Multiple Program Participation and Exits from Food Stamps among Elders

Sukriti Issar
Brown University

This article uses population-level administrative data from Rhode Island's Food Stamp Program to examine exits from the Food Stamp Program by elders. Multivariate event history models estimate the relations of multiple program participation and the timing of eligibility reviews to the probability of exiting food stamps. Results suggest that elders who are age 65 or older and who receive both Supplemental Security Income and food stamps have a higher probability of exiting the Food Stamp Program than do elders who receive only food stamps. The timing of eligibility reviews is also found to be positively associated with the probability of exit from food stamps. This article is argued to extend conceptual models of the determinants of food stamp exits.

The Food Stamp Program is a federally funded, in-kind, food assistance program. Renamed the Supplemental Nutrition Assistance Program (SNAP) in 2008, the program has been described as the "first defense against hunger" (Rhode Island Community Food Bank 2006, 2). The program aims to "permit low-income households to obtain a more nutritious diet by increasing their purchasing power" (Food and Nutrition Act of 2008, as amended, U.S. Public Law 95-113, cited in Wolkwitz and Trippe 2009, 1). A food stamp recipient receives an electronic benefit transfer card that can be used to purchase food from authorized retail stores. Food stamps are available to households with gross incomes below 130 percent of the federal poverty level, those with net incomes below 100 percent of the federal poverty level, and those with assets below a specified amount (Trenkamp and Wiseman 2007). The program imposes few nonfinancial eligibility criteria. It is thus the only income assistance program that potentially serves all financially needy households in the United States. Elders make up a substantial proportion of

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food stamp recipients. In 2008, 18.5 percent of the 12.5 million food stamp households included one or more elders (Wolkwitz and Trippe 2009).

Elder food stamp recipients are different from working-age recipients for a number of reasons (Hu 1998). Since welfare reform in 1996, working-age public assistance recipients are increasingly subject to work-related policies such as work-first or work-training (Moffitt 2007). This increased focus on work is less relevant for elders. Instead, the "worthiness principle" better describes public assistance policy for elders (Moffitt 2007, 42). Elders are perceived as more worthy of receiving social assistance, and their receipt of assistance is not related to work requirements as is assistance for working-age recipients. The worthiness principle translates into different food stamp eligibility rules and administrative procedures for elders. Households with elders are subject to more liberal eligibility rules than households without elders; for example, households with elders are subject to a net income test rather than a gross income test, such households are not subject to a cap on shelter deductions, and elder households have higher resource disregards of $3,000 compared to $2,000 for nonelder households (Haider et al. 2003; Wolkwitz and Trippe 2009). Elder households are also subject to less frequent eligibility reviews. These rule differences between elders and working-age food stamp recipients are likely to result in differential determinants of food stamp exits for these two groups.

This article uses event history analysis to study the probability of elders' exits from the Food Stamp Program. It pays particular attention to the ways in which multiple program participation and the timing of eligibility reviews (or recertification) relate to the probability of exiting food stamps.

Conceptual Framework: Determinants of Food Stamp Exits

Decisions to enter and exit public assistance programs (such as food stamps) are usually conceptualized as the result of individual- or household-level cost-benefit analysis. The paradigmatic agent in this conceptualization is a utility-maximizing individual (or household) who chooses between a bundle of program benefits and wages from work (see, e.g., O'Neill, Bassi, and Wolf 1987; Fitzgerald 1995; Lane and Stevens 1995; Harris 1996; Keane and Moffitt 1998; Nam 2005). In other words, individuals make decisions about entering and leaving public assistance by considering their eligibility and also by weighing the potential wages earned from work against the stigma and transaction costs associated with being on public assistance (Harris 1996; Mills et al. 2001).[1] Human capital plays an important predictive role in these models through its theorized influence on labor market success and employability (see, e.g., Nam 2005). Such conceptual models of the receipt of public ben-

efits (e.g., food stamps) fit more closely the life circumstances of the working-age population than elder adults and the disabled, for whom work requirements are not central to benefit receipt. For groups with a weak attachment to the labor market, the key trade-off might not be between leisure and labor but between the costs related to public assistance receipt and the benefits realized from it.

The costs and benefits of food stamp receipt are affected by other programs for which an individual is eligible. Multiple program participation is a common feature of the U.S. public assistance system, allowing recipients to access both cash and noncash benefits from different programs (MacDonald 1985; Trenkamp and Wiseman 2007). There are two main ways in which individuals access benefits from multiple programs: one is through categorical eligibility, and the other is by qualifying independently for each program. The Food Stamp Program is part of the categorical eligibility package (Wolkwitz and Trippe 2009). In other words, an individual eligible for certain programs is categorically eligible for food stamps. Elders meeting the income test for Supplemental Security Income (SSI) are in most cases categorically eligible for food stamps (Trenkamp and Wiseman 2007).

Research on multiple program participation focuses on three broad areas. First, in keeping with the literature's overall focus on employment, researchers study multiple program participation in terms of whether or not it is a disincentive to employment (Keane and Moffitt 1998). Second, authors consider multiple program participation's relations to poverty rates and the poverty gap (see, e.g., MacDonald 1985; Weinberg 1985; Nicholas and Wiseman 2009). Third, and most important for this article, research focuses on how different programs interact to influence program caseloads and recipient decision making (e.g., Ratcliffe, McKernan, and Finegold 2008).

