

South Carolina Food Stamp and Well-Being Study

Transitions in Food Stamp Participation and Employment Among Adult-Only Households

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Abstract

Several recent changes in the Food Stamp Program (FSP) have been directed at households without children. Some of the changes, such as new work requirements and time limits for able-bodied adults without dependents (ABAWDs), are intended to encourage economic self-sufficiency and to reduce program dependence. Other changes are intended to raise low program participation rates among vulnerable groups. This study examines administrative records for adult-only households from South Carolina's public assistance and Unemployment Insurance systems during 1996-2003. The study investigates how patterns of exit from and re-entry into the FSP and patterns of employment vary with program provisions for ABAWDs, recertification intervals, economic conditions, and personal and family characteristics. The study shows that households subject to ABAWD policies had shorter spells of food stamp participation, longer spells of food stamp nonparticipation, and higher rates of employment than did households not subject to the policies. In addition, adult-only households were much more likely to leave the FSP at recertification time than at other times. Finding employment hastened exits from the FSP and delayed returns.

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Summary

Several recent legislative and administrative changes in the Food Stamp Program have been directed toward households without children. Some of these changes, such as the new work requirements and time limits for able-bodied adults without dependents (ABAWDs), have been intended to encourage economic self-sufficiency and reduce program dependence. Other changes, such as new outreach efforts, special application procedures and extended recertification intervals, have been intended to increase the low program participation rates among vulnerable groups. Although adult-only households have been a focus of food stamp policy, they have not drawn a commensurate level of attention from researchers.

In this report, we examine administrative records for adult-only households drawn from South Carolina's public assistance and Unemployment Insurance systems over the period 1996-2003. We use these data to investigate how patterns of exit and re-entry in the Food Stamp Program and patterns of employment vary with ABAWD provisions, recertification intervals, economic conditions and personal and family characteristics. We conduct descriptive analyses of the duration of food stamp participation spells and distribution of spell lengths. We also conduct multivariate analyses in which we jointly estimate longitudinal models of the determinants of exits from food stamps, re-entry into food stamps, and employment in UI-covered jobs. The estimation approach allows for repeated spells of program participation and non-participation and controls for statistical problems associated with omitted variables and behaviorally-determined explanatory measures.

Because of the program environment in South Carolina, we are able to identify several interesting and important food stamp policy effects. One program feature in South Carolina was that the state exempted ABAWDs living in different counties at different times from the new work requirements and time limits; this led to geographic and longitudinal variability in the applicability of ABAWD policies. We find that households that were subject to ABAWD policies had shorter spells of food stamp participation, longer spells of food stamp non-participation (lower rates of re-entry into the program) and higher rates of employment than households that were not subject to these policies. South Carolina also required food stamp participants to recertify their eligibility at regular intervals—quarterly or annually before October 2002 and semi-annually or annually afterwards. Because recertification dates are set relative to the start dates of participation spells and because the intervals changed over time, they can be easily distinguished from seasonal effects and other calendar effects. We find that adult-only households in South Carolina were much more likely to leave the Food Stamp Program at recertification dates than at other dates. In addition to these policy results, we also find that employment hastened exits from the Food Stamp Program and delayed returns.

South Carolina Food Stamp and Well-Being Study: Transitions in Food Stamp Participation and Employment Among Adult-Only Households

1. Introduction

A series of recent legislative and administrative changes in the Food Stamp Program have brought new attention to the participation and employment behavior of adult-only households. The most profound legislative change in the Food Stamp Program was the enactment of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996, which established work requirements for able-bodied adults without dependents (ABAWDs) and limited people who failed to comply with these requirements to three months of assistance in any three-year period. These provisions, along with others in the PRWORA that eliminated eligibility for most immigrants, likely contributed to the historic declines in food stamp participation in the late 1990s.

Concurrent with the legislative changes, states also altered their administrative policies, such as the frequency at which they required households to re-establish, or “recertify,” their eligibility for benefits. In some states, recertification intervals were shortened, while in others, they were extended. Several states also undertook new outreach efforts and experimented with streamlined application procedures for vulnerable populations, like the disabled and elderly.

The overarching goal of these changes was to redirect assistance toward the truly needy by promoting self-sufficiency among people who might be able to work their way out of poverty and reducing barriers to participation among those who are less capable of work. To evaluate these policies, legislators, program officials, and the public need to know how they affected participation and employment behavior. For instance, how much did the ABAWD work and time limit provisions reduce food stamp participation? Did these provisions lead to greater work effort for this group? Elderly households are known to have very low program take-up rates; Cunyningham (2004) estimates that only a quarter of eligible elderly individuals participated in the Food Stamp Program in 2002. Did administrative policies contribute to these low take-up rates, and can the policies be changed to improve them?

Despite the importance of these questions, the research basis for answering them is remarkably thin. Only a few food stamp studies have focused on the adult-only caseload or the relevant policies. One reason why researchers may have overlooked these households is that the people in them make up only a small share of the food stamp caseload. Households without children accounted for 46 percent of the households participating in the Food Stamp Program in 2002 (Rosso and Faux 2003); however, because these households tend to be small, the people in them only made up 22 percent of the caseload (Cunyningham 2004).

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Adult-only households may have also been overlooked because they have better economic circumstances and a lower incidence of material hardships, on average, than other households. The U.S. Census Bureau reports that the poverty rate in 2003 was 5 percent for families without related children under age 18 but 14 percent for families with children.¹ Adult-only households were also more likely to be food secure—that is to have “access . . . at all times to enough food for an active healthy life” (Nord et al. 2004, p. 2)—than other households. Nord et al. (2004) estimate that 92 percent of adult-only households were food secure while only 83 percent of households with children were food secure. They also estimate that adult-only households were about half as likely to use food pantries as other households.

Several additional factors complicate an analysis of the policies themselves. Although many food stamp policies, such as benefit levels and the general ABAWD provisions, are set at the national level, the implementation and administration of the program are left to the states. This leads to considerable variation in the administrative landscape across states (Bartlett et al. 2003), even in what would seem to be narrowly constrained policies like the ABAWD requirements (Czajka et al. 2001). Information on these administrative procedures can be difficult to obtain and categorize. When policy measures are available, they might not have useful, independent variation. For example, in a longitudinal statistical analysis, a simple binary indicator for the nation-wide enactment of the ABAWD restrictions would not be distinguishable from a general set of controls for time effects. The issue of identifying variation is particularly relevant because we would want an analysis to account for possible confounding influences from other changes, such as the economic expansion during the late 1990s and the economic downturn early in the new millennium.

In this report we take up these questions and examine patterns of exit from and re-entry into the Food Stamp Program and patterns of employment among adult-only households over the period 1996-2003 using administrative case records from the state of South Carolina. Our empirical analyses use event history methods that are helpful for characterizing features of participation and non-participation spells, such as the distributions of duration patterns and spell lengths. Using personal and household descriptors from the administrative files as explanatory variables and augmenting these with several county-level measures, we examine how economic, demographic, and policy factors affect food stamp participation and employment.

Our study contributes to the research on food stamp caseloads in several ways. First, it exploits a detailed, comprehensive, and highly accurate data source—administrative records from South Carolina’s caseload management and Unemployment Insurance (UI) systems—that is representative of all adult-only households that began a spell of food stamp receipt in the state after the enactment of the PRWORA in 1996. The data are longitudinal, which allows us to examine dynamic behavior—exits from and re-entry into the Food Stamp Program as well as the length of participation and non-participation spells. This is an improvement over static analyses that have only examined the incidence of food stamp participation but have not considered flows into or out of the program. Policies, such as ABAWD time limits or the length of recertification intervals, might affect flows out of the program differently from flows into the program. The data indicate the exact dates when participation spells began and ended and are not subject to

¹ U.S. Census Bureau, “Detailed Poverty Tables—POV05: People in Families by Relationship to Householder,” <http://pubdb3.census.gov/macro/032004/pov/new05_100_01.htm>, accessed March 22, 2005.

recall, under-reporting, or non-response problems. The data also contain a large number of cases, which provides us with statistical power to disaggregate the data several ways in our descriptive analyses and to incorporate numerous explanatory variables in multivariate analyses.

Second, although we only consider a single state, the policies in that state applied to different groups of people in different ways. The differences in treatment enable us to identify several policy effects in a convincing manner. One feature of the policy context is that South Carolina applied for and obtained exemptions from the ABAWD restrictions for select counties. The PRWORA allowed states to exempt areas with high unemployment and surplus labor from the ABAWD rules, and the Balanced Budget Act of 1997 further allowed states to obtain waivers for up to 15 percent of their ABAWD caseloads. South Carolina obtained exemptions under each of these provisions and generally applied them on a county-by-county basis, with the set of counties changing over time. In 2002, the state obtained a waiver for all of its counties. The geographic and longitudinal variation in the applicability of ABAWD restrictions allows us to identify effects from these policies. In addition, because the restrictions only applied to people under age 50, we are able to use households in which all of the members were older than this as pseudo-controls to see if other features of the exempt counties may have contributed to differences in participation and employment outcomes.

Another feature of the South Carolina's administrative environment is an easily measurable set of recertification policies. Until October 2002, the state required food stamp recipients with variable incomes to recertify their eligibility every three months and recipients with fixed incomes to recertify every twelve months. After October 2002, the interval for recipients with variable incomes changed to six months. Because the recertification dates are tied to when a case begins, they can be distinguished from other calendar or seasonal effects. As with the studies by Staveley et al. (2002) and Ribar et al. (2005a), our analysis of the data reveals the anticipated pattern that households are substantially more likely to exit the Food Stamp Program at recertification dates than other dates.

Third, we employ a sophisticated statistical methodology for our multivariate event-history analyses. Specifically, we estimate longitudinal models of the determinants of exits from food stamps, re-entry into food stamps, and employment in UI-covered jobs as a joint system. In the system, the transitions into and out of the Food Stamp Program are specified to depend on employment. The study applies Lillard's (1993) simultaneous hazards procedure to account for the endogeneity of employment in the food stamp exit and re-entry models and to address problems of omitted variables in all three models. The procedure allows for repeated spells of program participation and non-participation. It also allows for the flexible estimation of duration patterns in the spells, which helps to identify detailed timing effects associated with ABAWD and recertification policies.

The remainder of this report is organized as follows. Section 2 summarizes the results from previous empirical studies that have either examined the adult-only caseload or that bear on this population. Section 3 discusses how the food stamp policy environment for adult-only households in South Carolina has evolved since the enactment of the PRWORA. Section 4 describes the administrative data that we use in our empirical analyses. A descriptive analysis of food stamp exit patterns and spell distributions among adult-only households follows in Section 5. Section 6 describes the statistical procedures that we use in our multivariate event-history

analyses of food stamp dynamics and employment, and section 7 reports the results from these procedures. Concluding remarks appear in Section 8.

2. Previous Research

Adult-only households have received much less attention than other groups from food assistance researchers. Indeed, many studies of food stamp participation have excluded these households altogether and instead focused on single-parent households (Blank and Ruggles 1996, Fraker and Moffitt 1988, Heflin 2004, Hofferth 2003, Keane and Moffitt 1998, Mills et al. 2001) or single- and married-parent households (Ribar et al. 2005a), often in the conjunction with other types of program participation. Other studies, such as Kabbani and Wilde (2003), Staveley et al. (2002) and Wallace and Blank (1999), have examined the caseload as a whole without distinguishing between adult-only and other households or considering policies that are unique to adult-only households. If adult-only and other households shared similar circumstances and responded in similar ways to changes in circumstances, these studies might help to inform us about behavior among adult-only households. However, as we have already discussed, households with and without children differ along many dimensions, including economic well-being, food hardships, program requirements, and participation rates; so, a special focus on adult-only households is warranted.

The studies that have been more informative about the participation behavior of adult-only households have fallen into three types:

- studies that examine participation behavior among the general caseload but include controls for adult-only households or policies that are relevant for these households,
- studies that examine participation among different types of households but apply a common methodology to estimate relationships between circumstances and behavior, and
- studies that focus on adult-only households or special segments of the adult-only caseload, such as elderly households or ABAWDs.

We briefly describe the findings from each type of study.

Studies of the general caseload. Bartlett et al. (2003), Farrell et al. (2003) and McKernan and Ratcliffe (2003) used household-level data to estimate multivariate models of the determinants of food stamp participation, which included dummy-variable controls for ABAWD households. They all found that ABAWDs were less likely than other types of households to participate in the Food Stamp Program, even after controlling for other observed characteristics. The samples that Bartlett et al. (2003) and Farrell et al. (2003) examined also included households with elderly members; however, neither set of researchers uncovered strong evidence of differences in participation between elderly and non-elderly households in their multivariate

models. A unique feature of the study by Bartlett et al. (2003) was that it also 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. Bartlett et al. found that these administrative characteristics influenced participation behavior.

