



United States  
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# **The Dynamics of Food Stamp Program Participation in the Early 1990s**

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(April 1998) Philip Gleason, Peter Schochet, and Robert Moffitt

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## EXECUTIVE SUMMARY

This report paints a comprehensive picture of individuals' patterns of participation in the Food Stamp Program during the early 1990s. The food stamp caseload has varied dramatically in recent years, rising from 19 million in 1989 to 28 million in 1994, then falling to 21 million in September 1997. Such variation raises the possibility that the experiences of people receiving food stamps may also differ over time. In particular, food stamp participants' experiences may have been different in the early 1990s than they were in the mid-1980s, the period covered by the last major study of food stamp participation dynamics.

The report addresses the following five questions about food stamp recipients' experiences on the program:

1. *What events lead people to enter (or exit) the Food Stamp Program?*
2. *How long do individuals going on the program remain on food stamps before exiting?*
3. *When participants exit the Food Stamp Program, do they stay off food stamps permanently or do they reenter the program later, and what does this imply about long-term dependence on food stamps?*
4. *What factors distinguish those who are more dependent on food stamps from those who are less dependent?*
5. *How did food stamp participation patterns change between the mid-1980s and the early 1990s, a period of rapid growth in the food stamp caseload?*

## METHODOLOGICAL APPROACH

We use the 1990 and 1991 panels of the Survey of Income and Program Participation (SIPP) to study food stamp participation dynamics. SIPP is a nationally representative, longitudinal survey of the resident, noninstitutionalized population of the United States. The 1990 SIPP panel's longitudinal sample consists of almost 44,000 individuals, including about 5,300 who reported receiving food stamps during at least one month of the 32-month panel period. The panel covers respondents' activities between late 1989 and summer 1992. The 1991 panel's sample consists of just over 30,000 individuals, including about 3,700 who reported receiving food stamps during at least one panel month. The 1991 panel covers respondents' activities in the 32-month period between late 1990 and summer 1993. We use the more recent 1991 panel alone for the analysis that describes recipients' patterns of food stamp participation. In our multivariate analysis, however, we estimate the basic model separately for a variety of household subgroups. To maximize the relevant sample sizes, therefore, we use data from both panels.

Most of our analysis of food stamp participation dynamics is based on individuals' "spells" of participation. A participation spell is a string of consecutive months in which a person receives food stamps. For most of the analysis, we focus on participation spells that begin during the 32-month SIPP panel period. However, to obtain information on longer participation spells in selected analyses, we also use information collected from SIPP respondents on their food stamp receipt prior to the panel period.

A natural part of the analysis of food stamp participation spells is to measure the distribution of the length of these spells. However, determining how long spells last depends on what group of food stamp recipients is examined. We use two samples in this report: (1) an *entry cohort sample*, and (2) a *cross-sectional sample*. The entry cohort sample includes all individuals who began a food stamp participation spell during the SIPP panel period. Analysis of this sample allows us to make statements about the food stamp experiences of recipients starting at the point they enter the food stamp program. The "point-in-time," or cross-sectional sample includes the full caseload of food stamp recipients in a given month, including those who began their food stamp spell prior to that month or all food stamp recipients in that month. Analysis of the cross-sectional sample allows us to make statements about the food stamp experiences of the group of people who make up the food stamp caseload in a given month. Both of these perspectives are potentially useful, and we provide information from each throughout the report.

In addition to analyzing the duration of food stamp participation spells, we measure participants' dependence on food stamps over time. One drawback of focusing on the length of single participation spells is that they can give a misleading picture of individuals' overall experiences on the program. For example, if participants quickly exit the program after entering, their participation spells will be short, suggesting little dependence on food stamps. However, if many participants who quickly exit the program also quickly reenter it, their dependence on food stamps over time could be relatively high. To address this issue, we measure the total amount of time individuals participate in the program during the 32-month SIPP panel period, regardless of whether this participation is continuous (a single participation spell) or intermittent (multiple spells).

To measure what factors distinguish recipients who are more dependent on food stamps from those who are less dependent, we estimate multivariate models of the length of participation spells and the length of time between the end of a participation spell and reentry into the food stamp program, using the entry cohort sample. The models show the effects on spell entry and exit of demographic and socioeconomic characteristics, entry and exit trigger events, and variables reflecting state economic and public assistance program information. Unlike the descriptive analysis, the sample for the multivariate analysis includes only adults. In addition, we estimate separate models by household type.

## RESULTS

- *Income changes trigger most movement into and out of the Food Stamp Program, although some evidence suggests that a combination of falling income and a change in household composition also commonly leads to food stamp entry*

About two-thirds of all people entering the Food Stamp Program experience a 20 percent drop in household income sometime during the four months before they started receiving food stamps. Similarly, about two-thirds of those who stop receiving food stamps experience a 20 percent increase in income around the time they leave the program.

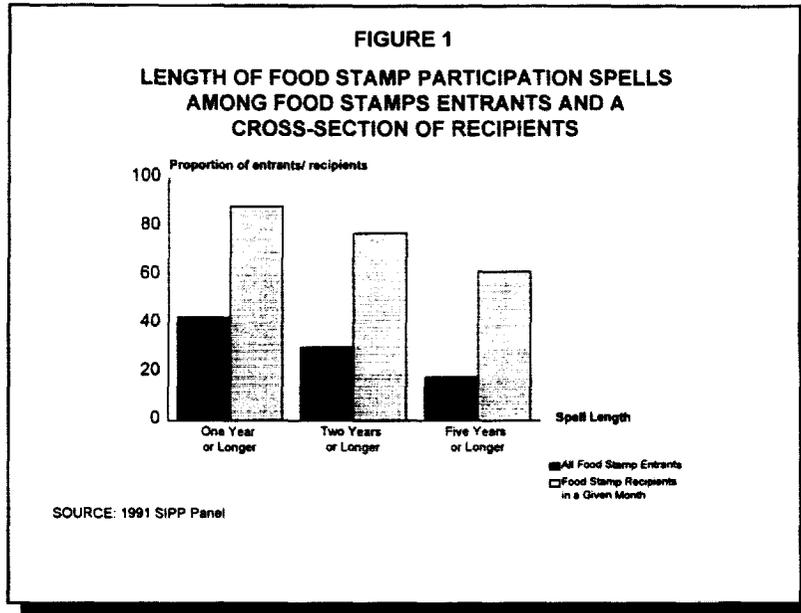
For some food stamp entrants, multiple events in their lives may lead them to start receiving food stamps. The importance of multiple events becomes apparent when we examine experiences over a period longer than the four months prior to food stamp entry. In particular, about one-third of entrants had both a decrease in household income and some change in the composition of their household (such as the departure of a spouse) during the eight months before they started receiving food stamps. Further analysis we conducted shows that both short-term events and long-term conditions are important in triggering the decision to start receiving food stamps. For example, we find that being unemployed in a given month is much more likely to trigger food stamp entry among individuals who are ordinarily employed than among those who are ordinarily unemployed.

Another way of looking at the decision to start receiving food stamps is to compare the characteristics of food stamp entrants with those of people who do not enter the program. We find that certain characteristics make a person more likely to start receiving food stamps. In particular, individuals who had previously received food stamps are much more likely to enter the program in a given month than those who had never received food stamps; two-thirds of food stamp entrants are repeat entrants. In addition, individuals in households with children (especially in households with a single adult and children) are more likely to enter the program than those in households without children. Finally, children are more likely to enter the program than prime-age adults, who are more likely to enter than the elderly.

- ***Most people who begin receiving food stamps exit the program relatively quickly; on the other hand, among food stamp recipients at a given point in time, most are in the middle of long participation spells***

Among people who start receiving food stamps in a given month, according to analysis of the entry cohort sample, most stop receiving food stamps within one year. The median participation spell length among food stamp entrants is only nine months. Furthermore, fewer than one-third of entrants remain on food stamps for two or more years and fewer than one in five remain on food stamps for five or more years (Figure 1).

However, analysis of the cross-sectional sample suggests greater dependence on food stamps among the caseload of food stamp recipients at a given point in time. Those who are on food stamps for long periods make up a disproportionate fraction of the caseload at any point in time. Among the food stamp caseload in a given month, a small minority (11 percent) are in the middle of a participation spell of a year or less, while over three-fourths are in the middle of a spell of two or more years, and over 60 percent are in the middle of a spell of five or more years.

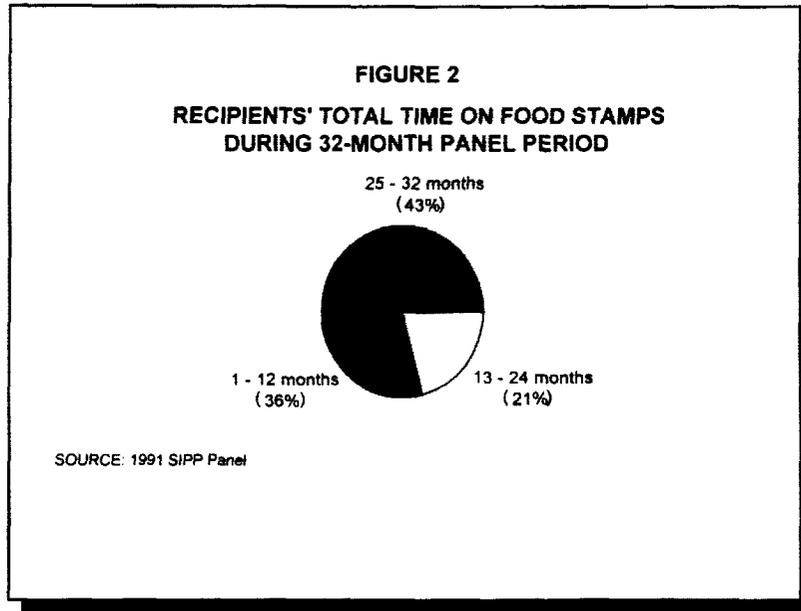


Whether we examine the entry cohort or cross-sectional sample, we find that certain groups of food stamp recipients stay on the program longer than other groups. In particular, food stamp spells are longest among those whose income is below the poverty line, who are in female-headed households with children, and who are repeat entrants into the program. Able-bodied, prime-age adults without children tend to have the shortest spells.

- *Reentering the Food Stamp Program after exiting is common, leading to high levels of dependence on food stamps over time*

More than half of those who stop receiving food stamps reenter the program within two years. Many of those who reenter the program do so relatively quickly. Among all individuals who exit food stamps, one-fourth start receiving food stamps again within four months and 42 percent with one year. The rate at which former recipients reenter the program slows down over time, as only 11 percent reenter the program in their second year after exiting food stamps.

These high reentry rates imply that the typical food stamp recipient is highly dependent on food stamps over the 32-month SIPP panel period, despite the short participation spells of most food stamp entrants. Among individuals who received food stamps at any time during the panel period, one-third received food stamps in each of the 32 months, while only a little over one-third received food stamps for a year or less during this period (Figure 2). The median “total time on” food stamps during the panel period among recipients was 20 months, nearly two-thirds of the maximum possible number of months. For many recipients, this heavy reliance on food stamps comes in the form of intermittent, rather than continuous, participation in the program. Measured over the panel period of less than three years, half of all recipients are on and off food stamps more than one time.