The literature on the interaction of multiple programs draws particularly from the empirical finding that the numbers of people receiving both welfare and food stamps declined after the passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA; U.S. Public Law 104-193; Zedlewski and Brauner 1999; Mills et al. 2001). The term "welfare" here refers to benefits received through Aid to Families with Dependent Children (AFDC) or Temporary Assistance for Needy Families (TANF; the 1996 law replaced AFDC with TANF). Welfare (AFDC or TANF) is available to families with dependent children. Because an individual's participation decisions in one program affect participation in other programs, participation in one program is likely to have spillover effects on the caseloads of other programs for which a person is eligible. Research focuses on how the tightening of welfare eligibility and benefit limits after welfare reform had spillover effects on food stamp receipt. Food stamps and welfare are linked through categorical eligibility, and research suggests that former welfare

recipients are more likely to leave the Food Stamp Program than are nonwelfare recipients (Zedlewski and Brauner 1999; Mills et al. 2001). Many former welfare (AFDC or TANF) recipients remain eligible for food stamps after losing eligibility for welfare, but they are unaware of their continued eligibility for food stamps or find the food stamp benefit too small and the transaction costs too high in the absence of welfare benefits (Zedlewski and Brauner 1999; Mills et al. 2001).

Research on the link between welfare and food stamps does not extend to elder adults. In particular, studies do not consider the relation between elders' multiple program participation and the probability of exiting food stamps (research on multiple program participation among elders focuses more on the link between Disability Insurance and SSI than on program overlaps with food stamps; see, e.g., Rupp and Scott 1996; Rupp, Davies, and Strand 2008). The relation between multiple program participation and food stamp exits is an important policy question for elders because it can be assumed that elders' decisions regarding food stamp receipt might be related to the costs and benefits of participating in linked programs rather than the costs and benefits of work. This article extends the analysis of multiple program participation to consider elders on food stamps and to investigate how participation in SSI and Medical Assistance relates to the probability of exiting food stamps.

Elders on food stamps may use a variety of benefit bundles that include a mix of cash and noncash benefits. Supplemental Security Income is a federal, means-tested, cash assistance program for elders, the disabled, and the blind (DeCesaro and Hemmeter 2008; Rupp et al. 2008). It is a key assistance program, because an elder's eligibility for SSI implies categorical eligibility for food stamps. Using Social Security Administration data, Bob Trenkamp and Michael Wiseman (2007) estimate that 64 percent of 2006 SSI recipients lived in households that also received food stamps. Recipients of SSI who are younger than age 65 are subject to the same stringent disability test for SSI eligibility as is used to determine eligibility for Disability Insurance (Muller, Scott, and Bye 1996; Rupp at al. 2008; Nicholas and Wiseman 2009). Individuals under age 65 often use SSI during the waiting period for Disability Insurance (Rupp et al. 2008). Because all SSI recipients are categorically eligible for Medicaid, SSI offers elders a path to medical access. In Rhode Island, as in many other states, elders can also access Medicaid through the state's Medical Assistance program, which serves medically needy elders who do not qualify for SSI (i.e., those who receive Medical Assistance do not receive SSI; Crowley 2003). Those participating in Medical Assistance can qualify for food stamps through independent applications.

Elders who access food stamps in conjunction with other programs are likely to have a different probability of exiting food stamps than do elders who access only food stamps. As mentioned above, previous re-

search on the working-age population suggests that former welfare recipients (i.e., those who transitioned off AFDC or TANF) have a higher probability of exiting food stamps than nonwelfare recipients do. However, such findings do not generalize to the population in this study. The previous findings apply to a different demographic group (working-age former welfare recipients instead of elders), different forms of cash benefits (AFDC or TANF instead of SSI), different policies (work-first for working-age participants instead of the worthiness principle for elders), and different types of data. Theoretically, one might expect multiple program participation by elders to diminish the probability that they exit food stamps. Multiple program participation has higher benefits and lower costs than participation in food stamps alone, and those participating in multiple programs (particularly if SSI is part of the benefit bundle) are likely to be financially needier.[2] In light of these theoretical expectations, the current study hypothesizes that elders on food stamps who participate in multiple programs have a lower probability of exiting food stamps than do elders who access only food stamps.

As individuals enter the welfare system (e.g., through food stamps), they interact with different agencies and are identified as categorically eligible for different programs. Public benefit recipients are likely to experience different trajectories of multiple program participation as they participate in different programs at different times. This makes multiple program participation an inherently dynamic process rather than a point-in-time decision or event.[3] This study undertakes a descriptive analysis of the trajectories that elders experience as they participate in the Food Stamp Program. The analysis informs the multivariate results. The literature on multiple program participation usually does not consider the dynamics of participation or the trajectories that individuals follow as they receive public assistance benefits from multiple programs (for notable exceptions, see Zedlewski and Brauner 1999; Mills et al. 2001).

Transaction costs are another feature of this study. Federal requirements mandate that food stamp recipients undergo eligibility reviews at regular calendrical times. This process is also known as recertification, and it imposes transaction costs on benefit recipients. Such costs include waiting in line at a program office and arranging for transportation to reach the office (Currie and Grogger 2001). More frequent eligibility reviews are found to be related to declines in Food Stamp Program participation rates; research suggests that (potentially eligible) individuals opt out of the program and forgo benefits rather than undertake the costs of eligibility review (Kabbani and Wilde 2003). In addition, the probability of exit from food stamps is found to spike during months in which eligibility reviews take place, particularly for working-age adults (see, e.g., Ribar, Edelhoch, and Liu 2008). This study hypothesizes that the positive relation between probability of exiting food stamps and the

timing of eligibility review also applies to elders. Although some of those who exit food stamps at eligibility review do so because they are ineligible (see, e.g., Zedlewski and Brauner 1999), the spikes also represent program departures by individuals who fail to recertify (i.e., who fail to complete paperwork or have no fixed address) and by those who voluntarily exit. Administrators and advocates use the phrase "lost at recertification" to describe those who fail to appear for eligibility review. It is not known whether those who fail to appear for eligibility review achieve income sufficiency and food security. For elders on food stamps, being lost at recertification might be a special concern because it can be assumed that they are less likely than working-age recipients to exit food stamps through paid work.

