Exploring How People's Characteristics, Contexts, and Life Events Predict Early Adult Participation in Supplemental Security Income

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Executive summary

Supplemental Security Income (SSI) provides a safety net for millions of young adults with significant disabilities. Although most SSI participants do not work, many want to do so, potentially because working can provide a substantially higher income than SSI participation and improve quality of life in other ways (Mueser et al. 2016). For example, survey reports suggest that 45 percent of SSI participants have work-related goals or expectations (Livermore 2011). Nevertheless, only a small percentage of those who participate in SSI as young adults ever work enough to forgo SSI benefits (Ben-Shalom and Stapleton 2015). Evidence suggests that the disparity between aspiration to work and reality arises because SSI participants with disabilities have trouble finding suitable jobs or are concerned about losing their benefits or health insurance if they gain employment (Livermore et al. 2017; MacDonald-Wilson et al. 2003; McQuilken et al. 2003).

Past efforts to improve the employment outcomes of people after they have applied for SSI have not been very fruitful (Nichols et al. 2021). Policy analysts have speculated that efforts to help these individuals firmly establish themselves in the labor force *before* they apply for SSI might be more successful. However, providing vocational services to people before they apply for SSI is challenging because it requires identifying in advance those who are likely to apply for SSI later.

This research aims to inform those who study, develop, or provide technical assistance to programs offering employment services to young adults who are potential SSI participants—those with a greater likelihood of future participation relative to their peers but who have not yet participated. We used long-term longitudinal data for youth and young adults to determine which factors predict their later participation in SSI. Predictors included personal characteristics (such as sex), contexts (such as participation in SSI as a child and opportunities for employment), and life events (such as health status or completion of education). This information could be used to identify young adults who might benefit from needs-based vocational supports to attain their employment goals before they apply for SSI, potentially leading to increased lifetime earnings and quality of life.

Mathematica conducted this study as part of the Next Generation of Enhanced Employment Strategies (NextGen) Project on behalf of the Office of Planning, Research, and Evaluation (OPRE) in the Administration for Children and Families, U.S. Department of Health and Human. The NextGen Project is part of OPRE's Innovative Strategies for Addressing Employment Barriers Portfolio, which seeks to rigorously evaluate the "next generation" of employment strategies for individuals with low incomes, and is partnering with the Social Security Administration on select evaluations. Consistent with the aims of supporting people's long-term employment goals, some of those approaches are aimed at helping people secure employment and thereby reduce their need for SSI.

Research questions

The report addresses the following research questions:

1. At what age do people with different characteristics and in different contexts first participate in SSI as adults?
2. Which life events precede SSI participation? Do they vary by the age of first SSI participation as an adult?
3. Which individual characteristics, contexts, and life events are most predictive of SSI participation as an adult?

4. To what extent do combinations of characteristics, contexts, and life events accurately predict SSI participation as an adult?

Data and framework

To answer these research questions, this study primarily used data from the National Longitudinal Study of Youth 1997 (NLSY97), a national sample of approximately 9,000 youth who were aged 12 to 18 at the start of 1997. The total sample included a cross-sectional sample of about 6,750 youth, designed to be nationally representative, and a supplemental sample of approximately 2,250 youth that oversampled Black and Hispanic or Latino youth. To improve the precision of our estimates, we included both samples in our analyses. The NLSY97 survey has been administered in 18 rounds, starting in 1997 and continuing through 2019. It collects longitudinal data that span a wide range of topics, including educational attainment, training receipt (including government-funded programs), employment, family and household background, marital history, health, childbirth, and involvement with the criminal justice system. It also collects longitudinal information on participation in government programs, including public assistance. We also used data from the Bureau of Labor Statistics Local Area Unemployment Statistics (LAUS) Survey on annual unemployment rates by census region to capture macroeconomic trends.

To align our analyses with the goal of the study, we developed a framework to outline how variables might be predictive of SSI participation (Exhibit ES.1). In the framework, people's participation in SSI depends on three drivers: (1) knowledge of SSI and support in applying for it; (2) a need for financial support; and (3) their likelihood of eligibility for SSI. These three drivers are not mutually exclusive. For example, eligibility for SSI is partly based on income, which relates to financial need.

The variables we selected included measures of characteristics, contexts, and life events that we expected to be predictive of SSI participation based on past evidence or theory. These included sex, race and ethnicity, parents' education, census region of residence, marital status, self-reported health status, and other variables.

Exhibit ES.1. Pathways through which characteristics, context, and life events may predict SSI participation

SSI = Supplemental Security Income.

Methods

We adopt four approaches to address our research questions:

1. A descriptive analysis of when people first participate in SSI as an adult and the life events that precede participation

2. A univariate regression analysis that examined the relationship between eventual SSI participation and individual characteristics, contexts, and life events
3. A multivariate regression analysis that examined the relationship between eventual SSI participation and groups of characteristics, contexts, and life events
4. An analysis that determined the predictive accuracy of groups of characteristics, contexts, and life events

Key takeaways

Our findings suggest several conclusions about how characteristics, contexts, and life events can be used to identify individuals who are relatively likely to participate in SSI (Exhibit ES.2). Several aspects of people's lives stood out as especially predictive, including low scores on an achievement test in adolescence, fair or poor health, recent unemployment, SSI participation as a child, mother's education, family structure as a child, participation in other types of public assistance, and marital status. Our selected characteristics, contexts, and life events accurately classified whether people participated in SSI 78 percent of the time, a substantial improvement over a benchmark of 50 percent from a hypothetical model in which the predictors are not predictive of SSI participation.

Employment and other programs seeking to effectively support potential SSI applicants can use these findings to improve their outreach and intake screening processes. Specifically, the findings show how such programs could use data to identify people who could benefit from additional employment supports to potentially preclude the need to apply for SSI. Our analyses point to several variables that are especially predictive and may be feasible for employment programs to collect. At the same time, they also suggest that most of the variables we considered predict SSI participation to some degree. For that reason, an employment program that already has access to some of this information may reasonably focus on variables that are readily available. For example, we found that limited educational attainment is predictive of SSI participation on its own but not when using other predictors at the same time, suggesting that educational attainment still has predictive value when other data are not available.

We strongly caution against drawing causal inferences about the relationship between the predictors and SSI participation based on these findings. Variables may be predictive of SSI participation in a statistical sense without being a cause of participation. The lack of causal interpretation does not undermine the value of the results for purposes of identifying those likely to apply for SSI and who may benefit from needs-based vocational supports.

Exhibit ES.2. Summary of analyses

Research question	Summary of results	Implications for employment programs
At what age do people with different characteristics and in different contexts first participate in SSI as adults?	**People were similarly likely to first participate in SSI as an adult at each age between 18 and 35, except for a spike at age 18 primarily driven by people who participated in SSI as children and, therefore, may be more likely to be eligible as adults and continue participating.** The average and median ages of first SSI participation were 25 and 24, respectively, which was relatively constant across people with different characteristics and contexts. The exception was people who participated in SSI during childhood, for whom the average and median ages were 22 and 20, respectively.	• About half of eventual SSI participants first participate in SSI after age 24, suggesting there is a window for employment programs to identify and support potential SSI applicants before they begin participating.

Research question	Summary of results	Implications for employment programs
Which life events precede SSI participation? Do they vary by the age of first SSI participation as an adult?	**People's experiences before participating in SSI differed by the age when they first participated.** Prior to participating in SSI, most people had participated in other public assistance, had been unemployed, had a child, and had lived with a young child. Compared to people who first participated in SSI before age 25, those who first participated after age 25 tended to have higher levels of educational attainment and were more likely to have participated in an educational or vocational training program or another form of public assistance.	• Because eventual SSI participants' life experiences differ based on when they start participating, employment programs may benefit from using different life events at different ages to identify potential SSI applicants.
Which individual characteristics, contexts, and life events are most predictive of SSI participation as an adult?	**When analyzing characteristics, contexts, and life events one at a time, most variables we analyzed had a statistically significant relationship with SSI participation.** These analyses suggested that most of the variables we considered could potentially help predict SSI participation, depending on the availability of other measures. **Several variables stood out as predictive across all models, including low scores on achievement tests in adolescence, SSI participation as a child, mother's education, family structure as a child, low levels of health, being unemployed or not in school within the last year, being unmarried, and participation in forms of public assistance other than SSI.** Many variables that had a statistically significant relationship with SSI participation on their own did not have such a relationship when controlling for other variables. This finding suggested that many of the variables captured redundant information, so not all variables would be required to predict who participates in SSI accurately. **Participation in SSI as a child and several life events were predictive of the likelihood of participation between the ages of 20 and 35.** People who participated in SSI as a child were 20 percentage points more likely to participate as an adult than those who did not participate as a child.	• Most of the variables we considered had a statistically significant relationship with SSI participation on their own, suggesting that employment programs that already collect these data could use them to help identify potential SSI applicants who could benefit from services. • If employment or other programs plan to collect additional data, they may wish to focus on the variables that remained predictive across all models, including achievement test scores in adolescence, SSI participation as a child, mother's education, family structure as a child, health, being recently unemployed and not in school, being unmarried, and participation in other forms of public assistance.
To what extent do combinations of characteristics, contexts, and life events accurately predict SSI participation as an adult?	**A model that included the group of characteristics, contexts, and life events accurately predicted who would participate in SSI as an adult 78 percent of the time, a substantial improvement over a benchmark of 50 percent that corresponds to a model in which the predictors were unrelated to SSI participation.** The model accurately classified 76.9 percent of the sample who eventually participated in SSI and 78.6 percent of the sample who did not do so. A model that included only participation in other public assistance and housing variables performed nearly as well.	• Characteristics, contexts, and life events combined predicted SSI participation with a relatively high level of accuracy, suggesting that employment programs could use these variables to identify potential SSI applicants. • A model using participation in other public assistance programs and information about housing performed nearly as well as the model that included all variables, suggesting that employment programs may wish to prioritize those variables.

1. Introduction

Supplemental Security Income (SSI) provides a safety net for millions of young adults with significant disabilities. Although most SSI participants do not work, many want to do so, potentially because working can provide a substantially higher income than SSI participation[1] and improve quality of life in other ways (Mueser et al. 2016). For example, survey reports suggest that 45 percent of SSI participants have work-related goals or expectations (Livermore 2011). Nevertheless, only a small percentage of those who participate in SSI as young adults ever work enough to forgo SSI benefits (Ben-Shalom and Stapleton 2015).[2] Evidence suggests that the disparity between aspiration to work and reality arises because SSI participants with disabilities have trouble finding suitable jobs or are concerned about losing their benefits or health insurance if they gain employment (Livermore et al. 2017; MacDonald-Wilson et al. 2003; McQuilken et al. 2003).

Past efforts to improve the employment outcomes of people after they have applied for SSI have not been very fruitful (Nichols et al. 2021). Policy analysts have speculated that efforts to help these individuals firmly establish themselves in the labor force *before* they apply for SSI might be more successful.

However, providing vocational services to people before they apply for SSI is challenging because it requires identifying in advance those who are likely to apply for SSI later. Some may not yet be eligible because their medical conditions or impairments have not yet been diagnosed. Some might become eligible only after release from incarceration. Others may not have applied yet because they are receiving adequate support from family, friends, or other safety net programs that could later expire. Still others may not know if they are eligible, may be unwilling to seek assistance from the government, or may not know how to do so—especially among those with unstable housing or engaged in criminal activity. They might only apply after a family member, health care provider, social worker, or law enforcement official encourages application or provides assistance.

This research aims to inform those who study, develop, or provide technical assistance to programs offering employment services to young adults who are potential SSI participants—those with a greater likelihood of future participation relative to their peers but who have not yet participated. We used long-term longitudinal data for youth and young adults to determine which factors predict their later participation in SSI. Predictors included personal characteristics (such as sex), contexts (such as participation in SSI as a child and opportunities for employment), and life events (such as health status or completion of education). This information could be used to identify young adults who might benefit from needs-based vocational supports to attain their employment goals before they apply for SSI, potentially leading to increased lifetime earnings and quality of life.

This study is part of the Next Generation of Enhanced Employment Strategies (NextGen) Project, which Mathematica is conducting on behalf of the Office of Planning, Research, and Evaluation in the Administration for Children and Families, U.S. Department of Health and Human Services in partnership with the Social Security Administration. The NextGen Project is a broader effort to evaluate promising employment approaches for individuals with low incomes who face complex challenges in finding and retaining employment (Box 1). Consistent with the aims of supporting

[1]For example, those who obtain and keep a job paying $10 per hour for 35 hours per week would earn about $1,516 per month, much higher than the maximum monthly SSI benefit of $841. Ten dollars is above the federal minimum wage of $7.25 but below the minimum wage in 28 states and the District of Columbia (U.S. Department of Labor 2023).

[2] For instance, among those eligible for benefits between ages 20 and 39 in 2001, fewer than 15 percent experienced at least one month of benefit suspension due to work over the following 10 years.

people's long-term employment goals, some of those approaches are aimed at helping people secure employment before applying for SSI.

Limited empirical evidence exists about the predictors of SSI participation. Past studies have focused primarily on demographic and economic determinants of SSI application or participation (Autor and Duggan 2003; Maestas et al. 2015, 2021; Nichols et al. 2017) or health-related determinants (Cutler et al. 2011; Layton et al. 2019; Park and Powell 2021). However, these studies lacked data on a rich set of life events, and they followed individuals for a few years at most. In contrast, we were able to follow individuals from their late teenage years until age 35. This scope allowed us to examine a broad set of characteristics, contexts, and life events that may be predictive of SSI participation.

