

# **EARNINGS VOLATILITY AND THE REASONS FOR LEAVING THE FOOD STAMP PROGRAM**

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## Abstract:

This paper uses administrative records from South Carolina on food stamp households with children to look generally at the characteristics of households that contribute to exits from the Food Stamp Program and more specifically at the reasons why households leave the program. The investigation focuses on how earnings histories and especially earnings volatility are associated with different types of exits. The analyses reveal that half of South Carolina's food stamp households with children leave the program because they let their certification periods lapse without filing the necessary paperwork for recertification. Households with earnings at the start of their certification periods are especially likely to leave for this reason. A further sixth of the caseload exits because either it fails to provide sufficient information or its information cannot be verified. Just over a fifth exits because it either reports or is discovered to have incomes that are too high, and about an eighth leaves voluntarily or for other reasons. For white households, more variable earnings histories are negatively associated with exits for income ineligibility. For black and white households, more variable earnings histories increase the odds of leaving voluntarily or for other reasons.

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# EARNINGS VOLATILITY AND THE REASONS FOR LEAVING THE FOOD STAMP PROGRAM

## 1. Introduction

The primary goal of the Food Stamp Program is to improve the well-being of low-income households by increasing their food purchasing power and helping them to obtain more nutritious diets than they might otherwise be able to afford. To increase well-being, program administrators want benefits to reach as many poor households as possible. Because it is means tested, the program also helps to stabilize consumption and provides a degree of social insurance. Beyond helping low-income households, the Food Stamp Program also has other goals. As a publicly-financed program, it must be a good steward of taxpayer dollars and minimize costs and maintain program integrity by ensuring that benefits are delivered efficiently and directed toward truly needy households. More recently, the Food Stamp Program has also emphasized an additional goal of promoting economic self-sufficiency.

In some cases, these goals conflict with one another. For instance, it is well-known that the benefit formula, which reduces a household's allotment of food stamps as its income rises, creates work disincentives that partly undermine the self-sufficiency goal. Less understood is how administrative procedures, intended mostly to advance the goal of maintaining program integrity, affect household well-being and self-sufficiency.

The federal and state governments are partners in the Food Stamp Program, with the federal government setting general rules for the program and paying the entire cost of benefits and the states administering the program. In their role as administrators, states have considerable latitude in a number of areas including establishing and running food stamp offices, developing

and reviewing initial applications, and setting recertification intervals. States may also obtain waivers from the federal government to alter other features of their programs.

Researchers have only recently begun to quantify the impacts of these policies and procedures. For example, Ribar et al. (2006a, b) found that exits from the Food Stamp Program occur mainly at recertification periods and that more frequent recertifications hasten exits and decrease the caseload. Staveley et al. (2002) uncovered similar patterns in administrative data from Maryland, and Currie and Grogger (2001), Kabbani and Wilde (2003), and Kornfield (2002) have documented negative associations between recertification frequency and food stamp caseloads. While this research has identified general impacts associated with policies and procedures, it has not yet explained why certain effects appear. With respect to recertification frequency, shorter intervals could increase the detection of ineligible households, deter ineligible households from continuing their participation, or discourage eligible households by increasing the costs of program compliance.

In this paper, we use administrative records from South Carolina on over 32,000 food stamp spells for cases with children that began between the second half of 1997 and the first half of 2005. We use descriptive and multivariate event-history methods to look generally at the characteristics of households that contribute to exits from the Food Stamp Program and more specifically at the reasons why households leave the program. A focus of our investigation is on how earnings histories and especially previous earnings volatility are associated with different types of exits. The data from South Carolina are extraordinarily helpful in this regard.

First, the information in South Carolina's administrative records is extremely rich and detailed. The records from the Food Stamp Program itself not only contain the start and stop dates of program participation—information needed to construct spells—but also contain

demographic information about the participating households and the specific reason why each household stopped receiving benefits. The records are also linked to quarterly earnings records from the state's Unemployment Insurance system, which allows us to construct earnings histories.

Second, some of South Carolina's food stamp policies are particularly easy to measure and examine. This paper concentrates on the state's recertification policies, which changed three times over the period that we study. Prior to October 2002, the state required most households with fluctuating earnings to recertify quarterly and most other households with stable unearned incomes, if children were present, to recertify annually. In October 2002, the state lengthened the recertification interval for households with earnings from three to six months, and in February 2005, it also made the interval for households with stable unearned incomes six months. Because the recertification dates are set relative to the beginning of a spell, they can be distinguished from regular calendar effects. The changes in policy over time mean provide an additional source of longitudinal variation, and the differences in their applicability across distinct groups provide additional cross-sectional variation. Moreover, the policies are directly relevant to the issue of earnings volatility because they expressly condition on it.

Our analyses reveal that half of South Carolina's food stamp households with children leave the program because they let their certification periods lapse do not file the necessary paperwork for a recertification. Households with earnings at the start of their certification periods are especially likely to leave for this reason. A further sixth of the caseload exits because either it fails to provide sufficient information or its information cannot be verified. Just over a fifth of households exit because they either report or are discovered to have incomes that are too high, and about an eighth leave either voluntarily or for other reasons. For white households,

more variable earnings histories are negatively associated with exits for income ineligibility. For black and white households, more variable earnings histories increase the odds of leaving voluntarily or for other reasons.

The rest of this paper is organized as follows. The next section describes the Food Stamp Program in South Carolina, focusing on how the program is administered. Section 3 reviews previous research on the interaction between program rules and food stamp participation. Section 4 describes how our analytical data set was constructed from the administrative records. A descriptive analysis of the characteristics of food stamp cases that leave the program for different reasons follows in Section 5. Section 6 reports results from our multivariate analyses of program exits, and the paper concludes in Section 7.

## **2. The Food Stamp Program in South Carolina**

General description. As mentioned, the Food Stamp Program is administered by the U.S. Department of Agriculture, to help low-income individuals and families obtain a more nutritious diet. The federal government pays the cost of food stamp benefits and also pays 50% of state administrative costs. Set by the federal government, monthly benefits are the same for all states in the continental U.S. In FY 2005, the maximum benefit for a household of three was \$399.