Data and Methods

Data

This study draws upon population-level monthly administrative data from the Rhode Island Department of Human Services. These data capture the timing of food stamp entries and exits, as well as the demographic characteristics of all food stamp recipients who first enrolled in the Food Stamp Program in Rhode Island between June 1993 and September 1998. The data follow individuals until October 1999 (so that each recipient who entered the system is followed for at least 1 year).

Administrative data have advantages and disadvantages. The main advantage is that the data are not dependent on participants' memory, so they do not suffer from nonresponse bias. The main disadvantage is that the data may not capture all relevant variables, because the data were collected for purposes other than quantitative research. The event history data used in this study have a few additional advantages. First, these are population-level data. Second, there are no left-censored observations. Every individual in this sample is observed from the start of his or her food stamp spell and was enrolled in the Food Stamp Program for the first time during the study period. Another advantage of these data is the stretch of time for which data are captured; the data follow individuals for time periods between 1 and 5 years (depending on when they enter the Food Stamp Program). The data are linked across administrative agencies, so that it is possible to study multiple program participation. Finally, because the data are from one state, Rhode Island, state policy remains constant across recipients at any point in time.

Analysis for this study is limited to food stamp recipients over 60 years of age (this is the convention used to identify elders in Rhode Island and in the U.S. Department of Agriculture's [USDA] annual reports on the Food Stamp Program; see Rosso and Fowler 2000). Individuals who age into the above-60 age group during an ongoing food stamp spell

are excluded from the current analysis, so the study population is limited to those who experience a first food stamp spell after turning age 60. Data are drawn from administrative records to include only those individuals who enrolled in the Food Stamp Program for the first time during the study period. In addition, 65 years is an important age discontinuity. It is the age at which individuals can qualify for retirement benefits and Medicare. It also is the age at which an individual can qualify for SSI without having to pass a disability test. The analysis provides descriptive results for the two age groups: ages 60–64 years and age 65 or older. Individuals who died during their food stamp spell are excluded from the analysis.

In Rhode Island, the shares of elders and elders in poverty are respectively higher than the national averages (according to both the 1990 and 2000 census). In 1990, 19.7 percent of Rhode Island residents were age 60 or older; nationwide, 16.8 percent of residents were in that age group. Among Rhode Island residents age 60 or older, 21.1 percent had incomes below the federal poverty level in 1990 (nationwide, 15.2 percent of this age group was estimated to live in poverty). According to USDA statistics for 1999, the last year of data for this article, the proportion of elder food stamp recipients in Rhode Island (19.1 percent) is comparable to the proportion nationwide (20.1 percent; Rosso and Fowler 2000). Data from the Bureau of Economic Analysis (1993–99) suggest that, during the study period, food stamp spending remained steady in Rhode Island but declined nationwide (author calculations).[4]

Variables

The dependent variable is the probability, or hazard, of exit from food stamps. A food stamp spell is defined as a period of receipt that lasts more than 1 month (see, e.g., Harris 1996). A food stamp exit occurs if a recipient does not receive food stamps for at least 1 month; this ensures that the study does not count short exits related to administrative errors.

The key independent variables in this study are multiple program participation and timing of eligibility review. Multiple program participation is operationalized in two ways: (1) as program participation at the start of the food stamp spell and (2) as trajectories or dynamics of multiple program participation during the food stamp spell.

The first operationalization, which examines whether recipients also received SSI or Medical Assistance at the start of their food stamp spells, employs three categories or start states: received only food stamps, received food stamps and SSI, received food stamps and Medical Assistance. Spells classified as receiving both food stamps and SSI are further divided to indicate the age of the food stamp recipient (60–64 years; 65 years or older) at the start of the spell; the distinction between the

two age groups is important because individuals younger than 65 years must pass a disability test in order to confirm eligibility for SSI, but those 65 years and older are not subject to the test.

The second operationalization of multiple program participation classifies food stamp spells into trajectories that are based on indicators of participation at the start and end of the food stamp spell (or end of the study period, whichever comes first). Because the study recognizes three possible start states (food stamps only, food stamps and SSI, food stamps and Medical Assistance) and three possible end states, there are nine possible trajectories for a food stamp spell. Bradford Mills and colleagues (2001, 544) refer to a "transition choice set," but the use of the term "trajectory" in the current study leaves open the question of how much choice or volition elders have in determining the program trajectories they experience.

The administrative data in this study lack time-varying information on multiple program participation and capture program participation information only at the start and end of the food stamp spell. For this reason, the trajectories of multiple program participation cannot be included in multivariate event history models. Instead, the first operationalization of multiple program participation at the start of the food stamp spell is used as a covariate in multivariate models. The descriptive analysis of the second operationalization of multiple program participation as transitions and trajectories of program participation informs the interpretation of results. The study's second independent variable, the timing of eligibility review, is estimated by creating dummy variables for the times at which eligibility review occurs; namely, for the 6-month mark and each yearly time point from the start of the food stamp spell. An important aspect of the probability of exit from food stamps is the occurrence of spikes and discontinuities at regular calendrical times (see, e.g., Ribar et al. 2008). The dummy variables proxy for these spikes. Finally, multivariate models control for age, gender, race, citizenship, whether English is the recipient's primary language, education, vehicle ownership, the timing of welfare reform, and net income at the start of the food stamp spell.

Multivariate Estimation Strategy

This study uses multivariate event history models to estimate the probability of exit from food stamps. Three specification choices are made to fit this model: choosing between the hazards metric and the accelerated failure time metric, choosing a parametric form for the shape of the underlying probability or hazard, and choosing a parametric form for unobserved heterogeneity (Cleves et al. 2008). The hazards metric

is preferable if some of the study population does not experience the event (in this case, exits from food stamps).

