

SSDI benefit	0.0034	0.0011	0.000005	-0.0075	-0.0051	0.001609
	(0.0151)	(0.0038)	(0.004046)	(0.0106)	(0.0035)	(0.001946)
WC benefit	4.0674	0.9398	0.534915	-0.7924	1.1728	-0.130041
	(2.7878)	(0.4847)	(1.272767)	(3.6991)	(1.0458)	(0.579738)
SNAP benefit	0.0307	0.027241*	0.010381	0.1101	-0.0005	0.033922*
	(0.0315)	(0.0108)	(0.016099)	(0.0609)	(0.0158)	(0.013228)
Housing benefit	0.0000	0.0000	-0.000051*	0.0000	0.0000	0.000012
	(0.0001)	(0.0000)	(0.000023)	(0.0001)	(0.0000)	(0.000025)
Energy benefit	0.0003	0.0000	-0.000037	-0.0005	-0.0001	-0.00008
	(0.0005)	(0.0001)	(0.000133)	(0.0007)	(0.0002)	(0.000132)
Childcare benefit	-0.0001	0.0000	-0.000014	-0.0001	0.0000	-0.000014
	(0.0001)	(0.0000)	(0.000028)	(0.0001)	(0.0000)	(0.000026)
Medicaid benefit	0.0000	0.0000	-0.000017	0.0000	0.0000	-0.000075
	(0.0003)	(0.0001)	(0.000088)	(0.0002)	(0.0001)	(0.000053)
Medicare benefit	-0.0001	0.0000	-0.000009	-0.0001	0.0000	-0.000006
	(0.0001)	(0.0000)	(0.000021)	(0.0001)	(0.0000)	(0.000017)
SSI benefit	-0.0067	-0.0009	-0.001032	-0.010544*	-0.0026	-0.001658
	(0.0056)	(0.0009)	(0.002233)	(0.0051)	(0.0014)	(0.001193)
TANF benefit	-0.0001	0.0000	0.000021	0.0001	0.0000	-0.000021
	(0.0001)	(0.0000)	(0.000029)	(0.0001)	(0.0000)	(0.000021)
VA benefit	0.0000	0.0000	-0.000001	0.0000	0.0000	0.000015
	(0.0000)	(0.0000)	(0.000003)	(0.0001)	(0.0000)	(0.00001)
EITC benefit	0.1924	0.0196	0.177677**	-0.3126	-0.1162	0.078496*
	-0.1996	-0.0722	(0.062956)	-0.2124	-0.0667	(0.0361)
State F.E.	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X
Observations	3,732	3,732	3,732	4,504	4,504	4,504

Notes: Households (HH) are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001.

Table A2. Selection factor coefficients on participation in individual programs for households with any disability