Benefits are provided to households and to qualify, households have to meet income tests (unless all members are receiving TANF or SSI, which makes the household “categorically eligible”). The federal government sets eligibility standards at 130% of poverty based on gross monthly income, and at 100% of poverty based on net income. Most households must meet both

the gross and net income tests, but a household with an elderly person or a disabled person only has to meet the net income test.<sup>1</sup>

Application procedures. In South Carolina, applicants may complete an application form for food stamps at the local Department of Social Services (DSS) office, or may use the application form on the agency website and deliver, mail or fax the application to the local DSS office. Applications are considered filed on the date when they are received by the county offices. An interview with the applicant is required for approval, either in person or on the telephone, and certain information must be verified, documenting identity, residency, income, and expenses.

Local DSS offices must approve applications within 27 days after receipt in the county office, and benefits must be accessible within 30 days.<sup>2</sup> Actual processing time from application to receipt of benefits averages 16 days statewide. In cases where an application is denied, denial must be received by the 30<sup>th</sup> day after receipt.

Income reporting. Clients are required to report all sources of income, including earnings, at their initial application. To verify earnings, a pay stub from the previous month or an official employer's statement is required. For clients receiving other government benefits, the agency can verify these sources of fixed income by accessing automated records online.

Food stamp eligibility is determined on a monthly basis; however, rules for reporting income changes depend on the clients' circumstances. Recipients with new employment and no

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<sup>1</sup> In terms of federally-defined resource limits, households may have \$2,000 in countable resources, such as a bank account, and may have \$3,000 if at least one person is age 60 or older, or is disabled. Certain resources are not counted, such as a home, and in some cases a vehicle. However, in April 2001, South Carolina opted to expand "categorical eligibility" under federal regulatory authority, which allows states to exclude consideration of assets, if income is at or below 180 percent of federal poverty guidelines and the household is receiving services from the state's TANF Program. Since then, virtually all food stamp households in the state have been excluded from asset limits.

<sup>2</sup> If the application is "expedited" for an emergency situation, the applications must be dated within 4 days, and benefits must be accessible by the 7<sup>th</sup> day.

previous earnings are told to report that change in earnings within ten days. Recipients who are employed at certification have more leeway; they are told only to report income increases that raise their gross incomes over 130% of the poverty level. Recipients are also allowed to report decreases in income, as these would allow them to increase their food stamp benefits.

Recertification. In addition to these reporting requirements, recipients are required to complete paperwork or interviews to “recertify” their eligibility on a periodic basis. Recipients on fixed incomes, such as disability income, are required to recertify less often than those recipients with variable incomes.

Prior to October 2002, South Carolina required most food stamp recipients with variable incomes to recertify their eligibility quarterly and most recipients with fixed incomes to recertify annually. For those with variable incomes, face-to-face interviews were only required once a year and mail-in recertifications were required each quarter. After October 2002, the recertification interval for recipients with variable incomes increased from three to six months. In addition, a larger number of recertification interviews were conducted over the phone, and income verification procedures were relaxed. In February 2005, the recertification interval for households with fixed incomes decreased from one year to six months.<sup>3</sup>

**Food Stamp Certification Intervals in South Carolina for Households with Children**

Characteristics of case	Before October 2002	October 2002 – February 2005	After February 2005
Unstable circumstances (e.g., no income), migrant worker	1-2 months	1-2 months	1-2 months
Fluctuating income	3 months	6 months	6 months
Fixed incomes	12 months	12 months	6 months

<sup>3</sup> Procedures for households consisting entirely of elderly and disabled clients living on fixed incomes are different. These households are formally certified for two years but receive an interim contact annually.

Case closures. Cases are “certified” for the intervals listed in the table above. If the case does not complete a recertification, it is automatically closed at the end of the certification period. Cases may also be closed at recertification if their paperwork is incomplete, if they fail to participate in interviews, or if their incomes cannot be verified. Cases are also closed at recertification or other times if a reported change in income or resources brings them above the applicable thresholds. Prior to December 2002, some cases could be closed for failure to participate in required Employment and Training activities.<sup>4</sup> In addition, cases are closed if the client cannot be located or moves out of state and under some other circumstances.

Once one of these issues arises, the case is sent a notice telling it that eligibility will be terminated in 10 days. Recertifications are due in the first half of the last month of certification; people who miss this deadline are sent their notices near the middle of the month and have their cases terminated at the end of the month. If a case reports an earnings change that puts it over 130% of poverty, the 10-day timely notice period begins the first day of the next month. For example, if the change occurs on June 15th, the report must be received by July 10th, in order for the client not to have to repay overages in benefits. If the client reports in the last ten days of the month, their case cannot be closed until the first of the "following" month. So, for example, a client reports an earnings change between September 21 and 30 that renders them ineligible, their case cannot be closed until November 1.

Clients are required to verify wages at certification and re-verify at recertification.

Unless clients report increases in income during the 6-month period, ineligibles are not identified until the 6 month recertification. If UI wage match shows a discrepancy at either certification or

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<sup>4</sup> In 1985, legislation was passed establishing the Food Stamp Employment and Training (E&T) program, designed to assist able-bodied recipients to gain employment skills. Only about 10 percent of food stamp recipients were subject to these requirements. South Carolina obtained a waiver in December 2002, which made participation in the E&T Program voluntary. Although the program is no longer mandatory, more than 3,000 clients in SC elected to participate in E&T activities in 2005.

recertification, clients are asked to verify wages again. However, if wage match shows a discrepancy during the six-month period in between, workers ignore the information until recertification. If the client has collected food stamp benefits to which he/ she was not entitled, the claims worker in the county seeks reimbursement from the client by establishing a repayment agreement. If that doesn't work, the case is sent to "tax intercept" and future tax refunds are garnished to repay the overage.

Caseload trends. Food stamp caseloads plummeted during the late 1990s in South Carolina and elsewhere. The state's food stamp caseload declined from 143,000 families in 1996 to 120,000 in 2000. Since 2000, the food stamp caseload has increased dramatically, climbing to over 226,000 families by the end of 2005.