- *Individuals' economic circumstances and household structure are the most important determinants of how long they receive food stamps*

We find that the better the economic circumstances of food stamp recipients when they enter the program, the shorter the length of their food stamp participation spells. For example, those who are working at the time they enter the program stay on food stamps for shorter periods of time than recipients not working at entry, all else equal. Furthermore, even among those who are not working when they start receiving food stamps, the longer that recipients have been out of work at the time they enter the program, the longer they will continue to receive food stamps before exiting. Household income is also related to the length of food stamp participation spells--recipients whose household income is below the poverty line when they start receiving food stamps tend to stay on the program longer than those in higher income households, even after controlling for employment status. Finally, another variable that proxies for individuals' economic circumstances is their receipt of cash welfare. We find that, all else equal, recipients receiving cash welfare when they enter the Food Stamp Program tend to stay on the program longer than those not receiving cash welfare.

A similar set of economic factors affects whether former recipients reenter the Food Stamp Program after exiting. Those receiving AFDC and living in poverty at the time they stop receiving food stamps are much more likely than their counterparts to reenter the program, all else equal. Once income is controlled for, however, employment does not significantly affect whether individuals return to food stamps.

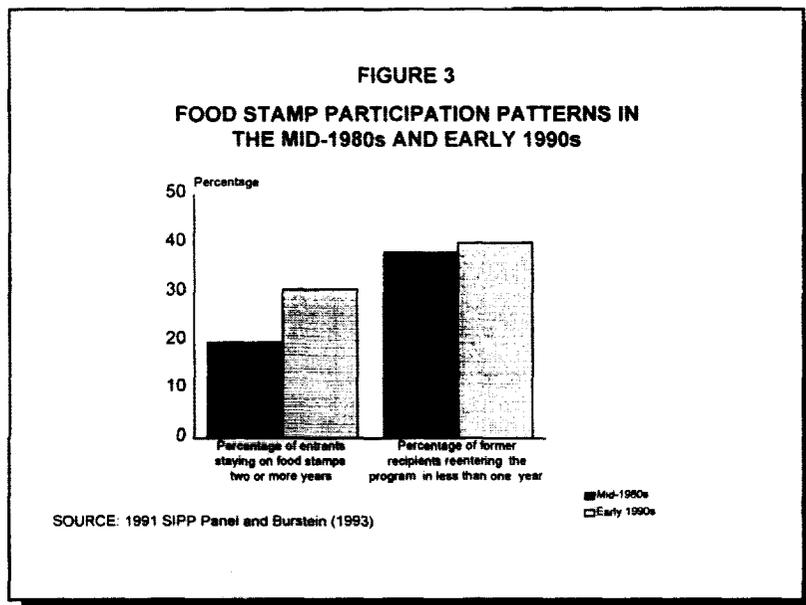
For prime-age, able-bodied food stamp recipients without children, increases in the state unemployment rate and falling wages in the state's manufacturing industry lead to significantly longer stays on food stamps, even after controlling for employment and income. This suggests that in addition to an individual's economic circumstances at food stamp entry, general economic

conditions in their area influence how quickly adults without children can exit the Food Stamp Program. For other groups, the unemployment rate and manufacturing wages do not significantly affect the length of food stamp spells.

The dimensions of household structure that are the most important determinants of the length of participation spells are the number of adults and the number of children in the household. Food stamp recipients in female-headed households with children remain on food stamps longer than other household groups. Furthermore, even among members of this group, food stamp spells are longer when there are fewer adults and more children under age six in the household. These results suggest that child care problems may lead to longer food stamp participation spells for some groups. In other words, those in households with many children to care for and few adults to provide care tend to remain on food stamps longer than those in households with fewer young children or more adults.

- *The increase in the food stamp caseload between the mid-1980s and early 1990s was driven primarily by an increase in the length of participation spells*

The typical food stamp entrant in the early 1990s remained on food stamps longer than the typical entrant in the mid-1980s. In particular, the median participation spell length was six months for spells beginning in the mid-1980s (Burstein 1993), compared with nine months for spells beginning in the early 1990s. Similarly, the fraction of entrants who stayed on food stamps for at least two years increased from one-fifth to just under one-third during this period (Figure 3).



However, the rate at which non-participating individuals began receiving food stamps or reentered the program after exiting did not substantially change between the mid-1980s and early 1990s. Among all individuals not receiving food stamps in a given month, estimates from both periods suggest that about one percent enter the program at some time during the next four months.

Similarly, the reentry rate among former recipients stayed about this same over this period. For example, the percentage of former recipients who reentered the program in less than one year was 38 percent in the mid-1980s and 40 percent in the early 1990s. Finally, the events leading to food stamp entry and exit also remained constant between the mid-1980s and early 1990s--in both cases, income was the primary trigger event leading to food stamp entry and exit.

## I. INTRODUCTION

The Food Stamp Program (FSP) is a central component of our nation's strategy for providing assistance to low-income households. For many low-income households, food stamps represent an important share of household resources. The number of people living in households that receive food stamps averaged about 23 million in fiscal year 1997, up 4 million from about 19 million in 1989. While this is lower than the peak of over 27 million in fiscal year 1994, it is still about 20 percent higher than levels in the mid-1980s (Figure I.1).

Although the size of the FSP caseload is well documented, we know less about the experiences of people receiving food stamps. The last major study of FSP participation dynamics examined participants in the mid-1980s. The large increase in the size of the caseload in the early 1990s raises the possibility that patterns of FSP participation have also changed between the mid-1980s and early 1990s. For example, participants may have had longer spells of participation, or reentry rates may have been higher. This report updates our knowledge of FSP participation dynamics and provides a comprehensive picture of individuals' patterns of FSP participation in the early 1990s. Understanding these patterns will help policymakers assess the implications of policy changes that potentially affect the FSP, particularly those enacted in August 1996 by the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 (P.L. 104-193).

In particular, this report addresses the following questions about individuals' patterns of FSP participation:

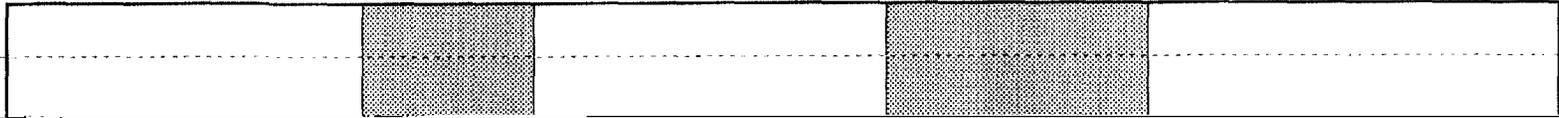
- Do most individuals use the FSP as a short-term assistance program or as a long-term source of support? We will address this question from the perspective of new entrants to the program and from the perspective of the set of recipients in a given month.
- What events lead people to enter and exit the program?

FIGURE 1.1

FSP PARTICIPATION

Number of Persons Participating (millions)

29



- When participants exit the FSP, do they remain off the program or do they receive food stamps again at a later date? What does the answer to this question imply about their long-term reliance on the program?
- What factors distinguish those who are heavily reliant on the program (that is, those who are likely to enter, have long participation spells, and are likely to reenter after exiting) from those who are less reliant?

We will address these questions using information on FSP participants in the early 1990s. However, we will also examine, to the extent possible, how the patterns of FSP participation among this group differ from the patterns of FSP participation among participants in the 1980s. We will also comment on the implications of these differences on the increase in the FSP caseload itself, by examining whether the increase in the caseload is tied to differences in the specific patterns of participation between the mid-1980s and early 1990s.

This report addresses these questions using the 1990 and 1991 panels of the Survey of Income and Program Participation (SIPP). The report describes FSP participation patterns sequentially. We first examine the rates at which individuals initially enter the FSP and the reasons they enter the program. Next, we measure how long they remain on the program and their reasons for exiting. We then examine whether they reenter the program after exiting. After presenting these aspects of FSP participation dynamics separately, we present summary measures of individuals' overall experiences with the program. Finally, we examine the factors affecting individuals' FSP participation dynamics. In particular, we estimate multivariate hazard models to determine how individual and household characteristics, economic factors, and state and federal policy parameters influence initial entry, spell duration, and reentry into the FSP.

We find that most people who receive food stamps at some time during their lives rely on the program for support over a relatively long period of time, due to high reentry rates. We also find that

individuals' economic circumstances--employment status and income level--are very important determinants of participation patterns. Specifically, our primary findings include:

- The increase in the size of the FSP caseload between the mid-1980s and early 1990s appears to have been driven primarily by an increase in the duration of participation spells (from a median of six months to nine months among FSP entrants), rather than by an increase in the entry rate or reentry rate.
- Decreases in income lead to most FSP entry, but multiple events (changes in household composition coupled with decreases in income) are important in triggering entry as well.
- The participation spells of most FSP *entrants* are relatively short, with a median length of nine months. Among a *cross section of participants* receiving food stamps in a given month, spells are much longer, on average.
- Reentry into the FSP is common, with more than half of those who leave the FSP reentering within two years. As a result, participants have a great deal of involvement with the FSP over time--for example, they participate in 20 of the 32 months of the SIPP panel period, on average.
- Individuals' household structures and economic circumstances are the most important determinants of the length of their participation spells. Single females with children, elderly people, and people with disabilities have longer than average spells, as do households with low income and whose members have not worked recently.

The rest of this chapter provides a background of the FSP, reviews the relevant literature on FSP participation dynamics, and provides a methodological introduction to our analysis. Chapter II describes entry into the FSP, the duration of participation spells, exiting the program, and FSP reentry. Chapter III examines the determinants of FSP participation dynamics, presenting the results of the estimation of multivariate hazard models.

#### **A. FOOD STAMP PROGRAM BACKGROUND**

The objective of the Food Stamp Program is "to permit low-income households to obtain a nutritious diet through normal channels of trade by increasing food purchasing power for all eligible households who apply for participation" (Food Stamp Act of 1977, Section 2). The U.S. Department

of Agriculture (USDA) administers the program nationally and fully funds the program benefits. State and local governments carry out daily administration of the program and share the program's administrative costs with the federal government. During fiscal year 1997, the FSP served approximately 23 million people per month, at a total annual benefit cost of \$19.6 billion (U.S. Department of Agriculture, Food Stamp Program Operations Data 1997).

Individuals apply for food stamps at local offices (typically at least one per county). Benefits are issued to the individual's household, defined as including the people who live in the same residence and usually purchase and prepare meals together. Eligibility for food stamps depends on household income and assets. Households without elderly or disabled members must have gross income less than 130 percent of the poverty line, net income less than 100 percent of poverty, and countable assets less than \$2,000.<sup>1</sup> Households with elderly or disabled members must have net income less than 100 percent of the poverty line and countable assets less than \$3,000.