To specify the shape of the hazard function, this work relies on an exponential model. That model assumes constant probability (or hazard) rates. It is chosen over models that assume hazard rates vary over time (Blossfeld and Rohwer 1995). Nonparametric diagnostic plots of the hazard rate over time suggest that spikes occur at eligibility review and provide little evidence of a time trend (see fig. 2 below). The exponential model employs independent dummy variables to represent the first 6-month mark and yearly marks after that. These variables account for hazard rate spikes that correspond to the timing of eligibility reviews.

A control for unobserved heterogeneity is included to account for latent (unobserved) factors that might cause some individuals to be more likely than others to exit from food stamps (Blossfeld and Rohwer 1995; Box-Steffensmeier and Jones 2004). Among such factors may be food stamp recipients' various unobserved characteristics, including an inability to navigate administrative forms or procedures or a tendency to have an unstable residential address. These characteristics could influence recipients' probability of exit from food stamps but are not observed in this data set. A Gamma distribution is employed to model unobserved heterogeneity, because there is little to support the use of a particular parametric form for the frailty term in an analysis of program participation dynamics (Galler and Poetter 1990).[5]

The probability of exiting food stamps is thus conceptualized as dependent on a vector of demographic characteristics, program interactions, and timing of eligibility reviews. The model for food stamp exits can be represented as an exponential hazard regression:

$$h(t \mid x) = \mathrm{h}_0 \exp(\mathbf{X}\beta),$$

in which $h(t|x)$ is the probability or hazard of experiencing the event at time t conditional on covariates, h_0 is the constant baseline hazard, $\mathbf{X}$ is a vector of covariates, and β is a vector of coefficients. The frailty term, α, accounts for unobserved heterogeneity and is introduced into the above model as an unobservable multiplicative effect on the hazard function. That is,

$$h(t \mid \alpha) = \alpha h(t).$$

This study conducts two empirical analyses on the Rhode Island administrative data. The first, a descriptive analysis, examines demographic and food stamp spell characteristics, the survivorship and hazard functions, and multiple program participation. Descriptive analyses compare the two age groups (ages 60–64 and age 65 or older). The second analysis estimates multivariate event history models of food stamp exit.

Table 1

CHARACTERISTICS OF SAMPLE BY AGE OF ENTRY INTO THE FOOD STAMP PROGRAM

	Ages 60–64 Years	Age ≥ 65 Years
% male	39.1	30.8
% African American	6.1	4.6
% Hispanic	18.9	14.3
% other race	9.1	6.4
% noncitizen	20.6	23.7
% less than ninth grade education	60.6	63.4
% vehicle	23.3	15.3
Average net income ($ at start of FS spell)	186	289
N (food stamp clients)	932	1,746

NOTE.—FS = food stamps.

Descriptive Analyses

Demographic and Spell Characteristics

Of the total number of food stamp participants who entered the program in Rhode Island during the study period (1993–98), 8.2 percent (2,678 individuals) were older than 60 years at the start of the first spell, and 5.4 percent (1,746 individuals) were age 65 or older. The full sample for this study therefore includes 2,678 Rhode Island elders. Of these, 932 were between the ages of 60 and 64. Table 1 presents key demographic and spell characteristics for the study sample.

As table 1 suggests, the elder population on food stamps in Rhode Island is predominantly female (about two-thirds) and white (about two-thirds). Few reported that they own a vehicle. Elders in the ages 60–64 group differ in some respects from their counterparts in the age 65 and older group; more recipients reported owning a vehicle in the ages 60–64 group than in the older group, and there are more males in the younger group. The younger group reported a lower average net income at the start of the food stamp spell.

Analysis of Hazard and Survivorship Functions

Estimates from the Rhode Island administrative data suggest that, among the sample members who entered the Food Stamps Program in the first year of the study and were followed for 5 years, 68.3 percent exited the program at least once before October 1999. Figure 1 illustrates the probability of exit from food stamps at various durations of the first food stamp spell. Nonparametric Kaplan-Meier estimates calculate the probability of exit (as a survivorship function) at each distinct survival time (Lee 1992). Results are stratified by age at the time of entry into the Food Stamp Program. The results suggest that the survivorship function is steeper for those who enter food stamps between ages 60 and 64 than it is for those who enter at age 65 or after. The estimated

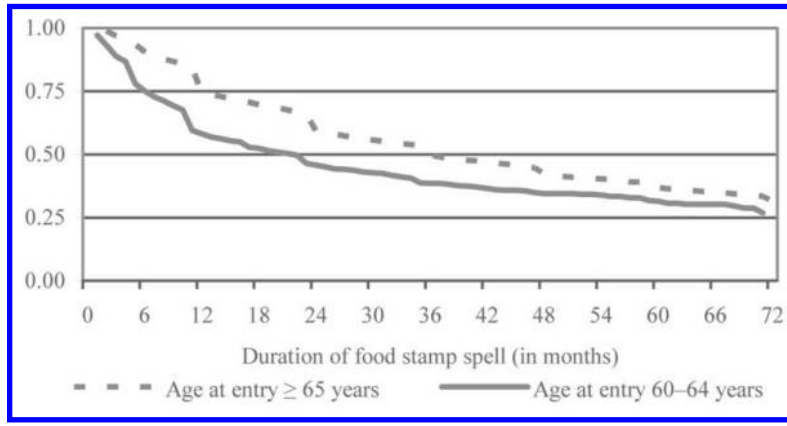

FIG. 1.—Probability of exit (Kaplan-Meier estimates) from the first food stamp spell by age.

difference between the age groups is statistically significant ($\chi^2 = 7{,}468$, $p = .000$).