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
Selection Factors:									
Black HHH	-0.0001	0.0128	0.0312	0.0451**	0.1016***	-0.0013	0.1054**	0.0384**	-0.0472*
	(0.0160)	(0.0322)	(0.0267)	(0.0141)	(0.0250)	(0.0223)	(0.0324)	(0.0140)	(0.0227)
Asian HHH	-0.0704**	-0.1295***	-0.1007	-0.0067	0.0122	-0.0720**	0.0052	-0.0675**	-0.0694
	(0.0242)	(0.0353)	(0.0558)	(0.0585)	(0.0488)	(0.0268)	(0.0962)	(0.0247)	(0.0920)
Other race HHH	-0.0224	0.0061	-0.0123	0.0465*	0.0784**	-0.0221	0.0105	-0.0173	-0.0330
	(0.0172)	(0.0332)	(0.0323)	(0.0195)	(0.0275)	(0.0413)	(0.0406)	(0.0306)	(0.0440)
Hispanic HHH	-0.0233*	-0.0457*	-0.0645***	0.0430*	-0.0249	0.0076	0.0235	-0.0061	-0.0802*
	(0.0102)	(0.0193)	(0.0172)	(0.0185)	(0.0246)	(0.0185)	(0.0336)	(0.0197)	(0.0376)
Female HHH	0.0029	-0.0099	-0.0336	0.0598***	0.0338	0.0366**	0.1292***	-0.0116	0.0510*
	(0.0065)	(0.0139)	(0.0224)	(0.0146)	(0.0203)	(0.0135)	(0.0234)	(0.0123)	(0.0234)
Age of HHH	-0.0172***	0.0139***	0.0028	-0.0057	0.0134**	0.0029	-0.0074	-0.0008	-0.0007
	(0.0034)	(0.0037)	(0.0043)	(0.0029)	(0.0040)	(0.0026)	(0.0041)	(0.0029)	(0.0050)
Age-Squared	0.0002***	-0.0001*	0.0000	0.0001	-0.0001**	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
IPR: 0-50%	-0.0048	0.0452*	0.0723***	0.1041***	0.0486*	0.0840***	0.3521***	-0.0043	-0.1943***
	(0.0091)	(0.0207)	(0.0191)	(0.0226)	(0.0207)	(0.0147)	(0.0247)	(0.0197)	(0.0285)
IPR: 50-100%	-0.0064	0.0223	0.0406	0.0798**	0.0442	0.0262	0.2827***	-0.0029	-0.0284
	(0.0150)	(0.0193)	(0.0206)	(0.0236)	(0.0239)	(0.0148)	(0.0271)	(0.0205)	(0.0271)
IPR: 100-150%	0.0043	-0.0046	-0.0102	0.0797***	0.0165	0.0005	0.1911***	-0.0010	0.0259
	(0.0131)	(0.0180)	(0.0159)	(0.0174)	(0.0179)	(0.0158)	(0.0273)	(0.0173)	(0.0232)
Married status	-0.0140	0.0082	-0.0235	-0.0996***	-0.0958***	-0.0495**	-0.1468***	-0.0162	-0.0103
	(0.0075)	(0.0155)	(0.0172)	(0.0125)	(0.0148)	(0.0170)	(0.0220)	(0.0123)	(0.0300)
Senior (65+)	0.4476***	-0.0556*	0.4435***	-0.0277	0.0093	-0.0263	-0.0238	0.0127	-0.0022
	(0.0566)	(0.0271)	(0.0438)	(0.0230)	(0.0419)	(0.0222)	(0.0220)	(0.0224)	(0.0526)
2 children in HH	0.0035	-0.0205	-0.0344	0.0256	0.0076	0.0234	0.0250	0.0719***	0.0950***
	(0.0131)	(0.0237)	(0.0211)	(0.0193)	(0.0220)	(0.0227)	(0.0259)	(0.0165)	(0.0251)
3 children in HH	0.0086	-0.0730**	-0.0712*	0.0494	-0.0110	0.0250	0.0379	0.0420**	0.1160***
	(0.0149)	(0.0225)	(0.0297)	(0.0261)	(0.0230)	(0.0213)	(0.0251)	(0.0153)	(0.0314)
4 children in HH	-0.0018	-0.0989***	-0.0680*	0.0737**	0.0387	0.0711*	0.0494	0.0312	0.1317***
	(0.0133)	(0.0258)	(0.0275)	(0.0243)	(0.0259)	(0.0297)	(0.0292)	(0.0177)	(0.0270)
Adults in HH	0.0055	0.0176	0.0194	0.0352***	0.0275**	-0.0061	0.0845***	-0.0038	0.0146
	(0.0055)	(0.0088)	(0.0120)	(0.0060)	(0.0098)	(0.0056)	(0.0103)	(0.0067)	(0.0136)
HH metro status	-0.0092	-0.0280	-0.0234	-0.0180	-0.0330	-0.0130	-0.0244	-0.0062	0.0301
	(0.0079)	(0.0209)	(0.0232)	(0.0216)	(0.0237)	(0.0151)	(0.0340)	(0.0214)	(0.0210)
SNAP spending	0.0000	0.0000	0.0000	0.0000	0.000002*	0.000001**	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SNAP PAI	-0.149490*	0.1328	0.0523	-0.2328	-0.0159	0.0063	-0.0176	-0.0638	0.422175*
	(0.0681)	(0.1009)	(0.1688)	(0.1485)	(0.0959)	(0.0936)	(0.1912)	(0.1178)	(0.1773)
MGI	-0.0005	-0.0011	0.0040	0.0027	0.004335*	-0.0014	0.0003	0.0016	-0.008237*
	(0.0013)	(0.0018)	(0.0025)	(0.0020)	(0.0017)	(0.0018)	(0.0029)	(0.0021)	(0.0036)
OASI benefit	0.0001								
	(0.0009)								
SSDI benefit		-0.0042							
		(0.0024)							
SNAP benefit							0.0048		