### **3. Previous Research**

Conceptual framework. The conceptual framework that we use to examine the different reasons for food stamp exits is Moffitt's (2003) model of program compliance. In Moffitt's model households receive and value different levels of income, which vary depending on their participation in public assistance programs, such as the Food Stamp Program. Households also care about other things, such as stigma (Moffitt 1983) and leisure, which vary with program participation.

To remain on a program, households must exert effort to comply with the program's rules. Higher levels of compliance increase the chances, but do not guarantee, that a household will continue to remain in good standing and receive benefits from the program. The chance element is important because even if a household complies with the rules, it may be randomly terminated—paperwork can be lost, information can be mistyped onto forms and into computers,

etc. Increased compliance effort also raises the effective cost of program participation to households.

Households in this model rationally choose their compliance efforts to balance the anticipated real and psychic net benefits of program participation against the costs of compliance, with some straightforward implications for program behavior. On the one hand, policies, such as longer recertification intervals, which ambiguously reduce compliance costs, should lead to higher levels of compliance and hence to higher levels of participation. On the other hand, larger incomes or smaller benefits, which lower the relative gains to program participation, should reduce compliance and participation.

The impacts of other changes are more difficult to predict—income volatility is a case in point. Variable incomes, especially in households with few assets and limited access to credit markets, increase the utility of food stamps and other social insurance programs (see, e.g., Gundersen and Ziliak 2003). At the same time, more volatile incomes increase compliance costs. In South Carolina, food stamp households with fluctuating incomes are required to recertify more frequently than other households. Even if this were not the case, income volatility would increase the documentation costs, for instance, by increasing the sources of income that would have to be reported and verified. Because volatility increases both the benefits and costs of program participation, the net impacts are ambiguous and a matter for empirical investigation.

The foregoing discussion treats compliance as if it is a unidimensional concept, but of course, with multiple program rules there are many possible dimensions of compliance. The various rules also give rise to the multiple reasons for program exits, which we subsequently examine.

Empirical studies. There have been an increasing number of studies of the food stamp

caseload and food stamp participation in recent years. Many of these studies have simply examined the incidence of food stamp participation, either by modeling the aggregate number of people or households receiving benefits (Currie & Grogger 2001, Kabbani & Wilde 2003, Kornfeld 2002, Wallace and Blank 1999, Wilde et al. 2000, Ziliak et al. 2003) or by modeling receipt among individual households (Currie and Grogger 2001, Farrell et al. 2003, Fraker and Moffitt 1988, Haider et al. 2003, Keane and Moffitt 1998). Some other studies break individual participation decisions into separate entry and exit decisions but examine these as simple bivariate outcomes (Blank and Ruggles 1996, Gleason et al. 1998, Hofferth 2003, Mills et al. 2001, Ribar et al. 2006a,b, Staveley et al. 2002). To our knowledge, previous studies have not modeled different types of exit outcomes.

There has been less research on food stamp policies, other than benefit levels. Many studies fail to include measures of policies and procedures at all. Several other studies include broad and imprecise measures like the average recertification interval in a state (Currie and Grogger 2001, Hofferth 2003, Kabbani and Wilde 2003, Kornfeld 2002); these studies have tended to generate weak and sometimes contradictory findings. Stronger results are found in a few studies that have been more careful in measuring policies and procedures. For instance, Bartlett et al. (2004) gathered detailed information on administrative policies, such as outreach efforts and operating hours, and administrator and staff attitudes across food stamp offices in different localities. They found that these administrative characteristics influenced participation behavior. Ribar et al. (2006a, b) used administrative data from South Carolina and looked in a detailed way at the timing of exits from individual food stamp spells; they found that exits coincided with the expected timing of recertifications.

The role of income volatility in food stamp participation has been largely overlooked.

One exception, however, is a study by Farrell et al. (2003), which compared at the income histories of food stamp participants and non-participants at different points in time. They found that eligible non-participants had higher incomes but also more income volatility than participants.

#### **4. Data**

Food stamp spells. The primary data for the empirical analyses of food stamp exits come from electronic case management records from South Carolina covering the period from July 1997 until June 2005. The records, which are maintained by the Office of Research and Statistics of South Carolina State Budget and Control Board (SC ORS), cover the universe of households and individuals that have both applied to and participated in the state's Food Stamp Program over the period. The records contain a wealth of household- and client-level information, including the dates and resolutions of applications, the starting and ending dates of participation spells, demographic characteristics of households, geographic identifiers, and benefit and reported income amounts during each month of program receipt.

Because of the large number of food stamp cases in South Carolina, we reduced the analysis extract by using a 1:11 random sample of longitudinal cases. We then further reduced the analysis sample by only considering records associated with approved applications, records with complete information about the processes involved in continuing a spell of program receipt, and records describing food stamp cases with adults and children present.

The units of analysis for our investigation are food stamp spells. Food stamp spells can begin anytime during a month. However, once a spell begins, benefits are only paid once a month. Also, when a case is terminated, the official closing date almost always occurs at the end of the month. Because of the timing of payments and case closings, we treat the spell data as a

series of discrete, monthly observations, with the initial observation for each spell corresponding to the first month of benefit receipt and the final observation corresponding to the last month of benefit receipt. We only consider spells that began during our observation window and accordingly drop on-going, or left-censored spells. Also, we ignore short breaks in spells or benefit receipt that last one month or less.<sup>5</sup>

For each month that a case continues, the records indicate the benefits that the household received as well as all of the economic information that enters the benefit calculation, including gross reported earned and unearned income amounts, deductions and exemptions, and net incomes. We use several of these variables in our descriptive and multivariate analyses. For all of the analyses, dollar amounts are adjusted to 2005 levels using the CPI-U.

The administrative records also contain information on demographic characteristics of the clients in the food stamp household. From this information, we construct measures of the number and age composition of the case members. We also construct indicators for the age, sex, race, educational attainment and marital status of the household member in charge of the case.

Each record indicates the county of residence for the household. These geographic identifiers allow us to link the administrative data to measures of the county unemployment rate to control for local economic conditions and measures of the population density to control for the level of economic development. We also include controls for whether the county of residence was exempt from the ABAWD work requirements and whether the county was on the state border.