Households receiving what was formerly known as Aid to Families with Dependent Children (AFDC), now replaced by Temporary Assistance for Needy Families (TANF), Supplemental Security Income (SSI), or General Assistance (GA) are categorically eligible for FSP benefits. Other types of households are categorically ineligible for FSP benefits, including many postsecondary students' households, households with members on strike, and households whose head voluntarily

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<sup>1</sup>Net income represents the amount of income households have available to use for food. It includes gross income less a standard deduction, an earnings deduction, and deduction for dependent care, medical care, and excess shelter expenses. For households without elderly or disabled members, the net income test is rarely binding. Countable assets include financial and vehicular assets.

left a job without cause.<sup>2</sup> Finally, households receiving food stamps must comply with work registration requirements to maintain eligibility.<sup>3</sup>

A household's food stamp benefit level equals the maximum benefit level for a household of that size less 30 percent of the household's net income (including most public assistance benefits). The maximum benefit is 103 percent of the Thrifty Food Plan, which represents USDA's lowest-cost food plan. Benefits are constant across states for families of similar sizes and net income levels, except for cost-of-living adjustments in Alaska and Hawaii.

The monthly rate of participation in the FSP has fluctuated greatly over time due to changes in eligibility requirements, fluctuations in economic activity, improvements in the accessibility of program benefits, changes in other federal programs such as Medicaid, changes in federal immigration policy, and changes in the behavior of households. These various factors resulted in a rising caseload during the late 1970s and early 1980s, a declining caseload during the middle and late 1980s, and a rising caseload during the early 1990s. This last increase was particularly large, the caseload rose from 18.8 million in August 1989 to 27.7 million in April 1994. Since that time,

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<sup>2</sup>PRWORA changed a number of features of FSP eligibility and program benefits. In particular, the legislation denied access to the FSP to most legal immigrants. It also stated that adults 18 and 50 who are childless, fit for employment, and neither working nor participating in a workfare program can receive food stamps for no more than three months in any 36-month period. One exception to this latter provision is that at a state's request, USDA may waive application of this work requirement to this group if the area where they reside has an unemployment rate higher than 10 percent or does not have a sufficient number of jobs to provide them employment. Finally, PRWORA required that the maximum food stamp benefit level be determined from year-to-year according to the actual change in the cost of the Thrifty Food Plan (TFP) rather than 103 percent of the change.

<sup>3</sup>Nonexempt household members applying for or receiving food stamps must register for work. As part of this requirement, they must accept a suitable job if one is offered and must comply with whatever job search or training requirements are in place in their state. There are exemptions to this requirement for those who are very young, elderly, disabled, a child's primary caregiver, and so forth.

as the caseload has declined to 23.0 million in April 1997 and 20.9 million in September 1997 (Figure I.1).

## **B. PREVIOUS LITERATURE**

Previous studies of FSP participation can be divided into static studies and dynamic studies. The static studies examine the rates and determinants of participation (and nonparticipation) among a cross section of individuals at a given point in time. The dynamic studies examine individuals' patterns of participation over time.

### **1. Static Studies**

Most static studies of FSP participation have examined the determinants of participation among low-income or FSP-eligible individuals or households (MacDonald 1977; Czajka 1981; Chen 1983; Coe 1983; Ross 1988; Trippe and Doyle 1992; Trippe et al. 1992; Martini and Allin 1993; and Trippe and Sykes 1994).<sup>4</sup> These studies, either using multivariate analysis or comparing the characteristics of participants and nonparticipants, have generated a consistent set of findings. FSP participation rates are highest among nonwhite and nonelderly people, and people living in households that:

- Are low income
- Include children
- Do not own their own home

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<sup>4</sup>A number of studies have examined the reasons for FSP *nonparticipation* among eligible nonparticipants (Coe 1983; U.S. General Accounting Office 1988; and Blaylock and Smallwood 1984). These studies have found that the main reason FSP nonparticipants give for not participating in the program is that they did not know they were eligible for benefits. Small percentages of nonparticipants reported reasons related to the stigma of receiving and using food stamps.

- Are eligible for the highest FSP benefits
- Have a household head that is not well educated
- Include members who participate in other welfare programs such as AFDC or Medicaid

Fraker and Moffitt (1988) also estimated a static multivariate model of FSP participation, but they took into account the potential simultaneity of employment and the decisions to participate in the FSP and the AFDC program by using a simultaneous equations framework. They estimated this model using a sample of single mothers eligible for AFDC and food stamps. Their results are similar to those using a single equation, confirming the importance of the factors listed above. They also found evidence of endogeneity--unobserved factors affecting FSP participation are positively related to unobserved factors affecting AFDC participation and negatively related to unobserved factors affecting employment. This suggests that, if possible, the determinants of AFDC participation, FSP participation, and employment should be estimated jointly.<sup>5</sup>

Corson and McConnell (1990), McConnell (1991), and Dynarski, Rangarajan, and Decker (1991) studied the determinants of FSP participation in a static framework but using macrolevel data. They all found that high unemployment rates positively affect the number of food stamp recipients. Corson and McConnell (1990) and McConnell (1991) also found that the expansions in Medicaid coverage among children during the late 1980s led to increases in FSP participation. Yelowitz (1995) also studied the link between the Medicaid expansion and FSP participation (using individual-level data) and found that the Medicaid expansion can explain about 10 percent of the overall increase in FSP participation during the late 1980s and early 1990s.

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<sup>5</sup>If the determinants of FSP participation are estimated in a single equation model, care must be taken in the interpretation of the effects of AFDC participation and employment on FSP participation.

## 2. Dynamic Studies

Dynamic studies of FSP participation follow individuals over time to document and try to explain how frequently they enter the FSP, how long they stay on the program after entering, and whether they reenter the program after exiting. One reason for dynamic analysis is to better understand the composition of the caseload at a point in time. Does the caseload consist of individuals who have received food stamps for a long time or people who have short participation spells and then leave the program for good? In addition, what factors lead individuals to enter and exit the FSP?

The early dynamic studies examined entry into and exit from the FSP (Coe 1979; Carr et al. 1984; and Lubitz and Carr 1985).<sup>6</sup> These studies uncovered factors that were positively related to entry into and negatively related to exit from the FSP, including:

- Having children
- Living in a single-parent household
- Living in a household with no earners
- Being eligible for a large benefit amount
- Participating in other federal welfare programs

The studies identified one factor with conflicting effects on entry and exit--being elderly or disabled made individuals less likely to enter the FSP *and* less likely to exit the program once they had entered.

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<sup>6</sup>In addition to these studies of the dynamics of FSP participation, there is an extensive literature on the dynamics of participation in the AFDC program (see, for example, Bane and Ellwood 1983; O'Neill 1987; Blank 1989; Fitzgerald 1991; and Gleason, Rangarajan, and Schochet 1998).

Lubitz and Carr (1985) also examined “trigger events” leading to FSP entry and exit (events that are associated with but not necessarily causal to FSP entry and exit). They found that changes in pretransfer household income and in the number of earners present in the household were the most important trigger events. When a household experienced a large drop in pretransfer income or a decrease in the number of earners, it was more likely to begin receiving food stamps. A participating household was more likely to leave the program if the opposite events occurred. Williams and Ruggles (1988) also examined trigger events and found that only a small proportion of the population experienced changes in household composition (as opposed to changes in household income), but that when such changes occurred they led to large increases in the likelihood of entering or exiting the FSP.

Several additional studies paint a complete picture of FSP dynamics among participants in the early and middle 1980s. Burstein (1993) used SIPP data to thoroughly describe aspects of FSP dynamics, such as how long the average spell lasts, what percentage of those who exit the program reenter within a year, and what percentage of entrants (or exiters) have experienced specific trigger events. Much of the descriptive analysis in our report builds on the work done by Burstein.

Burstein found that the median participation spell among FSP entrants lasts six months and that two-thirds of spells end within a year. However, many of these exiters reenter the program; in particular, 38 percent of those who exit the FSP reenter within one year. Finally, Burstein examined entry and exit trigger events and concluded that income changes, rather than household composition changes, explain most entry into and exit from the FSP.

Burstein and Visher (1989) used data from the Panel Study of Income Dynamics (PSID) to examine FSP participation dynamics and so were able to look at longer spells of participation. Using

yearly data, they found that 22 percent of spells last 5 years or longer and 12 percent of spells last 10 years or longer.<sup>7</sup>

Murphy and Harrell (1992) used data from the 1987 panel of SIPP to categorize FSP participants into short-term participants, medium-term participants, long-term participants, and multiple-spell participants (sometimes called “cyclers”). The first three of these groups were defined to have only a single spell of FSP participation during the 28-month SIPP 1987 panel period, with completed spell lengths of 1 to 8 months (short-term participants), 9 to 23 months (medium-term participants), and more than 24 months (long-term participants). They considered individuals with more than one spell of participation during the SIPP panel period to be multiple-spell participants. In a cross section of participants, they found that most are long-term participants (59 percent) or multiple-spell participants (27 percent). One limitation of this analysis is that the SIPP panel period is not long enough to observe whether individuals reenter the program after exiting, and the authors did not use information on previous participation spells.<sup>8</sup>

In two studies, Blank and Ruggles (1993 and 1996) examined the dynamics of participation in more than one welfare program and the dynamics of spells of eligibility and participation in the FSP. They used the 1986 and 1987 panels of SIPP and *limited their sample to single mothers*. They found that multiple program participation is very common--FSP participants receive AFDC in 77 percent of months and Medicaid in 85 percent of months they receive FSP benefits. With respect to eligibility, they found that single mothers participate in the FSP in 63 percent of the months they are

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<sup>7</sup>Studies that use yearly data to measure FSP participation spells are likely to overstate the length of those spells because individuals who exit the program in one year and reenter the program in the subsequent year will be considered to have had one continuous participation spell rather than two separate spells.

<sup>8</sup>The authors did use information on when spells observed during the panel period began (even if this was prior to the panel period). However, they ignored information on spells that both began and ended before the panel period.

eligible, but only 24 percent of their eligibility *spells* result in FSP participation, implying that there are many short spells of FSP eligibility that do not use include participation.<sup>9</sup>

Finally, two studies used data on FSP participation from the 1990s to shed light on the change in FSP participation dynamics from the 1980s to the 1990s. Martini and Allin (1993) found that the percentage of FSP participants who were still receiving food stamps two years after entering the program was greater among those who entered the program in the early 1990s than it was among those who entered the program in the late 1980s. However, we do not know whether this was due to an increase in the length of spells or an increase in the reentry rate.

Using administrative data from the early 1990s, Bartlett et al. (1995) found that the median FSP participation spell was eight months, and 62 percent of spells ended within a year. When compared with Burstein (1993), these findings suggest that participation spells had become longer between the mid-1980s and early 1990s. However, since Bartlett et al. (1995) used administrative data while Burstein (1993) used survey data, these results are not directly comparable.