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
							(0.0200)		
Childcare benefit								0.0000	
								(0.0000)	
Medicaid benefit				0.0000					
				(0.0000)					
Medicare benefit			0.0000						
			(0.0001)						
SSI benefit					0.0003				
					(0.0014)				
TANF benefit						0.0000			
						(0.0000)			
EITC benefit									-0.0205
									(0.0455)
State F.E.	X	X	X	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X	X	X	X
Observations	4,522	4,522	4,522	4,522	4,522	3,811	3,811	4,504	4,522

Notes: Households (HH) with no disability are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, is not missing a weight value, and has no members reporting a disability. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001.

Table A3. Selection factor coefficients on participation in individual programs for households with no disability

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
Selection Factors:									
Black HHH	-0.0155*	-0.0004	0.0135	0.1154***	0.0187	0.0515***	0.1864***	0.0759***	-0.0043
	(0.0062)	(0.0017)	(0.0177)	(0.0290)	(0.0108)	(0.0142)	(0.0421)	(0.0131)	(0.0226)
Asian HHH	-0.0068	-0.0049***	0.0418	0.0991*	0.0137	-0.0021	0.0484	0.0210	-0.090266*
	(0.0137)	(0.0013)	(0.0351)	(0.0417)	(0.0125)	(0.0149)	(0.0483)	(0.0213)	(0.0376)
Other race HHH	-0.0032	-0.0048**	0.0262	0.0664	0.0193	0.0535**	0.1147*	-0.0105	-0.0039
	(0.0098)	(0.0015)	(0.0201)	(0.0331)	(0.0152)	(0.0195)	(0.0540)	(0.0219)	(0.0408)
Hispanic HHH	-0.0068	-0.0015	0.0079	0.1957***	-0.0057	0.0001	0.0527	0.0123	-0.0600
	(0.0052)	(0.0013)	(0.0108)	(0.0321)	(0.0068)	(0.0099)	(0.0265)	(0.0120)	(0.0302)
Female HHH	0.0087*	-0.0016	-0.0190	0.0478*	0.0089*	0.0189*	0.1132***	0.0279**	0.0048
	(0.0036)	(0.0017)	(0.0098)	(0.0194)	(0.0043)	(0.0092)	(0.0160)	(0.0101)	(0.0164)
Age of HHH	-0.0161***	-0.0019	-0.0188***	-0.0173***	0.0029	0.0002	-0.0174**	0.0063	-0.0054
	(0.0032)	(0.0016)	(0.0031)	(0.0038)	(0.0020)	(0.0030)	(0.0052)	(0.0041)	(0.0053)
Age-Squared	0.0002***	0.0000	0.0003***	0.0002**	0.0000	0.0000	0.0002*	-0.0001	0.0001
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0001)
IPR: 0–50%	-0.0077	0.0029	0.0089	0.1205***	0.0094	0.0660**	0.2562***	0.0054	-0.1538***