This study used data from the National Longitudinal Study of Youth 1997 (NLSY97). The NLSY97 includes longitudinal data that span a wide range of topics, such as public assistance participation, employment, education and training, health, and family structure. Our analyses addressed four key research questions:

Box 1. The NextGen Project

The goal of the NextGen Project is to identify and study innovative employment programs for people facing complex employment challenges. The study explores how the programs are designed and operated, their cost, and how effective they are at improving participants' employment, earnings, and other outcomes related to economic self-sufficiency and well-being. The NextGen Project is part of the Office of Planning, Research, and Evaluation's Innovative Strategies for Addressing Employment Barriers Portfolio, which seeks to rigorously evaluate the "next generation" of employment strategies for individuals with low incomes, and is partnering with the Social Security Administration on select evaluations.

1. At what age do people with different characteristics and in different contexts first participate in SSI as adults?
2. Which life events precede SSI participation? Do they vary by the age of first SSI participation as an adult?
3. Which individual characteristics, contexts, and life events are most predictive of SSI participation as an adult?
4. To what extent do combinations of characteristics, contexts, and life events accurately predict SSI participation as an adult?

Our analyses suggested that people start participating in SSI at various ages and can have varying experiences before doing so. Although nearly all of the characteristics, contexts, and life events we considered were predictive of eventual SSI participation, several factors stood out as especially predictive, including low scores on the Armed Services Vocational Aptitude Battery (ASVAB) achievement test,[3] low levels of health, unemployment, SSI participation as a child, mother's education, family structure as a child, participation in public assistance other than SSI, and marital history. When using all characteristics, contexts, and life events, our statistical models accurately predicted whether people in the NLSY97 participated in SSI 78 percent of the time, a substantial improvement over a benchmark of 50 percent for a hypothetical model in which all predictors were unrelated to SSI participation.

[3] The ASVAB covers arithmetic reasoning, assembling objects, auto information, coding speed, electronics information, general science, mathematics knowledge, mechanical comprehension, numerical operations, paragraph comprehension, shop information, and word knowledge.

Chapter 2 provides background on the NLSY97 data and the variables we included in our analyses. Chapter 3 presents evidence on (1) the age at which people first started participating in SSI; (2) the life events that people experienced before participating in SSI; (3) which characteristics, contexts, and life events are most predictive of SSI participation; and (4) how accurately our statistical model can predict SSI participation. Chapter 4 discusses our conclusions. Appendixes A and B provide additional results and the technical details of our analyses, respectively.

2. Data and Framework

Data

This study primarily used data from the NLSY97, a national sample of approximately 9,000 youth who were aged 12 to 18 at the start of 1997. The total sample included a cross-sectional sample of about 6,750 youth, designed to be nationally representative, and a supplemental sample of approximately 2,250 youth that oversampled Black and Hispanic or Latino youth. To improve the precision of our estimates, we included both samples in our analyses. The NLSY97 survey has been administered in 18 rounds, starting in 1997 and continuing through 2019. It collects longitudinal data that span a wide range of topics, including educational attainment, training receipt (including government-funded programs), employment, family and household background, marital history, health, childbirth, and involvement with the criminal justice system. It also collects longitudinal information on participation in government programs, including public assistance. We also used data from the Bureau of Labor Statistics Local Area Unemployment Statistics (LAUS) Survey on annual unemployment rates by census region to capture macroeconomic trends.

Goal of the study

This study aims to use these longitudinal data to inform how employment programs could identify potential SSI participants who may benefit from needs-based vocational supports. To do so, we examine which variables predict future SSI participation. If these variables prove to be predictive, employment programs could use them to better reach potential participants who could benefit from their services.

We strongly caution against drawing causal inferences about the relationship between the predictors and SSI participation. Variables may be predictive of SSI participation in a statistical sense without being a cause of participation. The possibility of obtaining SSI benefits may influence the chance that various events occur, or a constellation of factors may affect the likelihood of both SSI application and the occurrence of the event. For example, although the NLSY97 data paint a rich picture of people's lives, they do not include other unobserved contextual factors, such as structural inequity, which may relate to SSI participation but have also been shown to influence a host of employment, health, and other outcomes. As a result, it would be inappropriate to interpret the findings to say a specific life event in the NLSY97 data set causes SSI participation. The lack of causal interpretation does not undermine the value of the results for purposes of identifying those likely to apply for SSI and who may benefit from needs-based vocational supports.

Theoretical framework and key variables

To align our analyses with the goal of the study, we developed a framework to outline how variables might be predictive of SSI participation. In the framework, people's participation in SSI depends on three drivers: (1) knowledge of SSI and support in applying for it; (2) a need for financial support; and (3) their likelihood of eligibility for SSI. These three drivers are not mutually exclusive. For example, eligibility for SSI is partly based on income, which relates to financial need.

Because we did not directly observe these three drivers in the data, we selected variables in the NLSY97 that may relate to the drivers and therefore may predict SSI participation. We created three categories for the predictors: (1) characteristics, defined as personal descriptors measured at a single point in time; (2) contexts, defined as external factors that could affect people's decisions or the

constraints within which they make them; or (3) life events that people experience over time. We hypothesized that the characteristics, contexts, and life events relate to the three drivers, which in turn determine SSI participation (Exhibit 1):

1. **Knowledge of SSI and support in applying for it.** For example, people who exit incarceration (a life event) may receive information about applying for SSI upon entry into the community (Ware 2019). Similarly, other life events, including interactions with caseworkers in other settings, such as health and mental health care providers, could inform people about the possibility of applying for SSI and provide referrals to receive support for an application.
2. **Need for financial support.** Some people who are aware of SSI and might be eligible may apply when life events increase their need for it. For example, someone may apply for SSI for themselves after the birth of a child—a life event that requires financial support and increases the opportunity cost of working—or after losing financial support from a spouse due to a divorce. Unless a pressing need arises, some people may not apply for SSI even if they are eligible, for various reasons, such as stigma (Whittle et al. 2017) or sufficient support from limited wages, family members, or other sources.
3. **Likelihood of eligibility for SSI.** Before age 65, SSI eligibility for adults depends on complex medical-vocational criteria regarding the ability to work, as well as a means test for income and wealth. A range of life events could affect eligibility. For example, job loss for any reason, moving out of a parent's home, or divorcing a spouse increases the chance that the individual may meet the SSI means test.

Exhibit 1. Pathways through which characteristics, context, and life events may predict SSI participation

SSI = Supplemental Security Income.

The variables we selected included measures of characteristics, contexts, and life events that we expected to be predictive of SSI participation based on past evidence or theory (see Exhibit 2). We included some variables that do not have a clear theoretical relationship to SSI participation, but that past evidence has suggested are predictive. For example, we included sex because descriptive statistics indicated that females participate in SSI at higher rates, on average, compared to males (Giefer 2021). Individual variables may predict SSI participation through multiple immediate drivers—in other words, a single variable may have more than one rationale for inclusion (Exhibit 2). For example, becoming unemployed may increase a person's need for financial support and make them eligible to participate in SSI. People who participate in SSI as a child may be more knowledgeable about the SSI program, have a greater need for income, and be more likely to be eligible because they have a disability.

As indicated by the headers in Exhibit 2, we divided the predictors into six different domains: (1) characteristics, (2) context during childhood, (3) context during adulthood, (4) life events related to family structure and health, (5) life events related to public assistance and housing, and (6) life events related to employment and education. Notably, we use the term "characteristic" to categorize predictors that describe the individual at a point in time, and for which our analysis includes a single measurement for each person. They are not necessarily fixed attributes of people. For example, the characteristics include the score on the ASVAB achievement test taken in adolescence as a characteristic because it is a description of a person at a point in time. However, a person's ASVAB score could be a function of their context and could change over time. Exhibit A.1 provides definitions of each variable, details on the rationale for inclusion, and the sources for any past evidence.

Exhibit 2. Variables included for characteristics, contexts, and life events and rationale for inclusion

Variable and description	Primary rationale for inclusion			
	Knowledge about SSI	Need for financial support	Likelihood of eligibility	Past evidence
Characteristics				
Sex				X
Race and ethnicity				X
Armed Services Vocational Aptitude Battery (ASVAB) achievement test score measured in adolescence[a]			X	
Context during childhood				
Mother/father completed high school			X	
Born to a teen mother			X	
Lived in a two-parent household			X	
Participation in SSI as a child	X	X	X	
Participation in other public assistance as a child			X	
Context during adulthood				
Currently living in an urban area				X
Census region of residence				X
Percentage unemployed in the census region		X	X	X
Life events related to family structure and health				
Marital status		X	X	
Had a child		X	X	
Living with children		X	X	
Health status		X	X	
Life events related to public assistance and housing				
Participation in other public assistance	X	X	X	
Release from incarceration	X	X	X	
Unstable housing		X	X	
Life events related to employment and education				
Unemployed		X	X	X
Educational level		X	X	
Dropped out of school		X	X	
Participation in education and training programs		X	X	

SSI = Supplemental Security Income.

[a]The ASVAB covers arithmetic reasoning, assembling objects, auto information, coding speed, electronics information, general science, mathematics knowledge, mechanical comprehension, numerical operations, paragraph comprehension, shop information, and word knowledge.

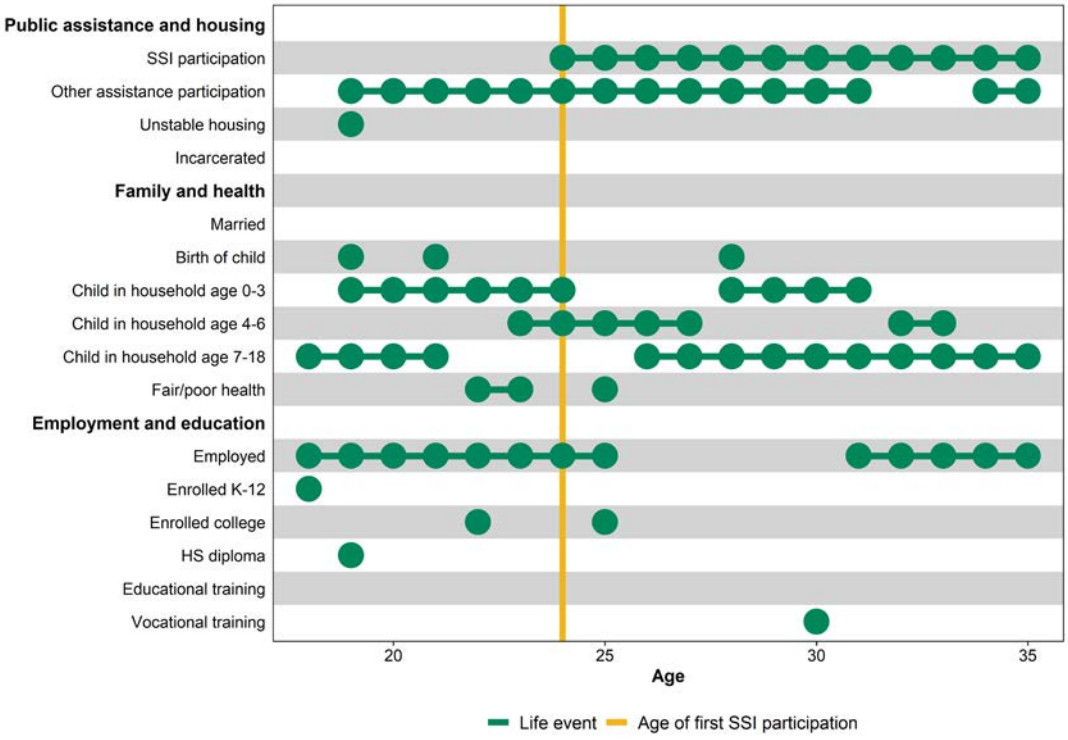
Life profiles of people who participate in SSI

To further motivate our theoretical model and selection of variables, we developed “life profiles” that display the evolution of the life of each individual in the NLSY97 through various states, including SSI participation (Exhibit 3). Like in-depth interviews, the profiles provide a more in-depth examination of people’s lives than can be provided by aggregate statistics. Each life profile displays SSI participation and life events for a single respondent, as opposed to an aggregate across multiple individuals. In Exhibit 3, the green circles indicate that an event occurred at the age specified. The vertical gold line indicates the age that the individual first participated in SSI; the green circles in the SSI participation row indicate their subsequent SSI participation. Participation in other forms of public assistance could include whether others in the household participated in that type of public assistance. The captions include additional information about the respondents' characteristics and context.