## **C. DATA AND METHODOLOGICAL APPROACH**

### **1. Data**

The 1990 and 1991 longitudinal panels of the SIPP, collected by the U.S. Bureau of the Census, are the primary data sources for examining the dynamics of FSP participation in this study. SIPP is a multipanel, longitudinal survey that collects demographic and socioeconomic information on individuals over a period as long as 32 months. SIPP provides detailed monthly measures of household composition, labor force behavior, income, and program participation. We also used data from the SIPP Wave 2 topical module, which provides information on respondents' experiences

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<sup>9</sup>The authors did use information on when spells observed during the panel period began (even if this was prior to the panel period). However, they ignored information on spells that both began and ended before the panel period.

prior to the beginning of the panel period. Finally, the SIPP data are supplemented with state-level employment and earnings data from the U.S. Department of Labor and state-level administrative data on the AFDC and GA programs.

**a. Description of the 1990 and 1991 SIPP Panels**

SIPP is a nationally representative, longitudinal survey of the resident noninstitutionalized population in the United States. SIPP is the best available data source for this study because it is specifically designed to measure individuals' program participation over a 32-month period, and it collects information often enough--every four months--to minimize recall error. We used the 1990 and 1991 panels of SIPP because they were the most recently available panels at the time we began the analysis.

Most of the descriptive analysis presented in this report is based on the 1991 panel alone. We also conducted much of the descriptive analysis using the 1990 panel, but do not present those results in the text. The results based on the 1990 panel are similar to the results based on the 1991 panel.<sup>9</sup> To increase sample sizes for the multivariate analysis, we conducted the analysis using both the 1990 and 1991 panels.

The Census Bureau selected a representative set of households for the 1990 and 1991 SIPP panels using multistage stratified sampling techniques. The first interviews for the 1990 panel began in February 1990 with a sample of approximately 21,900 households (of which roughly 3,000 represent an oversampling of black, Hispanic, and female-headed households). Interviews for the 1991 panel began the following February with a sample of 14,300 households.

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<sup>9</sup>One difference between the two panels is that the reported level of FSP participation in the 1991 panel is slightly higher than the reported level of FSP participation in the 1990 panel. See Appendix A for a discussion of this difference, along with a comparison of the basic 1990 panel versus 1991 panel results.

Sample households in each panel were divided into four *rotation groups* of equal size, and one rotation group was interviewed each month. Thus, each household was interviewed in four-month intervals, called *waves*. The 1990 and 1991 SIPP panels each contain eight waves, which provide up to 32 months of income and program participation data for each sample person.

At each interview, sample members provided information about their program participation and

other experiences during the preceding four-month period, which is called the *reference period*. Thus, the eight reference periods for the 1990 SIPP panel cover *October 1989 through August 1992*, and the reference periods for the 1991 SIPP panel cover *October 1990 through August 1993*.

All occupants of initially sampled households at the time of Wave 1 were designated as original sample members, and any child born to (or adopted by) an original sample member during the panel was considered an original sample member as well. During subsequent interviews, original sample members and all people living in their households were considered part of the sample for that wave. Original sample members were followed regardless of where they live, but individuals who entered the sample after Wave 1 were interviewed only if they live in the same household as an original sample member.

The SIPP questionnaire is composed of three parts: (1) the control card, (2) the core questions, and (3) topical modules. The control card contains monthly information on demographic

module contained information on respondents' prepanel experiences (described in greater detail later).

On completion of the final wave of interviews in a given panel, the Census Bureau constructed a full-panel, longitudinal research file by linking the data collected for each sample person over the life of the panel (each record contains the stream of data for a single person). After creating these full-panel records, the Census Bureau performed a series of edits, or imputations, designed to "correct" any internal inconsistencies.<sup>10</sup> This full-panel longitudinal research file provided the bulk of the data used in our analysis. In particular, it provided 32 months of data on each sample member's FSP participation status during the panel period.

The SIPP longitudinal sample that is represented by the longitudinal research file consisted of all original sample members who responded to all eight wave interviews or who exited the sample due to death, emigration, institutionalization, or entry into the armed forces.<sup>11</sup> The 1990 longitudinal sample contained 21,900 households and 43,799 individuals, including 5,317 who reported receiving food stamps during at least one panel month. The 1991 longitudinal sample contained 14,300 households and 30,613 individuals, including 3,710 who reported receiving food stamps during at least one panel month.

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<sup>10</sup>For example, in cases in which interviews have been completed but respondents have not provided answers to all questions, the Census Bureau imputed values for data missing on key variables. When data were missing for a single month and were present for each of the bounding months, the Census Bureau interpolated values for the missing data. The longitudinal file also contains "imputation flags" to indicate where these imputations have been performed. Where appropriate, we have checked our results for robustness by conducting analysis both including and excluding imputed data and examining how the results change.

<sup>11</sup>In the 1991 panel, the sample also included original sample members who failed to respond to one wave interview but who responded to the preceding and subsequent interviews. The missing wave information for these individuals was imputed.

To take into account nonresponse sample attrition and the complex sample design of SIPP (as well as the oversampling of certain households in the 1990 panel), the longitudinal research file contains *panel weights*. These weights make the SIPP longitudinal sample representative of the noninstitutionalized, resident population of the United States as of March 1990 for the 1990 panel and March 1991 for the 1991 panel. We use weights throughout the descriptive analyses presented in Chapter II. We do not use weights in the multivariate analysis presented in Chapter III (for reasons described in Chapter III).

**b. Wave 2 Topical Module**

The Wave 2 topical module contains retrospective information on sample members' prepanel activities and experiences. The most important such information for this study concerns sample members' prepanel participation in the FSP. For sample members who are in the middle of FSP participation spells at the start of the SIPP panel period (that is, who have *left-censored spells of FSP participation*), the Wave 2 topical module data provides information on the starting dates of those spells.<sup>12</sup> The module also includes information on whether sample members had previous spells of FSP participation that began and ended before the start of the panel period.

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<sup>12</sup>We had evidence that there was a significant recall error in the reported starting dates of left-censored spells. Thus, we conducted most of the analysis in this report without using this information. When we did use information on the starting dates of left-censored spells, we noted the possibility of this recall error. See Appendix B for a thorough discussion of the quality of the FSP reciprocity historical data.

### c. State-Level Data

The state-level data we used includes information on states' economic conditions and program parameters. We appended this state-level information, available by month from 1989 through 1993 to the SIPP data file. In particular, for each sample member in each of the 32 panel months, we merged the variables representing economic conditions and program parameters for the state the sample member lived in during that month.<sup>13</sup> This information is particularly useful in the multivariate analysis we do in Chapter III, as we explore how state characteristics affect individuals' experiences with the FSP.

The U.S. Department of Labor's Bureau of Labor Statistics (BLS) provided us the economic variables we merged to the SIPP data (including the state's unemployment rate and average wages and hours worked in the manufacturing industry in that state). These variables were intended to proxy for the labor market situation faced by SIPP sample members.

Two types of variables provided information on the level of government benefits available in states. First, the maximum monthly AFDC benefit for a family of four represents the generosity of each state's AFDC program. Second, the relative sizes of the AFDC Unemployed Parent (AFDC-UP) program and the state's GA program are measured by the caseload of these programs divided by the state's AFDC caseload. The information on maximum AFDC benefits was taken from *The Green Book* (1994), while the caseload information was taken from *Quarterly Public Assistance Statistics* (1993).

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<sup>13</sup>For nine states with relatively few SIPP respondents, the data do not identify the state individually, but rather in three groups. In these states, the state-level variables actually reflect mean characteristics across all the states in the group.

## **2. Methodological Approach**

Our general methodological approach consists of two parts. First, we describe FSP participation dynamics during the early 1990s and compare with the dynamics of the mid-1980s, as reported by Burstein (1993). Second, we use multivariate analysis to explore the factors that are related to FSP dynamics among individuals.

### **a. Descriptive Analysis**

We describe five aspects of FSP participation dynamics in this report. The first four aspects follow the logic of the chronological contact that a hypothetical individual has with the program. First, we examine the entry into the FSP, focusing particularly on the events in the lives of individuals that trigger entry into the program. Second, we measure how long individuals remain on food stamps once they have entered. Third, we examine the trigger events that lead individuals to exit the program. Fourth, we measure whether and when they reenter the program after exiting. The fifth aspect shows individuals' overall reliance on the FSP by presenting summary measures of FSP participation that combine information on initial entry, spell duration, and reentry.

As implied above, our descriptive analysis is based on a sample of *individuals* from the 1991 panel of SIPP. Alternatively, we could have examined the FSP dynamics of households. However, examining FSP household dynamics is difficult because the composition of households can (and often does) change over time. For example, individuals can move into or out of a household, two separate households can merge to form a single household, or a single household can split and become more than one household. Any longitudinal study of households must determine whether these changes mean that households end or new households begin, and this decision in turn affects whether spells of FSP participation end or begin. Although strategies can be developed to deal with

these problems, we decided to use the conceptually cleaner approach of analyzing FSP participation dynamics among a sample of individuals.<sup>14</sup>

We conducted the descriptive analysis of FSP participation dynamics for the full population of FSP participants (or all individuals) and for key subgroups of the population. The subgroup analysis provides information on whether participation behavior differs for different groups of participants.

The characteristics of the subgroups examined include:

- Whether previously received food stamps
- Household composition
- Household income level relative to the poverty line
- Age (younger than 18, 18 to 59, older than 59)
- Race/ethnicity
- Education of household head (whether graduated from high school)
- Whether U.S. citizen

In addition to these subgroups, we examined the relationship between other characteristics and FSP participation dynamics in our multivariate analysis.

Much of the descriptive analysis presented here is consistent with the descriptive analysis of FSP participation dynamics in the mid-1980s by Burstein (1993). This allowed us to compare FSP participation dynamics between the mid-1980s and early 1990s. For example, we followed Burstein's procedure of "closing up" one-month gaps in participation by assuming that sample members received food stamps in a given month if they received food stamps in the previous month

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<sup>14</sup>However, we have replicated our descriptive analysis of FSP participation spell duration using the household as the unit of analysis and developing a set of rules to deal with changing household composition over time. The results of this analysis were similar to the results of our analysis of spell duration using the individual as the unit of analysis, as summarized in Appendix C.

and in the subsequent month. This procedure reduced the number of FSP participation spells by about seven percent and increased median spell duration by about one month. We also were consistent with Burstein (1993) in assuming that individuals did not receive food stamps during the months that they were out of the sample (which included months after a sample member died or moved to a foreign country, an institution, or the military).

We extended the descriptive work done by Burstein (1993) and other researchers in at least four ways. First, although most of the descriptive analysis presented here is based on a cohort of individuals entering the FSP (that is, an *entry cohort sample*), we also described aspects of FSP participation dynamics of a *cross-section* of FSP participation at a given point in time. Second, we used information on the prepanel receipt of food stamps to discuss the dynamics of FSP participation among long-term participants. Third, in examining the trigger events leading to entry into the FSP, we focused particularly on the role of multiple trigger events--changes in household composition coupled with decreases in household income. Fourth, we focused on summary measures of FSP participation including the turnover rate; the “total time on” food stamps during a given calendar period; and the classification of FSP participants into single-spell short-term, medium-term, and long-term participants and multiple-spell participants.