Analysis of the administrative data (not shown in the tables) suggests some of sample members' reasons for exiting food stamps. Since these are administrative categories that classify a range of reasons for exit into a small number of categories, results about reasons for exit are indicative only. Results from administrative data suggest that, among sample members, the percentage of elders exiting food stamps due to changes in household composition is higher in the age 65 or older group (11.8 percent) than in the ages 60–64 group (3.7 percent). The percentage of elders in the ages 60–64 group who exit food stamps due to excess income (both earned and unearned; 18.4 percent) is higher than that of elders in the age 65 or older group (14.3 percent). Those in the ages 60–64 group are more likely than counterparts in the older group to experience changes in eligibility as they age. However, changes in income or household composition are not reported as the main reason for elders' exits from food stamps. Exits classified as voluntary (i.e., exits in which the recipient does not report any income or household changes that would affect eligibility) or due to noncooperation with administrative procedures are more common; these two reasons account for about three-fourths of exits for both groups.

Finally, the hazard rate is characterized by regular, calendrical spikes and discontinuities (see fig. 2). The probability of exiting food stamps is estimated to spike at the first 6 months after the start of a food stamp spell and then to spike again at yearly marks (12 months, 24 months, 36 months). These spikes correspond to the times at which eligibility reviews take place. It is interesting that exits by elder food stamp recip-

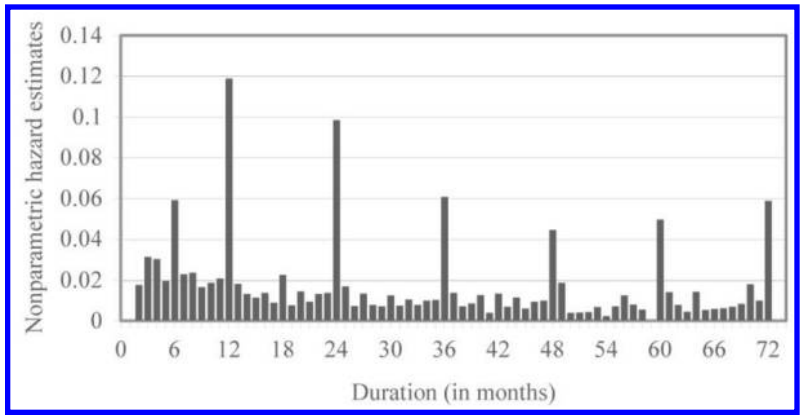

FIG. 2.—Nonparametric hazard estimates for food stamp exits

ients parallel those by working-age recipients, in that exits by both are estimated to spike at eligibility review (Ribar et al. 2008). This is noteworthy because it can be assumed that elders are less likely to work and hence to exit public assistance through earned income.[6] These spikes are included in the multivariate hazard model to account for discontinuities in the time dependence of the hazard rate.

Multiple Program Participation

As mentioned earlier, two operationalizations of multiple program participation are used in this study. The first captures multiple program participation at the start of the food stamp spell. The second captures it as trajectories of participation during the food stamp spell.

Results (not shown in this article's tables) for the first operationalization of multiple program participation suggest that 11.5 percent of sampled elders reportedly also receive SSI at the start of their food stamp spell. Of these, three-fourths are reportedly age 65 or older, and one-fourth are reportedly between the ages of 60 and 64 (those younger than age 65 are subject to a disability test for determining SSI eligibility). In addition, 31 percent of the sample reportedly receives both food stamps and Medical Assistance at the start of their first food stamp spell. Elders who receive food stamps and either SSI or Medical Assistance at the start of the spell may have entered the Food Stamp Program through these other programs. Therefore, these elders' decision-making processes may not be related to program provisions for food stamps but to those for SSI or Medical Assistance. In sum, results from the first operationalization suggest that 42.5 percent of sampled elders participate in multiple programs at the start of their food stamp spell. In other

Table 2

Percentage of Elder Food Stamp Recipients Experiencing Various Welfare Trajectories

Program Participation at the End of the Spell	Program Participation at the Start of the Spell: Food Stamps Only	Food Stamps and SSI	Food Stamps and MA
Food stamps only	53.5	22.0	29.8
Food stamps and SSI	32.7	73.8	31.6
Food stamps and MA	13.8	4.2	38.6
Total	100	100	100

Note.—SSI = Supplemental Security Income; MA = Medical Assistance. All numbers are percentages.

words, multiple program participation is found to be common among elders on food stamps (this supports previous findings: Weinberg 1985; Trenkamp and Wiseman 2007).

The second operationalization classifies food stamp spells into trajectories that are based on a cross-tab of multiple program participation at the start and end of the food stamp spell (or at the end of the study period for censored spells, whichever comes earlier). Results in table 2 suggest that recipients who enter a food stamp spell with a particular bundle of benefits do not necessarily access those benefits throughout the spell. For instance, 73.8 percent of recipients who receive SSI at the start of their food stamp spell still reportedly receive it at the end of the food stamp spell, but only 38.6 percent of those receiving Medical Assistance at the start of their food stamp spell are reported to receive it at the end of the food stamp spell. Of the elders who receive only food stamps at the start of their food stamp spell, 53.5 percent are found to receive only food stamps at the end of the spell (or at the end of the study period). The remaining food-stamp-only sample members are found to receive SSI (32.7 percent) and Medical Assistance (13.8 percent) by the end of their food stamp spell. Elders who access only food stamps during the entire food stamp spell (i.e., they start and end their food stamp spell on food stamps only) may be individuals who are in the Food Stamp Program solely for the nutritional assistance.[7] The cross-tab in table 2 suggests that multiple program participation is a dynamic process. This dynamism takes place as individuals gain information, lose eligibility, and move between different programs.