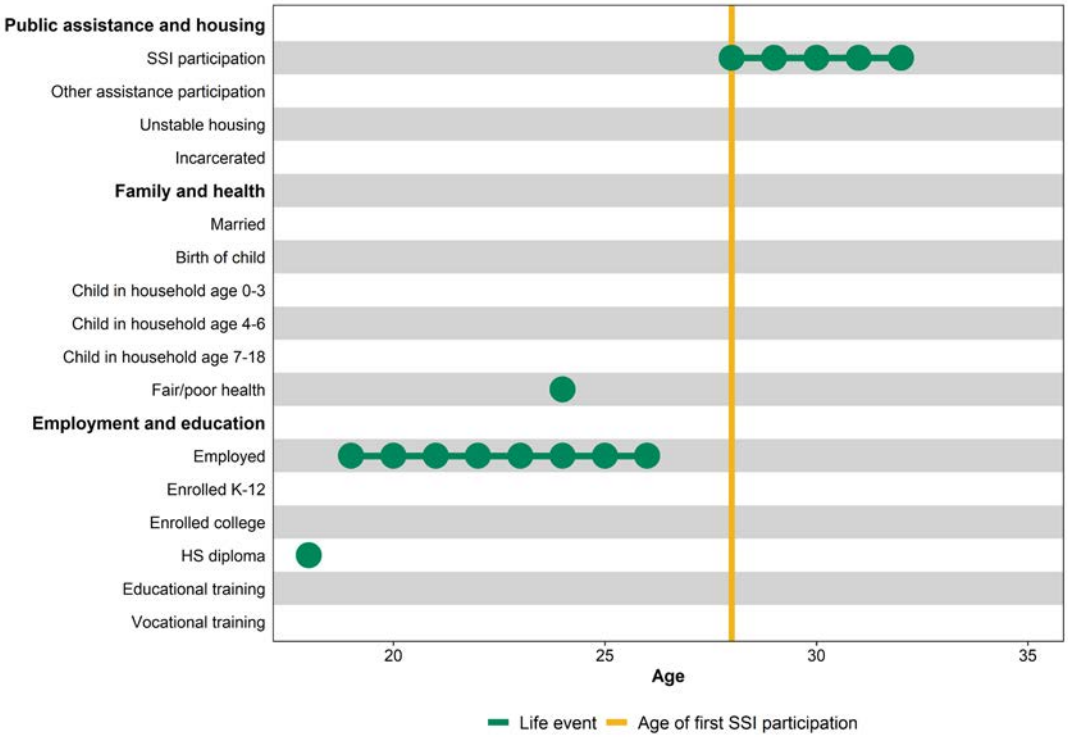
The four life profiles in Exhibit 3 reveal that people who participate in SSI are not homogenous and can experience a constellation of life events before taking up SSI. Each person first participated in SSI at a different age. Before participating, they had different work histories, household structures, and participation in other types of public assistance. These profiles highlight why we considered a broad range of variables for predicting SSI participation.

Exhibit 3. Life profiles of people who eventually participate in SSI

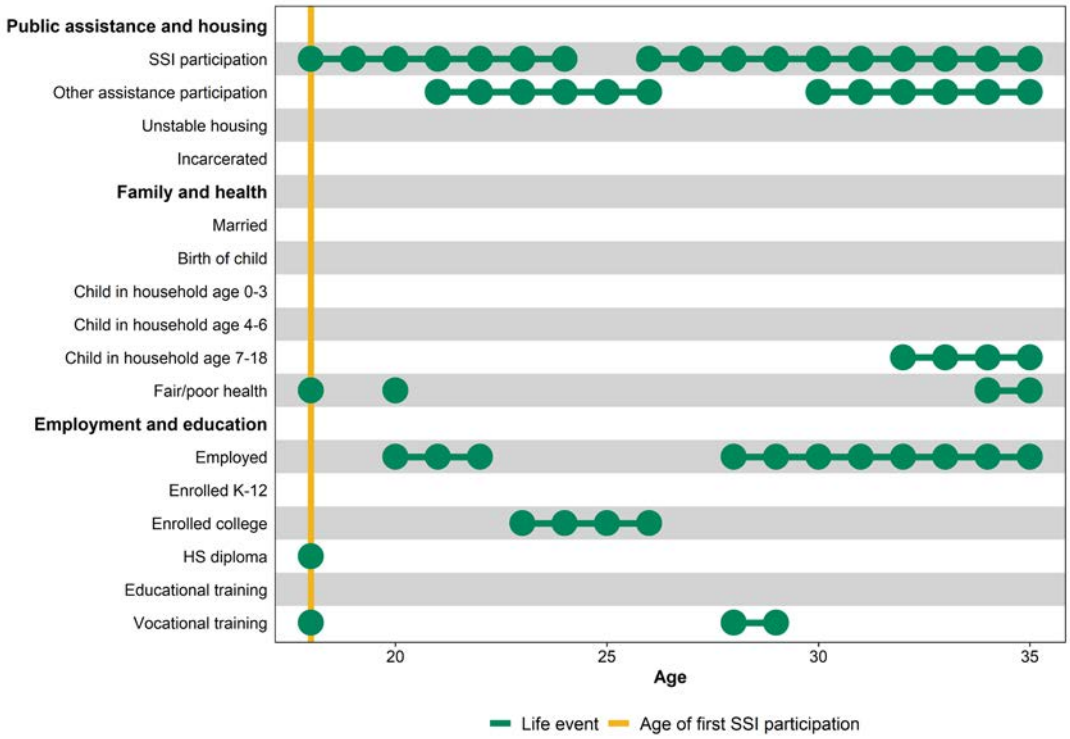
(a) A mother of three children who started participating in SSI at age 24, after enrolling in college, participating in forms of public assistance other than SSI, and experiencing fair or poor health for two years



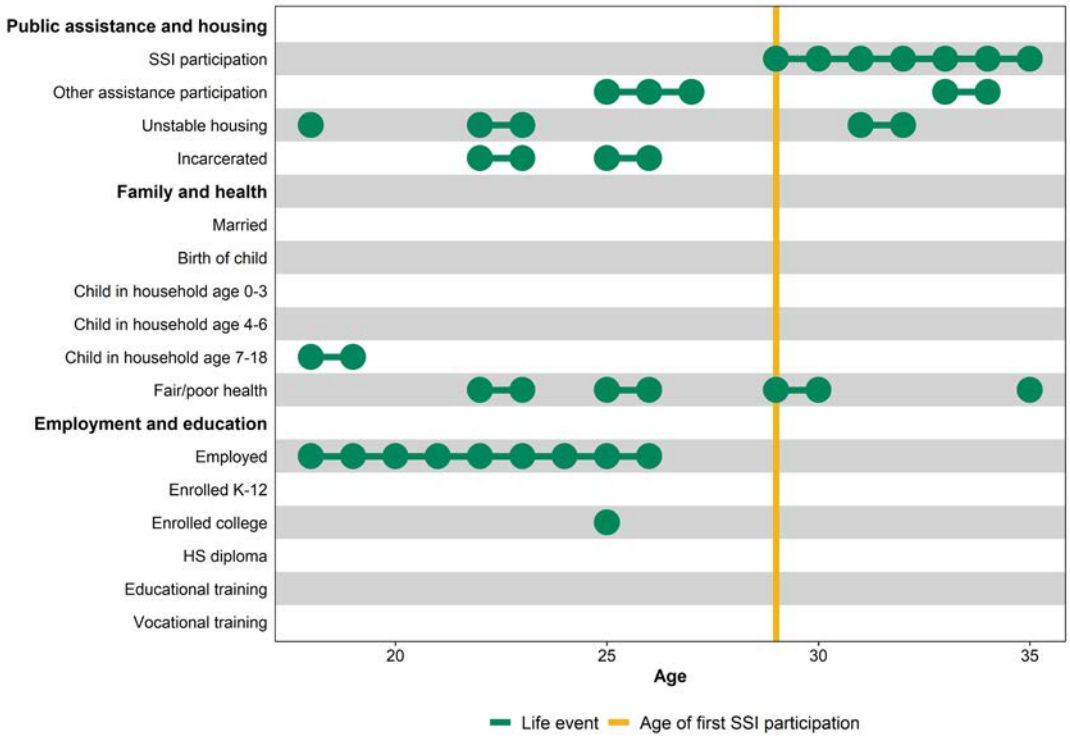
(b) An unmarried male without children who started participating in SSI at age 28 after working consistently for eight years, being unemployed for one year, and experiencing fair or poor health



(c) A female who started participating in SSI at age 18, continuing through age 35 after participating in SSI as a child



(d) An unmarried male without children who started participating in SSI at age 29 after experiencing fair or poor health, being incarcerated, and living in unstable housing



Source: Authors' calculations, based on data from the NLSY97.

HS = high school; SSI = Supplemental Security Income.

Defining SSI participation

We used responses to NLSY97 survey questions related to SSI to identify when respondents first participated in SSI. The questions about SSI differed across survey waves and, in some cases, could also apply to a respondent's spouse or partner. For that reason, we took steps to construct a measure of SSI participation that would be comparable over time and isolate whether the respondent—as opposed to a partner or spouse—participated in SSI (see Exhibit A.1 for more information).

Because our analyses sought to determine which factors could be used to identify people who might work and have an increased likelihood of participating in SSI, we defined SSI participation as participation in at least one year without regard to the subsequent duration. Based on this definition, just over 10 percent of respondents in the NLSY97 participated in SSI by age 35. Because past evidence has shown that most young adults who participate in SSI do so for many years (Ben-Shalom and Stapleton 2015), our analyses would generally apply to people who participate in SSI for extended periods. We did observe, however, that some NLSY97 respondents participated in SSI only for short periods or intermittently. The limited or intermittent nature of their participation could be due to multiple factors, such as errors in reporting SSI participation on the NLSY97, becoming ineligible for SSI, or no longer requiring SSI. Even though their participation in SSI is limited, they may still benefit substantially from well-designed vocational interventions. Although we focused on predicting whether people ever participate in SSI, we also conducted a sensitivity analysis that examined how the results would change if we predicted SSI participation of varying lengths of time.

3. Results

At what age do people with different characteristics and in different contexts first participate in SSI as adults?

Motivation

This analysis provided descriptive data on the timing of SSI participation, which offered context for the remaining analyses and informed our suggestions regarding the age ranges that employment programs could prioritize. For example, if most adults started participating in SSI at a young age, then later life events would have less room to influence SSI participation. In addition, whether different types of people start participating in SSI at different times could shed light on the determinants of participation.

Methodology

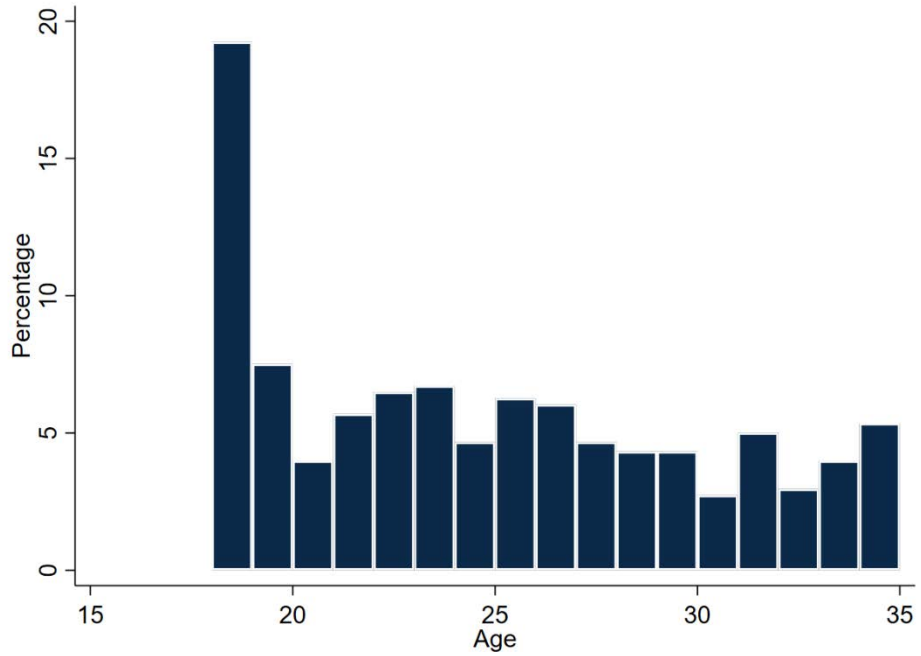
We calculated the percentage of people who first participated in SSI at each age and the cumulative percentage of survey respondents who had ever participated in SSI by each age. We also examined the age distribution of first SSI participation based on people's characteristics.

Results and discussion

People were similarly likely to start participating in SSI at each age between 18 and 35, except that a group of people who participated in SSI as children were more likely to start participating in SSI at age 18 (Exhibits 4 and 5). By age 35, just over 10 percent of the survey respondents had participated in SSI (Exhibit 5).[4] The average and median ages of first participation as an adult—25 and 24, respectively—were relatively constant across people with different characteristics and contexts (Exhibit A.1). One notable exception was people who participated in SSI during childhood, for whom the average and median age of SSI first participation as an adult were 22 and 20, respectively (Exhibit A.1). This group also accounted for much of the apparent spike in first adult participation at age 18. The potential loss of parental health insurance coverage may also relate to higher rates of first SSI participation in early adulthood. During the collection period for the NLSY97, dependents were covered by private parental health insurance through age 19. In many states, childless adults could receive Medicaid only through SSI, so the impending loss of their parents' health insurance may have induced some young adults to participate in SSI. This possibility is consistent with recent evidence that shows the Affordable Care Act's extension of coverage of parental insurance to age 26 has led to a spike in SSI participation at that age (Levere et al. 2021). Nevertheless, many people first participate in SSI at later ages, suggesting life events later in adulthood could also predict SSI participation.

[4] See Appendix A for a discussion of how the SSI participation rates in our sample relate to those nationally.