	(0.0053)	(0.0023)	(0.0140)	(0.0283)	(0.0086)	(0.0223)	(0.0284)	(0.0121)	(0.0272)
IPR: 50–100%	-0.0016	-0.0010	0.0028	0.1839***	-0.0089	0.0286*	0.2721***	0.039197*	0.0036
	(0.0053)	(0.0017)	(0.0148)	(0.0227)	(0.0053)	(0.0139)	(0.0203)	(0.0150)	(0.0300)
IPR: 100–150%	-0.0077	0.0027	-0.0040	0.1260***	-0.0071	0.0050	0.1144***	0.0211	0.0319
	(0.0047)	(0.0024)	(0.0161)	(0.0247)	(0.0053)	(0.0076)	(0.0224)	(0.0113)	(0.0302)
Married status	-0.0142	-0.0062	-0.0031	-0.1572***	-0.0184**	-0.0536***	-0.1951***	-0.0361**	-0.0570*
	(0.0087)	(0.0031)	(0.0105)	(0.0198)	(0.0054)	(0.0104)	(0.0273)	(0.0104)	(0.0264)
Senior (65+)	0.3726***	-0.0016	0.3911***	0.0146	0.1028	0.0701	0.0016	-0.0070	-0.1515
	(0.0788)	(0.0093)	(0.0768)	(0.0338)	(0.0572)	(0.0653)	(0.0743)	(0.0298)	(0.0772)
2 children in HH	0.0026	0.0061*	0.0039	0.0249	0.0117*	-0.0076	0.0666**	0.0211	0.1094***
	(0.0056)	(0.0024)	(0.0086)	(0.0193)	(0.0054)	(0.0116)	(0.0242)	(0.0146)	(0.0203)
3 children in HH	0.0041	0.0011	0.0139	0.0075	0.0185*	-0.0022	0.1319***	0.0234	0.1184***
	(0.0045)	(0.0021)	(0.0100)	(0.0188)	(0.0078)	(0.0144)	(0.0270)	(0.0142)	(0.0302)
4 children in HH	0.0124	0.0039	0.0231	0.0588**	0.0276**	-0.0009	0.1586***	0.0358*	0.1350***
	(0.0093)	(0.0037)	(0.0160)	(0.0213)	(0.0084)	(0.0134)	(0.0298)	(0.0169)	(0.0237)
Adults in HH	0.0011	0.0052	0.0002	0.0483***	0.0030	0.0049	0.0187	-0.0217***	0.0047
	(0.0045)	(0.0034)	(0.0100)	(0.0095)	(0.0036)	(0.0052)	(0.0150)	(0.0057)	(0.0105)
HH metro status	-0.0046	-0.0032	-0.0171	-0.0183	-0.0057	-0.0118	-0.0131	-0.0302*	-0.0481
	(0.0049)	(0.0026)	(0.0123)	(0.0337)	(0.0089)	(0.0122)	(0.0286)	(0.0134)	(0.0279)
SNAP spending	0.0000	0.0000	0.0000	-0.00001**	0.0000	0.0000	-0.000001*	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SNAP PAI	-0.0398	-0.0035	-0.0868	-0.0883	0.0516	0.0058	0.257897*	0.0523	-0.0280
	(0.0373)	(0.0155)	(0.1042)	(0.0877)	(0.0478)	(0.0903)	(0.1248)	(0.1162)	(0.2386)
MGI	-0.000810*	0.0000	0.0011	-0.0013	0.0001	-0.0012	-0.0020	0.0000	-0.0028
	(0.0004)	(0.0002)	(0.0016)	(0.0017)	(0.0009)	(0.0008)	(0.0023)	(0.0011)	(0.0029)
OASI benefit	-0.0009								
	(0.0006)								
SSDI benefit		0.0001							
		(0.0002)							
SNAP benefit							0.0124		