Wilde et al. (2000) and Ziliak et al. (2003) estimated multivariate models of food stamp participation using aggregate state-level data. Their models included controls for policies that are relevant for adult-only households, like the percentage of the ABAWD caseload that was exempt from work requirements. Both studies reported evidence that participation was higher in states with ABAWD exemptions, which is consistent with work requirements having some effect on adult-only households.

Disaggregated studies. As with the present study, Gleason et al. (1998) estimated multivariate event history (hazard) models of exits from and re-entry into the Food Stamp Program. They estimated these models separately for households in which all of the members were either elderly or disabled, households with at least one ABAWD and no children, and households with children. Gleason et al. found some similarities across groups, such as that higher levels of income reduced participation. However, they also found some differences. For instance, the exit behavior of ABAWDs appeared to be especially sensitive to changes in local economic conditions.

Currie and Grogger (2001) used repeated cross-section data from the Current Population Study to estimate models of program participation for elderly households, married adult-only households, “lone adults” and other households. The researchers found that adult-only households increased their food stamp participation when unemployment rates rose, but that they were less responsive to this variable than households with children. Currie and Grogger also examined several policies, including the average frequency of recertifications and the implementation of electronic benefit transfer (EBT) systems, but did not find statistically significant associations between these policies and food stamp participation for adult-only households.

Kornfeld (2002) used state-level data to estimate models of food stamp participation for households with no children or elderly members, households with only elderly members, and other types of households. Kornfeld also found that food stamp participation among adult-only households increased with the unemployment rate but that the relationship was stronger for non-elderly than elderly households. In contrast to Currie and Grogger, Kornfeld found that non-elderly households responded to changes in recertification intervals, while elderly households responded to the implementation of EBT systems and to high administrative error rates. A surprising finding from both studies was that food stamp participation among adult-only households was associated with the waiver and TANF reforms to cash assistance programs., even though such households were categorically ineligible for the programs.

Studies of ABAWDs. Stavrianos and Nixon (1998) examined food stamp eligibility, participation and employment among ABAWDs using pre-PRWORA data and used the results from their analysis to infer what the effects of the PRWORA work requirements and time limits would be. They predicted that a large proportion of ABAWDs would lose their food stamp

eligibility and that few ABAWDs would have strong enough work skills to become economically self-sufficient.

Czajka et al. (2001) examined characteristics of ABAWDs and surveyed states about specifics regarding their ABAWD policies. They found that ABAWDs comprised a tiny fraction of the caseload—about 2.5 percent of all food stamp participants in 2000. Consistent with the predictions of Stavrianos and Nixon (1998), they found that many ABAWDs were terminated from the Food Stamp Program because of time limits and that many also confronted employment and work registration barriers.

Richardson et al. (2003) surveyed ABAWDs who had left the Food Stamp Program in South Carolina. The interviews occurred approximately one year after the people initially left the program and were stratified to include people who lived in counties with and without exemptions to the ABAWD work requirements. They found that employment rates among ABAWDs were low; only about half were working a year after leaving food stamps. They also found that exemption status was not strongly correlated with subsequent employment or re-entry into the Food Stamp Program, suggesting that the ABAWD rules had little effect on behavior.

Studies of elderly households. Hollonbeck and Ohls (1984) examined participation among elderly households in three states who were informally screened for eligibility and found that food stamp participation declined with age, income, embarrassment over receiving assistance, and distance to a food stamp office. When asked their reasons for not participating, many non-participants stated that they believed they were ineligible, thought they did not need the benefits, felt that participating was too much trouble, or felt embarrassed.

More recently, Haider et al. (2003) used data from the 1998 and 2000 waves of the Health Retirement Survey to examine eligibility and participation. They found that although eligibility for food stamps increased with age, take-up rates decreased. Their estimates indicated that participation was negatively related to income and home ownership and positively related to SSI receipt. Oddly, however, they also found that take-up was negatively related to food stamp benefit amounts.

Cody (2004) reported results from county-wide demonstrations conducted in six states to increase participation among the elderly. The demonstrations included simplified application procedures (Florida), assistance completing applications (Arizona, Maine and Michigan) and the provision of commodities instead of a food stamp benefit (Connecticut and North Carolina). Comparable counties were selected in each state to serve as controls, and participation trends between the demonstration and comparison counties were examined. For most of the demonstrations, participation increased significantly more in the demonstration counties than in the comparison counties. For instance, the simplified application procedure in Florida was estimated to increase participation among the elderly by 7 percentage points after 12 months and 19 percentage points after 21 months. The Florida results are especially relevant for South Carolina, which adopted a simplified application procedure of its own in 2004.

3. Food Stamp Program in South Carolina

The South Carolina Department of Social Services (SC DSS) administers the state's Food Stamp Program, which is designed to promote the general welfare and to safeguard the health and well being of the state's citizens by raising the nutrition level of low-income households. The program permits participating low-income households to obtain a more nutritious diet, through normal channels of trade, by increasing the food purchasing power. While eligibility in the Food Stamp Program is limited by income and wealth, an important goal is to reach as many eligible households as possible and to maintain participation in the program for as long as eligibility lasts. The state has recently undertaken a number of steps to reduce administrative barriers and encourage participation among all eligible households. It has also implemented several policies aimed squarely at households without children.

Policies for all eligible households. One policy that affects all households participating in the Food Stamp Program is the frequency of recertification. Technically, eligibility in the Food Stamp Program is determined on a monthly basis, and households are supposed to inform their caseworkers immediately about any changes in their resources or needs. As a more detailed check on eligibility, states also require that households periodically participate in a formal process called recertification. South Carolina has recently streamlined its recertification requirements. Until October 2002, the state required food stamp recipients with variable sources of income, such as earnings, to recertify their eligibility quarterly with mail-in forms and annually through face-to-face interviews. For clients with fixed sources of income, the state set a longer recertification period—effectively a year (elderly and disabled clients were allowed to certify for 24 months but received an interim contact at 12 months). Since October 2002, the state has lengthened the period between mail-in recertifications for households with variable incomes from three months to six months but has continued to require face-to-face interviews once a year. As a result, the recertification frequency for households with variable incomes has effectively changed from quarterly to semi-annually. The recertification interval for households with fixed incomes has remained at 12 months.

Since the spring of 2000, South Carolina has also encouraged greater participation among the general population of eligible households by engaging in outreach activities. Specific efforts included conducting local demonstrations using a workshop format, promoting the use of USDA nutrition programs, developing brochures, and providing workshop guidance. Some of these projects involved contracted services with providers to conduct outreach activities, a social marketing campaign, and grant funding for special outreach demonstration projects.

Policies directed at adult-only households. In an effort to address the specific needs of food stamp households consisting entirely of adults, South Carolina has used regulatory options, waivers and demonstration project authority to tailor its Food Stamp Program. Three categories of adult-only households have received particular attention: households with ABAWDs, households with disabled members, and households with elderly members.

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ABAWD policies. The PRWORA imposed a new Food Stamp Employment and Training (FS E&T) requirement on childless, able-bodied adults, aged 18-49. This new requirement limited ABAWDs to three months of benefits in a three-year period unless they worked at least 20 hours or participated in an approved work or training program. The PRWORA gave states the option to exempt ABAWDs from these requirements if they lived in areas with high unemployment or an insufficient number of jobs. The threshold for the high unemployment was set at ten percent, and the threshold for insufficient jobs was set at one percent above the national unemployment rate. Following enactment of the PRWORA, South Carolina immediately applied to exempt ABAWDs from work requirements in areas meeting these definitions.

The Balanced Budget Act of 1997 introduced another exemption provision, allowing states to directly exempt up to 15 percent of their ABAWD cases from work requirements and time limits, using state-determined criteria. South Carolina subsequently applied for and received exemptions for several counties under this “15 percent” rule.

Table 1 provides a history of areas exempted from ABAWD work requirements for the years 1996-2003. Of the 46 counties in South Carolina, the number designated as high unemployment areas ranged from 2 to 9 over the period. The number of areas designated as having insufficient jobs (labor surpluses) ranged from 14 to 21. Most of these areas were counties, but a few were cities. Initially, South Carolina used its authority under the “15 percent” rule to exempt the balance of a county from the work requirements when a major city was already exempted under another provision. Starting in April 2000, the state began using its discretionary authority to continue exemptions in counties that had previously been economically distressed but that subsequently experienced improved conditions.

From August 1999 until March of 2001, a total of 24 counties were exempt under either the high unemployment, labor surplus, or “15 percent” provisions. In April 2001, the number of exempt counties increased to 25. Beginning in October 2002, exemptions were extended to all counties, first through the “15 percent” rule and later through a federal waiver (which was granted on the basis of the state’s overall job climate).

Since October 2002, the FS E&T program in South Carolina has effectively become voluntary. Caseworkers have been instructed to continue to refer ABAWD clients to the FS E&T program, but program staff now focus their efforts on clients who volunteer for services and are interested in becoming self-sufficient. The state’s FS E&T program is currently the only voluntary program in the United States and is being evaluated by the FNS. If the state does not meet participation goals, it may be required to revert back to a mandatory program.

Disabled clients. In 1995, the state created an innovative outreach program for Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) recipients living alone called the South Carolina Combined Application Project, or SCCAP. SCCAP is a cooperative effort between the SC DSS, the USDA, and the U.S. Social Security Administration, which was designed to simplify the application process for certain groups of disabled people.² To be considered under SCCAP, the applicant must meet the following requirements: (1) be

² Persons who receive SSI are aged, blind or disabled but have not necessarily paid into the social security system in order to receive disability benefits. Persons who receive SSDI have worked and paid into the system in order to receive these benefits. SSDI benefits can be higher than the SSI benefits.

Table 1. South Carolina Counties Exempt from ABAWD Work Requirements 1996 – 2003

Effective	Labor Surplus Areas	High Unemployment Areas	15% Exemption Areas
December 1, 1996	Abbeville, Allendale, Bamberg, city of North Charlestown, Chester, Chesterfield, Clarendon, Colleton, Darlington, Fairfield, city of Florence, Hampton, Kershaw, Lee, McCormick, Orangeburg, city of Sumter, Union	Barnwell, Dillon, Georgetown, Marion, Marlboro, Williamsburg	
March 1, 1998	Aiken, Allendale, Bamberg, Barnwell, Calhoun, city of North Charlestown, Chesterfield, Clarendon, Colleton, Darlington, Dillon, Edgefield, Fairfield, Florence, Hampton, McCormick, Orangeburg, Union	Chester, Georgetown, Lee, Marion, Marlboro, Williamsburg	Charleston (balance of county)
August 1, 1999	Abbeville, Aiken, Allendale, city of Anderson, Bamberg, Barnwell, Calhoun, city of North Charlestown, Chester, Chesterfield, Clarendon, Darlington, Dillon, Fairfield, Florence, Georgetown, Hampton, Lee, McCormick, Marion, Orangeburg, Union	Marlboro, Williamsburg	Anderson (balance of county), Charleston (balance of county)
April 1, 2000	Allendale, Bamberg, Barnwell, Chester, Chesterfield, Clarendon, Darlington, Dillon, Fairfield, Georgetown, Lee, McCormick, Orangeburg, Union	Marion, Marlboro, Williamsburg	Abbeville, Aiken, Anderson, Calhoun, Charleston, Florence, Hampton
April 1, 2001	Allendale, Bamberg, Barnwell, Calhoun, Chester, Chesterfield, Clarendon, Darlington, Fairfield, Georgetown, Greenwood, Lee, McCormick, Orangeburg, Union	Dillon, Marion, Marlboro, Williamsburg	Abbeville, Aiken, Anderson, Charleston, Florence, Hampton
April 1, 2002	Allendale, Bamberg, Barnwell, Calhoun, Chester, Chesterfield, Clarendon, Darlington, Georgetown, Greenwood, Lee, McCormick, Orangeburg, Union	Dillon, Fairfield, Marion, Marlboro, Williamsburg	Abbeville, Aiken, Anderson, Charleston, Florence, Hampton
October 1, 2002	Allendale, Bamberg, Barnwell, Calhoun, Chester, Chesterfield, Clarendon, Darlington, Georgetown, Greenwood, Lee, McCormick, Orangeburg, Union	Dillon, Fairfield, Marion, Marlboro, Williamsburg	Rest of state
May 1, 2003	Abbeville, city of Anderson, Barnwell, Cherokee, Chesterfield, Clarendon, Darlington, city of Florence, Georgetown, Greenwood, city of Sumter	Chester, Fairfield, Laurens, McCormick, Marion, Marlboro, Orangeburg, Union, Williamsburg	Rest of state

eligible for SSI or SSDI, (2) have no earned income, and (3) either live alone or purchase and prepare meals separately if living with others.