Exhibit 4. Distribution of the age of first SSI participation as an adult

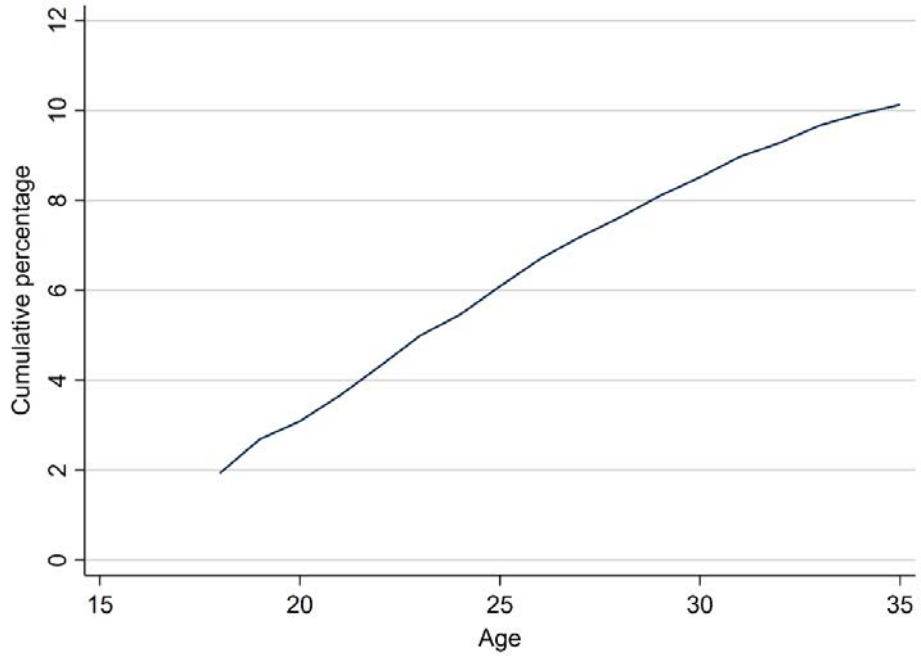


Source: Authors' calculations, based on data from the NLSY97.

Note: The figure shows the percentage of respondents who first participated in SSI at each age out of those who ever participated in SSI. The sample includes 878 respondents who participated in SSI by age 35

NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

Exhibit 5. Cumulative percentage of respondents who ever participated in SSI as an adult



Source: Authors' calculations, based on data from the NLSY97.

Note: The figure shows the cumulative percentage of respondents who ever participated in SSI at each age.

NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income. The sample includes 8,739 respondents.

Which life events precede SSI participation? Do they vary by the age of first SSI participation as an adult?

Motivation

This analysis described the characteristics, childhood contexts, and life events of people who eventually participate in SSI, providing a sense of their lived experiences. It examined whether life events differed based on the timing of their first SSI participation.

Methodology

To describe eventual SSI participants, we calculated the percentage of them who had various characteristics, childhood contexts, and life events before participating. Because people may experience different life events depending on when they first participate in SSI, we also calculated these percentages separately for people who first participated in SSI before and after age 25, the average age of first SSI participation in our data.

Results and discussion

People who eventually participated in SSI as adults are more likely to be female, tend to have lower achievement test scores, and are likely to have lived in a household as a child that participated in public assistance. In our sample, 64 percent of people who eventually participated in SSI were female. Those who participated also had relatively low levels of achievement test scores, with 57 percent having scored in the first quartile. In addition, 24 percent participated as a child, 46 percent lived in a household as a child that participated in another form of public assistance, and 27 percent lived in a two-parent household at the time of the NLSY97 baseline survey.

Experiences before participating in SSI as an adult differed by when people started participating. Most of the SSI participants had a child and lived with a young child before participating in SSI (Exhibit 6). Compared to people who participated in SSI before age 25, those who participated after age 25 tended to have higher levels of educational attainment and were more likely to have enrolled in an educational or vocational training program, perhaps because they had more time to do so. Participating in other forms of public assistance in the household was common, especially for those who participated in SSI after the age of 25. Similarly, most people who participated in SSI—especially those later in life—had experienced fair or poor health.

Exhibit 6. Characteristics and contexts of people who participated in SSI and life events that preceded first participation in SSI

Variable	Percentage of people		
	Overall	Began participating in SSI before age 25	Began participating in SSI after age 25
Characteristics			
Female (versus male)	64.0	62.3	66.0
Race and ethnicity			
White, non-Hispanic	34.7	37.7	31.3
Black, non-Hispanic	42.7	40.9	44.7
Hispanic	20.2	19.5	20.9
Other	2.4	1.9	3.1
ASVAB achievement test score measured in adolescence			
First quartile	57.2	59.8	54.5
Second quartile	24.6	21.8	27.7
Third quartile	12.0	11.5	12.7
Fourth quartile	6.1	7.0	5.1
Childhood contexts			
Mother completed high school	63.4	61.3	65.8
Father completed high school	67.5	64.0	71.3
Born to a teen mother	19.6	20.6	18.6
Lived in a two-parent household	27.0	24.9	29.3
Participation in SSI as a child	23.9	33.8	12.9
Participation in other public assistance as a child	45.9	48.6	42.9
Life events related to public assistance and housing			
Household participation in other assistance as an adult	62.7	47.0	80.3
Previously incarcerated	10.1	5.9	14.8
Lived in unstable housing as an adult	16.5	12.4	21.1
Life events related to family structure and health			
Got married	21.9	11.5	33.3
Ended a marriage	8.5	1.9	15.7
Had a child	56.3	42.1	72.1
Lived with a child 0–3 years old as an adult	64.5	52.8	77.3
Lived with a child 4–6 years old as an adult	48.5	28.7	70.0
Lived with a child 7–18 years old as an adult	70.9	57.3	85.7
Reported having fair or poor health	50.2	35.2	67.0
Life events related to employment and education			
Was unemployed and not in school	52.3	36.1	70.5
Educational attainment			
Earned a GED	15.4	8.8	22.7
Earned a traditional high school diploma	50.8	47.4	54.6
Completed some college	22.1	11.7	33.7
Two-year college degree	3.3	0.8	6.1
Four-year college degree	3.7	1.3	6.3

Variable	Percentage of people		
	Overall	Began participating in SSI before age 25	Began participating in SSI after age 25
Enrolled in an educational training program[a]	11.9	7.5	16.9
Enrolled in a vocational training program[a]	37.3	22.4	53.9
Dropped out of high school	46.1	44.4	48.0
Enrolled in college	28.3	18.9	38.9
Dropped out of college	17.8	8.6	28.1
Sample size	904	477	427

Source: Authors' calculations, based on data from the NLSY97.

ASVAB = Armed Services Vocational Aptitude Battery; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

[a] Exhibit A.1 describes the training programs classified as educational and vocational training, respectively.

Which individual characteristics, contexts, and life events are most predictive of SSI participation as an adult?

Motivation

The previous analyses provided descriptive information on the life events of the 10 percent of NLSY97 respondents who participated in SSI. However, the findings did not suggest which life events were most predictive of eventual SSI participation because they did not include information about people experiencing the event but not participating in SSI. For example, having a child would not predict SSI participation if people who participate in SSI have children at the same rates as those who do not. To explore this issue, we additionally used data on the 90 percent of NLSY97 respondents who did not participate in SSI to estimate how each characteristic, context, and life event related to the probability of participating in SSI.

Methodology

We used a statistical model to explore how individual characteristics, contexts, and life events relate to SSI participation at each age. The analysis provides an estimate of the likelihood of participating in SSI (in percentage points) for people who had a particular characteristic, context, or life event compared to those who did not—for example, the difference in the likelihood between those who are female versus male (see Appendix B for details). We allowed the life events to relate to the likelihood in two ways: (1) whether the life event ever previously occurred and (2) whether the event occurred within the last year (at either the current age or the year before). For example, being unemployed and not in school at any time in the past could relate to SSI participation. However, having experienced this event within the last year could be even more predictive.

A key decision of our study was whether to examine individual predictors separately or a group of predictors simultaneously. An unadjusted analysis includes a single predictor variable in the model, which reveals how that variable predicts SSI participation in isolation. An adjusted analysis includes multiple predictors in the same model. An adjusted analysis accounts for the possibility that an individual characteristic, context, or life event might appear predictive only because of its relationship with another predictor of SSI participation. We reiterate that we should not interpret

the findings about individual predictors as causal findings—even in models that control for other predictors (Box 2).

Box 2. Considerations for interpreting adjusted analyses

In other contexts, other variables are included in statistical models for the express purpose of separating the causal effect of a specific variable from the confounding relationships with the other variables. For instance, to estimate the causal effect of attending college on SSI participation, it would be essential to account for people's skills before going to college and a myriad of other factors that might influence both college attendance and SSI participation. People who attend college may already have higher levels of skills and might be less likely to participate in SSI even if they did not attend college. This lofty research objective is beyond what can be achieved with our data, given sample sizes and limits on the data collected for each individual. This limitation did not, however, prevent us from developing useful models for predicting SSI participation, which only requires variables related to SSI participation even if they do not cause participation. For example, even if attending college did not affect SSI participation but reflected something else about people—such as their skills in high school—college attendance could still be a strong predictor of SSI participation. For prediction, the main reason to add more variables to a model is to improve its overall predictive accuracy, not the interpretation of any one estimate.

In this chapter, we present estimates from three models that included different sets of predictors to provide a sense of which individual variables were most predictive under different scenarios:

1. **Unadjusted differences.** We estimated an unadjusted model that included each predictor on its own. The results from the unadjusted analysis indicated how each variable related to the likelihood of participating in SSI without accounting for other variables. For example, the unadjusted difference in SSI participation between females and males is equivalent to the difference in the percentage of females who participate in SSI minus the percentage of males who do so.
2. **Domain-adjusted differences.** We reported estimates from models that included multiple variables in the same domain simultaneously (for example, all variables related to childhood context). This analysis indicated which variables within a domain were most related to SSI participation when adjusting for the others in that domain. For example, the domain-adjusted difference in SSI participation between females and males is equivalent to the difference in the percentage of females who participate in SSI minus the percentage of males who do so, after accounting for differences in race and achievement test scores between males and females.
3. **Fully adjusted differences.** We also estimated a model that included all variables in Exhibit 2. This analysis suggested which variables were most related to SSI participation among all of those we considered. For example, the fully adjusted difference in SSI participation between females and males is equivalent to the difference in the percentage of females who participate in SSI minus the percentage of males who do so, after accounting for differences in all of the other characteristics, contexts, and life events included in the analysis.

We presented this range of estimates because, in practice, employment programs may have access to data different from the rich set of variables in the NLSY97. For example, when estimating an adjusted model with all variables as predictors, some variables that did not have a significant relationship with SSI participation were still predictive on their own and could be useful in other

contexts. If employment program staff had access only to information about those variables, they could still help identify people with an increased likelihood of participating in SSI. The adjusted analyses suggested on which variables analysts might focus if they could potentially include all of the variables. For example, if the staff at an employment program were designing a new intake form, they might focus on the variables most predictive of SSI participation in the fully adjusted model.

In addition to our primary analysis that used the entire sample to predict when people first participated in SSI, we conducted further analyses to explore how the estimates would change if we focused on different ages or used different definitions of SSI participation. To understand whether some characteristics, contexts, and life events were more predictive at different ages, we estimated the models separately before and after age 25 (the average age when people first participated in SSI in our sample). In addition, we estimated the models using different lengths of time of SSI participation. Our main specification predicted whether people participated in SSI at all. We also estimated four additional models that predicted whether people reported participating in SSI for at least two, three, four, and five survey years.

We present the resulting estimates from the models in two ways:

1. **Differences in the likelihood of starting to participate in SSI during a given year.** This estimate represents the difference in the likelihood of participating in SSI during a given year between people in one category versus another, such as females versus males. For variables that could take more than one value, we calculated the difference relative to a reference category. For example, for the ASVAB achievement test score, we calculated the effects of being in the second, third, and fourth quartiles relative to being in the first quartile. We also conducted statistical tests for whether the likelihood of participating in SSI differed across all of the values of the categorical variables. For example, these tests suggested whether the ASVAB achievement test predicted SSI participation overall.
2. **Differences in the cumulative likelihood of starting to participate in SSI across multiple years.** For variables that significantly predicted SSI participation in all three models (unadjusted, domain adjusted, and fully adjusted), we present the adjusted difference between groups in the cumulative likelihood of ever participating in SSI between ages 20 and 35. We selected this range because we have data for the majority of respondents in the NLSY97 for these ages. We present this second estimate because the difference in a single year could appear relatively small but add up across multiple years. For variables fixed over time—such as whether someone participated in SSI as a child—we examined the likelihood of ever participating in SSI for people with the variable versus those without that variable. For life event variables that change over time—such as participating in public assistance at various ages—we designated more specific scenarios. For example, we considered the difference in the likelihood of participating in SSI if someone participated in form of public assistance other than SSI for one year at age 20 compared to if they did not participate in another form of public assistance at all.

Results

Relationship between characteristics, contexts, and life events, and starting to participate in SSI during a given year

The unadjusted analyses revealed that, compared to people who did not participate in SSI, people who participated differed on most of the characteristics, contexts, and life events that

we considered. In unadjusted analyses, most predictors we considered had a significant relationship with SSI participation (Exhibit 7). The estimates represent the difference in the likelihood that a person with a given characteristic starts participating in SSI during a given year compared to someone who does not have that characteristic. For example, people were more likely to start participating in SSI if they were female, unmarried, had lower levels of educational attainment, participated in public assistance other than SSI, and reported poorer health. The domain-adjusted analyses showed a similar pattern of results. Although the magnitudes of the differences were small in absolute terms, they were substantial when compared to the average annual rate of 0.59 percent for first participating in SSI. This observation is also germane to the findings from the adjusted analysis.

Models that controlled for all other variables revealed fewer significant predictors of SSI participation. For example, although educational attainment significantly predicted SSI participation in the unadjusted and domain-adjusted analyses, it did not predict participation when controlling for all other variables—likely because people with different levels of educational attainment have different characteristics, contexts, and life events also associated with SSI participation. The adjusted results did not necessarily suggest that variables like educational attainment are not worth including in a predictive model, but rather that their predictive value depends on the availability of other variables.