	(1) OASI	(2) SSDI	(3) Medicare	(4) Medicaid	(5) SSI	(6) TANF	(7) SNAP	(8) Childcare	(9) EITC
							(0.0161)		
Childcare benefit								0.0000	
								(0.0000)	
Medicaid benefit				0.0000					
				(0.0000)					
Medicare benefit			0.0000						
			(0.0000)						
SSI benefit					-0.0003				
					(0.0003)				
TANF benefit						0.0000			
						(0.0000)			
EITC benefit									-0.0658
									(0.0423)
State F.E.	X	X	X	X	X	X	X	X	X
Year F.E.	X	X	X	X	X	X	X	X	X
Observations	4,522	4,522	4,522	4,522	4,522	3,811	3,811	4,504	4,522

Notes: Households (HH) with no disability are included in the sample if the household head is over the age of 18, has an annual household income less than 200 percent of the federal poverty line, has a child less than six years old, is not missing a weight value, and has no members reporting a disability. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a functional, work-limiting, or child disability, while households without disability are defined as no members reporting any of these three kinds of disability. Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). Selection factor coefficients on program participation are estimated using linear regression with year and state fixed effects. Robust standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001.

Table A4. Comparison of number of and multiple program participation rates with any and no disability, stratified by food security status

	Any Disability	No Disability	Difference	Standard error
Panel A. VLFS	*n=533*	*n=297*		
Any program	0.996	0.980	0.016*	0.007
0 programs	0.004	0.021	-0.016*	0.007
1	0.043	0.105	-0.063***	0.018
2	0.066	0.178	-0.112***	0.023
3	0.200	0.267	-0.067*	0.031
4	0.221	0.178	0.043	0.030
5	0.232	0.140	0.092**	0.030
6	0.141	0.076	0.065***	0.024
7	0.043	0.019	0.025	0.014
8+	0.022	0.018	0.004*	0.010
3 or more	0.888	0.697	0.191***	0.028
5 or more	0.468	0.252	0.215***	0.036
Average #	4.410	3.398	1.012***	0.076
Panel B. LFS	*n=729*	*n=561*		
Any program	0.988	0.984	0.005	0.007
0 programs	0.012	0.017	-0.005	0.007
1	0.070	0.061	0.008	0.014
2	0.125	0.153	-0.027	0.019
3	0.173	0.313	-0.139***	0.024
4	0.189	0.217	-0.028	0.023
5	0.191	0.151	0.041	0.021
6	0.115	0.058	0.057***	0.016
7	0.079	0.022	0.056***	0.013
8+	0.046	0.009	0.037***	0.010
3 or more	0.793	0.770	0.024	0.023
5 or more	0.431	0.240	0.191***	0.027
Average #	4.180	3.505	0.675***	0.072
Panel C. MFS	*n=770*	*n=1,155*		
Any program	0.979	0.954	0.025**	0.009
0 programs	0.021	0.046	-0.025**	0.009
1	0.049	0.148	-0.099***	0.015
2	0.114	0.197	-0.083***	0.017
3	0.168	0.211	-0.043**	0.018
4	0.161	0.169	-0.007	0.017
5	0.240	0.136	0.104***	0.018
6	0.130	0.069	0.061***	0.014
7	0.076	0.022	0.054***	0.010
8+	0.041	0.002	0.039***	0.006
3 or more	0.817	0.609	0.208***	0.022
5 or more	0.487	0.230	0.258***	0.022
Average #	4.276	3.117	1.159***	0.067
Panel D. HFS	*n=1,749*	*n=2,567*		
Any program	0.970	0.896	0.074***	0.008
0 programs	0.030	0.104	-0.074***	0.008
1	0.084	0.143	-0.059***	0.010
2	0.140	0.201	-0.061***	0.012
3	0.187	0.228	-0.041**	0.013
4	0.208	0.157	0.050***	0.012

	Any Disability	No Disability	Difference	Standard error
5	0.168	0.101	0.068***	0.010
6	0.113	0.054	0.059***	0.008
7	0.041	0.011	0.031***	0.005
8+	0.030	0.002	0.028***	0.004
3 or more	0.746	0.552	0.194***	0.015
5 or more	0.352	0.167	0.185***	0.013
Average #	3.814	2.774	1.039***	0.045

Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income of less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households without disability are defined as no members reporting a functional, work-limiting, or child disability. Unconditional participation looks at any participation, while conditional participation calculates the rates of participation given that a household participates in at least one program. The analytic sample is stratified by food security status. HFS is when a household has no reported indications of food-access problems or limitations. MFS is when a household reports one or two indications of food-access problems or limitations but little or no indication in change of diet. LFS is when a household reports reduced quality, variety, or desirability of diet, but typically with little or no indication of reduced food intake. VLFS is when a household reports multiple indications of disrupted eating patterns and reduced food intake (USDA, 2022). Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). *p<0.05, **p<0.01, ***p<0.001.

Table A5. Comparison of individual program participation rates across disability status, stratified by food security status