Eligibility procedures and benefit calculations under SCCAP are streamlined. SCCAP participants receive a standard food stamp benefit based on a monthly representative income that is consistent with the SSI federal benefit rate of \$579 (SSI only) or \$599 (SSI and SSDI) and a representative shelter/utility deduction. Although people may go to a local Social Security office and apply for food stamps when they apply for SSI or SSDI, over 90 percent of SCCAP cases come from SC DSS county offices. SCCAP has subsequently become a model for other combined application projects (USDA 2004a).

Elderly clients. In 2001, the state's "expanded categorical eligibility determination" began allowing elderly households to maintain resources accumulated through their work-life for emergency situations (such as medical, extended care, burial) and to receive food assistance as long as their income was below 130 percent of the poverty line.

In September 2004 (after the period that we consider in our empirical analysis), South Carolina implemented a new Elderly Simplified Application Project (ESAP). ESAP was intended to "reinvent" the food stamp application process for clients age 60 and over. These clients have very stable eligibility characteristics because most are on fixed incomes with few reportable changes in household composition or deductions. However, as mentioned earlier, their take-up of benefits tends to be low.

ESAP clients complete a simplified application, which they can mail in. The majority of information on the application can be taken as self-declaration; this lessens the paperwork burden by reducing the amount of supporting documentation that needs to be included with an application. A centralized eligibility unit at the SC DSS state office administers the ESAP program, processing all applications, checking eligibility (where possible) against other systems, and performing maintenance functions for this caseload. By February 2005, more than 4,082 clients had begun to receive food stamps through ESAP.

Summary. As the discussion in this section indicates, food stamp policy in South Carolina is multi-faceted and evolving. The policy landscape, in turn, affects the way that we structure our empirical investigation. For instance, the review of policies reveals that many policies for adult-only households are distinct from those for other households; this motivates us to focus on adult-only households in this report and households with children in another (Ribar et al. 2005a).

The examination of policies also reveals that several lend themselves to direct measurement. Specifically, we use measures based on the length of time that has elapsed since a spell of food stamp participation began to examine recertification policies. Also, we use indicators for whether an adult-only household lived in a county with an ABAWD exemption to examine ABAWD policies. To account for all other changes in policies over time as well as changes in other conditions, our analyses rely on a flexible set of time-trend variables.

4. Analysis Data

The primary data for the empirical analysis come from two administrative systems maintained by the state of South Carolina: one describes participants in the state's assistance programs, while the other describes covered earnings in the state's Unemployment Insurance program. The study draws records from these systems covering the period from October 1996 until December 2003 and examines variable-length spells of program participation and quarterly periods of employment.

Spell data. The units of analysis for our study of program participation and non-participation are spells. In general, a spell refers to the length of time that a household spends in one situation, such as participating in the Food Stamp Program, before leaving that situation. Spells are demarked by start and end dates and are also described in terms of their durations. Households can experience repeated, alternating, non-overlapping spells of food stamp participation and non-participation in which the end date for one type of spell is immediately followed by the start date for the other type of spell.

While spells all necessarily begin and end at some time, we do not always observe these times in the data. Spell records can be complete, right-censored, or left-censored. As the designation implies, complete spell records contain both the start and end dates of spells and provide exact information on the spell duration. Right-censored spells are those for which the end date is missing. Because these observations are followed up to some date but not after, we know that the spell was at least as long as the measured duration. In this study, spells that were ongoing on December 31, 2003 are right-censored. The "hazard" procedures used in the descriptive and multivariate statistical analyses address the loss of information associated with right-censoring. Left-censored spells are those for which the start date is missing; spells that were ongoing as of October 1, 1996 are left-censored. As with right-censored spells, the durations of left-censored spells are longer than what is measured. Unlike right-censoring though, it is relatively difficult to account for left-censoring in a multivariate analysis with time-varying explanatory variables. Because of this, left-censored program participation spells are dropped from the analysis.

Spells should refer to continuous periods of participation or non-participation. However, the administrative records contain numerous instances of breaks and short spells. In processing the data for each household, the study smoothes the information by combining spells of program participation that are separated by a month or less and ignoring spells of participation that last a month or less. This kind of smoothing is commonly applied in studies of caseload dynamics and can be interpreted as reflecting reasonably strong attachment or detachment from a program.

Quarterly employment data. The assistance program records designate one person as the "primary informant" for the household. The primary informant is the person responsible for the household's financial decisions and in a position to provide caseworkers with information for its

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members. We extract data from the assistance program records on this person's age, gender, race, educational attainment, and marital status and use these as explanatory variables. We also extract quarterly records on the person's earnings from the state's UI database.

The UI database contains earnings records for most private, non-agricultural employers. The Bureau of Labor Statistics estimates that UI-covered jobs account for nearly all non-farm employment in the country.³ Even so, the database still 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.

For the primary informant in each household, we sum his or her earnings from all jobs reported in a given quarter and create an indicator for whether the earnings exceeded \$250. The figures for different years are adjusted to constant 2003 dollars using the Consumer Price Index for Urban Workers. The \$250 threshold was selected after some experimentation. It is approximately the amount that a minimum-wage employee would earn working one week at a full-time job. For our analyses, we consider the discrete, quarter-by-quarter realizations of the earnings/employment indicator. Because an overwhelming number of earnings histories are left-censored at the start of the observation window and because spells of joblessness could easily be masked within or across quarters, we only analyze the incidence and not the duration of employment.

Other variables. From the information available for the primary informants, we construct separate indicators for whether the person was female or black. To describe the informant's educational attainment, we also construct two mutually exclusive indicators for whether the person completed high school but did not go on to college or whether the person completed at least some college; the excluded category consists of those who did not complete high school. For marital status and marital history, our analyses include two mutually exclusive indicators for whether the primary informant is currently or formerly married; the omitted category is never married. The data also indicate the informant's age and whether all of the household members are age 60 or older. All of these indicators are measured as of the beginning of the spell.

We use information on the household's county of residence to link the administrative records to a set of economic, demographic, geographic and policy measures. In particular, we merge in quarterly measures of the county unemployment rate as indicators of economic opportunities. We use the population density—the number of people per square mile in the county of residence—to capture the degree of urbanization and development. As a partial control for missed coverage in the UI employment variable, we include an indicator for counties along the state's border. As a policy measure, we include a time-varying indicator based on the information from Table 1 for whether ABAWDs in the county of residence were exempt from the PRWORA work requirements under the high unemployment, insufficient jobs, or 15-percent waiver rules. In the empirical analyses, the time-varying county-level measures are updated within spells.

³ "Quarterly Census of Employment and Wages," <<http://www.bls.gov/cew/>>, accessed March 31, 2005.

Sample inclusions. To construct our analysis sample, we start with a universe of adult-only households who began a spell of food stamp participation between October 1, 1996 and December 31, 2003. In 2003, 41 percent of the households on food stamps in South Carolina were childless (USDA 2004b).

To avoid problems with left-censoring of participation spells, the initial spell for each household in our sample had to involve a transition from not participating in food stamps to participating in the program. Thus, we exclude spells of food stamp participation that were ongoing on October 1, 1996. While the extract is representative of all spells that began over the 7¼-year period, it is not representative of all spells that might be observed over that period. In particular, it disproportionately excludes long spells.

Extracting information for all households with new participation spells produces records for over 150,000 households—far too many to analyze. To reduce the size of the analysis file, we use a sampling approach. We extract records for all families with new spells who had already been selected for inclusion in the five food stamp and FI leaver surveys conducted by Maximus, Inc. and the state of South Carolina.⁴ We then supplement these with records for one out of every 11 remaining families. In the statistical analysis, we weight the observations to reflect these different sampling rates.

Our analysis sample excludes a small number of additional observations with (a) inconsistent spell information, (b) missing demographic information, (c) primary informants who change over time, and (d) primary informants who are younger than 18 or older than 85 years of age when they were first observed participating in a program. These exclusions result in the loss of just over three percent of the sample. The final analysis extract contains information for 13,814 households and includes 18,783 food stamp participation spells and 12,463 non-participation spells. It also includes 203,444 quarterly employment observations. On average, each case was followed for just under four years, experienced 1.4 spells of food stamp participation, experienced 0.9 spells of non-participation, and held a covered job 19 percent of the time.

In the multivariate empirical analyses, we separately examine 9,264 adult-only households with any members under the age of 50 who were potentially ABAWDs and 4,550 adult-only households whose members were all age 50 and older. Appendix A lists the means of the variables in the analysis separately for the households with younger and older members. Means for the time-varying measures are computed from the quarterly employment observations, which span the observation period for each household. The primary informants in younger households were more likely to be men, more likely to be black, more educated, and less likely to be currently or formerly married than the informants in older households. The younger group also spent less time on food stamps and more time working than the older group.

⁴ A companion analysis (Ribar et al. 2005b) uses the survey data to examine food security and other material well-being outcomes among food stamp leavers.

5. Descriptive Analysis of Spell Data

Figure 1 displays nonparametric Kaplan-Meier estimates of the hazard and survival functions for spells of food stamp participation from the South Carolina administrative data. The hazard functions give the probabilities of leaving the Food Stamp Program at different times, or durations, during a participation spell conditional on having remained in the program up until those times. They are useful for describing how people's program exit behavior changes with the length of time that they remain on food stamps. Statisticians refer to the changes in exit behavior across the length of a spell as the duration dependence pattern. Survival functions give the probabilities of spells lasting beyond given points of time. They are useful for describing the distribution of spell lengths—for instance, what percentage of spells last for more than a certain number of months or what the median spell length is across households.⁵

The administrative source data for the spells are recorded at a daily level; however, to smooth the figures and reduce the number of computations that we needed to make, the estimates in Figure 1 are calculated using periods that correspond to a fifth of a month, or roughly a six-day period (the multivariate analyses later in the report use the finer daily resolution). All of the estimates incorporate weights that adjust for the study's sampling methodology. In Figure 1, separate estimates are calculated for households that began their food stamp spells before 2000 and households that began their food stamp spells after June 2002. Households from the first cohort were subject to quarterly or annual recertification for at least their first 30 months on the Food Stamp Program, while households from the later cohort were subject to semi-annual or annual recertification for the duration of their spells. Spells that began in the intervening period from the start of 2000 until the middle of 2002 were subject to different recertification policies at different points in their durations; for brevity and to maximize the contrasts in behavior, we do not display the hazard estimates for these spells in the intervening period, although the estimates are available upon request.

In addition to the spell start dates, the estimates in Figure 1 also distinguish between adult-only households with any members under age 50 and adult-only households with all members age 50 and older. For comparison purposes, Figure 1 also displays hazard estimates from Ribar et al. (2005a) for the same period for South Carolina households with children.

The most striking feature of the estimated hazard functions for all groups is the pronounced saw-tooth pattern. All of the hazard functions exhibit sharp upward spikes at three-, six- or twelve-month intervals. The spikes coincide with the dates when the households would have been required to recertify their eligibility. The estimates indicate that households are much more likely to leave the Food Stamp Program in recertification months than in other months.

⁵ Hazard and survivor functions were originally developed to study mortality data. In a mortality analysis, hazard probabilities measure the chances of dying at a particular age conditional on living or *surviving* up until that age. Statisticians have continued to use the mortality terminology for these functions.