#### **b. Multivariate Analysis**

Although the descriptive analysis of FSP participation dynamics provides a thorough description of individuals’ experiences with the FSP, it has a few limitations. For example, while descriptive statistics for different subgroups indicate the relationships between single characteristics and an outcomes of interest, they do not show the relationships between groups of characteristics and outcome of interest. Nor does this simple subgroup analysis allow us to control for exogenous factors affecting participation dynamics when measuring these relationships. In addition,

determining the relationship between time-varying characteristics (for example the unemployment rate) and the length of participation spells through descriptive analysis is difficult.

To address these concerns, we conducted multivariate analyses of FSP participation dynamics. In particular, we estimated multivariate models of initial FSP entry, the duration of participation spells, and reentry into the FSP. These models provide better estimates of the combinations of characteristics that are related to initial entry into the FSP, to long spells of participation, and to frequent reentry into the program. The independent variables in these models include individual characteristics, household characteristics, and state-level economic and program characteristics, some of which are time-varying variables. The models also include variables measuring spell duration that indicate the degree to which there is duration dependence in participation spells (that is, the degree to which an individual's probability of exiting the program depends on how long he or she already has been in the program).

The sample for these estimates is an entry cohort sample of individuals age 18 and older. Because of concerns about the quality of the retrospective data on left-censored participation spells and the difficulty of measuring the independent variables in the models at the start of left-censored spells, we included only non-left-censored spells in the analysis. Estimates based on this sample of spells will provide information on characteristics related to the dynamics of short spells of FSP participation.

In addition to estimating multivariate models using the full entry cohort sample of adults, we also estimated the models separately by the composition of these adults' households. For this purpose, we distinguished households according to whether they contained elderly or disabled

members, whether they contained children, and whether households containing children were headed by a female, a married couple, or some other combination.<sup>15</sup>

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<sup>15</sup>We distinguished between households because the factors affecting individuals' experiences with the FSP may differ depending upon the type of household to which they belong. For example, we expect that AFDC participation and benefit levels are most likely to affect FSP participation dynamics among female-headed households, while labor market characteristics are least likely to affect participation dynamics among households consisting solely of elderly and disabled members.

## **II. DESCRIPTION OF INDIVIDUALS' FSP PARTICIPATION DYNAMICS**

Individuals first come into contact with the Food Stamp Program (FSP) when some event occurs that leads their household to enter the program. Following entry, they spend a certain amount of time on the program until another event occurs that leads the household to exit the program. After exiting, individuals either remain off food stamps indefinitely or reenter the program after a certain period of time. In fact, they may enter and exit many times over the course of their lifetime. This chapter describes the general patterns of each participation activity and summarizes overall levels of reliance by individuals on the FSP. In particular, the chapter examines entry into the FSP (Section A), the duration of participation spells (Section B), exit from the program (Section C), and reentry into the program (Section D). Finally, Section E summarizes individuals' overall experiences with the FSP.

### **A. ENTRY INTO THE FSP**

Individuals first come into contact with the FSP when they apply for and begin receiving food stamps. Two questions about entry into the program are of interest. First, at what rate do individuals enter the program? This question is addressed in Section A.1. Second, why do people enter the FSP? In other words, what events in their lives prompt them to enter the FSP? This question is addressed in Section A.2.

#### **1. The FSP Entry Rate**

Among individuals of any income level not receiving food stamps at a given point in time--the "at-risk population," the FSP entry rate measures the proportion who begin receiving food stamps

during a subsequent period of time.<sup>1</sup> In practice, we define two types of entry rates. The *monthly entry rate* is the percentage of individuals entering the FSP in a given month among those who had not received food stamps during the previous two months (at least).<sup>2</sup> We measured the monthly entry rate using data from months 10 through 32 of the Survey of Income and Program Participation (SIPP) panel period, so a given sample member may contribute up to 23 months of data to the calculation of the rate and also may contribute more than one program entry to the calculation of the rate.<sup>3</sup> The *yearly entry rate* is the percentage of individuals not receiving food stamps in months 8 and 9 of the panel period who begin receiving food stamps during the subsequent year (months 10 through 21). Sample members may contribute only one observation to the calculation of the yearly entry rate.

We calculated monthly and yearly entry rates for all individuals at risk of entry and for selected subgroups. We defined these subgroups according to the characteristics of the individual (or individual's household) four months prior to the month in which the entry rate was measured.<sup>4</sup>

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<sup>1</sup>We use the term "at-risk population" simply to identify individuals not currently receiving food stamps in a given month. The term is not meant as a precise measure of the "risk" of negative life events.

<sup>2</sup>The at-risk population was restricted to those who had not received food stamps for the previous two months because of our practice of closing one-month gaps in FSP participation. Under this practice, we assumed that sample members received food stamps in a given month if they received food stamps in the previous month and also in the subsequent month. In effect, sample members have to be off the program for two months to be considered nonparticipants (and "at risk" of entering the program).

<sup>3</sup>We began examining FSP entry in month 10 of the panel period (rather than earlier) so that we could look for events that trigger entry during a period prior to the sample month. In the entry trigger event analysis, described next, we examined trigger events both over a four-month and an eight-month window period prior to the sample month.

<sup>4</sup>We defined the subgroups four months prior to the sample month in order to ensure consistency between the entry rate analysis described here and the entry trigger event analysis described in the subsequent section. In the entry trigger event analysis, we defined subgroups according to  
(continued...)

Table II.1 reports these entry rates for the population and for the subgroups. In addition, we look at the initial entry rate, which measures when individuals begin receiving food stamps for the first time.

**a. FSP Entry Among the Full Population**

The monthly FSP entry rate is 0.3 percent (Table II.1). This suggests that among individuals not receiving food stamps at the beginning of a month, roughly 3 of 1,000 enter the program during the month. This monthly entry rate appears lower than one might expect, in part, because it refers to entry in a single month. Even if an individual does not enter the program in a given month, he or she might enter in a subsequent month. The yearly entry rate of 2.6 percent gives a more useful measure of FSP entry. This rate suggests that among individuals not receiving food stamps at the beginning of a given year, 26 of 1,000 will enter the program during the year.

Another reason that the monthly and yearly entry rates are relatively low is because they are defined for a sample of all at-risk individuals, including those whose income is high and who are not eligible for the program.<sup>5</sup> If we limit the sample to those in households with incomes below the poverty line, the monthly entry rate is about 2 percent and the yearly entry rate is almost 16 percent (Table II.1).

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<sup>4</sup>(...continued)

individuals' characteristics four months prior to the sample month so that trigger events, which were measured over a four-month period prior to the sample month for most of the analysis, did not affect the subgroup to which an individual belongs.

<sup>5</sup>Ideally, we would also measure the entry rate among individuals eligible for the FSP. However, eligibility for the FSP is difficult to measure on a longitudinal basis because household asset holdings are measured at only two points in time during the SIPP panel period. In addition, food stamp filing units do not always coincide with the Census view of households used in SIPP, and SIPP does not include enough information to directly measure cases in which food stamp units differ from Census households. We attempted to overcome these difficulties and measure FSP filing eligibility, but found that about 20 to 25 percent of FSP participants in a given month were coded as being ineligible for the program and did not pursue this analysis.

TABLE II.1  
FSP ENTRY RATES AND THE DISTRIBUTION  
OF THE CHARACTERISTICS OF ENTRANTS  
(Percentages)

Subgroup	At-Risk Population <sup>a</sup>	FSP Entry Rate		FSP Monthly Entrants
		Monthly	Yearly	
All Individuals	100.0	0.31	2.6	100.0
Previous FSP Participation				
Never received food stamps	85.9	0.12	1.6	32.1
Previously received food stamps	14.1	1.35	8.4	67.9
Income				
Less than poverty line	5.5	1.98	15.7	39.4
Between one and two times poverty line	16.4	0.68	5.9	39.2
Between two and three times poverty line	20.1	0.19	2.1	12.8
More than three times poverty line	58.0	0.05	0.6	8.6
Household (HH) Type				
Individuals in HHs with only able-bodied, prime-age adults	20.1	0.07	0.8	4.9
Individuals in HHs with only elderly or disabled members	15.1	0.14	1.6	7.3
Individuals in HHs with elderly/disabled and able-bodied adults, no children	10.0	0.21	2.0	6.8
Adults in single-adult HHs with children	1.6	0.89	7.0	4.7
Children in single-adult HHs with children	2.3	1.08	10.2	8.3
Adults in multiple-adult HHs with children	28.7	0.37	2.9	34.8
Children in multiple-adult HHs with children	22.0	0.48	3.7	33.2
Age				
Older than 60 years	16.4	0.11	1.1	5.9
18 to 59 years	59.2	0.27	2.3	52.6
Younger than 18 years	24.4	0.54	4.3	41.5
Gender				
Male	49.2	0.28	2.3	44.7
Female	50.8	0.34	2.8	55.3
Race/Ethnicity				
White/other	83.1	0.21	2.0	56.8
Black, non-Hispanic	9.0	0.78	5.4	22.9
Hispanic	8.0	0.78	5.9	20.3
HH Earnings Status				
HH contains earners	85.1	0.27	2.4	73.0
HH contains no earners	14.9	0.53	3.7	27.0
HH Education Status <sup>b</sup>				
HH includes high school graduate	90.9	0.24	2.2	61.0
HH includes no high school graduate	9.1	1.30	8.7	31.5
U.S. Citizenship <sup>c</sup>				
Citizen	94.2	0.24	2.0	88.8
Noncitizen	5.8	0.49	3.7	11.2

SOURCE: 1991 SIPP Panel.

NOTE: The overall sample size is 633,448 person-months from 28,768 individuals in the 1991 SIPP panel. FSP entry rate is defined as the percentage of at-risk population who begin to receive food stamps in a given period (month or year). The monthly entry rate is defined over SIPP panel months 10 through 32. The yearly entry rate is defined over the year covered by SIPP panel months 10 through 21 and is based on an overall sample size of 27,392.

TABLE II.1 (continued)

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<sup>a</sup>The distribution of subgroup characteristics among the full at-risk population is measured among sample members who had not received food stamps for at least two months as of month 10 of the SIPP panel period.

<sup>b</sup>Defined only for households that include nondisabled adults between ages 18 and 59.

<sup>c</sup>Defined only for adults (age 18 or older).



shows the cumulative entry rate into the FSP for the cohort--that is, the percentage of adults born in a given year who have received food stamps at some time in their lives up to a given age. The second column also shows a cumulative entry rate but limits the sample to those who do enter the program. The third column shows the estimated distribution of age at first entry among all those who enter the program. For these adults, FSP participation as children (that is, under age 18) is ignored.