Table 3 presents estimates of the percentage of spells in each trajectory that result in a food stamp exit. A chi-square test is used to examine the trajectories of elders who exit food stamps, and the results of the test are found to be statistically significant ($\chi^2 = 624.5384$, $p = .000$). Results suggest that the rate of exit is high among elders who transition off SSI or Medical Assistance and among those who access only food

Table 3

PERCENTAGE OF FOOD STAMP SPELLS THAT END IN A FOOD STAMP EXIT, BY TRAJECTORY

PROGRAM PARTICIPATION AT THE END OF THE SPELL	PROGRAM PARTICIPATION AT THE START OF THE SPELL		
	Food Stamps Only	Food Stamps and SSI	Food Stamps and MA
Food stamps only	80.2	98.5	85.0
Food stamps and SSI	27.5	40.8	25.7
Food stamps and MA	44.1	58.3	56.5

NOTE.—SSI = Supplemental Security Income; MA = Medical Assistance. All numbers are percentages.

stamps throughout their spell. The rate of exit is found to be low among elders who transition onto SSI. In other words, elders who experience different trajectories have different probabilities of exiting food stamps.

Results of Multivariate Hazard Models

Table 4 presents multivariate results for two exponential hazard models. The dependent variable is the probability of exiting food stamps (appendix table A1 lists the independent variables used in the models). The estimated coefficients in table 4 are hazard ratios; values greater than one imply a higher rate of exit than that for the reference group.

Model 1 includes demographic characteristics and key variables related to program participation (e.g., multiple program participation). Model 2 adds dummy variables for the time of eligibility review at which the hazard rate may spike. The results of statistical tests suggest that model 2 is the better fitting model (using a likelihood ratio test, chi-square significant at $p = .000$), and the addition of time dummies for eligibility review is estimated to improve model fit. Therefore, the results section discusses only the results of estimates from model 2. An additional analysis (not shown in this article) estimates an extension of model 2. That analysis controls for individual-level unobserved heterogeneity, and the frailty term is found to be statistically nonsignificant. This suggests that variables in model 2 likely account for much of the heterogeneity in hazard rates for food stamp exits by this population of elders.

The results in table 4 suggest that age at the start of the food stamp spell is negatively associated with the probability of exit from food stamps, net of other variables in model 2. The linear term for age bears a small but statistically significant (at $p > .001$) and negative relation to food stamp exits for the sampled elders. This is to be expected, as the propensity to work declines with age. In models (not shown in this article) that include a variable to proxy for entry to food stamps from age 65 onward, the linear term for age is not found to be statistically

Table 4

Exponential Hazard Model of Food Stamp Program Exits

	Model 1	Model 2
Age at the start of the spell	.981***	.981***
Male	1.258***	1.263***
Race (ref. is white):		
African American	.876	.891
Hispanic	1.256	1.237
Other race	1.110	1.118
Citizenship	.997	1.032
English	1.464***	1.404***
Education	1.003	1.003
Vehicle ownership	1.716***	1.705***
Postreform	1.092	.995
Net income	1.0004**	1.0004**
Multiple program participation (ref. is only food stamps at start of spell):		
MA recipient	1.067	1.069
SSI recipient age ≥ 65 years	1.478***	1.484***
SSI recipient ages 60–64 years	.959	.958
Time (in months):		
6		4.040***
12		7.788***
24		6.902***
36		3.890***
48		3.087***
60		4.144***
Log likelihood	−4,062.8	−3,550.7
N (no. of spells)[a]	2,678	2,678

Note.—Ref. = reference group; SSI = Supplemental Security Income; MA = Medical Assistance.

[a]The unit of analysis for the multivariate hazard estimation is the spell (measured as person-months) and not the individual food stamp recipient.

** $p > .01$.

*** $p > .001$.

significant. The linear term may proxy for an important discontinuity at age 65, when eligibility rules change.

Table 4 suggests that gender is positively and statistically significantly associated with the probability of exit from food stamps (at $p > .001$), and the estimated probability of food stamp exit is 27 percent higher for men than for women. Previous research suggests that women are more likely to experience poverty in late life, and this may explain why they are less likely to exit food stamps than men (Rank and Hirschl 2001).

Race does not appear to be statistically significantly associated with the probability of exit from food stamps. The results in table 4 suggest that African American and Hispanic elders do not differ to a statistically significant degree from whites in their probability of leaving food stamps. Past research on the relations between race and the probability of exits from public assistance are mixed; for example, Mills and associates (2001) find no statistically significant difference in food stamp

exits by race, but Hilary Hoynes (2000) finds that, compared with their white counterparts, African American and Hispanic recipients have longer spells on welfare and shorter spells off welfare. Because previous studies focus on the working-age population and families with children, it is difficult to compare that research with the current finding.

The results are mixed for several indicators of human capital. On the one hand, neither education (measured as last grade completed) nor citizenship is found to be statistically significantly associated with the probability of exit from food stamps. On the other hand, English as primary language is estimated to be positively and statistically significantly related to the probability of exiting (at $p > .001$). It is possible that this relation proxies for past success in the labor market. The multivariate results in table 4 suggest that many social characteristics (such as race, education, citizenship) are not statistically significantly related to the probability of food stamp exits for elders.

Vehicle ownership and income are found to be positively related to the probability of exiting food stamps. Elders who own a vehicle (18 percent of the sample) are estimated to be 70 percent more likely to leave the Food Stamp Program than nonowners; vehicle ownership may serve as a proxy for assets and resources even though it is not itself included in asset computation for determining eligibility. Similarly, although all sampled elders were reportedly income-eligible for food stamps, those with higher net income are estimated to have a higher probability of exiting food stamps. As per food stamp eligibility rules, those with higher net incomes receive a lower food stamp allotment, and elders with high net incomes may find it less beneficial to stay on food stamps than do those with lower net incomes.

Results from multivariate models in table 4 suggest that, if other variables are controlled, the rate of elders' exit from the Food Stamp Program before the 1996 welfare reform does not differ to a statistically significant degree from the rate after the 1996 changes. Welfare reform affected three subgroups of SSI recipients: noncitizens, children with disabilities, and adults with drug and addiction disabilities (Schmidt 2004). It is possible that the coefficient for postreform is statistically nonsignificant because multivariate models control for the relevant SSI recipients who were affected by welfare reform (e.g., a control for citizenship or 60–64-year-olds with a disability).