Figure 1. Nonparametric Event History Analysis of Food Stamp Program Exits for Different Entry Cohorts of Households

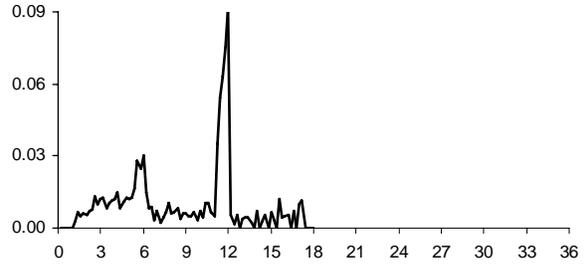
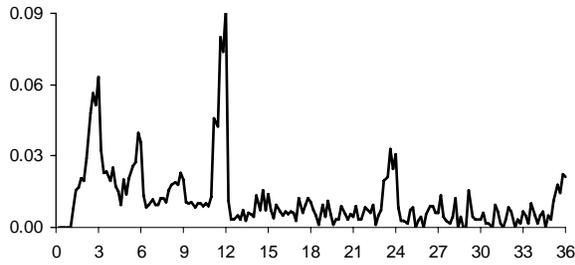
a. Hazard functions

Spells began before 2000

Spells began after June 2002

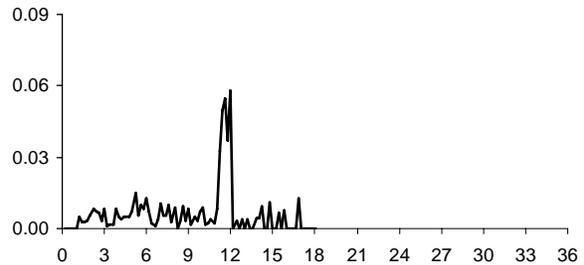
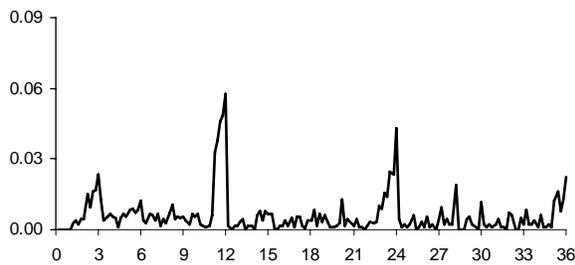
Adult-only HHs with members under age 50

Adult-only HHs with members under age 50



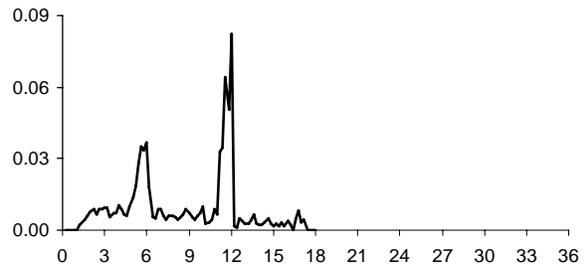
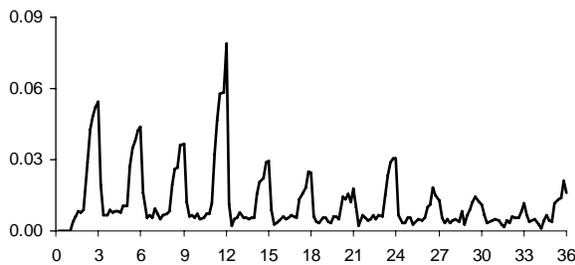
Adult-only HHs with no members under age 50

Adult-only HHs with no members under age 50



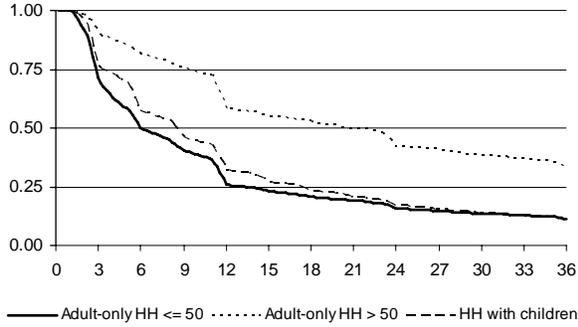
Households with children

Households with children

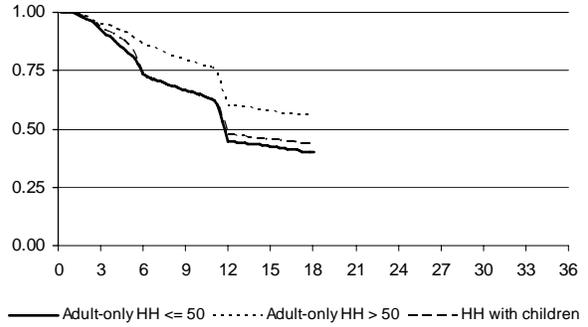


b. Survival functions

Spells began before 2000



Spells began after June 2002



Note: Figures are Kaplan-Meier hazard and survival functions, calculated using 6-day frequencies. The figures are computed using weighted administrative data from the South Carolina Department of Social Services. Figures for households with children are taken from Ribar et al. (2005a).

The upper-most left panel displays the estimated hazard function for households with potential ABAWD members that began food stamp spells between October 1, 1996 and December 31, 2000. The exit probabilities for these households rise sharply in the third month on the program, which is consistent with the both the three-month ABAWD time limit and possible quarterly recertification requirements. There are other noticeable spikes in the exit probabilities at the sixth, ninth and twelfth months, which are consistent with quarterly and annual recertification intervals. After the twelfth month, the exit probabilities fall off noticeably, which indicates that the remaining recipients are very persistent and that they may be hard to move off of the program.

The upper right panel shows the hazard function for similar households with food stamp spells that began in the second half of 2002. These households were required to recertify their eligibility semi-annually or annually. They also would have been receiving benefits at a time when the ABAWD time limits were waived across the entire state. Consistent with these changes, the spikes in exit probabilities in the third and ninth months from the previous graph disappear; the spikes at the sixth and twelfth months are the only ones that remain.

The second row of graphs shows hazard functions for food stamp exits for households in which all of the members were 50 years old or older. These households differ from the younger households in two ways: first, they do not include any ABAWDs, and second, they are more likely to have fixed incomes. Because of these differences, the duration patterns for older households should be dominated by annual spikes, and this is exactly what the graphs show. Older adult-only households have remarkably low exit probabilities, except at the annual recertification periods.

The third row of graphs shows hazard functions for households with children. For the households that entered the Food Stamp Program before 2000, exit probabilities are highest at quarterly and annual intervals. For the households that entered after June 2002, exit probabilities are highest at semi-annual and annual intervals. These patterns are again consistent with the recertification regime. Households with children clearly have higher exit probabilities than older adult-only households. Comparisons between households with children and younger adult-only households produce mixed results; households with children have somewhat lower exit probabilities early in their spells but higher exit probabilities later.

The graphs at the bottom of Figure 1 show the survival functions of continuing a spell of food stamp participation for the different types of households in the two entry cohorts. By construction, the survival functions decrease with the length of spells and fall more precipitously at times when the hazard probabilities are high. Accordingly, the upward spikes in the hazard functions around recertification and ABAWD time limit periods are associated with especially steep drops in the survival functions. For early cohorts of younger adult-only households and households with children, the survival probabilities fall noticeably during the third month. Among younger adult-only households, 29 percent of the participation spells that began prior to 2000 ended within three months. In the same period, only 9 percent of spells begun by older adult-only households ended within three months. The median spell length for younger adult-only households in the early entry cohort was six months, while the median spell lengths for

households with children and older adult-only households were 8½ and 20½ months, respectively.

Exit probabilities fell, and spell durations rose on average for all three types of households after the recertification intervals for households with variable incomes were extended and the ABAWD time limits were waived state-wide. To the extent that these changes affected a greater proportion of younger adult-only households and households with children than older adult-only households, we would expect to observe disparate changes in exit behavior and do, in fact, see that the changes were largest for the most affected groups. The percentage of spells lasting three months or less fell four percentage points (to 5 percent) for older adult-only households, 17 points (to 6 percent) for households with children, and 22 points (to 7 percent) for younger adult-only households. The median spell lengths for households with children and younger adult-only households each increased to just under a year. For all practical purposes, the spell distributions for households with children and younger adult-only households became indistinguishable after the middle of 2002, a result that is consistent with their more equitable policy treatment.

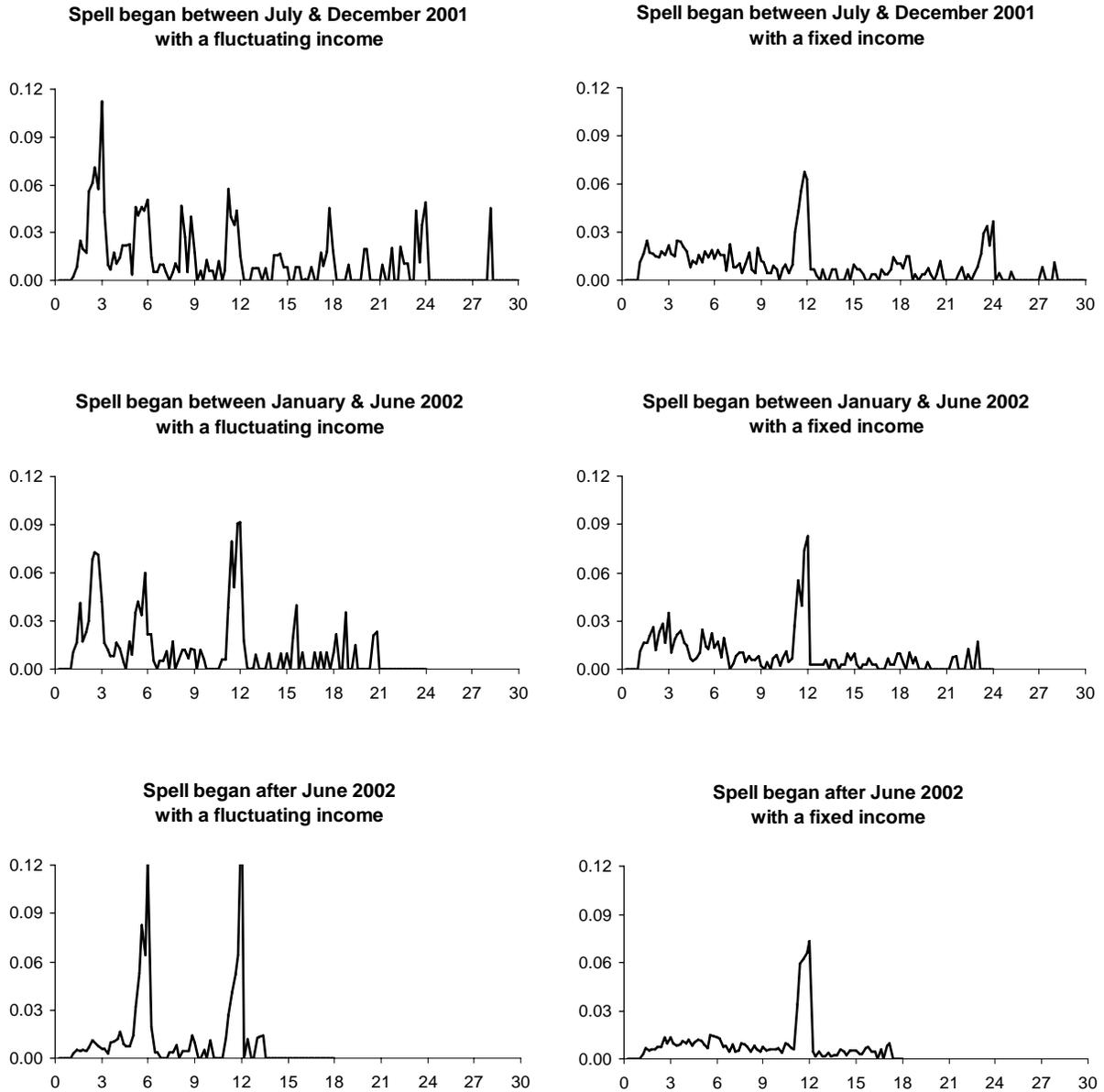
To examine the likely impacts of recertification policies more carefully, Figure 2 shows hazard functions that are estimated separately for adult-only households that began their food stamp spells with fluctuating or fixed incomes. The indicators for variable or fixed incomes come directly from the program records but are only available in the administrative data system after July 2001. Figure 2 reports estimates for three entry cohorts:

- spells that began in the second half of 2001 – these were potentially subject to more frequent (three-month/twelve-month) recertifications for their first year and less frequent (six-month/twelve-month) recertifications thereafter;
- spells that began in the first half of 2002 – these were potentially subject to frequent recertifications for their first six months and longer recertifications thereafter; and
- spells that began in or after the second half of 2002 – these were subject to the longer recertification policy for their entire duration.

The estimates in Figure 2 only include adult-only households and do not distinguish between younger and older households.

The graphs provide additional evidence that recertification policies are responsible for the serrated patterns in the hazard functions. From the top-most left panel of Figure 2, households that began food stamp spells with fluctuating incomes in the second half of 2001 had hazard functions with quarterly spikes in their first year and semi-annual spikes thereafter. As we move down the left set of panels, households that began spells with fluctuating incomes in the first half of 2002 had hazard functions with quarterly spikes in their first half year and semi-annual spikes thereafter, while households that began spells with fluctuating incomes in or after the second half of 2002 had hazard functions with only semi-annual spikes. From the three right panels, households that began food stamp spells with fixed incomes had hazard functions with annual spikes, regardless of the spell start date. The patterns in Figure 2 exactly conform to the differences over time and across income groups in South Carolina's recertification policies.