Once the programmatic, demographic and geographic information were processed, we made one final set of exclusions to the data. First, we limited the analysis to households in

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<sup>5</sup> Food stamp households in South Carolina that miss their recertifications and have their cases closed have one month to submit their paperwork and have it treated as a recertification. After a month, any paperwork is treated as a new application.

which the adult in charge was between the ages of 18 and 75. Second, we restricted the analysis to households in which the head of the case was white or black. Only five percent of cases were identified as another race or ethnicity, and this did not leave enough cases to examine. Third, we dropped a small number of observations with missing or incomplete information. Our final analysis data set contained 442,309 monthly observations from 32,047 spells of food stamp receipt.

Reasons for exit. For every case that is turned down or closed, the administrative records give a reason for closure. There are 33 detailed codes that are used at least once in our records.

We grouped the codes into five broad categories—cases that ended because the household

- missed its recertification,
- lost eligibility because its income or assets were too high,
- lost eligibility because it failed to provide information or provide reliable information,
- lost eligibility because of some other reason, or
- voluntarily quit.

The list of detailed codes, our categorizations, and the associated frequencies are reported in Appendix A.

The tabulations for the reasons of exit reveal that 49 percent of cases headed by blacks and 51 percent of cases headed by whites ended because the case let its certification period lapse without submitting any paperwork for a new certification. This confirms the findings from our earlier studies (2006a, b) that recertification is an important element in food stamp exits. The tabulations also indicate that just over one fifth of the exits—24 percent among cases headed by blacks and 18 percent among cases headed by whites—occur because the households either report or are found to have a change in income which makes them ineligible. Approximately one

sixth of cases end because the household fails to provide sufficient or reliable information. Nine percent of cases lose their eligibility for some other reason, most typically because the household moves or cannot be located, and three to four percent withdraw voluntarily.

UI earnings data. For each client in the food stamp case management records, the SC ORS has quarterly records of the person's earnings, if any, from the state's Unemployment Insurance (UI) database. The UI database contains earnings records for most private, non-agricultural employers. However, it overlooks government employment and some types of private-sector jobs, such as agricultural and domestic work, that may be relevant for food stamp recipients. It also misses employment by people who commute out of the state to work.

We construct measures of the total amount of earnings for all clients in the food stamp case for the current quarter of a given spell observation, the previous quarter, and the previous year. We adjust these amounts using the CPI-U, and to make them comparable to our other earnings and income figures, express them as monthly equivalents. To measure earnings volatility, we also calculate the coefficient of variation for the household's covered earnings for the previous year. We also create an indicator for the maximum quarterly earnings during the previous year and an indicator for no reported earnings during the previous year.

## **5. Descriptive analysis**

Tables 1b and 1w list statistics describing the characteristics of food stamp cases from South Carolina in the months in which the cases closed. The characteristics were measured as of the start of the month, and the cases generally closed at the end of the month, so the characteristics reflect conditions immediately preceding the closures. Table 1b lists statistics for cases headed by blacks, while Table 1w lists statistics for cases headed by whites. In each table,

averages of the characteristics are calculated conditionally, depending on the reason why the cases closed.

The rows at the top of each table describe economic conditions of the cases, including the level of food stamp benefits, reported levels of income, and the earnings history reported into the state UI system. As can be immediately seen, the economic conditions of cases differed substantially depending on their reasons for exit. Cases that lost their eligibility for income or resource reasons tended to have the lowest level of benefits. Cases that failed to recertify also had relatively low benefits, which is consistent with such cases having reduced incentives for complying with program rules. Cases that ended because they failed to provide necessary or reliable information and cases that lost eligibility for other reasons had the highest benefits on average, while cases that ended voluntarily fell in between these extremes. These associations apply to both black- and white-headed cases.

The differences among cases with different reasons for exit were even more pronounced when it came to incomes and earnings. As might be expected, cases that lost eligibility for income and resource reasons tended to be the most economically advantaged, with the highest reported earnings and countable incomes and the strongest and least volatile histories of UI-covered earnings. At the other end of the spectrum were cases in our “residual” category that lost their eligibility for reasons other than high incomes, missed recertifications or failures to provide information. Relative to cases that ended for income reasons, the cases in the residual category were roughly three times as likely to have begun their food stamp participation spells with no reported income whatsoever. On average, the residual cases had countable incomes that were less than half the size of cases that ended for income reasons and covered earnings that were less than a third the size of this group. The differences in covered earnings were starkest in

the quarters that the cases actually ended, indicating possible continuing disadvantage after the cases left the Food Stamp Program.<sup>6</sup> Cases that failed to recertify had economic resources that were below those of income-ineligibles but above those of the other groups. Cases that ended voluntarily came next, followed by cases that ended because of failures to provide information. Cases that ended for information reasons had the highest levels of covered-earnings volatility.

Cases that lost eligibility for income reasons also tended to have the shortest durations, while cases that missed their recertifications tended to be more than a month longer. Among blacks, cases that ended for information reasons, other reasons and voluntarily were slightly longer on average than cases that ended because of missed recertifications. Among whites, the opposite was true.

The demographic patterns are generally consistent with the income and earnings patterns, with cases losing eligibility for income and resource reasons having the highest average levels of education and marriage and fewest children than other cases. Cases in our residual category had the lowest rates of marriage, lowest levels of education, and the most young children.

## **6. Multivariate analysis**

For our multivariate analyses we estimate discrete logistic hazard models of different types of food stamp exits (see Allison 1982 for a thorough discussion of discrete-time models). The hazard rate, which refers to the probability that a spell of remaining in one situation ends at a given point in time conditional on the spell having lasted up to that time, is a standard tool for analyzing program behavior. Hazard models are especially useful in this regard because they account for the fact that some spells of program participation are not observed to end, because

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<sup>6</sup> Some of the differences in covered earnings at the time of exit are undoubtedly artifacts of clients in the “residual” cases moving out of state and in a few cases dying. However, evidence of disadvantage precedes the exits and is seen in other indicators such as low levels of education and marriage.

they either continue past the analyst's observation window or are missing information at some point during their duration. The discrete logistic hazard model is especially easy to apply. In particular, it is straightforward to incorporate controls for duration dependence. For our models, we include 36 monthly dummy variables that cover the first three years of a spell duration and four semi-annual dummy variables that cover the next two years; thus, the model essentially adopts a semi-parametric specification for the spell duration, akin to a Cox proportional hazard model. Similarly, it is straightforward to account for other time-varying characteristics in the discrete logistic model.