Several variables stood out as predictive across all models, including low scores on the ASVAB achievement test, SSI participation as a child, mother's education, family structure as a child, low levels of health, being unemployed or not attending school within the last year, being unmarried, and participation in forms of public assistance other than SSI. Because these variables were independently predictive of SSI participation irrespective of which other controls were included, they may be helpful predictors regardless of the other data available to staff at employment programs. For example, after controlling for all variables, SSI participation as a child remained predictive of adult participation, suggesting that this variable may help employment programs better identify those likely to apply for SSI again as an adult, even after considering all other information available to the program.

With some important exceptions, the findings were similar for varying lengths of SSI participation and when estimating the model separately by age group. For most predictors, the estimated effects had the same sign and level of statistical significance when defining SSI participation as being at least two, three, four, or five survey years, rather than the single year definition used for the main analysis (Exhibit A.3). Similarly, in the fully adjusted model, most of the life event variables that were significant in the analyses of the entire sample were significant when restricting the sample to observations below and above age 25 (Exhibit A.4). However, the four characteristic and childhood context variables that were predictive in the full sample were only predictive in the model estimated on data below age 25. These four included (1) scores on the ASVAB achievement test, (2) SSI participation as a child, (3) mother's education, and (4) family structure as a child.

Exhibit 7. Relationships between characteristics, contexts, and life events and the likelihood of starting SSI participation during a given year

Predictor	Unadjusted		Domain adjusted		Fully adjusted	
	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value
Characteristics						
Female (versus male)	0.32***	0.00	0.28***	0.00	0.03	0.15
Race and ethnicity	-	0.00	-	0.00	-	0.38
White, non-Hispanic (reference)	-	-	-	-	-	-
Black, non-Hispanic	0.48***	0.00	0.17***	0.00	-0.02	0.40
Hispanic	0.13***	0.00	-0.03	0.41	-0.05*	0.07
Other	-0.01	0.88	-0.03	0.68	-0.04	0.49
ASVAB achievement test score measured in adolescence	-	0.00	-	0.00	-	0.00
First quartile (reference)	-	-	-	-	-	-
Second quartile	-0.42***	0.00	-0.36***	0.00	-0.02	0.38
Third quartile	-0.62***	0.00	-0.53***	0.00	-0.10***	0.00
Fourth quartile	-0.71***	0.00	-0.62***	0.00	-0.13***	0.00
Context during childhood						
Mother completed high school	-0.40***	0.00	-0.13***	0.00	-0.05**	0.04
Father completed high school	-0.25***	0.00	0.01	0.68	0.05**	0.03
Born to a teen mother	0.26***	0.00	0.01	0.76	-0.03	0.16
Lived in a two-parent household	-0.45***	0.00	-0.26***	0.00	-0.07***	0.00
Participation in SSI as a child	1.46***	0.00	0.67***	0.00	0.31***	0.00
Participation in public assistance other than SSI as a child	0.78***	0.00	0.32***	0.00	-0.01	0.73
Context during adulthood						
Currently living in an urban area	0.05	0.22	0.06	0.16	-0.02	0.52
Census region of residence		0.15		0.10		0.00
Northeast (reference)	-	-	-	-	-	-
North Central	-0.08	0.15	-0.08	0.16	-0.07**	0.03
South	-0.07	0.18	-0.06	0.23	-0.11***	0.00
West	-0.12**	0.02	-0.14**	0.02	-0.04	0.32
Percentage unemployed in the census region	-	0.03	-	0.03	-	0.14
First quartile, low unemployment (reference)	-	-	-	-	-	-
Second quartile	-0.06	0.19	-0.04	0.39	-0.04	0.20
Third quartile	0.06	0.26	0.07	0.16	0.02	0.46
Fourth quartile, high unemployment	0.07	0.26	0.10	0.12	0.01	0.73
Life events related to public assistance and housing						
Ever lived in a household that participated public assistance other than SSI	1.46***	0.00	0.38***	0.00	0.12**	0.02

Predictor	Unadjusted		Domain adjusted		Fully adjusted	
	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value
Lived in a household that participated in public assistance other than SSI within the last year	2.33***	0.00	2.24***	0.00	0.79***	0.00
Previously incarcerated	0.44***	0.00	0.01	0.86	-0.02	0.65
Released from incarceration within the last year	0.64***	0.00	0.07	0.41	0.02	0.70
Ever lived in unstable housing	0.46***	0.00	0.16***	0.00	0.06*	0.06
Lived in unstable housing within the last year	0.38***	0.00	0.16**	0.02	-0.01	0.89
Life events related to family structure and health						
Marital status	-	0.00	-	0.00	-	0.00
Never married (reference)	-	-	-	-	-	-
Married	-0.17***	0.00	-0.39***	0.00	-0.14***	0.00
Previously married	0.42***	0.00	0.05	0.61	0.04	0.48
Married within the last year	-0.08	0.26	-0.21***	0.00	-0.04	0.31
Ended a marriage within the last year	-0.03	0.83	0.09	0.21	0.01	0.81
Ever had a child	0.60***	0.00	0.37***	0.00	0.01	0.79
Had a child within the last year	0.50***	0.00	0.36***	0.00	0.00	0.94
Living with a child 0–3 years old	0.54***	0.00	0.18***	0.00	0.03	0.29
Living with a child 4–6 years old	0.42***	0.00	0.10**	0.01	0.01	0.76
Living with a child 7–18 years old	0.24***	0.00	0.07**	0.04	0.02	0.45
Ever reported having fair or poor health	0.83***	0.00	0.32***	0.00	0.12***	0.00
Reported having fair or poor health within the last year	1.46***	0.00	1.11***	0.00	0.40***	0.00
Life events related to employment and education						
Ever previously unemployed and not in school	0.59***	0.00	0.25***	0.00	0.05*	0.09
Unemployed and not in school within the last year	0.69***	0.00	0.54***	0.00	0.46***	0.00
Educational level	-	0.00	-	0.00	-	0.77
High school dropout (reference)	-	-	-	-	-	-
GED	-0.11	0.30	0.00	0.99	0.00	0.92
Traditional high school diploma	-0.48***	0.00	-0.21***	0.00	0.01	0.64
Completed some college	-0.49***	0.00	-0.19***	0.00	0.01	0.76
Two-year college degree	-0.65***	0.00	-0.31***	0.00	0.00	0.99
Four-year college degree	-0.84***	0.00	-0.50***	0.00	-0.06	0.23
Dropped out of high school within the last year	0.38**	0.02	0.09	0.33	0.09	0.23
Dropped out of college within the last year	-0.15**	0.04	-0.04	0.57	-0.02	0.71

Predictor	Unadjusted		Domain adjusted		Fully adjusted	
	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value	Difference in likelihood of SSI participation (percentage points)	*p*-value
Previously enrolled in educational training	0.37***	0.00	0.13**	0.02	-0.01	0.83
Enrolled in educational training within the last year	0.50***	0.00	0.26**	0.01	0.03	0.58
Previously enrolled in vocational training[a]	0.08**	0.03	0.09***	0.00	-0.01	0.57
Enrolled in vocational training within the last year[a]	0.06	0.21	0.17***	0.00	0.02	0.49
Sample size	8,739		8,739		8,544	

Source: Authors' calculations, based on data from the NLSY97 and the LAUS.

Note: Estimates in the table are all percentage point differences. For comparison purposes, the average annual rate of first SSI participation is 0.59 percent. Standard errors were calculated using the delta method, which allows for clustering at the individual level. The *p*-values in the rows for categorical variables are from Wald tests of equality across categories. Because sample sizes vary by predictor, we reported the largest sample size for each type of model.

[a] Exhibit A.1 describes the training programs classified as educational and vocational training, respectively.

***/**/* Marginal effects are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

ASVAB = Armed Services Vocational Aptitude Battery; LAUS = Local Area Unemployment Statistics Survey; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

Relationship between characteristics, contexts, and life events, and starting SSI participation across a range of years

Participation in SSI as a child and several life events were highly predictive of participation in SSI between the ages of 20 and 35. To provide a better sense of the magnitude of the relationship between key predictors and SSI participation, we also calculated the difference in the likelihood of participating in SSI between ages 20 and 35 across several variables or scenarios (Exhibit 8). These differences in SSI participation over the 15-year period were all at least 4 percentage points. However, some were substantially higher. For example, controlling for the other predictors, people who participated in SSI as children were 20 percentage points more likely to participate in SSI as adults compared to those who did not participate as children.

Exhibit 8. Relationships between characteristics, contexts, and life events, and first SSI participation between ages 20 and 35 (fully adjusted model)

Predictor or scenario	Difference in likelihood of participating in SSI between ages 20 and 35 (percentage points)	*p*-value for difference across categories
Characteristics		
ASVAB achievement test score measured in adolescence	-	0.00
First quartile (reference)	-	-
Second quartile	-1.67	0.38
Third quartile	-6.90***	0.00
Fourth quartile	-9.57***	0.00

Predictor or scenario	Difference in likelihood of participating in SSI between ages 20 and 35 (percentage points)	*p*-value for difference across categories
Context during childhood		
Mother completed high school	-3.72**	0.04
Lived in a two-parent household	-4.91***	0.00
Participation in SSI as a child	19.50***	0.00
Life events		
Newly married at age 20 and married through age 35 versus never married	-9.80***	0.00
Divorced at age 20 and unmarried through age 35 versus married at age 20 and married through age 35	12.04***	0.00
Reported having fair or poor health at age 20 for one year versus never reporting having low levels of health	9.28***	0.00
Lived in a household that participated in other assistance at age 20 for one year versus never receiving other assistance	10.05***	0.00
Unemployed for five years starting at age 20 versus never being unemployed	10.85***	0.00
Sample size	8,544	

Source: Authors' calculations, based on data from the NLSY97 and the LAUS.

Note: The marginal effects were multiplied by 100, so they represent the effect of each covariate on the likelihood of starting SSI participation during the time period. Standard errors were calculated using the bootstrap method, which allows for clustering at the individual level. The *p*-values in the rows for categorical variables are from Wald tests of equality across categories.

***/**/* Marginal effects are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

ASVAB = Armed Services Vocational Aptitude Battery; LAUS = Local Area Unemployment Statistics Survey; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

To what extent do combinations of characteristics, contexts, and life events accurately predict SSI participation as an adult?

Motivation

This analysis examined the extent to which groups of characteristics, contexts, and life events predicted whether individuals were likely to participate in SSI or not. The results provided an intuitive measure of how effectively combinations of predictors accurately classified people with an increased likelihood of participating in SSI.

Methodology

To summarize how well the group of characteristics, contexts, and life events accurately predicted whether people participated in SSI, we calculated the classification accuracy by comparing the predictions using different combinations of variables against whether people reported participating in SSI between ages 18 and 35. We followed four steps:

- **Step 1.** Using the statistical models described earlier in Chapter 3, we estimated the probability that each person in the sample participated in SSI between ages 18 and 35.
- **Step 2.** We classified people with probabilities above a threshold as likely to participate in SSI and those below the threshold as unlikely to participate.

- **Step 3.** For each person, we determined whether the model's classification aligned with whether the person reported participating in SSI. We counted the model as correctly classifying a person if either (1) the model classified the person as likely to participate in SSI and the person did participate or (2) the model classified them as unlikely to participate in SSI and they did not participate.
- **Step 4.** We calculated the model's classification accuracy as the fraction of people the model correctly classified.

The classification accuracy depended on the threshold used in Step 2 to determine whether people were likely to participate in SSI. Different thresholds yielded different classification accuracies for (1) those who participated in SSI and (2) those who did not participate (Box 3). To illustrate how the accuracy for these two groups depended on the threshold, we calculated the accuracy for each group for all possible thresholds. As a benchmark, we highlighted one commonly used rule for selecting the threshold, which maximized the percentage of people who participated in SSI who were accurately classified plus the percentage of people who never participated in SSI who were accurately classified.

To provide a sense of the importance of different types of variables in classifying whether people participate in SSI or not, we used our full model with all variables, as well as models with the variables in each of the domains presented earlier in Chapter 3.

Box 3. Interpreting classification accuracy

Classification accuracy can be split into two components:

1. **The percentage of people who participated in SSI and were predicted to do so by the model (the true positive rate).** This component measures how accurately the model and threshold classified people who participated in SSI between the ages of 18 and 35.
2. **The percentage of people who did not participate in SSI and were predicted to not do so by the model (the true negative rate).** This component measures how accurately the model and threshold classified people who never participated in SSI between ages 18 and 35.

The probability threshold governs a trade-off between accurately classifying people who eventually participate in SSI and those who do not. Reducing the threshold means that people who participate in SSI are accurately classified a higher percentage of the time, but people who do not participate in SSI are accurately classified a lower percentage of the time. For example, in the extreme, a threshold of 0 would mean that all people are classified as participating in SSI because everyone's probability is 0 or greater. In that case, 100 percent of the people who participated in SSI were accurately classified, and 0 percent of those who did not participate were accurately classified. A threshold of 1 would yield the opposite result.

Depending on how the information would be used, it might be more important to classify one of the two groups accurately. For example, it may be more important to accurately classify those people who eventually participate in SSI to ensure resources are allocated to support them, even at the expense of inaccurately classifying more people who never participate.

A receiver operating characteristic (ROC) curve illustrates this trade-off for all possible thresholds and can be used as a tool for determining such refinements. The curve illustrates the trade-off between accurately classifying people who eventually participate in SSI and accurately classifying those who do not participate as the threshold moves from 0 to 1.