Figure 2. Nonparametric Hazards of Food Stamp Program Exits for Different Entry Cohorts of Adult-Only Households Conditional on Initial Income Status



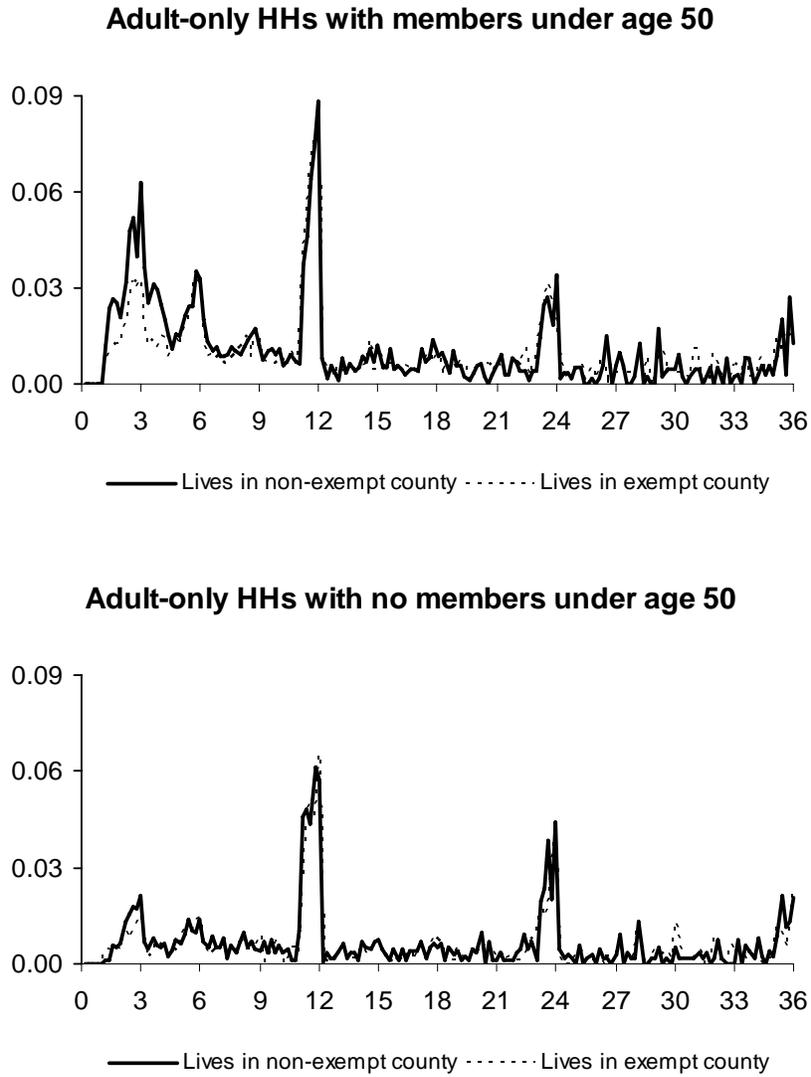
Note: Figures are Kaplan-Meier hazards, calculated using 6-day frequencies. The figures are computed using weighted administrative data from the South Carolina Department of Social Services.

In Figure 3 we examine hazards for the adult-only sample that distinguish between residents of counties with and without ABAWD exemptions and that further distinguish between households with and without possible ABAWD members. The four-way comparison is motivated by a concern that geographic differences in exit behavior might not only reflect differences in the treatment of ABAWDs but also differences in the economic circumstances that led to the exemptions. In the terminology of program evaluation studies, the comparisons allow a *difference-in-difference analysis*. The idea behind the analysis is that older households should not be affected by ABAWD policies, so differences by county exemption status for this group should indicate whether there are confounding influences from economic conditions. If younger and older households respond in similar ways to changes in economic conditions—a crucial yet arguably unreasonable presumption given the evidence from previous studies—the differences by exemption status for older households could be subtracted from the differences for younger households to arrive an impact of the ABAWD policies.

The top panel in Figure 3 shows the estimated hazard functions for younger households living in exempt and non-exempt counties, while the lower panel shows the corresponding estimates for older households. Among younger households, there is a clear difference associated with exemption status. Consistent with expectations, younger adult-only households living in non-exempt counties (counties with ABAWD time limits and work requirements) were more likely to leave the Food Stamp Program during the first few months of their spells than similar households living in exempt counties (counties without restrictions). For younger households that managed to stay on the food stamp program for more than four months, there were no subsequent differences in exit behavior. For older households, there were no appreciable differences in exit behavior at any time during their spells. The specificity of findings—that living in a non-exempt county hastens exits from the food stamp program only among younger households and only during the initial months of their spells—strongly indicates that the patterns represent the impact of ABAWD policies and not something else.

The hazard estimates show that ABAWD restrictions from the PRWORA legislation reduced food stamp participation in South Carolina. Survival estimates (not shown) reveal that these reductions were substantial. In counties with ABAWD restrictions, 30 percent of food stamp spells among younger adult-only households ended within three months, and the median spell length for younger adult-only households was six months. In counties without these restrictions, only 18 percent of participation spells for younger adult-only households ended within three months, and the median spell length was eleven months.

Figure 3. Nonparametric Hazards of Food Stamp Program Exits for Adult-only Households Living in Counties with and without ABAWD Exemptions



Note: Figures are Kaplan-Meier hazards, calculated using 6-day frequencies. The figures are computed using weighted administrative data from the South Carolina Department of Social Services.

6. Econometric Specification

For our multivariate analyses, we estimate hazard models of exits from and re-entry into the Food Stamp Program and binary choice models of employment. The transitions out of and into the Food Stamp Program are specified to depend on employment. We apply Lillard's (1993) simultaneous hazards procedure to address problems of omitted variables in the models of all three processes and to account for the endogeneity of employment in the food stamp hazard models. The econometric specification is discussed in more detail below.

To examine the determinants of the timing of exits from food stamps, we estimate a continuous-time log hazard model

$$\text{Food stamp exit model:} \quad \ln h_{FS}(t) = A_{FS}'T_{FS}(t) + \delta_{FS}E(t) + B_{FS}'X_{FS}(t) + \eta. \quad (1)$$

The hazard, $h_{FS}(t)$ is the probability of exiting the Food Stamp Program at time t conditional on having remained in the program until at least t . In equation (1), $T_{FS}(t)$ represents a vector of duration variables; these are functions of the length of time that an ongoing spell of program participation has lasted and include controls for typical recertification deadlines. Among the other terms in equation (1), $E(t)$ is an indicator for employment; $X_{FS}(t)$ is a vector of other observed and possibly time-varying explanatory variables; η is an unobserved, time-invariant variable, and A_{FS} , δ_{FS} and B_{FS} are coefficients.

The presence of unobserved heterogeneity (equivalently, the problem of omitted variables) in the hazard function is a substantial complication. Unobserved heterogeneity arises because we are not able to measure all of the characteristics that are relevant to people's food stamp participation decisions, such as their precise food needs or their attitudes regarding assistance. Failure to account for such heterogeneity can lead to biased estimates of the coefficients and especially to spurious indications of negative duration dependence. Following Lillard (1993), we assume that the variable representing these characteristics, η , is normally distributed with mean 0 and variance σ_η^2 . We then use a maximum likelihood procedure that accounts for the distribution of food stamp participation spell lengths under this assumption. The procedure is similar to the one developed by Butler and Moffitt (1982) for random-effect panel probit models in that it specifies the hazard function conditional on η and then integrates over the distribution and possible values of η .

A second complication is that our explanatory measures include employment, which is a behaviorally-determined, or endogenous, measure. We address this problem by estimating models of food stamp participation and employment jointly and by allowing the unobserved determinants of these outcomes to be correlated. The key assumption underlying this approach is that the source of bias is a time-invariant unobserved variable. This is similar to the

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assumption that is invoked when fixed effects or difference-in-difference estimators are used to address endogeneity. The correlated random effects approach is even more restrictive than a fixed effects estimator, however, because it requires the omitted variables to be conditionally independent of the observed variables in $X_{FS}(t)$.

Along with the model for exits from food stamps, we also estimate a model of the timing of re-entry into food stamps (equivalently, exits from non-participation and spells of non-participation). The log hazard for this outcome is specified as

$$\text{Food stamp re-entry model:} \quad \ln h_{NF}(t) = A_{NF}'T_{NF}(t) + \delta_{NF}E(t) + B_{NF}'X_{NF}(t) + \mu \quad (2)$$

where $T_{NF}(t)$ is a vector of duration variables, $E(t)$ is defined as before, $X_{NF}(t)$ is a vector of other observed variables, μ is an unobserved, time-invariant variable, and A_{NF} , B_{NF} and δ_{NF} are coefficients. The unobserved variable μ is assumed to be normally distributed with mean 0 and variance σ_{μ}^2 . The analysis allows for multiple, alternating spells of food stamp participation and non-participation.

A discrete-time, binary-choice specification is used to model employment. In the model, the net benefits of employment for the primary informant of the household at time t are specified to be a linear function such that

$$\text{Employment model:} \quad E^*(t) = B_E'X_E(t) + v + \varepsilon(t) \quad (3)$$

where $X_E(t)$ is a vector of observed variables, v is a normally distributed, time-invariant, unobserved variable with mean 0 and variance σ_v^2 , and $\varepsilon(t)$ is a normally distributed, transitory, unobserved variable with mean 0 and variance 1. We assume that the primary informant works to earn more than \$250 if the net benefits are positive ($E(t) = 1$ if $E^*(t) > 0$) and does not work this much otherwise ($E(t) = 0$ if $E^*(t) \leq 0$). The unobserved transitory variable $\varepsilon(t)$ is assumed to be serially uncorrelated and independent of the other unobserved variable v . With this assumption, employment is modeled as a random-effects probit.

The transitory error is also assumed to be independent of the other two time-invariant, unobserved variables, η and μ . However, η , μ , and v are allowed to be freely correlated (the correlation coefficients are $\rho_{\eta\mu}$, $\rho_{\eta v}$, and $\rho_{\mu v}$). The two log hazard models and the random effects probit model are estimated jointly as a single system using the aML software package (Lillard and Panis 2003). The aML package employs Gaussian quadrature—a numerical approximation procedure—to evaluate the integrals over the three sources of time-invariant, unobserved heterogeneity. We report estimates from models that used ten quadrature points in each dimension, or 1,000 points total.⁶

⁶ For more information on the Gaussian quadrature technique, please see Butler and Moffitt (1982) and Lillard and Panis (2003).

7. Multivariate Estimation Results

Specification issues. The multivariate estimation methodology is exceedingly flexible in the ways it can both model duration dependence patterns and incorporate controls for unobserved variables. Because of this flexibility, it is important before reporting our estimation results to discuss how we specified the models and how we checked the specifications. An initial discussion of specification issues is also necessary because the complexity and size of the models make it cumbersome to report detailed results from more than a few specifications.

We begin with a discussion of the duration controls. The food stamp exit and re-entry models are specified as proportional hazard models, which means that each of the models has a baseline duration dependence pattern, or baseline hazard, that is shifted up or down by the explanatory variables and error terms. In equations (1) and (2), the baseline hazard functions are represented by the expressions, $A_{FS}T_{FS}(t)$ and $A_{NF}T_{NF}(t)$, respectively. An initial step in estimating the models is to specify the functional forms of the baseline hazards—that is, to determine what the elements of $T_{FS}(t)$ and $T_{NF}(t)$ will be. The final shape of the baseline hazards depends on the values of the coefficients in A_{FS} and A_{NF} , which are estimated jointly with the other coefficients in the model. Two general sets of duration controls are used in the study’s hazard models: piecewise-linear functions, or linear *splines*, for the durations of the spells and for general time effects and step functions (dummy variables) for potential recertification months. We describe each of these controls in more detail below.

Each of the log hazard models includes a piece-wise linear function that is defined relative to the start of the spell to account for duration effects—increases and decreases in the exit probabilities as the spell progresses. The number of segments in the functions and the points during the spell where the segments connect differ across the exit and re-entry models. The duration splines in the food stamp exit models have 15 segments: twelve three-month segments covering the first three years of a participation spell, two six-month segments covering the fourth year of a spell and a final linear segment covering subsequent years.⁷ The duration splines in the food stamp re-entry models have eight segments that connect at months 2, 5, 9, 13, 18, 24 and 36. The number of segments and locations of the connecting points were selected after some initial experimentation and specification testing done in conjunction with our companion analysis of households with children (Ribar et al. 2005a).