Besides our duration controls, all of our models also include controls for the calendar year of the observation to account for unmeasured state-wide changes in policies, economic conditions and attitudes. The models also include controls for the month of the year to account for seasonal effects. For brevity, we do not report the estimation results for the duration, calendar year or seasonal controls, though the complete results are available upon request.

Analyses of all exits. Coefficients and standard errors for our models of any type of food stamp exit estimated separately for black- and white-headed cases are reported in Table 2. Because they consider exits generally, the models are broadly comparable to those estimated by other researchers. However, unlike most previous specifications, the models include detailed controls for earnings histories.

At the top of the table are coefficients for benefits, reported earned incomes and reported unearned incomes. For blacks and whites the coefficients have the anticipated signs with higher benefits reducing the probability of leaving the Food Stamp Program and higher incomes increasing the probability. The implied effect sizes are modestly large – a \$100 increase in monthly benefits lowers the odds ratio of exit by 12 percent for blacks and 8 percent for whites.

A \$100 increase in earnings raises the odds ratio of exit by 3 percent for blacks and 2 percent for whites, while a \$100 increase in unearned income raises the odds ratio of exit by 4 percent for blacks and 1 percent for whites.

More surprising are the next two sets of results, which indicate that households that start their food stamp spells without any income have higher exit rates than other households, while households that start either their spells or their subsequent certification periods with some positive earnings have substantially lower exit rates than other households. Though the results seem counterintuitive when viewed from the perspective of household resources, there is a policy basis for the findings. South Carolina instructs its caseworkers to grant short certification periods to transient households and households without any stable means of support. South Carolina also requires non-working households to report changes in their employment within ten days, whereas working households only need to make immediate reports if their income changes bring them above the gross income threshold.

As expected, higher levels of UI-covered earnings in the preceding quarter are associated with faster exits from the Food Stamp Program. Given that the models already control for current earned income, the estimates for previous quarter's UI earnings most likely reflect a recent history of job-holding and attachment to the labor force. Households with more variable UI earnings also have higher probabilities of exit. This suggests that the extra compliance costs of variable earnings outweigh their impacts on households' valuations of social insurance. The maximum level of UI earnings in the previous year is also positively associated with exits, which seems consistent with maximum earnings acting as a proxy for earnings capacity.

Results for the demographic variables correspond to previous findings. Being female, being older, having more children and living in a high unemployment area are all negatively

associated with food stamp exits. Completing high school or a GED, completing more post-secondary schooling, being currently or formerly married, and having more adults in the household are positively associated with exits.

The last 12 rows of estimates in the table are from dummy variable controls for likely recertification months and for interactions of those dummy variables with the household's earnings status at the beginning of its certification period. Recall that prior to October 2002, most households with children in South Carolina were required to recertify quarterly if they had fluctuating incomes and annually if they had fixed incomes. From October 2002 until February 2005, households with fluctuating incomes had to recertify semi-annually. After February 2005, households with fixed incomes also had to recertify semi-annually. As with our previous study (Ribar et al. 2006a), the estimates in the last 12 rows indicate that households were substantially more likely to leave the Food Stamp Program in recertification months than other months, with households that report incomes being even more likely to leave at the quarterly or semi-annual dates than other households.

Analyses of exits for specific reasons. Results for discrete logistic hazard models broken out by reason of exit are reported in Tables 3b and 3w. These models are specified and estimated just like the models from Table 2, with the exception that exits are only recognized if they occurred for the specified reason—all other exits are treated as random sources of right-censoring. Thus, the specifications represent models of uncorrelated competing risks. Because of the relatively small number of exits in the “residual” ineligibility and voluntary categories, we have combined these last two outcomes and therefore examine a total of four reasons for exit in these multivariate analyses.

[To be completed].

## **7. Conclusions**

[To be completed].

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**Table 1b. Characteristics at spell exits by reason of exit: cases headed by blacks**

	Missed recertification	Income/assets too high	Failed to provide info.	Other loss of eligibility	Voluntary exit
<u>Case income and benefits</u>					
Benefits	221.4	197.7	270.7	289.6	235.5
Reported earned income	646.8	712.0	333.3	260.7	415.8
Reported unearned inc.	283.6	381.9	297.6	295.1	375.8
Countable income	576.1	691.1	384.1	315.8	503.6
Any earn. start of spell (%)	56.8	59.0	39.3	28.9	42.0
No inc. start of spell (%)	13.6	9.8	26.3	30.2	19.2
UI earnings current quarter	916.6	1,205.0	790.2	258.2	820.3
UI earnings last quarter	789.4	1,092.2	651.7	299.3	738.6
Avg. UI earnings last year	762.3	1,131.2	647.9	332.0	720.0
C.V. UI earnings last year	0.565	0.491	0.658	0.641	0.608
Max. UI earnings last year	1,130.5	1,582.0	1,028.4	582.3	1,114.0
No UI earn. last year (%)	19.5	15.0	23.4	42.4	25.1
Spell length (months)	12.1	10.8	12.3	12.6	12.4
<u>PI characteristics</u>					
Female (%)	95.6	93.8	93.5	95.5	93.2
Age	32.2	35.4	31.4	31.3	35.4
Education	11.7	11.9	11.7	11.5	11.8
Currently married (%)	12.4	21.1	12.0	8.7	17.4
Formerly married (%)	27.8	29.7	25.8	30.0	35.4
<u>Case composition</u>					
Number in case	3.1	3.3	3.1	3.0	3.0
Number of children 0-2	0.4	0.3	0.4	0.4	0.3
Number of children 3-5	0.4	0.3	0.4	0.4	0.3
Number of children 6-11	0.7	0.6	0.6	0.6	0.6
Number of children 12-14	0.3	0.3	0.3	0.2	0.3
Number of children 15-17	0.2	0.3	0.2	0.2	0.2
Number of adults	1.2	1.4	1.2	1.2	1.3
<u>Geographic characteristics</u>					
County unemploy. rate	5.7	6.3	6.0	6.1	6.5
County population density	203.8	188.3	211.0	193.7	178.1
ABAWD exemption (%)	63.3	71.7	68.4	72.5	72.2
Border county (%)	36.3	34.6	39.3	38.8	36.9
Number of exits	6,562	3,170	2,135	1,032	426

Source: Authors' calculations from South Carolina food stamp administrative records. Dollar amounts are expressed in 2005 dollars; UI earnings amounts are expressed in monthly equivalents.