Among individuals who live to be at least age 71, about 20 percent will have participated in the FSP at some point in their adult lives. The distribution of the age at first entry is distributed surprisingly evenly. Individuals are slightly more likely to enter the program in the twenties than at other ages, but a large proportion enter for the first time late in life. In particular, about a third of those who eventually receive food stamps have done so for the first time by age 30 and about half have done so by age 40. However, nearly 30 percent of those who enter the FSP do so for the first time when they are 60 or older.

### **c. FSP Entry Among Subgroups**

Although we used individuals as the unit of analysis, since entering the FSP is typically a household decision, it is useful to break down FSP entry rates by household structure. The

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<sup>6</sup>(...continued)

possible age between 18 and 80, this life table estimated yearly initial entry rates by calculating percentage of the sample entering food stamps for the first time at that age, among those in the sample who were at least that old and who had not entered the program at a younger age. These yearly initial entry rates were then translated to cumulative initial entry rates among the full sample and among sample members who ultimately entered the program. One important assumption implicit in this methodology is that all individuals in the artificial cohort are assumed to live to at least age 71. Another required assumption is that there is stationarity over time in initial entry rates, since we are using information from a cross section of individuals to infer what would happen to a single cohort of individuals.

TABLE II.2  
INITIAL FSP ENTRY RATE, BY AGE

Age	Cumulative Entry Rate	Cumulative Entry Rate Among FSP Entrants	Percentage of Initial FSP Entrants
Younger than 20	3.3	11.1	11.1
21 to 30	6.7	33.5	22.4
31 to 40	9.9	49.6	16.1
41 to 50	11.6	58.6	9.0
51 to 60	14.1	71.0	12.4
61 to 70	16.9	85.1	14.1
Older than 70	19.9	100.0	14.9

SOURCE: 1991 SIPP Panel.

NOTE: The sample includes only individuals age 18 and older. The sample size is 21,907, including 2,215 FSP entrants. This table is based on an artificial life table of time until initial entry into the FSP among adults, based on a cross section of SIPP panel members at month 1 of the 1991 panel. This methodology rests on the assumption that all adults will live to be at least 71 years old.

household structure definitions in this section are based on those used by Burstein (1993) and depend on whether the household contains children and/or elderly or disabled members and on whether the individual for whom we are defining household structure is an adult or child. The specific household subgroups and their relative frequencies in the sample of individuals who may enter the FSP are:

- Individuals in households with only able-bodied, prime-age (18 to 59) adults (20 percent)
- Individuals in households with only elderly or disabled members (15 percent)
- Individuals in households with both able-bodied, prime-age and elderly or disabled adults, no children (10 percent)
- Adults in households with multiple adults and children (29 percent)
- Children in households with multiple adults and children (22 percent)
- Adults in households with a single adult and children (2 percent)
- Children in households with a single adult and children (2 percent)<sup>7</sup>

FSP entry rates vary widely across these household groups. Entry rates are highest for households with a single adult and children, with 7 to 10 percent of the at-risk members of these groups entering the program in a given year (Table II.1). Among households with multiple adults and children, yearly entry rates are about half this high (three to four percent). However, FSP entry rates among all groups of households with children are higher than in households without children. In particular, households containing only able-bodied, prime-age adults enter the FSP at a rate of less than one percent a year.

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<sup>7</sup>The frequency of households with a single adult and children is lower than one might expect for two reasons. First, the at-risk population excludes individuals already receiving food stamps, and many households with a single adult and children are already receiving food stamps in a given month. Second, many *families* consisting of a single adult and children live in *households* with other adults. For example, a single mother and her child might live with the child's grandmother or with the mother's boyfriend.

We also examined FSP entry rates for a few additional subgroups. Not surprisingly, income is strongly related to FSP entry. The yearly FSP entry rate is almost 16 percent among individuals in households living below the poverty line, six percent among those in households with incomes between one and two times the poverty line, two percent among those in households with incomes between two and three times the poverty line, and less than one percent among those in households with higher incomes.

Age, race/ethnicity, and education are also related to FSP entry. Age is negatively related to FSP entry--the yearly entry rate is about one percent among individuals over age 60, two percent among those 18 to 59, and four percent among those younger than age 18 (Table II.1). These differences can primarily be explained by the fact that households with children are more likely than households without children to enter the program, and most elderly sample members do not live with children. The FSP entry rate among blacks and Hispanics each is nearly triple the entry rate among whites. In addition, the yearly entry rate is higher among individuals in households in which no one has a high school degree (nine percent) than among those in households with a high school graduate (two percent).

Finally, we examined FSP entry among U.S. citizens and noncitizens. Noncitizens make up only six percent of the at-risk population, but will be strongly affected by the recently enacted welfare reform legislation (PL 104-93, or PRWORA) which cuts most legal immigrants from the program. The yearly entry rate among noncitizens is almost four percent, higher than the two percent rate among citizens. Thus, the benefit cuts affect a group that would otherwise enter the FSP at higher than average rates.

#### **d. Changes in FSP Entry Over Time**

We examined whether the dramatic increase in the FSP caseload between the late 1980s and early 1990s can be explained by an increase in the FSP entry rate. Since the 1990 and 1991 panels of SIPP cover a period after this increase had already begun, we turned to studies examining FSP entry during the 1980s.

No previous study has used the exact methodological approach we describe above in measuring FSP entry. However, Burstein (1993) examined FSP entry rates during the mid-1980s using the 1984 panel of SIPP and a similar methodological approach. In particular, she calculated a “wave entry rate”—the proportion of at-risk individuals who enter the FSP during a given wave (or four-month period) of the SIPP panel. Aside from calculating a wave entry rate instead of a monthly or yearly entry rate, Burstein’s approach differed from ours in her definition of the at-risk population. She restricted the at-risk population to those who had not received stamps during any month of the previous wave *and* whose household income was no more than three times the poverty line.

Burstein estimated an FSP wave entry rate of 2.0 percent for the 1984-1986 period. This implies that among individuals who had not received food stamps during the previous four months, 2.0 percent began receiving food stamps (for at least one month) during the subsequent four months. We replicated Burstein’s methods using the 1991 panel of SIPP and estimated a wave entry rate of 2.4 percent for the 1991 to 1993 period.<sup>8</sup>

Although a comparison of our estimate with Burstein’s estimate of the FSP entry rate suggests a sizeable (20 percent) increase in entry rate between the mid-1980s and early 1990s, we feel that this increase is overstated, for two reasons. First, if the relative size of the at-risk population decreased between the mid-1980s and early 1990s, then the entry rate could have increased over this

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<sup>8</sup>For details on our replication methodology, see Gleason, Schochet, and Moffitt (1996).

time period even if the number of entrants did not increase. Burstein reports that among individuals not receiving food stamps in a given wave, about 50 percent have household incomes less than three times the poverty line. By contrast, we find that in the 1990 and 1991 panels of SIPP, about 43 percent have incomes less than three times the poverty line. When the entry rate estimates are “blown up” so that the base population includes all income levels, there is very little difference between Burstein’s estimated entry rate for the mid-1980s and our estimated entry rate for the early 1990s.<sup>9</sup>

Second, when we estimated the wave entry rate using the 1990 panel of SIPP, we obtained very different results. The wave entry rate based on the 1990 panel (covering the 1990 to 1992 period) is only 2.0 percent, much lower than the entry rate of 2.4 percent based on the 1991 panel.<sup>10</sup> Combining the 1990 and 1991 panels to generate an estimate of the FSP wave entry rate over the 1990 to 1993 period yields an entry rate of 2.2 percent. This is probably the most appropriate estimate to use to compare with Burstein’s entry rate estimate. Given these two factors, we do not believe that our entry rate estimates provide evidence that the FSP entry rate increased between the mid-1980s and early 1990s.<sup>11</sup>

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<sup>9</sup>Assuming an entry rate of 0 among those in households with incomes above three times the poverty line, an entry rate of 2.0 among a low-income population making up 50 percent of all individuals translates to an entry rate of 1.0 among the full population. An entry rate of 2.4 among a low-income population making up 43 percent of all individuals also translates to an entry rate of approximately 1.0 among the full population.

<sup>10</sup>This difference in the estimated entry rate between the 1990 and 1991 panels of SIPP holds true even during the overlapping time period in the two panels (October 1990 through August 1992) and is consistent with the higher level of reported FSP participation in the 1991 panel of SIPP (compared with the 1990 panel), reported in Chapter I and Appendix A.

<sup>11</sup>This conclusion is consistent with our later analysis showing that the FSP reentry rate among those who exited the program did not substantially change between the mid-1980s and early 1990s (see Section D).

## 2. Entry Trigger Events

It is important to understand why individuals enter the program, as well as the rate at which individuals enter the FSP. We cannot necessarily identify the underlying reasons why individuals begin receiving food stamps. However, we can examine their situation immediately preceding entry to try to understand the events that led them to enter the program (that is, the entry trigger events). Knowledge of the paths individuals take leading to FSP participation may suggest points of intervention for policymakers attempting to reduce FSP dependence.

### a. Methods

To examine entry trigger events, we defined FSP entry as participation in the FSP in a given month after nonparticipation during the two previous months. So that the period prior to entry will be long enough to observe possible entry trigger events, we examined FSP entry in months 10 through 32 of the SIPP panel period. These months are called *sample months*. Throughout most of the analysis, we looked for entry trigger events during the four-month period immediately preceding the sample month. This is called the *window period*. To check the robustness of our results, we also examined entry trigger events using an eight-month window period.

Building on the work of Burstein (1993), we had three major objectives in defining entry trigger events. First, entry trigger events should be both *relevant* and *predictive*. They should be relevant in that they explain a large proportion of FSP entries. They should be predictive in that experiencing one of these events should increase the probability that an individual enters the FSP. Second, we wanted to clearly distinguish between entry trigger events related to changes in household income and entry trigger events related to changes in household composition. Third, we wished to define a set of entry trigger events that are mutually exclusive. Making these events mutually exclusive allowed us to distinguish between situations in which individuals experience a single trigger event

and situations in which individuals experience multiple trigger events during the window period, such as a decrease in income and a change in household composition.

With these objectives in mind, we defined the following entry trigger events:

- Decrease in household income, no change in household composition
  - Decrease in household members' earnings
  - Decrease in household members' other income
- No decrease in household income, change in household composition
  - New household member without income
  - Other household composition change
- Decrease in household income, change in household composition
  - Departure of some household member with income, no decrease in remaining household members' income<sup>12</sup>
  - Departure of household member with income *and* decrease in remaining household members' income
  - Decrease in household members' income *and* new household member without income<sup>13</sup>
  - Decrease in household members' income *and* other household composition change<sup>14</sup>
- Startup of cash assistance other than food stamps, with no other trigger event

We defined a decrease in income to be a 20 percent decrease in household income from one month to the next during the window period.<sup>15</sup> If a sample member suffered this 20 percent decrease

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<sup>12</sup>This category includes cases in which there is both the departure of a household member with income and another household composition change.

<sup>13</sup>An example of this trigger event would be if a household member quit his or her job after the birth of a baby.