Recall that we estimate our models separately for adult-only households that have any members under age 50 (that have potential ABAWD members) and adult-only households that only have older members (that do not have any ABAWD members). For the younger group, we

⁷ The specific elements of the duration vectors, $T_{FS}(t)$, in the food stamp exit models are $T_{0-3}(t) = \min(t, 3)$, $T_{4-6}(t) = \max[0, \min(t-3, 3)]$, $T_{7-9}(t) = \max[0, \min(t-6, 3)]$, ... $T_{34-36}(t) = \max[0, \min(t-33, 3)]$, $T_{37-42}(t) = \max[0, \min(t-36, 6)]$, $T_{43-48}(t) = \max[0, \min(t-42, 6)]$, and $T_{49+}(t) = \max(0, t-48)$.

estimate separate duration splines depending on whether the household did or did not live in a county with an ABAWD exemption. We saw in the descriptive analysis that the ABAWD provisions were associated with differences in exit probabilities early in a spell but not later. We allow for such differences in our multivariate model by using separate duration specifications for households in exempt and non-exempt counties; tests confirmed that different specifications were appropriate. The number and location of the segments are the same across specifications; the model simply allows for different slopes along the segments (different values of the coefficients in A_{FS}) for households in exempt and non-exempt counties. Operationally, this is accomplished by interacting an indicator for exemption status at the beginning of the spell with each of the elements of $T_{FS}(t)$.

The hazard models also include piece-wise linear duration functions that are defined relative to a particular date—October 1, 1996, the beginning of the observation window for our analysis data—rather than relative to the beginning of the spell. The specifications of these “calendar” splines are common across all of our hazard models with initial nine-month segments that extend from October 1996 to June 1997 and a series of six-month segments thereafter. We include the calendar splines to capture general trends in the exit and re-entry probabilities that might arise from unmeasured national or state-wide changes in economic, demographic or policy conditions. Tests indicated that half-year segments fit the spell data better than longer segments.

In addition to the linear splines for duration dependence and calendar effects, the food stamp exit models include four dummy-variable controls corresponding to potential recertification months—indicators for every third and twelfth month of a spell that occur before October 2002 and indicators for every sixth and twelfth month of a spell that occur after that. Each indicator is set relative to the start date of a spell and covers a 31-day window that extends from 28 days before the potential recertification date to two days afterward. The dummy controls lead to discrete jumps, or steps, in the hazard functions for food stamp exits at the beginning and end of potential recertification months. Our examination of the nonparametric hazards and some preliminary testing guided the specification of these indicators.

To approximate the differences in recertification policies associated with fixed versus fluctuating incomes, the food stamp exit models also include interactions of the recertification dummy variables with an indicator for whether the household began its spell with covered earnings. Households with initial earnings should be subject to shorter recertification intervals. For the analysis sample of older adult-only households, we also include interactions of the recertification dummy variables and an indicator for whether everyone in the household was over age 60. Households with older members are more likely to rely on fixed incomes and, consequently, to face longer recertification intervals.⁸

⁸ The administrative data system notes whether households have fixed or fluctuating incomes; it also records the households’ sources of income. However, these data are not available across the entire period of our study; so, we instead rely on the initial employment and age composition variables in the multivariate analyses.

**Summary of duration and calendar controls in food stamp exit and re-entry models
(elements of $T_{FS}(t)$ & $T_{NF}(t)$)**

Type of control	Food stamp exit model	Food stamp re-entry model
Baseline hazard	Piecewise linear function with 15 segments	Piecewise linear function with 8 segments
Duration pattern for people living in exempt counties (ABAWD pattern) ^A	Piecewise linear function with 15 segments interacted with exempt county indicator	
General recertification month indicators	4 dummy variables: indicators for every 3 rd and 12 th month of a spell before Oct. 2002 and every 6 th and 12 th month of a spell after Oct. 2002	
Recertification month indicators for employed people	4 dummy variables described above interacted with emp. status at start of spell	
Recertification month indicators for older people ^B	4 dummy variables described above interacted with indicator for all household members being over age 60	
Calendar time controls	Piecewise linear function with 14 segments defined relative to Oct. 1, 1996	Piecewise linear function with 14 segments defined relative to Oct. 1, 1996

^A Only included in models for households with members under age 50.

^B Only included in models for households without members under age 50.

A second general specification issue involved the inclusion and distribution of the unobserved heterogeneity terms, η , μ and ν . Initial specification tests confirmed that controls for unobserved heterogeneity were necessary and that the heterogeneity terms were correlated across some of the equations. In the results that follow, the models all include complete sets of controls for unobserved heterogeneity and correlations among the heterogeneity terms.

Estimation results for younger adult-only households. Coefficient estimates from the three-equation system for adult-only households with at least one member under the age of 50—that is, with potential ABAWD members—are reported in Table 2. From left to right, the columns in Table 2 list results from the food stamp exit hazard, food stamp re-entry hazard, and covered employment probit models. The first ten rows of the table list coefficients for measures of the household's and primary informant's observed characteristics. The next four rows list coefficients for the county-level variables. Coefficients for the recertification-month dummies and the interactions of these variables with the initial employment indicator for the food stamp exit model appear in the next eight rows. These are followed by the estimated slopes of the piecewise-linear (spline) controls for general calendar effects. Estimates of the variance and

Table 2. Models of Food Stamp Transitions and Employment: Adult-Only Households with Members under Age 50

	Food stamp exit	Food stamp re-entry	UI-covered earnings >\$250
PI and household characteristics			
Age spline through age 25	-0.0171 (0.0108)	0.0418 ** (0.0201)	-0.0668 *** (0.0094)
Age spline after age 25	-0.0171 *** (0.0018)	0.0035 (0.0029)	-0.0364 *** (0.0021)
Female	-0.3470 *** (0.0279)	0.2357 *** (0.0442)	0.2885 *** (0.0414)
African-American	-0.1228 *** (0.0285)	0.4625 *** (0.0488)	0.4075 *** (0.0435)
Completed high school	0.2226 *** (0.0283)	-0.1942 *** (0.0455)	0.4624 *** (0.0322)
Completed some college	0.3173 *** (0.0441)	-0.4133 *** (0.0721)	0.6796 *** (0.0513)
Formerly married	0.0172 (0.0310)	0.0262 (0.0513)	0.0214 (0.0329)
Currently married	0.2707 *** (0.0467)	-0.1032 (0.0777)	0.1466 *** (0.0390)
Earned \$250 or more in quarter	0.4562 *** (0.0317)	-0.2443 *** (0.0415)	
Was earning \$250 or more at start of spell	-0.1613 *** (0.0415)		
County characteristics			
Unemployment rate	0.0076 (0.0053)	0.0387 *** (0.0079)	-0.0158 *** (0.0031)
Population density	0.5171 *** (0.1213)	-0.0509 (0.1941)	0.4418 *** (0.1093)
Border county	0.0506 * (0.0275)	0.0200 (0.0445)	-0.0419 (0.0323)
Exempt from ABAWD requirements	-0.4310 *** (0.1475)	0.1022 ** (0.0505)	-0.0678 *** (0.0154)
Spell period dummies			
End of quarter (before 10/02)	0.5065 *** (0.0322)		
End of year (before 10/02)	1.1429 *** (0.0769)		
End of 6-months (after 10/02)	0.8346 *** (0.0874)		
End of year (after 10/02)	1.1850 *** (0.1166)		
End of quarter (before 10/02) x earnings status at spell start	0.4220 *** (0.0511)		

End of year (before 10/02) x earnings status at spell start	-0.3934 *** (0.0929)		
End of 6-months (after 10/02) x earnings status at spell start	0.4354 *** (0.1173)		
End of year (after 10/02) x earnings status at spell start	-0.5383 *** (0.1548)		
Calendar time spline			
October 1996 - June 1997	-0.0112 (0.0219)	-0.1111 (0.1220)	0.0204 *** (0.0036)
July 1997 - December 1997	-0.0764 *** (0.0157)	0.1073 *** (0.0414)	
January 1998 - June 1998	-0.0058 (0.0150)	-0.0420 (0.0303)	0.0176 *** (0.0026)
July 1998 - December 1998	0.0362 ** (0.0145)	0.0234 (0.0271)	
January 1999 - June 1999	-0.0055 (0.0144)	-0.0648 *** (0.0251)	0.0065 *** (0.0022)
July 1999 - December 1999	-0.0060 (0.0144)	0.0379 (0.0245)	
January 2000 - June 2000	-0.0029 (0.0145)	-0.0101 (0.0232)	-0.0080 *** (0.0020)
July 2000 - December 2000	-0.0118 (0.0145)	0.0583 *** (0.0221)	
January 2001 - June 2001	-0.0010 (0.0141)	-0.0452 ** (0.0198)	-0.0231 *** (0.0027)
July 2001 - December 2001	-0.0376 *** (0.0132)	0.0328 * (0.0192)	
January 2002 - June 2002	0.0319 ** (0.0124)	-0.0178 (0.0179)	0.0082 ** (0.0037)
July 2002 - December 2002	-0.1558 *** (0.0135)	0.0147 (0.0182)	
January 2003 - June 2003	0.0704 *** (0.0136)	0.0065 (0.0176)	0.0061 (0.0048)
July 2003 - December 2003	-0.1036 *** (0.0166)	-0.1463 *** (0.0267)	
Variance/covariance parameters			
$\sigma_{\eta}^2, \sigma_{\mu}^2, \sigma_{\nu}^2$	0.6237 *** (0.0319)	0.9011 *** (0.0396)	1.9652 *** (0.0271)
$\rho_{\eta\mu}, \rho_{\eta\nu}, \rho_{\mu\nu}$	-0.0439 (0.0484)	0.4750 *** (0.0162)	0.3285 *** (0.0266)
Log likelihood		-137816.54	
Cases		9264	
Spells/outcomes	13331	9271	133425

Note: Estimates based on weighted administrative data from the South Carolina Department of Social Services. Models calculated using Gaussian quadrature with 10 points in each dimension. Intercepts and coefficients for piecewise linear duration dependence patterns in hazard models are not reported. Asymptotic standard errors in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

correlation parameters for the heterogeneity terms appear at the bottom of the table. To conserve space, intercepts and estimated parameters for the piecewise-linear duration functions in the hazard models are not reported (complete results are available upon request from the authors).

The estimates from Table 2 indicate that the food stamp policy variables are statistically and substantively important, even after controlling for other characteristics. Younger adult-only households were much more likely to leave the Food Stamp Program in recertification months—at quarterly and annual intervals prior to October 2002 and at half-yearly and annual intervals subsequently—than in other months. The coefficients on the uninteracted recertification dummy variables give the exit pattern for households that were not initially working. As expected, these households are more likely to leave at annual intervals than at shorter intervals.

For households that were initially working, we need to consider both the uninteracted and interacted coefficients. When we do this we see that households that were initially working were also more likely to leave at annual intervals than at shorter intervals; however, the exit probabilities at the shorter intervals are higher than those for initially non-working households. These patterns are consistent with the way that we would expect the recertification policy to operate.

There are also significant differences in program participation and employment between younger adult-only households living in counties with exemptions from the ABAWD restrictions and households living other counties. The estimates indicate that the food stamp re-entry hazards for younger households living in exempt counties are roughly ten percent higher than the corresponding hazards for households living in non-exempt counties. The probabilities of employment are about ten percent lower (2 to 3 absolute percentage points) in exempt counties.

The hazard model for food stamp exits includes a dummy variable for exemption status along with interactions of exemption status and the baseline hazard; however, Table 2 does not report the coefficients for the interactions (detailed results are available upon request). Calculations based on the estimates indicate that the exit hazard probability is initially 35 percent lower for households in exempt counties than for households in non-exempt counties. Calculated differences at other points during the first nine months of a spell appear below.

Difference in exit hazards for younger adult-only households living in exempt and non-exempt counties

month:	0	1	2	3	4	5	6	7	8	9
difference:	35%	34%	33%	32%	26%	19%	11%	8%	4%	0%

The calculations indicate that the difference in hazard rates falls slightly across the first three months of a food stamp spell, rapidly across the fourth through sixth months of a spell, and moderately across the seventh through ninth months of a spell. By the ninth month, there are no differences in the exit hazards between younger households living in exempt and non-exempt counties. The pattern of results is similar to what we observed in the descriptive analysis: younger adult-only households in exempt counties have substantially lower food stamp exit hazards but only in the first few months of their spells.

The estimates from Table 2 indicate that employment is associated with faster exits from food stamps and slower returns to the programs for younger adult-only households. These associations are substantively large—earning \$250 or more in a quarter increases the food stamp exit hazard by 58 percent and reduces the re-entry hazard by 22 percent. Increased schooling is associated with faster exits from food stamps, slower returns to the program, and greater chances of employment. On average, younger adult-only households with female and black informants experience longer spells of food stamp participation and shorter spells of non-participation than similar households with male or non-black informants; however, female and black informants are also more likely to work in a covered job. Younger currently-married households have higher exit probabilities and higher employment rates than other households. Exit probabilities and employment probabilities decrease with age.