The 45-degree line in the ROC analysis serves as a benchmark for accuracy because it represents the ROC curve for a model in which the variables are not predictive of SSI participation. The higher the ROC curve above the 45-degree line, the better the model performs relative to this benchmark.

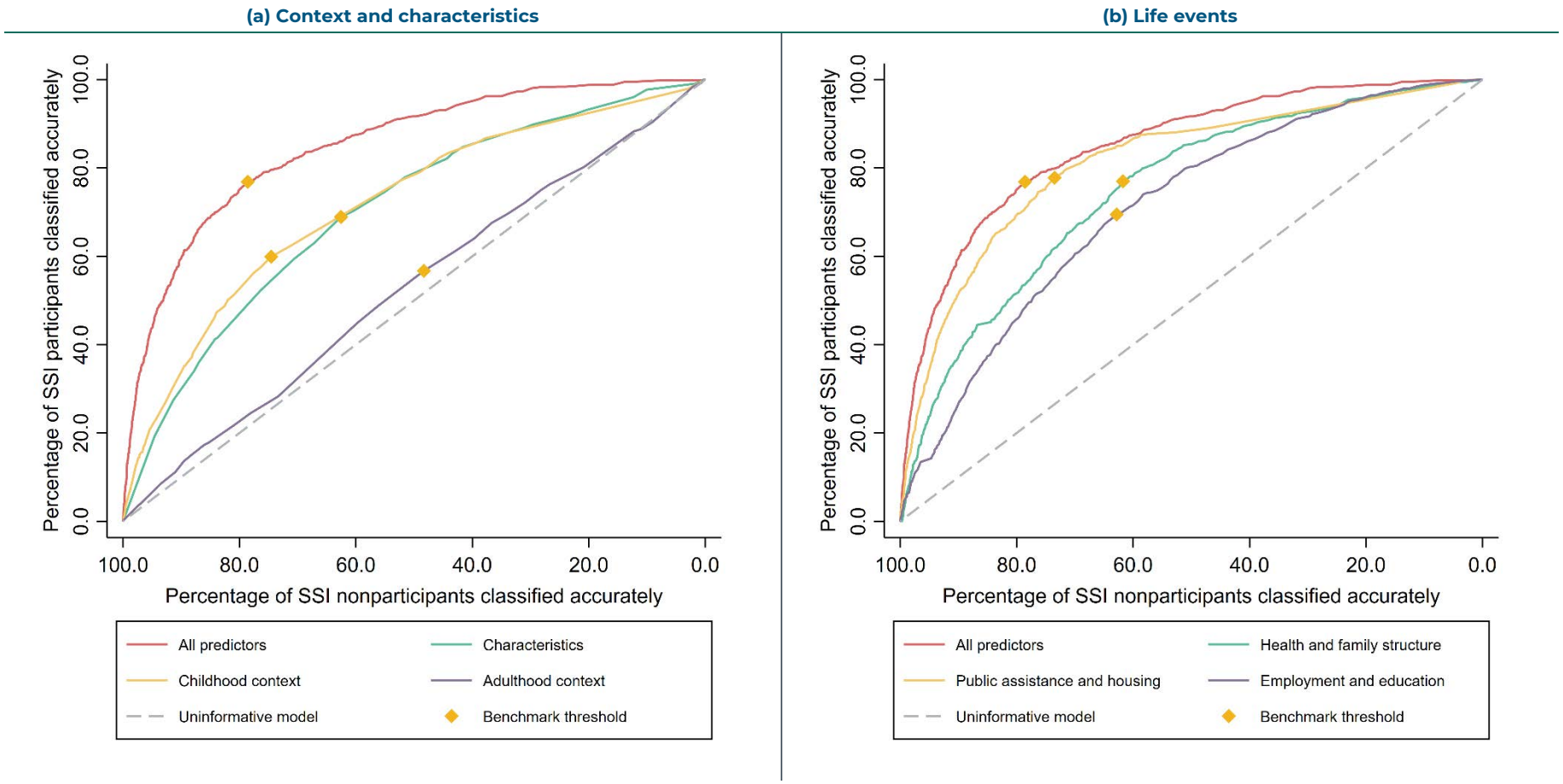
One commonly used threshold maximizes Youden's J statistic (Youden 1950), which amounts to maximizing the percentage of people who participate in SSI who are accurately classified plus the percentage of people who never participate in SSI who are accurately classified. In other words, it gives equal weight to correctly classifying those who eventually participate in SSI and those who do not eventually participate. In this case, an accuracy of 50 percent serves as a natural comparison for our models because an uninformative model that classifies all people the same way would lead to an average accuracy of 50 percent when weighting the two groups equally.

Results and discussion

Overall, the fully adjusted model accurately classified people 78 percent of the time, substantially better than the benchmark of 50 percent that corresponded to an uninformative model. Exhibit 9 shows the classification accuracy of the model for all possible probability thresholds (see the red line in both panels). At our benchmark probability threshold of 13, the model that included all predictors accurately classified 77 percent of the sample who eventually participated in SSI and 79 percent of the sample who did not participate. Different thresholds yielded different results. Reducing the threshold means that more people who participate in SSI are classified accurately. For example, at a lower probability threshold of 6, 90 percent of those who participated in SSI were classified accurately, but only 55 percent who did not do so were classified accurately. The optimal threshold depends on the relative value of classifying these two groups correctly.

The analyses of subsets of the predictors revealed that the model that included only public assistance and housing variables was especially predictive. This model performed nearly as well as the model that included all predictors (compare the yellow and red lines in Panel [b] of Exhibit 9). The models with health and family structure variables and employment and education variables also performed relatively well. In contrast, the adult context variables added little predictive accuracy (compare the solid blue line with the dashed gray line in Panel [a] of Exhibit 9). This finding suggests that employment programs could identify people with a relatively high likelihood of SSI participation by having information about their participation in other public assistance, stability of housing, health status, family structure, employment status, and education level. Much of this information is commonly collected on intake forms for social service programs.

Exhibit 9. Trade-offs between accurately classifying people who participate in SSI and those who do not (ages 18–35)



Source: Authors' calculations, based on the NLSY97 and the LAUS.

LAUS = Local Area Unemployment Statistics Survey; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income. The sample ranges from 8,544 to 8,739 respondents, depending on the set of predictors included in the model.

4. Conclusions

Our findings suggest several conclusions about how characteristics, contexts, and life events can be used to identify individuals who are relatively likely to participate in SSI and could potentially benefit from needs-based vocational supports (Exhibit 10). To guide the analyses, we developed a framework that posits that people's participation in SSI depends on three drivers: (1) knowledge of SSI and support in applying for it; (2) a need for financial support; and (3) the likelihood of eligibility for SSI. Because direct measures of these drivers were unavailable, the analysis examined measures that may relate to the drivers and therefore may predict SSI participation. Several such measures stood out as especially predictive, including low scores on an achievement test in adolescence, fair or poor health, recent unemployment, SSI participation as a child, mother's education, family structure as a child, participation in other types of public assistance, and marital status. Our selected characteristics, contexts, and life events accurately classified whether people participated in SSI 78 percent of the time, a substantial improvement over a benchmark of 50 percent from a hypothetical model in which the predictors are not predictive of SSI participation.

Employment and other programs seeking to effectively support potential SSI applicants can use these findings to improve their outreach and intake screening processes. Specifically, the findings show how such programs could use data to identify people who could benefit from additional employment supports to potentially preclude the need to apply for SSI. Our analyses point to several variables that are especially predictive and may be feasible for employment programs to collect. At the same time, they also suggest that most of the variables we considered predict SSI participation to some degree. For that reason, an employment program that already has access to some of this information may reasonably focus on variables that are readily available. For example, we found that limited educational attainment is predictive of SSI participation on its own but not when using other predictors at the same time, suggesting that educational attainment still has predictive value when other data are not available.

Exhibit 10. Summary of analyses

Research question	Summary of results	Implications for employment programs
At what age do people with different characteristics and in different contexts first participate in SSI as adults?	**People were similarly likely to first participate in SSI as an adult at each age between 18 and 35, except for a spike at age 18 primarily driven by people who participated in SSI as children and, therefore, may be more likely to be eligible as adults and continue participating.** The average and median ages of first SSI participation were 25 and 24, respectively, which was relatively constant across people with different characteristics and contexts. The exception was people who participated in SSI during childhood, for whom the average and median ages were 22 and 20, respectively.	• About half of eventual SSI participants first participate in SSI after age 24, suggesting there is a window for employment programs to identify and support potential SSI applicants before they begin participating.
Which life events precede SSI participation? Do they vary by the age of first SSI participation as an adult?	**People's experiences before participating in SSI differed by the age when they first participated.** Prior to participating in SSI, most people had participated in other public assistance, had been unemployed, had a child, and had lived with a young child. Compared to people who first participated in SSI before age 25, those who first participated after age 25 tended to have higher levels of educational attainment and were more likely to have participated in an educational or vocational training program or another form of public assistance.	• Because eventual SSI participants' life experiences differ based on when they start participating, employment programs may benefit from using different life events at different ages to identify potential SSI applicants.

Research question	Summary of results	Implications for employment programs
Which individual characteristics, contexts, and life events are most predictive of SSI participation as an adult?	**When analyzing characteristics, contexts, and life events one at a time, most variables we analyzed had a statistically significant relationship with SSI participation.** These analyses suggested that most of the variables we considered could potentially help predict SSI participation, depending on the availability of other measures. **Several variables stood out as predictive across all models, including low scores on the ASVAB achievement test in adolescence, SSI participation as a child, mother's education, family structure as a child, low levels of health, being unemployed or not in school within the last year, being unmarried, and participation in forms of public assistance other than SSI.** Many variables that had a statistically significant relationship with SSI participation on their own did not have such a relationship when controlling for other variables. This finding suggested that many of the variables captured redundant information, so not all variables would be required to predict who participates in SSI accurately. **Participation in SSI as a child and several life events were predictive of the likelihood of participation between the ages of 20 and 35.** People who participated in SSI as a child were 20 percentage points more likely to participate as an adult than those who did not participate as a child.	• Most of the variables we considered had a statistically significant relationship with SSI participation on their own, suggesting that employment programs that already collect these data could use them to help identify potential SSI applicants who could benefit from services. • If employment or other programs plan to collect additional data, they may wish to focus on the variables that remained predictive across all models, including achievement test scores in adolescence, SSI participation as a child, mother's education, family structure as a child, health, being recently unemployed and not in school, being unmarried, and participation in other forms of public assistance.
To what extent do combinations of characteristics, contexts, and life events accurately predict SSI participation as an adult?	**A model that included the group of characteristics, contexts, and life events accurately predicted who would participate in SSI as an adult 78 percent of the time, a substantial improvement over a benchmark of 50 percent that corresponds to a model in which the predictors were unrelated to SSI participation.** The model accurately classified 76.9 percent of the sample who eventually participated in SSI and 78.6 percent of the sample who did not do so. A model that included only participation in other public assistance and housing variables performed nearly as well.	• Characteristics, contexts, and life events combined predicted SSI participation with a relatively high level of accuracy, suggesting that employment programs could use these variables to identify potential SSI applicants. • A model using participation in other public assistance programs and information about housing performed nearly as well as the model that included all variables, suggesting that employment programs may wish to prioritize those variables.

Three limitations of this study suggest directions for future research:

1. Although we specified a plausible statistical model for predicting participation in SSI, refinements to the model could improve the predictive power. For example, we did not systematically explore all possible interactions between variables, such as whether some life events were more predictive for males versus females. Future work could explore such interactions or adopt machine-learning approaches that could identify complex clusters of predictors that improve predictive accuracy.
2. The NLSY97 is based on self-reported data, which can be susceptible to recall error or misinterpretation of a survey question. For example, it is possible that some respondents may conflate SSI and Social Security Disability Insurance (SSDI). Using administrative data—potentially coupled with survey data—could help mitigate such issues.

3. Our estimates focused on prediction and did not establish causal relationships between SSI participation and characteristics, contexts, and life events. For identifying people who may benefit the most from employment programs, prediction is sufficient. However, for other policy purposes, causal evidence is critical, such as for understanding whether education and training programs could increase self-sufficiency and reduce SSI participation. Future research could explore some of these relationships through other research designs that better establish causality, such as the randomized controlled trials conducted under the NextGen and Building Evidence on Employment Strategies projects.

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Appendix A. Supplementary Information

Comparability of SSI participation in our sample to the population

In the main text, we reported that just over 10 percent of people in our study sample had ever participated in SSI by age 35. We did not find comparable national statistics on the number of people who had ever participated in SSI during the years in our study; however, we did find information on the percentage of the adult population ages 18 to 34 participating in SSI during the period of our study. This figure ranged from 1.45 percent to 1.87 percent of the population in the relevant time periods (Social Security Administration 2018). We believe there are three potential explanations for why the "ever participate" percentage is so much larger than the percentage in any given year. First, the turnover rate of people on SSI to SSDI within a year of first participating in SSI is relatively high. An earlier study found that 27 percent of people first entitled to SSI become ineligible for SSI within a year because they become eligible for SSDI instead (Rupp and Riley 2011). With that high turnover rate, the percentage of people who ever participate in SSI could far exceed the annual prevalence. Second, our analysis sample included an oversample of Black adults who, on average, participate in SSI at higher rates than the full population (Giefer 2021). Third, people in the NLSY97 may overreport SSI participation if they (1) report participating in SSI when a dependent participated in SSI, or (2) conflate SSI and SSDI, leading them to respond that they have participated in SSI when they have participated only in SSDI.

Descriptions of key variables and rationale for inclusion

Exhibit A.1 describes key variables and provides a rationale for their inclusion in the analysis.