<sup>14</sup>These "other household composition changes" could include the departure of a household member without income or the addition to the household of a new member with income.

<sup>15</sup>If we observed an income decrease during any month of the window period, it was considered a trigger event regardless of what happened in the other months of the window period. Thus, if a sample member suffered a decrease in household income in one month and gained the income back (continued...)

in income, we identified the month in which the largest decrease took place and classified it into one of three categories: (1) decrease in household members' earnings, (2) decrease in household members' other income, and (3) departure from the household of member(s) with income.

**b. Distribution of Entry Trigger Events**

Table II.3 contains the basic results of the entry trigger event analysis. The first column of the table shows the percentage of the overall at-risk population that experienced each trigger event during the four-month window period. The second column shows the entry rate among those at-risk individuals who experienced the event. This column shows the predictive power of the trigger event--the greater the probability of entry among those who experienced the event, the greater the predictive power of the event. The third column shows the percentage of FSP entrants who experienced the event. This column shows the relevance of the event--the larger the percentage of entrants experiencing the event, the more relevant the event.

Overall, the entry trigger events we defined are both relevant and predictive. Nearly three-fourths of all FSP entries can be tied to one of these trigger events (Table II.3). Furthermore, members of the at-risk population who experience a trigger event are more than four times as likely to enter the FSP as those who do not experience a trigger event (0.56 percent versus 0.14 percent). Nevertheless, 27 percent of FSP entries are not explained by this methodology for defining trigger events.

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<sup>15</sup>(...continued)

in a subsequent month, it is still considered a trigger event. On the other hand, if a sample member suffered a series of 10 percent decreases in household income in consecutive months during the window period, this is not considered to be a trigger event.

TABLE II.3  
 OCCURRENCE OF FSP ENTRY TRIGGER EVENTS  
 (ALL INDIVIDUALS, FOUR-MONTH WINDOW)  
 (Percentages)

Trigger Event <sup>a</sup>	Percent of At-Risk Sample Who Experienced the Event	Percent Who Entered the FSP, Conditional on Experiencing the Event (FSP Monthly Entry Rate)	Percent of FSP Entrants Who Experienced the Event
None	59.1	0.14	27.1
Income Decrease Only <sup>b</sup>			
Earnings	27.4	0.45	39.8
Other income	4.2	0.63	8.7
Change in Household (HH) Composition Only			
New HH member without income	1.1	0.77	2.7
Other HH composition change	2.0	0.23	1.5
Income Decrease <sup>b</sup> and HH Composition Change			
Departure of HH member with income	2.2	1.17	8.3
HH member's income decrease and departure of HH member with income	0.9	1.13	3.3
HH member's income decrease and new HH member without income	1.0	1.32	3.7
HH member's income decrease and other HH composition change	0.8	1.04	2.6
New Public Assistance Receipt	1.4	0.46	2.2
Any Trigger Event	40.9	0.56	72.9
Total At-Risk Population	NA	0.31	NA
<b>Sample Size (Person Months)</b>	<b>633,448</b>	<b>633,448</b>	<b>1,964</b>

SOURCE: 1991 SIPP panel.

NOTE: The sample includes all sample members in every month between 10 and 32 in which they had not participated in the FSP in the previous two months.

<sup>a</sup>All trigger events are mutually exclusive.

<sup>b</sup>Income decreases were defined as 20 percent decreases in household income from one month to the next during the window period.

NA = not applicable

The most common entry trigger event is a decrease in household income. Among entrants, 49 percent experienced a 20 percent decrease in income during the window period without a change in household composition (Table II.3). Another 18 percent experienced both a decrease in household income and a change in household composition. By contrast, changes in household composition alone triggered FSP entry among only four percent of entrants, and new receipt of public assistance other than food stamps triggered entry among only two percent of entrants.<sup>16</sup>

One reason that decreases in income are such common trigger events is that they occur commonly in the at-risk population. In the full at-risk population, 36 percent experienced a decrease in household income either with or without a change in household composition during the four-month window period. However, experiencing a decrease in income is also reasonably predictive of FSP entry. Among individuals who experienced a decrease in household members' earnings alone, the monthly FSP entry rate is 0.45 percent, compared with 0.14 percent among individuals who experienced no trigger events.

One possible explanation for the 27 percent of FSP entrants having no entry trigger event is that the window we used to observe trigger events is not long enough. Events that ultimately lead to FSP entry might take longer than four months to have their full effect. For example, after experiencing an income decrease, an individual might try to avoid entering the FSP for a few months. After more than four months of trying to get by on less income, however, the individual might decide to enter the program. Even though the income loss took place more than four months before entry, it would still be the true trigger event.

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<sup>16</sup>It turns out that entry trigger events are similar for those entering the program for the first time and those who have previously received food stamps. For each group, approximately 50 percent of entrants experienced a decrease in household income with no change in household composition, 4 percent experienced a change in household composition with no decrease in household income, and just under 20 percent experienced both a decrease in household income and a change in household composition.

To explore the possibility that a four-month trigger window is not long enough, we measured trigger events using an eight-month window.<sup>17</sup> In addition to capturing trigger events for individuals who had no measured trigger events during the four-month window, we felt that an eight-month window period would better capture the incidence of multiple trigger events leading to FSP entry. Low-income households may be able to withstand the problems caused by a single trigger event, but the occurrence of a second trigger event may cause them to turn to the FSP for support. These multiple events may be directly linked. For example, if a nonemployed woman with a child separates from her husband, she may get a job so that her household income does not decrease immediately. However, the woman's work and child care demands may prove to be too burdensome after several months and she may reduce her work hours several months later, leading to a decrease in household income. Since events such as these may occur over a period longer than four months, the use of an eight-month window may more accurately capture the importance of multiple trigger events.

As expected, using an eight-month window increases the percentage of FSP entries that are explained by a trigger event, from 73 percent to 86 percent (Table II.4). Meanwhile, these trigger events remain as predictive as those defined under the four-month window scheme. Individuals in the at-risk population who experience trigger events are still four times more likely to enter the FSP

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<sup>17</sup>Other than the length of the window period, the methodology used to define entry trigger events is the same.

TABLE II.4  
 OCCURRENCE OF FSP ENTRY TRIGGER EVENTS  
 (ALL INDIVIDUALS, EIGHT-MONTH WINDOW)  
 (Percentages)

Trigger Event <sup>a</sup>	Percent of At-Risk Sample Who Experienced the Event	Percent Who Entered the FSP, Conditional on Experiencing the Event (FSP Monthly Entry Rate)	Percent of FSP Entrants Who Experienced the Event
None	38.5	0.11	14.2
Income Decrease Only <sup>b</sup>			
Earnings	39.3	0.31	39.6
Other income	6.5	0.48	10.4
Change in Household (HH) Composition Only			
New HH member without income	1.2	0.26	1.0
Other HH composition change	2.1	0.23	1.6
Income Decrease <sup>b</sup> and HH Composition Change			
Departure of HH member with income HH member's income decrease and departure of HH member with income	3.9	0.94	12.0
HH member's income decrease and new HH member without income	2.7	0.75	6.5
HH member's income decrease and other HH composition change	2.3	1.02	7.6
HH member's income decrease and other HH composition change	1.9	0.95	6.0
New Public Assistance Receipt	1.6	0.24	1.2
Any Trigger Event	61.5	0.44	85.8
Total At-Risk Population	NA	0.31	NA
<b>Sample Size (Person Months)</b>	<b>633,448</b>	<b>633,448</b>	<b>1,964</b>

SOURCE: 1991 SIPP panel.

NOTE: The sample includes all sample members in every month between 10 and 32 in which they had not participated in the FSP in the previous month.

<sup>a</sup>All trigger events are mutually exclusive.

<sup>b</sup>Income decreases were defined as 20 percent decreases in household income from one month to the next during the window period.

NA = not applicable

in a given month than those who do not experience trigger events (0.44 percent versus 0.11 percent).<sup>18</sup>

Using a longer window period leads to a large increase in the incidence of multiple trigger events. Under a four-month window, only 18 percent of FSP entrants experience both an income decrease and a change in household composition (Table II.3). Under an eight-month window, 32 percent of entrants experience both of these events (Table II.4). This analysis suggests that multiple trigger events are more relevant than appeared to be the case when we used a four-month window.

### **c. Alternative Explanations for Unexplained FSP Entry**

Using the entry trigger analysis described above, we could associate entry trigger events with most FSP entries. For the remaining cases, individuals are entering the FSP without an observed change in economic or household circumstances. Aside from events leading to entry over a window period longer than four months, other factors not associated with any of the trigger events described above may explain entry into the FSP. We could not directly define an entry trigger event for most of these explanations due to limitations of the SIPP data. However, the data do provide indirect evidence on the likelihood of these other explanations. Thus, for each FSP entrant who did not experience one of the trigger events we defined during the four-month window period, we examined this indirect evidence to evaluate the plausibility of these other explanations. Below, we describe these alternative explanations, along with the SIPP data we used to evaluate their plausibility.<sup>19</sup>

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<sup>18</sup>On the other hand, experiencing a decrease in household members' earnings without a change in household composition seems to lose its predictive power as a trigger event under the eight-month window analysis. The monthly FSP entry rate among individuals who experience this trigger event is 0.31 percent, which is exactly the same as the FSP entry rate among the overall at-risk population. In other words, knowing that an individual experienced this trigger event tells us nothing about that individual's likelihood of entering the FSP in a given month.

<sup>19</sup>In addition to the explanations listed here, another reason individuals may enter the FSP  
(continued...)

decrease in household income from one month to the next, smaller income losses for low-income households may lead to FSP entry. We defined a small income loss as a decrease in income of between 5 and 20 percent from one month to the next during the four-month window period to individuals whose household income was no more than two times the poverty line.