**Table 1w. Characteristics at spell exits by reason of exit: cases headed by whites**

	Missed recertification	Income/assets too high	Failed to provide info.	Other loss of eligibility	Voluntary exit
<u>Case income and benefits</u>					
Benefits	256.5	232.4	301.1	301.3	286.1
Reported earned income	635.9	716.3	299.9	280.7	341.4
Reported unearned inc.	254.3	331.7	266.7	244.0	375.8
Countable income	520.1	627.6	316.8	287.9	418.4
Any earn. start of spell (%)	55.6	57.5	35.7	30.0	38.6
No inc. start of spell (%)	17.7	13.7	32.2	34.7	24.1
UI earnings current quarter	810.6	1,189.1	709.3	293.6	722.9
UI earnings last quarter	707.2	1,069.2	587.8	351.2	595.4
Avg. UI earnings last year	702.5	1,106.7	600.9	362.2	670.9
C.V. UI earnings last year	0.666	0.546	0.738	0.666	0.579
Max. UI earnings last year	1,105.3	1,617.4	1,028.3	645.8	1,064.2
No UI earn. last year (%)	23.3	19.2	27.1	43.3	36.8
Spell length (months)	10.3	9.0	9.2	9.4	9.2
<u>PI characteristics</u>					
Female (%)	89.1	87.6	89.0	92.3	88.2
Age	31.9	33.7	31.2	30.5	33.9
Education	11.2	11.5	11.2	11.0	11.4
Currently married (%)	35.4	46.4	30.0	25.4	37.0
Formerly married (%)	41.8	34.2	44.1	41.5	46.6
<u>Case composition</u>					
Number in case	3.3	3.4	3.2	3.1	3.3
Number of children 0-2	0.4	0.4	0.4	0.5	0.4
Number of children 3-5	0.4	0.3	0.4	0.4	0.3
Number of children 6-11	0.6	0.6	0.6	0.6	0.7
Number of children 12-14	0.3	0.3	0.2	0.2	0.3
Number of children 15-17	0.2	0.2	0.2	0.1	0.2
Number of adults	1.4	1.6	1.4	1.3	1.4
<u>Geographic characteristics</u>					
County unemploy. rate	5.4	5.8	5.7	5.8	5.9
County population density	205.8	200.0	211.8	204.5	202.5
ABAWD exemption (%)	55.9	64.7	63.3	65.4	66.8
Border county (%)	56.8	58.8	61.7	61.2	58.0
Number of exits	5,341	1,867	1,887	1,035	440

Source: Authors' calculations from South Carolina food stamp administrative records. Dollar amounts are expressed in 2005 dollars; UI earnings amounts are expressed in monthly equivalents.

**Table 2. Results from discrete logistic hazard models of FS exits by race of case head**

	Black		White	
	Coefficient	(Std. error)	Coefficient	(Std. error)
Benefits (/100)	-0.1345**	(0.0185)	-0.0816**	(0.0191)
Reported earned income (/100)	0.0270**	(0.0044)	0.0189**	(0.0046)
Reported unearned income (/100)	0.0379**	(0.0056)	0.0142*	(0.0058)
No income at start of spell	0.1768**	(0.0287)	0.2325**	(0.0315)
Any earn. start of cert. period	-0.4347**	(0.0343)	-0.5084**	(0.0399)
UI earnings last quarter (/300)	0.0226**	(0.0021)	0.0194**	(0.0021)
Avg. UI earnings last year (/300)	0.0006	(0.0048)	-0.0180**	(0.0046)
C.V. UI earnings last year	0.1219**	(0.0275)	0.0656*	(0.0275)
Max. UI earnings last year (/300)	0.0116**	(0.0028)	0.0140**	(0.0029)
No UI earnings last year	0.0435	(0.0419)	0.0202	(0.0429)
Female	-0.3339**	(0.0445)	-0.1125**	(0.0364)
Age spline 18-21 years	-0.0194	(0.0256)	-0.0928**	(0.0292)
Age spline 22-40 years	-0.0095**	(0.0023)	-0.0149**	(0.0026)
Age spline 41-60 years	-0.0203**	(0.0032)	-0.0274	(0.0043)
Age spline 60+ years	-0.0117	(0.0128)	-0.0051	(0.0235)
Education spline 0-12 years	-0.0131	(0.0114)	-0.0045	(0.0111)
Education spline 12+ years	0.0916**	(0.0177)	0.0574*	(0.0244)
Completed HS or GED	0.1362**	(0.0325)	0.0811*	(0.0355)
Completed college	-0.0744	(0.1092)	0.0416	(0.1561)
Currently married	0.1455**	(0.0336)	0.1623**	(0.0344)
Formerly married	0.1259**	(0.0247)	0.1742**	(0.0311)
Number of children 0-2	-0.2045**	(0.0270)	-0.2005**	(0.0297)
Number of children 3-5	-0.2035**	(0.0267)	-0.1751**	(0.0289)
Number of children 6-11	-0.1885**	(0.0225)	-0.1300**	(0.0243)
Number of children 12-14	-0.1704**	(0.0261)	-0.1036**	(0.0295)
Number of children 15-17	-0.1845**	(0.0277)	-0.0584	(0.0329)
Number of adults	0.0576**	(0.0276)	0.0645*	(0.0302)
County unemployment rate	-0.0141*	(0.0058)	-0.0258**	(0.0078)
Spell quarter (< 10/02)	0.9787**	(0.0571)	1.0817**	(0.0641)
Spell 6 months (10/02-1/05)	0.3938**	(0.0850)	0.2941**	(0.0989)
Spell 6 months (> 1/05)	0.7359**	(0.1584)	0.8110**	(0.1738)
Spell year (< 10/02)	0.0715	(0.1444)	-0.2163	(0.2124)
Spell year (10/02-1/05)	0.7839**	(0.1555)	0.8916**	(0.2212)
Spell year (> 1/05)	0.4652*	(0.2214)	0.6259*	(0.2741)
AE x spell quarter (< 10/02)	0.8008**	(0.0440)	0.9283**	(0.0510)
AE x spell 6 mo. (10/02-1/05)	1.6304**	(0.0844)	2.0530**	(0.0955)
AE x spell 6 months (> 1/05)	1.6641**	(0.1716)	1.6521**	(0.1896)
AE x spell year (< 10/02)	-0.5642**	(0.0758)	-0.5309**	(0.1006)
AE x spell year (10/02-1/05)	-1.1574**	(0.1049)	-1.4963**	(0.1178)
AE x spell year (> 1/05)	-0.9869**	(0.2270)	-1.1589**	(0.2467)
Log likelihood	-45,843.73		-32,845.26	
Monthly observations / spells	283,785 / 18,425		158,524 / 13,622	