	Any Disability	No Disability	Difference	Standard error
Panel A. VLFS	*n=533*	*n=297*		
UI	0.036	0.042	**-0.005**	0.014
OASI	0.063	0.016	0.0473**	0.016
SSDI	0.134	0.001	0.1327***	0.021
WC	0.019	0.021	**-0.001**	0.010
SNAP	0.789	0.586	0.2034***	0.036
WIC	0.573	0.561	**0.012**	0.040
School food	0.519	0.471	**0.048**	0.039
Housing	0.051	0.058	**-0.007**	0.017
Energy	0.236	0.129	0.1066***	0.030
Childcare	0.084	0.130	**-0.0453***	0.022
Medicaid	0.946	0.853	0.0933***	0.021
Medicare	0.241	0.071	0.1694***	0.029
SSI	0.263	0.021	0.2425***	0.028
TANF	0.112	0.071	**0.042**	0.024
GA	0.027	0.034	**-0.007**	0.014
VA	0.022	0.016	**0.006**	0.010
EITC	0.495	0.564	**-0.069**	0.037
Panel B. LFS	*n=729*	*n=561*		
UI	0.040	0.048	**-0.008**	0.012
OASI	0.072	0.004	0.0678***	0.011
SSDI	0.115	0.001	0.1137***	0.014
WC	0.017	0.001	0.0157**	0.006
SNAP	0.693	0.563	0.1301***	0.029
WIC	0.533	0.571	**-0.037**	0.031
School food	0.572	0.537	**0.035**	0.029
Housing	0.070	0.041	0.0293*	0.013
Energy	0.182	0.139	0.0428*	0.021
Childcare	0.114	0.128	**-0.014**	0.018
Medicaid	0.901	0.859	0.0426*	0.018
Medicare	0.223	0.068	0.1546***	0.020
SSI	0.179	0.021	0.1581***	0.018
TANF	0.101	0.061	0.0402*	0.017
GA	0.038	0.027	**0.011**	0.011
VA	0.030	0.006	0.0239**	0.008
EITC	0.546	0.623	**-0.0772***	0.028
Panel C. MFS	*n=770*	*n=1,155*		
UI	0.067	0.047	**0.020**	0.011
OASI	0.079	0.018	0.0606***	0.009
SSDI	0.108	0.003	0.1057***	0.010
WC	0.014	0.011	**0.003**	0.005
SNAP	0.648	0.437	0.2109***	0.024
WIC	0.483	0.454	**0.029**	0.024
School food	0.515	0.414	0.1012***	0.024
Housing	0.062	0.060	**0.002**	0.011
Energy	0.167	0.097	0.0704***	0.015
Childcare	0.168	0.133	0.0353*	0.017
Medicaid	0.865	0.729	0.1353***	0.019
Medicare	0.231	0.049	0.1823***	0.015
SSI	0.180	0.021	0.1588***	0.013

	Any Disability	No Disability	Difference	Standard error
TANF	0.085	0.049	0.0358**	0.012
GA	0.036	0.009	0.0264***	0.007
VA	0.026	0.011	0.015*	0.006
EITC	0.636	0.657	**-0.021**	0.022
Panel D. HFS	*n=1,749*	*n=2,567*		
UI	0.054	0.036	0.0175**	0.006
OASI	0.110	0.020	0.0894***	0.007
SSDI	0.112	0.004	0.1077***	0.007
WC	0.029	0.009	0.0202***	0.004
SNAP	0.549	0.391	0.1578***	0.017
WIC	0.492	0.458	0.0337*	0.017
School food	0.539	0.439	0.1008***	0.016
Housing	0.044	0.034	**0.010**	0.006
Energy	0.110	0.068	0.0425***	0.009
Childcare	0.098	0.097	**0.002**	0.009
Medicaid	0.850	0.742	0.1079***	0.013
Medicare	0.263	0.063	0.2003***	0.011
SSI	0.152	0.024	0.1284***	0.008
TANF	0.069	0.047	0.0214**	0.008
GA	0.031	0.013	0.0186***	0.005
VA	0.043	0.013	0.0303***	0.005
EITC	0.484	0.485	**-0.001**	0.016

Notes: Households are included in the sample if the household head is over the age of 18, has an annual household income of less than 200 percent of the federal poverty line, has a child less than six years old, and is not missing a weight value. A household is considered to participate in a given program if any member of the household participated in the last calendar year. Rates of participation are weighted to the household head. Households with any disability are defined as any member in the household reporting a function, work-limiting, or child disability, while households without disability are defined as no members reporting a functional, work-limiting, or child disability. Unconditional participation looks at any participation, while conditional participation calculates the rates of participation given that a household participates in at least one program. The analytic sample is stratified by food security status. HFS is when a household has no reported indications of food-access problems or limitations. MFS is when a household reports one or two indications of food-access problems or limitations but little or no indication in change of diet. LFS is when a household reports reduced quality, variety, or desirability of diet, but typically with little or no indication of reduced food intake. VLFS is when a household reports multiple indications of disrupted eating patterns and reduced food intake (USDA, 2022). Data is from SIPP (Panels 2014, 2018; and Year 2018 and 2019). *p<0.05, **p<0.01, ***p<0.001. Bolded estimates indicate that participation rates by households with disability are statistically lower or equivalent to rates by households with no disability.