Exhibit A.1. Description of key variables and rationale for inclusion

Variable and description	Rationale for inclusion
Outcome	
First SSI participation. For follow-up survey rounds before 2009, the survey questions grouped SSI participation with other less common types of assistance (general assistance payments, emergency assistance payments, or Cuban/Haitian or Indian assistance payments). Questions in other survey rounds asked specifically about SSI. The baseline survey distinguished between SSI and these other types of assistance. For follow-up surveys after 2009, the survey questions on public assistance separated SSI assistance from other types of public assistance. For follow-up surveys after 2009, the survey questions asked whether either the respondent or their spouse or partner participated in each type of public assistance. For respondents who had a spouse or partner, we used data on whether the respondent had a medical condition to determine whether they would have been eligible for SSI. For those without a medical condition, we assumed that they did not participate in SSI.	**Past evidence.** Because our analyses sought to identify which factors could be used to identify people who might work but are also more likely than others to participate in SSI, we focused on whether people participated in SSI at any point. Evidence has shown that most people who participate in SSI do so for many years (Ben-Shalom and Stapleton 2015). Therefore, our analyses will generally apply to people who participate in SSI for longer periods.

Variable and description	Rationale for inclusion
Characteristics	
Sex. Measured at baseline.	**Past evidence.** Evidence suggests that SSI participation rates differ across sex (Giefer 2021).
Race and ethnicity. Divided into four categories: (1) White, non-Hispanic; (2) Black, non-Hispanic; (3) Hispanic; and (4) other (including people who fall into multiple categories).	**Past evidence.** Evidence suggests that SSI participation rates differ across race and ethnicity (Giefer 2021).
ASVAB achievement test score. Included 12 subtests covering arithmetic reasoning, assembling objects, auto information, coding speed, electronics information, general science, mathematics knowledge, mechanical comprehension, numerical operations, paragraph comprehension, shop information, and word knowledge. For our analyses, we divided the scores on the ASVAB into four categories based on quartiles.	**Likelihood of eligibility.** The ASVAB tests provide a proxy for cognitive ability, which could relate to whether someone is eligible for SSI. For example, a low score could reflect a cognitive challenge limiting the ability to work.
Context during childhood	
Mother/father completed high school. Defined as whether the respondent's mother or father reported completing 12 or more years of school, as reported at baseline.	**Likelihood of eligibility.** People from families whose parents have lower levels of education may be more likely to meet the means requirements for SSI.
Born to a teen mother. Defined as having been born to a mother who was age 19 or younger at the time of birth.	**Likelihood of eligibility.** People born to teen mothers may be more likely to meet the means requirements for SSI.
Lived in a two-parent household. Defined as living in a home with both biological parents, measured at baseline.	**Likelihood of eligibility.** People not living in a two-parent household may be more likely to meet the means requirements for SSI.
Participation in SSI as a child. Defined as whether the respondent reported participating in SSI before age 18.	**Knowledge of SSI.** People who participated in SSI as a child might be more likely to know about the SSI program from their past experiences. **Need for financial support.** People who previously participated in SSI may be less concerned about stigma. **Likelihood of eligibility.** People who participated in SSI as a child may be more likely to meet the means and disability requirements as an adult.
Participated in other public assistance as a child. Defined as whether the respondent's family participated in TANF, SNAP, WIC, or UI before age 18.	**Likelihood of eligibility.** People whose families participated in other forms of public assistance may be more likely to meet the means requirements for SSI.
Context during adulthood	
Currently living in an urban area. Measured at the time of the interview.	**Past evidence.** Other evidence suggests that SSI participation rates differ for rural versus urban areas (Nolan et al. 2017; Wong 2016).
Census region of residence. Defined as which census region the respondent lives in during each year (Northeast, North Central, South, West).	**Past evidence.** Other evidence suggests that SSI participation rates differ across regions (Wong 2016).
Percentage unemployed in the census region. Defined as the percentage of the average annual total labor force in the region that is not employed, according to the Local Area Unemployment Statistics Survey from the Bureau of Labor Statistics.	**Need for financial support and likelihood of eligibility.** The unemployment rate captures broader economic forces that could relate to whether someone would like to participate in SSI. For example, in a downturn, people may have a greater need for other sources of income. **Past evidence.** Past evidence suggests that economic conditions can affect the likelihood of applying for SSI (Nichols et al. 2017).

Variable and description	Rationale for inclusion
Life events related to family structure and health	
Marital status. Divided into three categories: (1) never married, (2) married, and (3) previously married. In our analyses, we also included variables for whether a marriage recently started or ended.	**Need for financial support.** A change in marital status could affect whether someone would like to apply for SSI. For example, if someone becomes divorced, they may have a greater need. **Likelihood of eligibility.** SSI determines eligibility partly based on spousal income, so marital status could affect eligibility directly.
Had a child. Defined as whether a respondent gave birth or fathered a child.	**Need for financial support.** Supporting a child may require additional resources and prompt someone to apply for SSI. **Likelihood of eligibility.** The income requirements for SSI are more relaxed for families with ineligible children (Code of Federal Regulations §416.1163).
Living with children of various ages. Divided into three categories based on the ages of the children: (1) 0–3 years old, (2) 4–6 years old, and (3) 7–18 years old.	**Need for financial support.** Supporting a child may require additional resources and prompt someone to apply for SSI. **Likelihood of eligibility.** The income requirements for SSI are more relaxed for families with ineligible children (Code of Federal Regulations §416.1163).
Reporting having fair or poor health. Defined as whether a respondent reported having "poor" or "fair" health rather than "good," "very good," or "excellent" health.	**Need for financial support.** People who experience poorer health may have a greater financial need for SSI. **Likelihood of eligibility.** People who experience poorer health may be more likely to meet the disability requirements for SSI.
Life events related to housing and public assistance	
Participation in other public benefits. Defined as whether anyone in the household participated in housing assistance, TANF, or SNAP.	**Knowledge of SSI.** People in households receiving other public assistance programs may learn about SSI through them. **Need for financial support.** People who live in households receiving other forms of assistance may have fewer resources, leading to a greater need for SSI and likelihood of meeting the means requirements. **Likelihood of eligibility.** People who live in households that receive other forms of assistance may be more likely to meet the means requirements for SSI.
Release from incarceration. Defined as whether a respondent was previously but not currently incarcerated.	**Knowledge of SSI.** People who exited incarceration may receive information about applying for SSI upon reentry. **Need for financial support and likelihood of eligibility.** People who are released from incarceration may have a greater need for SSI because they face complex challenges in finding and keeping a job.
Unstable housing. Defined as whether the respondent reported having no permanent residence or reported living in (1) quarters, which are not a housing unit in a rooming or boarding house; (2) in a nonpermanent unit in a transient hotel or motel; (3) in a shelter or on the street; (4) in jail, prison, detention, or work release; (5) or in a group home or treatment center.	**Need for financial support and likelihood of eligibility.** People living in unstable housing may be more likely to need financial support and meet the means requirements for SSI.

Variable and description	Rationale for inclusion
Life events related to employment and education	
Unemployed. Defined as someone who is not in school and not employed.	**Need for financial support and likelihood of eligibility.** People who are unemployed and not in school may have a greater need for SSI and be more likely to meet the means requirements. **Past evidence.** Past evidence suggests that unemployment can affect the likelihood of applying for SSI (Nichols et al. 2017).
Educational level. Divided into six categories: (1) no high school diploma, (2) a GED, (3) a traditional high school diploma, (4) completed some college, (5) two-year college degree, and (6) four-year college degree.	**Need for financial support and likelihood of eligibility.** People with lower levels of education may face more challenges in finding a job and may have a greater need for SSI and be more likely to meet the means requirements.
Dropped out of high school. Defined as someone who is not currently enrolled in K–12 schooling and who does not have a traditional high school diploma.	**Need for financial support and likelihood of eligibility.** Dropping out of high school may reflect a change in someone's life (such as developing a mental health condition) that could allow them to have a greater need for SSI and be more likely to meet the means requirements.
Dropped out of college. Defined as someone who is no longer enrolled in college and did not receive a degree.	**Need for financial support and likelihood of eligibility.** Dropping out of college may reflect a change in someone's life (such as developing a mental health condition) that reflects a greater need for SSI and be more likely to meet the means requirements.
Participation in education and training programs. Defined as someone who is at least 16 years old and participated in any occupational training programs outside of their regular schooling. Educational training programs include (1) adult basic education (pre-GED programs); (2) GED programs; (3) correspondence courses; (4) community or junior college; and (5) school-based K–12 training, including ROTC. Vocational training programs include (1) government training; (2) apprenticeship programs; (3) nursing school (LPN or RN); (4) business or secretarial school; (5) seminars or training programs outside of work; (6) seminars or training programs at work run by someone other than an employer; (7) formal company training run by an employer; (8) vocational rehabilitation centers; and (9) vocational, technical, or trade schools.	**Need for financial support and likelihood of eligibility.** Participation in education and training programs could potentially reflect a need for additional education and training due to a lack of resources, which could also cause people to apply for SSI and be more likely to meet the means requirements. Alternatively, it could reduce the need for financial support and likelihood of meeting the means requirements if the programs increase employability.

ASVAB = Armed Services Vocational Aptitude Battery; LPN = licensed practical nurse; RN = registered nurse; ROTC = Reserve Officers' Training Corps; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Income; TANF = Temporary Assistance for Needy Families; UI = Unemployment Insurance; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Additional results

Exhibits A.2.–A.4 present additional results. Exhibit A.2 presents information on the distribution of the age of first SSI participation by sample characteristic. Exhibit A.3 presents the relationship between characteristics, contexts, and life events and the likelihood of SSI participation when defining SSI participation in a variety of ways, including being on SSI for at least one, two, three, four, or five survey years. Exhibit A.4 presents the relationship between characteristics, contexts, and life events and the likelihood of SSI participation using data before and after age 25.

Exhibit A.2. Distribution of age of first SSI participation, by sample characteristic

Sample	Mean	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Overall	24.69	18	19	24	29	33
Characteristics						
Male	24.35	18	19	23	28	33
Female	24.88	18	20	24	29	33
Race and ethnicity						
White, non-Hispanic	23.96	18	19	23	28	32
Black, non-Hispanic	25.15	18	20	24	30	34
Hispanic	24.73	18	19	24	29	33
Other	26.14	20	22	26	30	34
ASVAB test above 50th percentile	24.62	18	21	24	28	32
ASVAB test below 50th percentile	24.81	18	19	24	29	33
Context						
Mother has a high school diploma	24.85	18	19	24	29	33
Mother does not have a high school diploma	24.29	18	19	23	28	33
Father has a high school diploma	24.86	18	20	24	29	33
Father does not have a high school diploma	24.23	18	19	23	28	33
Born to a teenage mother	24.81	18	19	23	30	33
Not born to a teenage mother	24.68	18	19	24	29	33
Lived in a two-parent household	25.01	18	21	25	29	33
Did not live in a two-parent household	24.57	18	19	24	29	33
Lived in an urban area at age 16	24.93	18	20	24	29	33
Did not live in an urban area at age 16	23.85	18	19	23	27	31
Participated in SSI as a child	22.06	18	18	20	25	31
Did not participate in SSI as a child	25.51	18	21	25	30	33
Participated in public assistance other than SSI as a child	24.36	18	19	23	29	33
Did not participate in public assistance other than SSI as a child	24.96	18	20	24	29	33
Census region of residence at age 16						
Northeast	25.14	18	21	25	29	33
North Central	23.49	18	19	22	27	32
South	25.18	18	20	25	29	34
West	24.56	18	19	24	28	32

Source: Authors' calculations, based on data from the NLSY97. The sample includes 904 respondents.