Notes: Models also include controls for population density, ABAWD exemptions, border county, calendar year, month of year, and duration month. Standard errors in parentheses.

\* Significant at .05 level.

\*\* Significant at .01 level.

**Table 3b. Results from hazard models of FS exits for specific reasons: cases headed by blacks**

	Missed recertification	Income/assets too high	Failed to provide info.	Other inelig. / voluntary exit
Benefits	-0.2374**	0.0495	-0.1980**	0.1503**
Reported earned income	0.0249**	0.1063**	-0.0709**	0.0287*
Reported unearned income	0.0125	0.1430**	-0.0373**	0.0491**
No income at start of spell	0.0022	-0.0209	0.3893**	0.4579**
Any earn. start of cert. period	-0.2432**	-0.3837**	-0.2937**	-0.2781**
UI earnings last quarter	0.0224**	0.0096**	0.0204**	0.0082
Avg. UI earnings last year	-0.0404**	0.0326**	-0.0192*	0.0024
C.V. UI earnings last year	-0.0443	0.0167	-0.0365	0.4354**
Max. UI earnings last year	0.0240**	0.0026	0.0117	0.0008
No UI earnings last year	-0.2274**	-0.2062*	-0.3879**	0.7290**
Female	-0.3222**	-0.1713*	-0.6048**	-0.1482
Age spline 18-21 years	-0.0197	0.2892**	-0.0441	-0.1783**
Age spline 22-40 years	-0.0166**	0.0108*	-0.0241**	0.0053
Age spline 41-60 years	-0.0264**	-0.0050	-0.0302**	-0.0202*
Age spline 60+ years	-0.0052	-0.0081	-0.0122	-0.0210
Education spline 0-12 years	-0.0090	-0.0328	-0.0072	0.0106
Education spline 12+ years	0.0933**	0.1229**	0.0344	0.0618
Completed HS or GED	0.1059*	0.3270**	0.1210	-0.0486
Completed college	-0.0413	-0.1549	-0.3846	0.1774
Currently married	0.0304	0.2074**	0.1631*	0.3138**
Formerly married	0.1103**	0.0324	0.1516*	0.3403**
Number of children 0-2	-0.1608**	-0.4847**	0.0571	-0.2668**
Number of children 3-5	-0.1175**	-0.5544**	0.0546	-0.2823**
Number of children 6-11	-0.0856**	-0.5553**	0.0598	-0.2480**
Number of children 12-14	-0.0929*	-0.4336**	0.0640	-0.3200**
Number of children 15-17	-0.0395	-0.5332**	0.0640	-0.4115**
Number of adults	0.0629	-0.1287**	0.3642**	-0.2121*
County unemployment rate	-0.0244**	0.0037	-0.0010	-0.0272
Spell quarter (< 10/02)	2.1760**	0.4192**	-0.2442	0.1581
Spell 6 months (10/02–1/05)	1.0886**	0.3398*	0.0198	0.2549
Spell 6 months (> 1/05)	1.6784**	0.5509	0.2600	-0.0171
Spell year (< 10/02)	0.0519	-0.3479	0.9178**	-0.2277
Spell year (10/02–1/05)	1.3502**	0.4305	0.5188	-0.1777
Spell year (> 1/05)	0.7077*	0.3722	0.5951	-1.0423
AE x spell quarter (< 10/02)	0.5573**	0.7239**	0.2308	0.0902
AE x spell 6 mo. (10/02–1/05)	1.9266**	1.2244**	0.3482	0.0808
AE x spell 6 months (> 1/05)	1.7345**	1.1749**	-0.1165	1.1054*
AE x spell year (< 10/02)	-0.7737**	-0.1757	0.5167**	0.4187
AE x spell year (10/02–1/05)	-1.8112**	-0.9041**	0.4900	0.0373
AE x spell year (> 1/05)	-1.5192**	-0.5828	1.0097	–
Log likelihood	-23,461.92	-15,337.30	-11,858.40	-8,798.91

Notes: Models also include controls for population density, ABAWD exemptions, border county, calendar year, month of year, and duration month. Models estimated with 283,785 monthly observations.

\* Significant at .05 level.

\*\* Significant at .01 level.