Living in a county with a high unemployment rate reduces the probability that the primary informant in a younger adult-only household works and also increases the probability of a household returning to the Food Stamp Program. Living in a densely populated county increases the probability of exiting food stamps and of working. Living in a border county is also associated with a higher exit probability.

The controls for calendar time effects are jointly significant in the program and earnings/employment models. The coefficients in the employment model are consistent with the observed trends: employment increased through 1999, decreased in 2000 and 2001, and started to increase again in 2002. Although there are many significant coefficients, it is harder to detect a consistent pattern in the time trends for the food stamp exit and re-entry models.

The unobserved characteristics of households that hasten exits from food stamps (the characteristics represented by the factor η) are not strongly correlated with the unobserved characteristics that hasten returns to the program (represented by μ). However, η and μ are each significantly, positively correlated with the unobserved characteristics that lead to employment (represented by ν). The results indicate that factors that contribute to employment also contribute to more turbulent program behavior for younger adult-only households.

Estimation results for older adult-only households. Results from the food stamp and employment models estimated for adult-only households with all members age 50 and above are reported in Table 3. The models for older adult-only households are specified slightly differently than the models for younger households. The models for older-households (a) employ a different age spline, (b) include an indicator for all members being age 60 or over, (c) include interactions of the age 60 indicator with the recertification variables in the food stamp exit hazard, and (d) do not interact the ABAWD exemption status variable with the baseline hazard in the food stamp exit equation. Initial specification tests indicated that these changes were appropriate.

As with the estimates from Table 2, the results for the recertification variables in the food stamp exit model are statistically and substantively significant. The estimates for the uninteracted coefficients indicate that older households who were initially without earnings and who initially had members under the age of 60 were more likely to leave at quarterly and especially annual intervals before October 2002 and at semi-annual and annual intervals after October 2002. The quarterly pattern before October 2002 is stronger among older households

Table 3. Models of Food Stamp Transitions and Employment: Adult-Only Households with No Members under Age 50

	Food stamp exit	Food stamp re-entry	UI-covered earnings >\$250
PI and household characteristics			
Age spline through age 65	-0.0451 *** (0.0077)	-0.0378 *** (0.0136)	-0.1168 *** (0.0081)
Age spline after age 65	-0.0046 (0.0067)	-0.0566 *** (0.0123)	-0.1426 *** (0.0151)
All members over age 60	0.0101 (0.0925)	-0.2763 ** (0.1353)	-0.4362 *** (0.0524)
Female	-0.4077 *** (0.0483)	0.1819 ** (0.0768)	0.0056 (0.1023)
African-American	-0.1384 *** (0.0467)	0.3477 *** (0.0790)	0.4086 *** (0.1046)
Completed high school	0.2875 *** (0.0527)	-0.0552 (0.0867)	0.9936 *** (0.0947)
Completed some college	0.3927 *** (0.0946)	-0.0599 (0.1483)	1.0074 *** (0.1868)
Formerly married	0.0014 (0.0603)	-0.0560 (0.0969)	-0.0233 (0.1174)
Currently married	0.3791 *** (0.0815)	-0.2577 * (0.1399)	0.3867 *** (0.1290)
Earned \$250 or more in quarter	0.5961 *** (0.0763)	-0.4954 *** (0.1231)	
Was earning \$250 or more at start of spell	-0.2741 *** (0.0986)		
County characteristics			
Unemployment rate	-0.0197 ** (0.0091)	0.0240 (0.0155)	0.0106 (0.0070)
Population density	0.0850 (0.2057)	0.0967 (0.3495)	-0.0325 (0.2870)
Border county	0.0267 (0.0459)	-0.0142 (0.0764)	0.0253 (0.0950)
Exempt from ABAWD requirements	-0.0568 (0.0545)	0.0028 (0.0929)	-0.0124 (0.0400)
Spell period dummies			
End of quarter (before 10/02)	0.7371 *** (0.0687)		
End of year (before 10/02)	1.1224 *** (0.1137)		
End of 6-months (after 10/02)	0.6746 *** (0.1755)		
End of year (after 10/02)	1.1875 *** (0.2002)		

End of quarter (before 10/02) x earnings status at spell start	0.7344 *** (0.1199)		
End of year (before 10/02) x earnings status at spell start	-0.7538 *** (0.1672)		
End of 6-months (after 10/02) x earnings status at spell start	0.1607 (0.2699)		
End of year (after 10/02) x earnings status at spell start	-0.2486 (0.3219)		
End of quarter (before 10/02) x all members over age 60	-0.5708 *** (0.1032)		
End of year (before 10/02) x all members over age 60	0.6377 *** (0.1150)		
End of 6-months (after 10/02) x all members over age 60	-0.3687 (0.2702)		
End of year (after 10/02) x all members over age 60	0.5139 * (0.2910)		
Calendar time spline			
October 1996 - June 1997	-0.0894 ** (0.0451)	0.2474 (0.3207)	0.0031 (0.0083)
July 1997 - December 1997	-0.0217 (0.0306)	0.0047 (0.1216)	
January 1998 - June 1998	-0.0790 *** (0.0276)	0.0873 (0.0768)	0.0017
July 1998 - December 1998	0.1068 *** (0.0258)	-0.0555 (0.0561)	(0.0060)
January 1999 - June 1999	-0.0249 (0.0233)	-0.0030 (0.0497)	0.0165 ***
July 1999 - December 1999	0.0406 * (0.0227)	0.0176 (0.0462)	(0.0053)
January 2000 - June 2000	-0.0492 ** (0.0230)	0.0067 (0.0457)	-0.0170 ***
July 2000 - December 2000	0.0074 (0.0231)	-0.0182 (0.0462)	(0.0048)
January 2001 - June 2001	0.0270 (0.0233)	0.0143 (0.0451)	-0.0308 ***
July 2001 - December 2001	-0.0346 (0.0221)	0.0051 (0.0408)	(0.0061)
January 2002 - June 2002	0.0048 (0.0219)	0.0164 (0.0357)	0.0135 *
July 2002 - December 2002	-0.0320 (0.0240)	-0.0099 (0.0366)	(0.0080)
January 2003 - June 2003	0.0364 * (0.0208)	0.0127 (0.0367)	-0.0070
July 2003 - December 2003	-0.0880 *** (0.0273)	-0.1705 *** (0.0591)	(0.0099)

Variance/covariance parameters			
$\sigma_{\eta}^2, \sigma_{\mu}^2, \sigma_{\nu}^2$	0.7443 *** (0.0700)	0.5898 *** (0.0843)	2.6291 *** (0.0734)
$\rho_{\eta\mu}, \rho_{\eta\nu}, \rho_{\mu\nu}$	0.0801 (0.1517)	0.5567 *** (0.0278)	0.7418 *** (0.0756)
Log likelihood		-40819.98	
Cases		4550	
Spells/outcomes	5452	3192	70019

Note: Estimates based on weighted administrative data from the South Carolina Department of Social Services. Models calculated using Gaussian quadrature with 10 points in each dimension. Intercepts and coefficients for piecewise linear duration dependence patterns in hazard models are not reported. Asymptotic standard errors in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

who initially had earnings. The annual pattern is stronger before and after October 2002 for households in which all members were over age 60. The results are consistent with recertification policies regarding people with different types of incomes and elderly recipients.

The coefficients for the other direct policy measure—the indicator for whether the county was exempt from the ABAWD restrictions—are not significant in any of the models. We did not expect that the ABAWD provisions themselves would have an effect for older households, but there was a possibility that exempt and non-exempt counties were different in other ways that we could not measure. From these results, it appears that there are no relevant differences, at least insofar as they might affect older households.

Many of the other results for older adult-only households are similar to those for younger households. Earning more than \$250 in covered wages in a quarter sharply increases the hazard for exiting food stamps and sharply reduces the hazard for re-entering food stamps. The results for the gender, race, schooling, and marital status variables are also mostly similar to the results from Table 2, as are the estimates for the relationships among the unobserved variables.

One notable difference between the estimates for younger and older households is that older households are generally less sensitive to changes in the local economic and demographic variables. While the unemployment variable in the food stamp exit equation has a significantly negative coefficient, all of the other county-level variables are statistically insignificant. Some of the loss in statistical significance is associated with the reduced power and larger standard errors from the smaller sample size. However, there are also substantial reductions in magnitude for several coefficients.

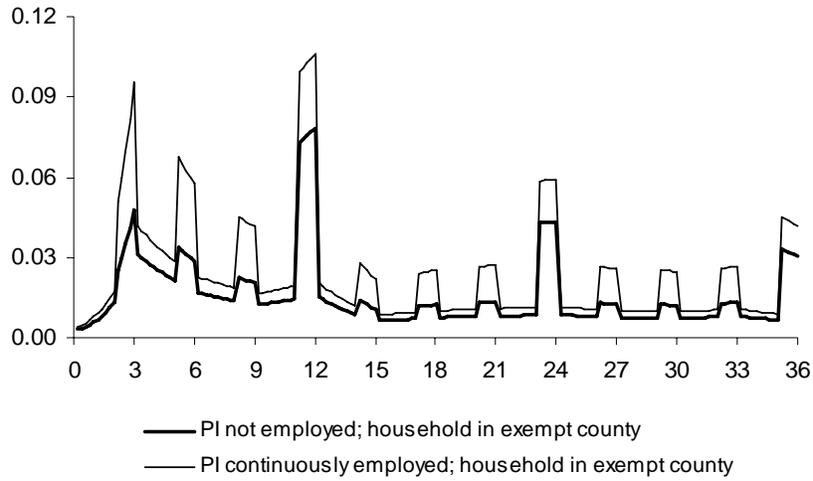
Simulations. There are numerous statistically significant results in Tables 2 and 3. However, owing to our use of non-linear specifications and our use of interactions and overlapping duration variables, it is difficult to gauge the magnitudes of some of the relationships. To show what the duration patterns in estimated hazard functions look like and illustrate how they differ with key variables, we use the coefficients from Tables 2 and 3 (including the suppressed baseline hazard coefficients) to calculate hazard functions for several hypothetical cases.

Figure 4 displays predicted hazards for leaving the Food Stamp Program for a hypothetical non-black, childless, married woman who is 38 years old at the start of her food stamp spell. In all of the predictions, we assume that the woman has a high school diploma and lives in a non-border county with a population density of 2,000 people per square mile and a six percent unemployment rate. We alter other characteristics in the predictions, however. Specifically, we consider how spells from the short recertification regime compare with spells from the long recertification regime by simulating hazards with start dates of January 1, 1997 and July 1, 2002, respectively. We also consider how spells differ between women who were continuously working or not working and between women who were living in exempt and non-exempt counties.