ASVAB = Armed Services Vocational Aptitude Battery; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

Exhibit A.3. Relationships between characteristics, contexts, and life and the likelihood of starting SSI participation during a given year for varying years of SSI participation for the fully adjusted model

Predictor	Difference in likelihood of SSI participation per year for those receiving SSI for at least: (percentage points)				
	One year	Two years	Three years	Four years	Five years
Characteristics					
Female (versus male)	0.03	0.01	0.02	0.02	0.01*
Race and ethnicity	*p* = 0.38	*p* = 0.18	*p* = 0.05	*p* = 0.04	*p* = 0.10
White, non-Hispanic (reference)	-	-	-	-	-
Black, non-Hispanic	-0.02	-0.02	-0.02	-0.01	-0.01
Hispanic	-0.05*	-0.05**	-0.04***	-0.04***	-0.03**
Other	-0.04	-0.01	0.01	0.01	-0.01
ASVAB achievement test score measured in adolescence	*p* = 0.00	*p* = 0.00	*p* = 0.00	*p* = 0.00	*p* = 0.04
First quartile (reference)	-	-	-	-	-
Second quartile	-0.02	-0.03	-0.03*	-0.04**	-0.02
Third quartile	-0.10***	-0.08***	-0.06***	-0.05***	-0.03**
Fourth quartile	-0.13***	-0.11***	-0.08***	-0.08***	-0.04**
Context during childhood					
Mother completed high school	-0.05**	-0.05**	-0.03*	-0.02*	-0.02*
Father completed high school	0.05**	0.02	0.02	0.01	0.01
Born to a teen mother	-0.03	-0.01	0.00	-0.01	-0.01
Lived in a two-parent household	-0.07***	-0.06***	-0.02	-0.01	-0.02*
Participation in SSI as a child	0.31***	0.19***	0.15***	0.12***	0.08***
Participated in public assistance other than SSI as a child	-0.01	-0.01	-0.01	-0.01	0.00
Context during adulthood					
Currently living in an urban area	-0.02	0.00	-0.01	-0.01	0.00
Census region of residence	*p* = 0.00	*p* = 0.00	*p* = 0.14	*p* = 0.37	*p* = 0.58
Northeast (reference)	-	-	-	-	-
North Central	-0.07**	-0.07***	-0.02	0.00	0.00
South	-0.11***	-0.09***	-0.04**	-0.02	-0.01
West	-0.04	-0.03	-0.02	-0.02	-0.01
Percentage unemployed in the census region	*p* = 0.14	*p* = 0.13	*p* = 0.02	*p* = 0.00	*p* = 0.01
First quartile, low unemployment (reference)	-	-	-	-	-
Second quartile	-0.04	-0.04*	-0.03*	-0.04**	-0.02*
Third quartile	0.02	0.00	0.00	0.00	0.00
Fourth quartile, high unemployment	0.01	-0.02	0.02	0.03	0.02
Life events related to public assistance and housing					
Ever lived in a household that participated in public assistance other than SSI	0.12**	0.07*	0.02	0.02	0.02
Lived in a household that participated in public assistance other than SSI within the last year	0.79***	0.56***	0.28***	0.23***	0.14***
Previously incarcerated	-0.02	-0.02	-0.02	-0.04**	-0.02
Released from incarceration within the last year	0.02	-0.01	-0.02	-0.02	-0.01

Predictor	Difference in likelihood of SSI participation per year for those receiving SSI for at least: (percentage points)				
	One year	Two years	Three years	Four years	Five years
Ever lived in unstable housing	0.06*	0.05*	0.01	0.00	0.00
Lived in unstable housing within the last year	-0.01	0.00	-0.01	-0.02	-0.01
Life events related to family structure and health					
Marital status	p = 0.00	p = 0.00	p = 0.00	p = 0.01	p = 0.03
Never married (reference)	-	-	-	-	-
Married	-0.14***	-0.10***	-0.07***	-0.05***	-0.03***
Previously married	0.04	0.04	-0.03	-0.03	-0.04*
Married within the last year	-0.04	-0.03	-0.02	-0.02	-0.02
Ended a marriage within the last year	0.01	0.01	0.03	0.02	0.01
Ever had a child	0.01	0.00	0.00	-0.01	-0.01
Had a child within the last year	0.00	-0.03	-0.01	-0.01	-0.02
Living with a child 0–3 years old	0.03	0.01	-0.01	-0.02	-0.01*
Living with a child 4–6 years old	0.01	0.02	0.01	0.00	0.00
Living with a child 7–18 years old	0.02	-0.01	-0.01	-0.01	-0.01*
Ever reported having fair or poor health	0.12***	0.08***	0.06***	0.04**	0.01
Reported having fair or poor health within the last year	0.40***	0.28***	0.21***	0.17***	0.10***
Life events related to employment and education					
Ever previously unemployed and not in school	0.05*	0.05**	0.02	0.03	0.02
Unemployed and not in school within the last year	0.46***	0.40***	0.30***	0.28***	0.21***
Educational level	p = 0.77	p = 0.67	p = 0.72	p = 0.47	p = 0.06
High school dropout (reference)	-	-	-	-	-
GED	0.00	-0.01	0.00	-0.01	-0.02
Traditional high school diploma	0.01	0.00	0.01	0.01	0.00
Completed some college	0.01	-0.01	-0.01	-0.01	-0.03*
Two-year college degree	0.00	-0.04	-0.03	-0.03	-0.05*
Four-year college degree	-0.06	-0.07*	-0.03	-0.04	-0.07***
Dropped out of high school within the last year	0.09	0.09	0.04	0.02	0.02
Dropped out of college within the last year	-0.02	0.03	-0.01	-0.01	-0.01
Previously enrolled in educational training[a]	-0.01	0.00	0.03	0.02	0.00
Enrolled in educational training within the last year[a]	0.03	0.01	-0.02	-0.02	-0.02
Previously enrolled in vocational training[a]	-0.01	0.01	0.01	0.01	0.01
Enrolled in vocational training within the last year[a]	0.02	0.02	0.03*	0.00	0.01
Sample size	8,544	8,547	8,528	8,530	8,520

Source: Authors' calculations, based on data from the NLSY97 and the LAUS.

Note: Standard errors were calculated using the delta method, which allows for clustering at the individual level. The p-values in the rows for categorical variables are from Wald tests of equality across categories.

[a] Exhibit A.1 describes the training programs classified as educational and vocational training, respectively.

***/**/* Marginal effects are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

ASVAB = Armed Services Vocational Aptitude Battery; LAUS = Local Area Unemployment Statistics Survey; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

Exhibit A.4. Relationships between characteristics, contexts, and life events and the likelihood of starting SSI participation during a given year before and after age 25 for the fully adjusted model

Predictor	Difference in likelihood of SSI participation (percentage points)		*p*-value for difference across categories	
	Before age 25	After age 25	Before age 25	After age 25
Characteristics				
Female (versus male)	0.00	0.04*	0.92	0.07
Race and ethnicity	-	-	0.12	0.37
White, non-Hispanic (reference)	-	-	-	-
Black, non-Hispanic	-0.10**	0.02	0.04	0.45
Hispanic	-0.10*	-0.02	0.08	0.44
Other	-0.17*	0.05	0.07	0.44
ASVAB achievement test score measured in adolescence	-	-	0.01	0.33
First quartile (reference)	-	-	-	-
Second quartile	-0.06	-0.01	0.29	0.69
Third quartile	-0.19***	-0.04	0.00	0.22
Fourth quartile	-0.21***	-0.07*	0.00	0.07
Context during childhood				
Mother completed high school	-0.11**	-0.02	0.04	0.46
Father completed high school	0.05	0.03*	0.19	0.06
Born to a teen mother	-0.04	-0.03	0.41	0.13
Lived in a two-parent household	-0.15***	-0.02	0.00	0.42
Participation in SSI as a child	0.88***	0.02	0.00	0.61
Participation in public assistance other than SSI as a child	-0.05	0.01	0.28	0.56
Context during adulthood				
Currently living in an urban area	-0.04	0.00	0.46	0.96
Census region of residence			0.00	0.01
Northeast (reference)	-	-	-	-
North Central	-0.02	-0.10***	0.81	0.00
South	-0.16***	-0.07**	0.00	0.02
West	0.01	-0.03	0.92	0.37
Percentage unemployed in the census region	-	-	0.01	0.40
First quartile, low unemployment (reference)	-	-	-	-
Second quartile	-0.13**	0.03	0.02	0.35
Third quartile	0.00	0.02	0.95	0.53
Fourth quartile, high unemployment	-0.17**	0.05	0.03	0.11
Life events related to public assistance and housing				
Ever lived in a household that participated in public assistance other than SSI	0.17	0.10**	0.24	0.02
Lived in a household that participated in other assistance within the last year	0.92***	0.58***	0.00	0.00
Previously incarcerated	0.03	0.00	0.86	0.91
Released from incarceration within the last year	-0.11	0.08	0.34	0.25

Predictor	Difference in likelihood of SSI participation (percentage points)		*p*-value for difference across categories	
	Before age 25	After age 25	Before age 25	After age 25
Ever lived in unstable housing	0.17*	0.02	0.05	0.45
Lived in unstable housing within the last year	0.01	-0.01	0.92	0.84
Life events related to family structure and health				
Marital status	-	-	0.19	0.00
Never married (reference)	-	-	-	-
Married	-0.09	-0.11***	0.21	0.00
Previously married	-0.28***	0.05	0.00	0.25
Married within the last year	-0.04	-0.03	0.59	0.46
Ended a marriage within the last year	-0.02	-0.01	0.88	0.87
Ever had a child	0.01	-0.02	0.88	0.46
Had a child within the last year	0.08	-0.07*	0.28	0.06
Living with a child 0–3 years old	0.12*	0.00	0.06	0.93
Living with a child 4–6 years old	0.06	0.00	0.27	0.94
Living with a child 7–18 years old	0.03	0.01	0.45	0.54
Ever reported having fair or poor health	0.21***	0.07***	0.00	0.01
Reported having fair or poor health within the last year	0.50***	0.28***	0.00	0.00
Life events related to employment and education				
Ever previously unemployed and not in school	-0.04	0.09***	0.49	0.00
Unemployed and not in school within the last year	0.43***	0.44***	0.00	0.00
Educational level	-	-	0.88	0.73
High school dropout (reference)	-	-	-	-
GED	0.05	-0.01	0.52	0.71
Traditional high school diploma	0.01	0.02	0.83	0.61
Completed some college	0.08	-0.01	0.30	0.67
Two-year college degree	-0.01	-0.02	0.96	0.73
Four-year college degree	-0.04	-0.05	0.78	0.25
Dropped out of high school within the last year	0.08	0.12	0.41	0.53
Dropped out of college within the last year	-0.20***	0.11	0.01	0.19
Previously enrolled in educational training[a]	-0.06	0.01	0.36	0.67
Enrolled in educational training within the last year[a]	0.05	0.02	0.60	0.72
Previously enrolled in vocational training[a]	-0.16***	0.02	0.00	0.33
Enrolled in vocational training within the last year[a]	0.06	-0.01	0.23	0.72
Sample size	8,425	7,654		

Source: Authors' calculations, based on data from the NLSY97 and the LAUS.

Note: Standard errors were calculated using the delta method, which allows for clustering at the individual level. The *p*-values in the rows for categorical variables are from Wald tests of equality across categories.

[a] Exhibit A.1 describes the training programs classified as educational and vocational training, respectively.

***/**/* Marginal effects are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

ASVAB = Armed Services Vocational Aptitude Battery; LAUS = Local Area Unemployment Statistics Survey; NLSY97 = National Longitudinal Study of Youth 1997; SSI = Supplemental Security Income.

Appendix B. Methodology

Hazard models

To estimate the relationships between SSI participation and characteristics, life events, and context, we adopted a discrete choice hazard model with a logit link function, which approximates a continuous-time Cox proportional hazard model (Allison 1982). This approach is equivalent to estimating a logit model on a data set that has been reorganized so that the observations are at the individual-year level and a person's observations appear until they participate in SSI for the first time or are censored because they do not participate in SSI within the time frame of the survey.

The probability that individual i first takes up SSI at age t if they had not yet taken up SSI by t is given by Equation (1):

(1) $$\Pr(t, X_{it}) = \Pr(T_i = t \mid T_i \geq t, X_{it}) = \frac{\exp(X_{it}\beta)}{1 + \exp(X_{it}\beta)},$$

where T_i is the time for when someone first takes up SSI and X_{it} is a vector of potentially time-varying covariates, including age dummy variables, as well as the characteristics, contexts, and life events.

Marginal effects on the probability of starting SSI participation at a single age

For each covariate, we estimated the marginal effect of starting SSI participation at a single age (per period marginal effects), which represents how the probability of starting SSI participation in a particular year depends on a one-unit change in the covariate. Because our covariates were all discrete, we calculated the marginal effect of covariate k with Equation (2):

(2) $$\overline{ME}^k = \Pr(\bar{t}, \overline{X}^{-k}, \overline{X}^k = 1) - \Pr(\bar{t}, \overline{X}^{-k}, \overline{X}^k = 0),$$

where $\bar{t}$ is the average across ages in the sample and $\overline{X}^{-k}$ indicates the average of the vector of covariates across observations and periods, except for covariate k. This expression represents the difference in the probability of SSI participation as covariate k changes from 0 to 1 when evaluated at the average in the sample. We calculated the standard error of the average marginal effect using the delta method, which allows for clustering at the individual level.

Marginal effects on the probability of starting SSI participation during a range of ages

In addition, we considered the marginal effects on the probability of starting SSI participation between the ages of 20 and 35. The probability of starting SSI participation between t_l (lower bound) and t_h (upper bound), given $T_i \geq t_l$, is demonstrated by Equation (3):

(3) $$\Pr(T_i \leq t_h \mid T_i \geq t_l, X_i) = 1 - \Pr(T_i > t_h \mid T_i \geq t_l, X_i) = 1 - \Pi_{t-t_l}^{t_h}(1 - \Pr(t, X_{it}))\,,$$

where X_i is the full set of covariates (including time-varying covariates) for an individual between t_l and t_h. Note that this probability depended on the per-period probabilities so that we could estimate it from the logit estimates.

The marginal effect for the interval $[t_l, t_h]$ of a non-time-varying, binary covariate k is represented by Equation (4):

(4) $$\overline{ME}^{k,t_l,t_h} = \Pr(T_i \leq t_h \mid T_i \geq t_l, \overline{X}^{-k}, \overline{X}^{k} = 1) - \Pr(T_i \leq t_h \mid T_i \geq t_l, \overline{X}^{-k}, \overline{X}^{k} = 0)\,.$$

The analogous marginal effects for time-varying covariates were more complicated. To analyze them, we assumed that an event occurred at time t_l and it perpetuated in a natural way over time. For example, our model allowed for both an effect of ever having participated in public assistance other than SSI and an effect of having participated in other public assistance within the last year. We based the overall effect of participating in other public assistance at age t_l on the probability of participating in SSI by age t_h, which included both components. We set the covariate for whether the respondent participated in other public assistance within the last year to 1 for both period t_l and t_{l+1}. In addition, we set the value for whether the respondent ever participated in other public assistance to 1 for all periods (t_l through t_h). We set the value for having participated in other public assistance within the last year to 0 for all future values after t_{l+1}. We calculated the standard errors using the bootstrap method, which allows for clustering at the individual level.

To learn more, please visit

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