**Table 3w. Results from hazard models of FS exits for specific reasons: cases headed by whites**

	Missed recertification	Income/assets too high	Failed to provide info.	Other inelig. / voluntary exit
Benefits	-0.1641**	0.0936*	-0.0303	0.0217
Reported earned income	0.0222**	0.0973**	-0.0501**	-0.0111
Reported unearned income	-0.0009	0.1184**	-0.0175	0.0001
No income at start of spell	0.1021*	0.0585	0.3817**	0.3441**
Any earn. start of cert. period	-0.4270**	-0.4122**	-0.2943**	-0.2957**
UI earnings last quarter	0.0181**	0.0130**	0.0194**	0.0099
Avg. UI earnings last year	-0.0263**	-0.0200*	-0.0392**	0.0062
C.V. UI earnings last year	0.0584	-0.2979**	0.0178	0.3668**
Max. UI earnings last year	0.0126**	0.0233**	0.0242**	-0.0015
No UI earnings last year	-0.1071	-0.4647**	-0.1834*	0.8053**
Female	-0.1921**	0.0678	-0.2081**	0.0791
Age spline 18-21 years	-0.1009*	0.0057	-0.1450**	-0.0213
Age spline 22-40 years	-0.0208**	0.0098	-0.0176**	-0.0144*
Age spline 41-60 years	-0.0304**	-0.0065	-0.0407**	-0.0252*
Age spline 60+ years	-0.0531	0.0290	-0.0553	0.0332
Education spline 0-12 years	0.0069	-0.0173	0.0184	-0.0432
Education spline 12+ years	0.0388	0.1263**	-0.0027	0.0454
Completed HS or GED	-0.0010	0.2832**	-0.0155	0.1757*
Completed college	0.1500	0.1540	-0.7252	0.0189
Currently married	0.1820**	0.2394**	0.0549	0.0478
Formerly married	0.2166**	-0.0177	0.2632**	0.0769
Number of children 0-2	-0.2381**	-0.4119**	-0.0337	-0.1000
Number of children 3-5	-0.0913*	-0.5351**	-0.0677	-0.1748*
Number of children 6-11	-0.0844*	-0.4301**	-0.0248	-0.0942
Number of children 12-14	0.0043	-0.4672**	-0.0623	-0.1405
Number of children 15-17	0.0816	-0.4881**	-0.0200	-0.1060
Number of adults	0.0465	-0.0974	0.1751**	0.0046
County unemployment rate	-0.0501**	-0.0049	0.0057	-0.0101
Spell quarter (< 10/02)	2.5474**	0.2838*	-0.1184	-0.0050
Spell 6 months (10/02–1/05)	1.2490**	-0.2276	0.0607	0.2633
Spell 6 months (> 1/05)	1.8904**	0.2473	0.1982	0.3346
Spell year (< 10/02)	-0.4355	-0.5077	0.7467	-1.1360
Spell year (10/02–1/05)	1.2918**	0.4595	0.4716	-0.8815
Spell year (> 1/05)	0.7180*	0.1747	0.0905	-0.2375
AE x spell quarter (< 10/02)	0.7977**	0.6947**	0.3869**	0.1927
AE x spell 6 mo. (10/02–1/05)	2.5047**	1.5080**	0.0655	0.1355
AE x spell 6 months (> 1/05)	1.5938**	1.3764**	0.6844	0.8363
AE x spell year (< 10/02)	-0.6065**	-0.2899	0.1618	-0.2280
AE x spell year (10/02–1/05)	-2.2743**	-0.6816*	0.7127*	0.3998
AE x spell year (> 1/05)	-1.6391**	-0.1658	0.4109	–
Log likelihood	-16,495.87	-9,213.40	-9,694.57	-8,001.77

Notes: Models also include controls for population density, ABAWD exemptions, border county, calendar year, month of year, and duration month. Models estimated with 158,524 monthly observations.

\* Significant at .05 level.

\*\* Significant at .01 level.

**Appendix A. Detailed reasons for food stamp exits by race of case head**

Reason for exit	Black		White	
	Number	Percent	Number	Percent
Missed recertification	<u>6,562</u>	<u>49.25</u>	<u>5,341</u>	<u>50.53</u>
MR: Failed to file MR	4,263	31.99	3,460	32.73
CE: Closed–certification end (S-Gen)	2,299	17.25	1,881	17.80
Income or assets too high	<u>3,170</u>	<u>23.79</u>	<u>1,867</u>	<u>17.66</u>
IN: Income (net) meets exceeds req.	2,341	17.57	1,390	13.15
IE: Increase–earned income	620	4.65	341	3.23
IU: Unearned income exceeds limits	135	1.01	82	0.78
RE: Resources	72	0.54	53	0.50
LS: Lump sum ineligibility	2	0.02	1	0.01
Failed to provide reliable information	<u>2,135</u>	<u>16.02</u>	<u>1,887</u>	<u>17.85</u>
FI: Failed to furnish information	1,418	10.64	1,327	12.55
FP: Failed to provide info. (S-Gen)	459	3.44	290	2.74
VR: Verification–failed to provide	162	1.22	215	2.03
FC: Failed to complete interview (S-Gen)	61	0.46	32	0.30
IM: Incompletely verified MR	35	0.26	23	0.22
Other loss of eligibility	<u>1,032</u>	<u>7.74</u>	<u>1,035</u>	<u>9.79</u>
NR: Nonresident	495	3.71	541	5.12
CL: Cannot locate	244	1.83	318	3.01
HH: No eligible household members	111	0.83	76	0.72
AE: Application opened in error	31	0.23	27	0.26
DE: Death	37	0.28	18	0.17
ET: Failure to comply with E&T req.	26	0.20	14	0.13
SH: Not separate FS household	23	0.17	13	0.12
WR: Work req.–refused/failed to comply	22	0.17	4	0.04
CC: Opened/closed case with claim	16	0.12	9	0.09
AB: ABAWD time limit expired	11	0.08	4	0.04
QC: Refused to cooperate with QC	6	0.05	2	0.02
CH: Change in law/policy	6	0.05	0	0.00
FE: Fail to accept reim. comp.–FS E&T	1	0.01	4	0.04
CD: Drug conviction	0	0.00	2	0.02
DR: Disqualified–misrep. residency/ID	0	0.00	2	0.02
DF: HH disqualified for fraud	1	0.01	0	0.00
FF: Fleeing felon–probation parole	1	0.01	0	0.00
RJ: Refused to accept a job	0	0.00	1	0.01
SS: SSN–refused/failed to furnish/apply	1	0.01	0	0.00
Voluntary exit	<u>426</u>	<u>3.20</u>	<u>440</u>	<u>4.16</u>
VW: Voluntary withdrawal	397	2.98	423	4.00
VQ: Voluntary quit	29	0.22	17	0.16

Source: Authors' calculations from South Carolina food stamp administrative records.