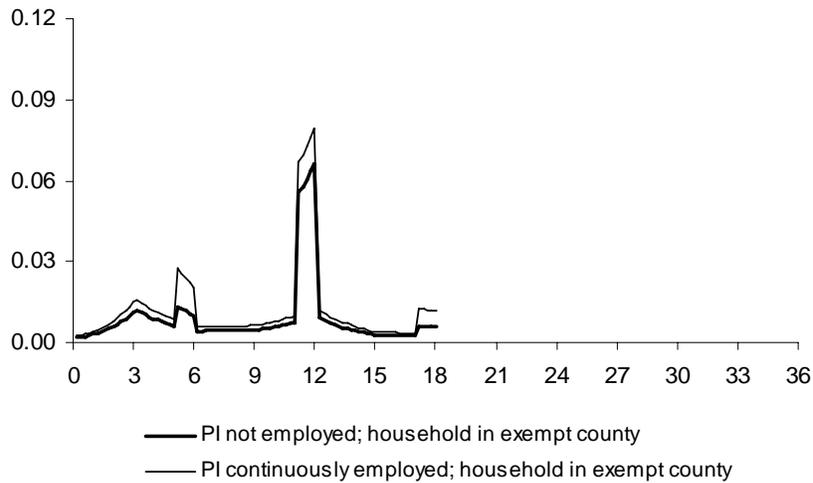
The top panel in Figure 4 shows the simulated hazards for a food stamp spell that began on January 1, 1997 in an exempt county. The dark line shows the simulated hazard when the PI does not work, while the solid line shows the hazard when the PI works continuously. The first

Figure 4. Simulated Hazards of Food Stamp Program Exits for Adult-only Households with Members Under Age 50

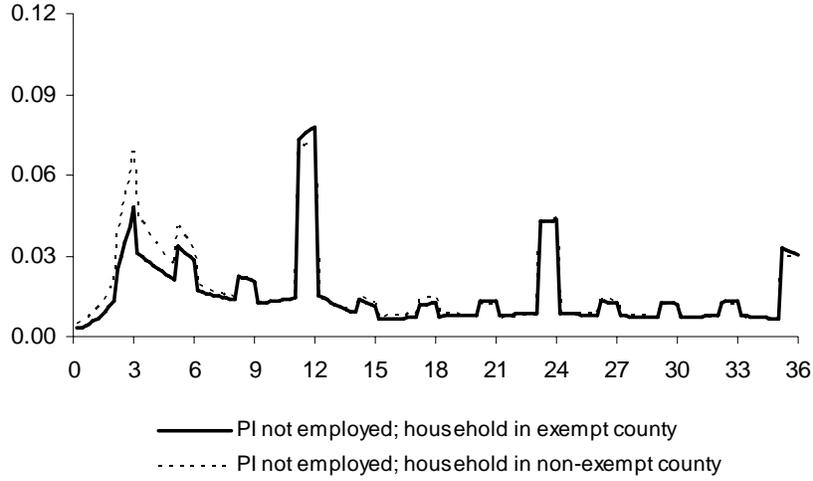
a. Simulated change in initial employment status – spell begins in January 1997



b. Simulated change in initial employment status – spell begins in July 2002



c. Simulated change in ABAWD exemption – spell begins in January 1997



Note: Simulations are based on estimates from Table 2 and use a 6-day resolution. Simulations assume that the primary informant was a white female, age 38, married, with a high school education, living in a non-border county with 2,000 people per square mile, and a 6 percent unemployment rate. Simulations in panels a and b assume that household is in a non-exempt county. Simulations in panel c assume that primary informant is not employed.

thing that we notice is that the simulated hazards capture the recertification pattern that was evident in the descriptive analysis. For the simulation without employment, there are small but detectable spikes at quarterly intervals and much larger spikes at annual intervals. For the simulation with continuous employment, the quarterly spikes become more prominent. In addition to altering the shape of the hazard functions, continuous employment also clearly raises the level of the hazard function. At all points in a simulated spell, households are substantially more likely to exit food stamps if they are employed.

The middle panel in Figure 4 repeats this exercise but changes the start dates of the spells to July 1, 2002. With the later start dates, the simulated hazards now have spikes at six- and twelve-month intervals. Once again, continuous employment is associated with a higher exit hazard and a stronger semi-annual pattern.

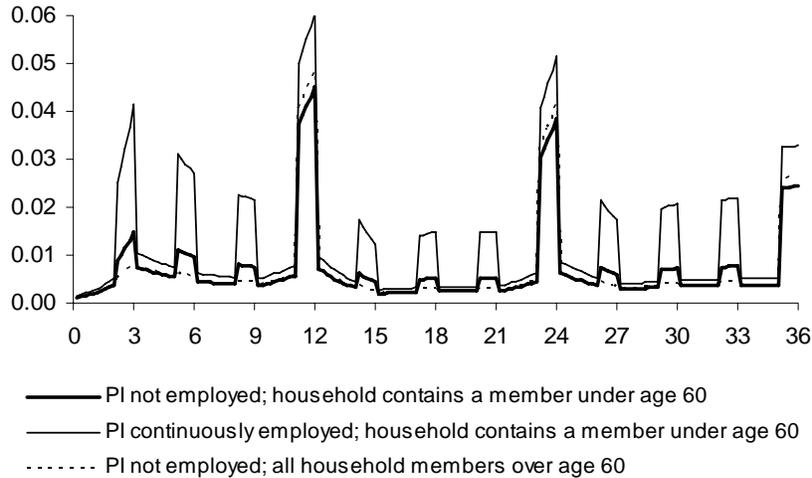
The hazards in the last panel in Figure 4 set the start dates back to January 1, 1997 and assume that the primary informant in the household does not work. Instead of altering work status, the simulations alter whether the household is located in an exempt or non-exempt county, represented by dark and dashed lines, respectively. The simulations indicate that a household in a county with ABAWD exemptions has a lower hazard rate over the first few months of a food stamp spell than a household in a county without exemptions. Once a spell has progressed beyond a few months, there is little noticeable difference in the hazards between households in exempt and non-exempt counties.

Figure 5 displays simulated hazards for exiting the Food Stamp Program for adult-only households with older members. These simulations use the model coefficients from the first column of Table 3. The simulations change the age of the primary informant to 62 but keep most of the other characteristics the same. All of the simulations in Figure 5 assume that the household is in a county that is exempt from the ABAWD provisions. The simulations alter the start dates between January 1, 1997 (top panel) and July 1, 2002 (bottom panel). They also alter the work status of the primary informant and the household composition. In each panel, the dark solid line indicates a household in which the primary informant does not work and at least one member is under age 60. The thin solid line indicates a household with a continuously working primary informant and at least one member under age 60, while the dashed line indicates a non-working household with all members age 60 or above.

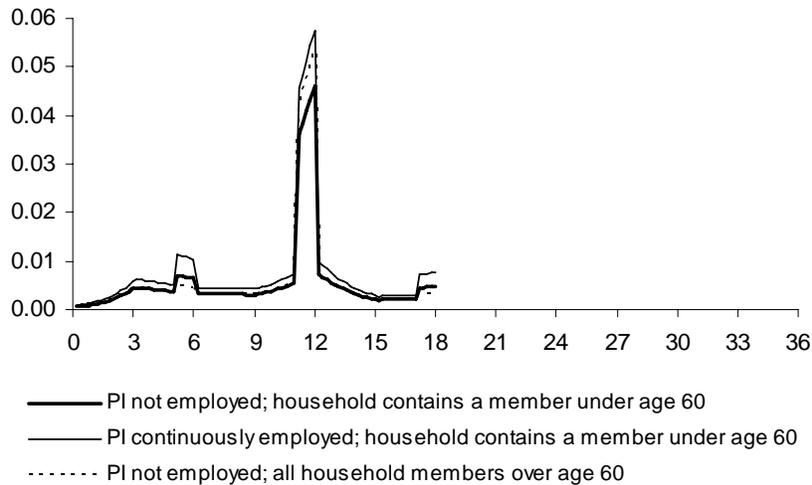
The simulations once again show the expected recertification patterns. Non-working households, especially those with all older members have very small quarterly or semi-annual spikes in their exit hazards but large annual spikes. Quarterly and semi-annual spikes are higher among working households. The figures also show that employment is associated with a substantially elevated food stamp exit hazard, while the presence of older household members is associated with an attenuated hazard.

Figure 5. Simulated Hazards of Food Stamp Program Exits for Adult-only Households with No Members Under Age 50

a. Simulated changes in initial employment status and age composition – spell begins January 1997



b. Simulated changes in initial employment status and age composition – spell begins July 2002



Note: Simulations are based on estimates from Table 3 and use a 6-day resolution. Simulations assume that the primary informant was a white female, age 62, married, with a high school education, living in a non-border county with 2,000 people per square mile, a 6 percent unemployment rate and an ABAWD exemption.

8. Conclusion

Adult-only households have been at the center of several important changes in food stamp policy, both nationally and in the state of South Carolina. Despite gaining the attention of policymakers, adult-only households have been overlooked by many food assistance researchers. In this report, we examine food stamp participation and employment for this group using post-PRWORA administrative data from the South Carolina Department of Social Services and the South Carolina UI system. The administrative records are transformed into longitudinal, household-level, event-history data. With the transformed data, we conduct descriptive statistical analyses of the timing of exits and the distribution of spell lengths for food stamp participation. We also estimate multivariate models of policy, economic and demographic factors that contribute to food stamp exits, food stamp re-entry, and employment among adult-only households. In all of our analyses, we distinguish between households that do and do not have members under the age of 50—that is, households with and without members in the ABAWD age range.

The analyses produce two important direct policy findings. First, we find that exits from South Carolina’s Food Stamp Program are strongly associated with the timing of recertification. One reason for studying South Carolina is that its recertification policies are very easy to characterize and measure. Before October 2002, the state required recertifications quarterly or annually, depending on a household’s sources of income. After October 2002, this schedule changed to semi-annually or annually. When we examine the timing of exits from the Food Stamp Program, we find that the exit rates are much higher in recertification months than in other months. The change in recertification intervals before and after October 2002 is plainly evident in the data, as are the differences associated with the sources of income. The results of our analyses indicate that the longer recertification intervals after October 2002 led to more persistent participation spells and contributed to an increase in the food stamp caseload.

A second specific policy finding is that the new ABAWD work requirements and three-month time limits from the PRWORA substantially reduced food stamp participation and only slightly increased employment among younger adult-only households. South Carolina obtained exemptions from the ABAWD requirements for different counties at different times, which allowed us to compare food stamp and employment outcomes across exempt and non-exempt counties. Estimation reveals that younger adult-only households were more likely to leave the Food Stamp Program if they lived in a non-exempt county that imposed the ABAWD requirements. The differences in the probability of exit between households in exempt and non-exempt counties all occurred in the first few months of a spell—around the time that we would expect to see a time limit effect. As a sensitivity check, we also compared outcomes across exempt and non-exempt counties for adult-only households with no members in the ABAWD age range but found no statistically detectable differences in program behavior or employment

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for this group. The findings that the differences in exit, re-entry and employment behavior only appeared for the at-risk group and that the differences for exit behavior only appeared in the first few months of spells provide compelling evidence that these are results of the ABAWD policies and not some other correlate of a county's exemption status.

In addition to the results for specific policy measures, the empirical analyses generate findings for economic and demographic variables that have general implications for policy. For instance, the analyses show that adult-only households are much more likely to end a spell of food stamp receipt and much less likely to return to the program if they are working in a UI-covered job. The association between earnings and food stamp exits operates through several channels: earnings reduce a household's eligibility for food stamps; they reduce benefits, which reduces the attractiveness of participating; they alter the recertification schedule because they are considered a variable source of income, and they increase the opportunity costs of complying with program rules. All of these channels work to make earnings less compatible with food stamp participation and diminish the program's utility as a work support program. There are some features of the Food Stamp Program, like the standard 20-percent earnings deduction in the benefit calculation, that help to reduce these work disincentives. However, officials and administrators may want to consider additional steps, such as longer recertification intervals or simpler and less time-consuming recertification methods, for working households.

The empirical results also show that particular groups face elevated risks of program dependence. Less-educated adults and unmarried adults appear especially likely to remain on food stamps and to return to the program; these groups also have low levels of employment. It may be unrealistic to expect that low-skill or socially isolated individuals will be responsive to policies to move them and keep them off the program rolls. At the same time, results that indicate that women and African-Americans have longer spells of food stamp participation, shorter spells of non-participation, but higher probabilities of employment, suggest that they are a "work-ready" group that might benefit from additional work supports or programs to improve earnings opportunities. In general, the demographic findings should help administrators to better target services and program requirements.

While the empirical analyses produce a number of strong and useful findings, it is important to keep some of the limitations in mind. The biggest limitation is that the administrative data that we examined from South Carolina's Food Stamp Program only describe households who participated at some point in the program. We do not examine households who may have been eligible for food stamps but never elected to participate. We also do not examine the many households that, despite having low wages and little wealth, manage to "keep their heads above water" and avoid eligibility by virtue of their hard work and industriousness. Another limitation of the analyses of program outcomes is that they only consider participation and non-participation. These are important outcomes to be sure, but they do not let us distinguish between eligibility, program take-up and compliance effects. For example, our analyses do not tell us whether the patterns of food stamp exits at recertification intervals reflect the detection of ineligible households or discouragement among eligible households. Future research should address this issue.

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Appendix A. Means of Analysis Variables

	Households with members under age 50	Households with no members under age 50
Primary informant and household characteristics		
Female	0.48	0.62
African American	0.60	0.55
Age	37.62	61.99
Completed high school	0.45	0.25
Completed some college	0.12	0.06
Currently married	0.10	0.13
Formerly married	0.38	0.72
All household members age 60 or older	—	0.50
Months observed on food stamps	15.89	25.07
Months observed off food stamps	25.54	19.86
Quarters with earnings above \$250	3.60	1.32
Quarters with earnings below \$250	10.66	14.09
County characteristics		
Unemployment rate	6.42	6.30
Population per square mile (000s)	0.20	0.20
Border county	0.41	0.44
Exempt from ABAWD restrictions	0.64	0.62

Note: Estimates computed using weighted administrative data from the South Carolina Department of Social Services. Means for gender, program participation and employment variables calculated from household-level observations. Means for other variables calculated from quarterly earnings observations.

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