In keeping with the hypothesis, the timing of eligibility reviews is found to be positively and statistically significantly associated (at $p < .001$) with the probability of exit from food stamps. This finding suggests that the administrative timetable is one of the key predictors of the food stamp exit rate even for the elder population. This is noteworthy because elders are perceived as far more deserving and are subject to fewer program requirements than their working-age counterparts (Moffitt 2007; Wolkwitz and Trippe 2009). Elders also are less likely than other

recipients to earn their way off welfare. The magnitude of the relation (the probability of exiting food stamps is up to eight times higher in some months than in others) is in line with results from other studies (e.g., Ribar et al. 2008) that estimate the probability to be six times higher during eligibility review. Other coefficients are fairly robust to the addition of time dummies that proxy for eligibility review. This implies that the time dummies explain an independent aspect of the variance in probability of food stamp exit. It also suggests that those who exit at eligibility review are not demographically different from those who exit during other months.

Finally, results in table 4 are mixed for the relations between multiple program participation at the start of the spell and the probability of exiting food stamps. Elders in the ages 60–64 group who receive both food stamps and SSI at the start of their food stamp spell do not differ to a statistically significant degree from the reference group (those who receive only food stamps) in the probability of exiting food stamps. So too, the probability of exit among sample members (age 60 or older) who received food stamps and Medical Assistance at the start of their food stamp spell does not differ to a statistically significant degree from that of the reference group. However, elders in the age 65 and over group who received food stamps and SSI are found to be almost 1.5 times more likely to exit food stamps than are their counterparts in the reference group. This finding runs counter to the current study's hypothesis that the probability of food stamp exit is lower among elders who participate in multiple programs than among elders who receive only food stamp benefits.

Results from the descriptive analysis of trajectories of multiple program participation throw some light on this finding. Elders age 65 and older who start their food stamp spell on SSI have three possible trajectories during their spell; they may move from SSI to food stamps only, stay on SSI, or move from SSI to Medical Assistance. Results in table 3 suggest that the first trajectory, moving from SSI and food stamps to food stamps only, has the highest nonparametric probability of food stamp exit of all the nine trajectories. Sample members with this trajectory are similar to the former welfare recipients described in the multiple program participation studies mentioned above. Those studies find that former AFDC and TANF recipients have a higher probability of food stamp exit than those who receive only food stamp benefits (Zedlewski and Brauner 1999; Mills et al. 2001). If one extends the argument used in these studies, it is conceivable that elders will find the cost of maintaining food stamp benefits (in terms of transaction costs) to be too high in the absence of the cash benefits of SSI. If elders are not eligible for SSI, they may choose to also exit food stamps. It is also possible that some elders gain sufficient income to lose eligibility for both SSI and food stamps.

The second trajectory, staying on SSI throughout the food stamp spell, likely reflects the pattern of recipients who exit SSI at the same time they exited food stamps. Because an elder's receipt of SSI implies categorical eligibility for food stamps, one can assume that a food stamp exit recorded in food stamp administrative data occurs concurrently with an exit from SSI. Recipients with the second trajectory are found to have a higher nonparametric probability of exiting food stamps than have those who moved onto SSI during their food stamp spell (see table 3).

The third trajectory, moving from SSI to Medical Assistance during a food stamp spell, has too few cases and therefore is not considered here. The results (not shown in this article) are similar if model 2 is reestimated using receipt of both food stamps and Medical Assistance as the reference category (instead of food stamps only). The estimates suggest that, net of other variables, elders age 65 or older who start their food stamp spell with SSI are 1.4 times more likely to exit food stamps than those who start their food stamp spell on Medical Assistance. In sum, elders age 65 or older who start their food stamp spell with SSI are found to have a statistically significantly higher probability (at $p > .001$) of exiting food stamps than those who start on food stamps only or those who start their food stamp spell with Medical Assistance.[8]

Thus, there is little support for the hypothesis that multiple program participation diminishes the probability of food stamp exits. Instead, the relation between multiple program participation and the probability of food stamp exit is complicated by the type of program participation and the process of program participation. First, the relation between multiple program participation and food stamp exit is tied to the type of program participation. Results suggest that elders accessing food stamps alone have a lower probability of exiting food stamps than those participating in food stamps and SSI. The rate of exit does not differ to a statistically significant degree between elders participating only in food stamps and those participating in food stamps as well as Medical Assistance. Second, multiple program participation is a complex and dynamic process. Both program participation at the start of the food stamp spell and the dynamics of program participation during the food stamp spell should be considered to fully understand the probability of food stamp exits.

Conclusion and Implications

This article extends research on multiple program participation and the interaction between cash and noncash benefits. The findings suggest that elders age 65 or older who access both SSI and food stamps have a higher probability of exiting food stamps than counterparts who start their food stamp spell on food stamps alone. Multiple program partic-

ipation is found to be a dynamic process that creates trajectories of program participation, and the estimates suggest that these trajectories are differentially related to the probability of exiting food stamps; the study finds that different operationalizations of multiple program participation illuminate different aspects of the food stamp decision-making process. Therefore, an understanding of how program participation changes during a spell should complement efforts to operationalize program participation at the start of the food stamp spell.

The findings from this article have important implications for future research. Since this study is limited to an analysis of Rhode Island administrative data, future research could focus on extending these findings to other states and to other data sets. The results from this study suggest that the timing of eligibility reviews (or recertification) should be included in multivariate models of food stamp exits, because such reviews affect time dependence and create discontinuities in the survival function. Multiple program participation is found to be common among elders on food stamps, and the results also suggest that models of food stamp exit should account for the overlaps among programs and for the dynamic aspects of program interactions. There is a need for more research on operationalization of multiple program participation. This study uses two operationalizations that seem useful for administrative data.

Results from this study provide insight into subgroups of elders that could be targeted for future research. Such research might focus on ways to keep elders in the Food Stamp Program. It appears that former recipients of cash benefits (whether working-age recipients of AFDC or TANF or elders receiving SSI) have a higher probability of exiting food stamps than food stamp recipients who do not receive cash benefits. For many elders, the food stamp benefit allotment may not outweigh the costs of participating in the program. Steven Haider and associates (2003) argue that elders are less likely to participate in food stamps than the working-age population and that elders who do not participate are not in particular need of food assistance. However, like former AFDC or TANF recipients, elder SSI recipients may also be unaware that they remain eligible for food stamps (Mills et al. 2001).

Future research could target SSI recipients who are 65 and older to better understand their eligibility for food stamps and their food security after they exit food stamps. As Mills and colleagues (2001) point out in their study of multiple program participation by working-age recipients, more information is needed about the knowledge and experiences of food stamp exiters. If food stamp exiters are aware of their eligibility but deterred by transaction costs, policy changes should focus on streamlining administrative procedures and reducing the burden of documentation and eligibility review on elder recipients. However, if exiters are unaware of their eligibility for food stamps, then informational out-

reach becomes a priority. Because elders' food stamp participation rates and likelihood of earning their way off assistance are low, their food stamp use is an important policy-relevant area for future research.

Appendix A

Table A1

Descriptions of Variables Used in Multivariate Models

Variable	Description
Age	Captured at the start of the spell
Male	= 1 if recipient is male
Race (ref. is white):	
African American	= 1 if recipient is African American
Hispanic	= 1 if recipient is Hispanic
Other race	= 1 if recipient is other race
Citizenship	Citizen = 1; noncitizen = 0
English	= 1 if primary language is English
Education	Last grade of education completed
Vehicle ownership	= 1 if recipient owns a vehicle
Postreform	= 1 after August 1996 passage of PRWORA
Net income at the start of the food stamp spell	Reported net income in dollars
Multiple program participation (ref. is only food stamps at start of spell)	
Medical Assistance recipient	= 1 if recipient started food stamp spell on MA
SSI recipient age $\geq$ 65 years	= 1 if recipient started food stamp spell on SSI and is age 65 or older
SSI recipient ages 60–64 years	= 1 if recipient started food stamp spell on SSI and is ages 60–64
Time dummies for eligibility review*	= 1 for the specific months in which hazard rate spikes

Note.—Ref. = reference group; PRWORA = Personal Responsibility and Work Opportunity Reconciliation Act of 1996; MA = Medical Assistance; SSI = Supplemental Security Income.

* Time dummies = 6 months and yearly time points from the start of the food stamp spell; reference category is calendrical months other than eligibility review months.

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Notes

Direct correspondence to Sukriti Issar, Department of Sociology, Box 1916, Brown University, Providence, RI 02912. E-mail: sukriti_issar@brown.edu. I thank Hilary Silver and David Lindstrom for access to data and for their suggestions and comments. I would also like to thank the three anonymous reviewers and my colleagues—Julia Drew, Sze Liu, and Hongwei Xu—for their comments on earlier drafts. The data collection for this research was supported by grant no. 215Y703 from the University of Wisconsin Institute for Research on Poverty and the U.S. Department of Agriculture, granted to Hilary Silver and Edith Barrett.

1. Although words such as "decision" and "choice" are used in this article and in the program participation literature, public benefit receipt (and exits from benefit receipt) are not an entirely volitional process.

2. On the benefit side, the value of SSI and Medical Assistance is likely to exceed the value of the food stamp allotment (Trenkamp and Wiseman 2007). On the cost side, multiple program participation has fewer costs (both stigma and transaction costs) than participating in a single program (e.g., Keane and Moffitt 1998; Mills et al. 2001). As Trenkamp and Wiseman (2007, 72) point out, SSI is a program of "last resort."

3. This section draws from conversations with those involved with Rhode Island's Food Stamp Program administration, outreach activities, and casework.

4. Census data are accessed from the Census Bureau's Web site (http://www.census.gov). Bureau of Economic Analysis (n.d.) data provide information on food stamp expenditures at the national and state levels.

5. Some types of event history analyses, such as analyses of fertility or mortality, are associated with theoretical expectations about the parametric form of the frailty term.

6. Data from the same administrative data set suggest that elders and the working-age population have almost the same percentage of exits at recertification intervals (8–10 percent).

7. It is possible that these individuals gain information about other welfare programs on entering the Food Stamp Program and may even initiate the application process for other programs. However, there is no evidence that, during the study period, they transition to any other program.

8. To account for possible endogeneity between food stamp exits and participation in multiple programs, two bivariate probit models are estimated (not shown in the tables): one for SSI and one for Medical Assistance. Bivariate probits estimate two binary simul-

taneous equations in which the probability of the second outcome is conditional on the first. The errors from the two equations are assumed to be correlated (Biratu and Lindstrom 2006). Equation 1 estimates the probability of participating in SSI or Medical Assistance. Equation 2 estimates the probability of exiting food stamps. This estimation procedure is reasonable given the lack of duration dependence in the hazard of exit (duration is ignored in these models, and exit from food stamps is treated as a binary outcome). The correlation coefficient, rho, is found to be statistically nonsignificant in both the models. This suggests that the two outcomes (participation in multiple programs and exit from food stamps) are independently determined. In other words, participation in multiple programs and exit from food stamps are not found to be endogenous. This implies that food stamp exits and receipt of SSI or Medical Assistance may not be all determined by some third factor such as the recipient's health. In addition, results for mortality are found to be similar (between 9 and 11 percent of elders die during their food stamp spell) across categories of multiple program participation at the start of the food stamp spell (food stamps only, food stamps and SSI, food stamps and Medical Assistance).