- ***Asset Loss.*** Even if individuals maintain their income at about the same level from one month to the next, a decrease in asset balances could lead them to enter the FSP. This explanation could be particularly relevant for the low-income elderly, who may be drawing down their asset balances over time. SIPP does not report asset balances on a monthly basis, but does report asset income on a monthly basis. We considered an individual to have experienced an asset loss if their household experienced a decrease in asset income from more than \$10 in one month to \$0 in the subsequent month *or* if they lost the use of a vehicle during the window period.
- ***Newly Eligible Noncitizens.*** The 1986 Immigration Reform and Control Act (IRCA) instituted the Legally Authorized Workers Program beginning in May 1987 that allowed undocumented aliens who had been living in the United States since January 1, 1982, to apply for permanent resident status. If granted this status, they would become eligible for the FSP after five years, making the first “IRCA (Immigration Reform and Control Act) aliens” eligible in May 1992 (month 16 to 19 of the 1991 SIPP panel period). Since SIPP provides no information on when individual undocumented aliens were

proportion of unexplained entrants who are disabled or elderly should be viewed as an upper-bound estimate of the proportion who enter because of rising medical costs.<sup>21</sup>

- ***Elimination of General Assistance (GA).*** During the 1991 SIPP panel period, six states (Michigan, Montana, Ohio, Oregon, South Dakota, and Wyoming) either eliminated or severely cut back their GA programs. This cutback may have caused some individuals to lose benefits, leading to FSP entry. For others, the knowledge that GA was no longer available may have made them more likely to rely on food stamps. We considered this to be a potential explanation for FSP entry among unexplained entrants living in these six states at the time they entered the program.
- ***Increasing Child Care Expenses.*** Another potential source of rising expenses is child care. Households who lose an inexpensive source of child care may find that replacing that child care source drains their resources to such an extent that they must begin receiving food stamps. Unfortunately, the SIPP questionnaire does not provide monthly information on child care arrangements. To get a sense of the proportion of unexplained entrants who entered the FSP because of child care expenses, we measured the proportion of individuals in households containing children under age 6 and in which all adults in the household are working.<sup>22</sup>

Using the procedures described above, we associated a possible explanation for the FSP entry of 84 percent of the previously unexplained entrants. We examined these alternative explanations in the order listed above, giving higher priority to those explanations listed first. Among all previously unexplained FSP entrants, experiencing income losses of less than 20 percent and facing rising medical expenses are the most plausible explanations for FSP entry. Overall, 32 percent of previously unexplained entrants experienced a small income loss. Relatively small proportions experienced an asset loss (1 percent) or were newly eligible noncitizens (10 percent). Among the

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<sup>21</sup>Ponza and McConnell (1996) conducted focus groups with elderly FSP participants and found that among those who were not poor prior to becoming elderly, the two biggest reasons for their need for economic assistance are deteriorating health conditions and the death of a spouse.

<sup>22</sup>In addition to increasing medical and child care costs, FSP entry may be triggered by increases in other household expenses. For example, increasing household shelter expenses may lead some households to enter the FSP.

remainder, however, 24 percent were disabled and 11 percent were nondisabled elderly. Small proportions appear to enter the program because of the loss of GA or increasing child care expenses.

**d. Changes in Entry Trigger Events Over Time**

To determine whether the events leading to FSP entry have changed over time, we compared the entry trigger events found in the 1991 panel of SIPP with those found in the 1984 panel of SIPP by Burstein (1993). As noted above, we built our entry trigger analysis on work done by Burstein. However, there are differences between our methodology and that used by Burstein. In particular, the entry trigger events she defines differ slightly from those we described above, and these trigger events are not mutually exclusive. We replicated Burstein's methodology to track any changes of entry trigger events over time.

Burstein defined the following entry trigger events:

- Decrease in household income
  - Decrease in household members' earnings
  - Decrease in household members' unemployment benefits
  - Decrease in household members' other income
  - Departure of household member with earnings
  - Departure of household member with other income
  - Miscellaneous
- New household member without income
  - Infant
  - Other
- Startup of cash assistance other than food stamps, with no other trigger event

Each of the household income decrease categories are mutually exclusive with respect to each other, but the two "new household member without income" categories are not mutually exclusive--they

both could have occurred for the same FSP entrant and either could have occurred simultaneously with a decrease in household income.

The distribution of entry trigger events among FSP entrants is very similar in the mid-1980s and early 1990s, indicating that the events leading to individuals' entry into the program have not changed over this period. Table II.5, which shows the distribution of entry trigger events over the two time periods, indicates that household income decreases explain the majority of FSP entries in both time periods. In fact, in each time period, 53 percent of entrants experienced a decrease in household earnings to a household member. In no instance is there a statistically significant difference between the incidence of a particular trigger event in the mid-1980s and early 1990s.<sup>23</sup> The overall proportion of FSP entries explained by trigger events is 82 percent in the mid-1980s and 78 percent in the early 1990s.

## **B. DURATION OF FSP PARTICIPATION SPELLS**

Once individuals enter the FSP, the next determinant of their involvement with the FSP is how long they continue to receive food stamps before exiting the program. We examined the length of FSP participation spells by using "life table analysis" to estimate the rate at which individuals exit the program in each month of participation following program entry.

We examined the duration of FSP participation for two different samples of participants--an entry cohort sample and a cross-sectional sample. The entry cohort sample includes all individuals who begin a spell of FSP participation during a given calendar period. Duration analysis of an entry cohort sample allows us to answer such hypothetical questions as: "Of the next 100 people who walk

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<sup>23</sup>We compared the incidence of trigger events in the early 1990s versus the mid-1980s using a series of chi-square tests. These tests take into account the SIPP weights and the clustered nature of the SIPP data collection design.

TABLE II.5

DISTRIBUTION OF FSP ENTRY TRIGGER EVENTS AMONG FSP ENTRANTS,  
MID-1980s AND EARLY 1990s

Trigger Event	Percentage of Entrants	
	Mid-1980s	Early 1990s
Household (HH) Income Decrease		
Decrease of earnings to HH member	53.1	52.7
Loss of Unemployment Insurance to HH member	1.7	3.8
Decrease of other income to HH member	8.0	8.6
Departure of HH member with earnings	6.4	3.9
Departure of HH member with other income	1.5	1.4
Miscellaneous	0.6	0.3
New HH Member Without Income		
Infant	10.1	9.2
Other	8.3	7.3
Startup of Cash Assistance (with no other trigger event)	5.1	4.2
Any Trigger Event	81.8	77.6
<b>Sample Size</b>	<b>1,503</b>	<b>1,387</b>

SOURCE: The 1991 SIPP panel is the source for trigger events during the early 1990s. Burstein (1993), using the 1984 SIPP panel, is the source for trigger events during the mid-1980s.

NOTE: The sample includes all sample members who entered the FSP between SIPP Waves 4 and 8. We checked the significance levels of differences in the percentages experiencing these trigger events between the mid-1980s and early 1990s and found no statistically significant differences.

into the food stamp office to begin receiving food stamps, how many will still be receiving food stamps six months later?”

The cross-sectional sample of FSP participants includes all individuals receiving food stamps at a given point in time, regardless of when they began receiving food stamps. Duration analysis of the cross-sectional sample allows us to answer two hypothetical questions. The first is, “Among all individuals receiving food stamps this month, how many *additional* months will they spend on food stamps before they finally exit, on average?” The second is, “Among all individuals receiving food stamps this month, how many total months (from the beginning of their spell) will they eventually have spent on food stamps before they finally exit, on average?”

## **1. Entry Cohort Analysis**

### **a. Sample and Methods**

The entry cohort analysis was based on a sample from the 1991 panel of SIPP, in which each observation represents a spell of FSP participation of an individual.<sup>24,25</sup> The primary sample we used consists of all spells that begin in month 2 or later of the SIPP panel period--spells that did not require us to use information on prepanel FSP participation from the Wave 2 topical module. Thus, sample members may have contributed more than one spell to the analysis.

For each participation spell, we had information on the observed length of the spell during the panel period and whether the spell ended before the end of the panel period (that is, whether the spell

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<sup>24</sup>We also analyzed the 1990 panel of SIPP using similar methods, and formally tested whether the two panels yielded significantly different results. We failed to reject the hypothesis that the distribution of the duration of FSP participation spells measured by the two panels is the same. In other words, the 1990 panel yielded similar results to the 1991 panel.

<sup>25</sup>As noted in Chapter I, we conducted the entry cohort duration analysis using the household as the unit of analysis as well (see Appendix C). The results of the life table analysis of households' FSP participation spells are similar to the results of the life table analysis of individuals' FSP participation spells, a finding consistent with Burstein (1993).

was right-censored). We also knew whether the individual had ever received food stamps prior to the beginning of their current spell, so we could distinguish initial participation spells from repeat spells.

For all spells that were not left-censored (that is, spells that began during the SIPP panel period), we assign the individuals having the spells to specific subgroups based on their characteristics during the first month of the spell. These subgroups are similar to those used in the analysis of FSP entry, except that they include an additional set of household structure subgroups not used earlier.

The entry cohort data set of FSP participation spells contains 4,592 spells in all, from 3,688 individuals. Nearly 80 percent of sample members contributed only one spell to the data set. About 45 percent of spells are left-censored, including 20 percent that end within the panel period and 25 percent that are both left-censored and right-censored. The remaining 55 percent of spells are not left-censored, including 30 percent that are neither left-censored nor right-censored and 25 percent that are right-censored. Among all spells we observed, 46 percent were individuals' first spells of FSP participation during their lifetime, while the remaining 54 percent were repeat spells.

The construction of "life tables" was the primary statistical tool we used to describe the duration of individuals' spells of FSP participation. The benefit of constructing life tables is that for each spell, the life table uses only the information we have about the length of the spell while ignoring information we do not have. For example, if a participation spell is right-censored after ten months, the life table uses the information we have that this spell did not end within the first ten months. Even though we do not know when the spell ultimately did end, it is not necessary to make any assumptions about when the spell ends to use information from the first ten months of the spell in a life table.

Life tables break down participation spells into months and for each month show the estimated hazard rate, survivor rate, and cumulative exit rate for participation spells. The hazard rate is the probability that a spell ends in a particular month, given that it has lasted at least until the beginning of that month. The survivor rate is the unconditional probability that a spells lasts more than a given number of months. The cumulative exit rate is the unconditional probability that a spell ends within a given number of months. The survivor and cumulative exit rates total 100 percent.

As implied by the example given above, right-censored spells contribute information to the life table up to the month in which they are right-censored (that is, to the point in time in which we no longer have information about them). In our example of a spell that is right-censored after ten months, for example, we know that the spell does not end in month five, so we include this information in calculating the month five hazard rate. However, we do not know whether the spell continues to month 15, so we do not include an observation from this spell in calculating the month 15 hazard rate.

Life tables themselves contain a great deal of information and can be somewhat complicated. Therefore, we used the life table to generate summary information to calculate the median spell duration and cumulative exit probabilities.<sup>26</sup> The median spell duration is the month in which the cumulative exit rate is 50 percent, implying that half of all participation spells are longer than the median and half are shorter. Cumulative exit probabilities show the proportions of FSP participants who exit the program within certain periods of time. We report cumulative exit probabilities at 4 months, 12 months, and 24 months for the full sample and for key subgroups.

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<sup>26</sup>It is also possible to calculate a mean spell length based on information in the life table. However, since we did not have information on the completed length of all spells, it was necessary to make some assumption about how long right-censored spells ultimately last in order to calculate the mean spell length. We calculated the mean spell length using various assumptions, but found that our estimate of mean length is very sensitive to this assumption.

Burstein (1993) also estimated the duration of FSP spells using SIPP data and a similar methodology, though with a slightly different sample. Her estimates cover the mid-1980s (late 1983 through mid-1986). We replicated Burstein's methodology as closely as possible in order to compare the duration of spells in the early 1990s with the duration of spells in the mid-1980s.<sup>27</sup>

In order to determine whether the duration of spells has changed significantly over time, we statistically tested the hypothesis that spell durations have not changed over time. We also statistically tested whether spell durations differ significantly for different subgroups. We tested these hypotheses using the log-rank test statistic.<sup>28,29</sup> The variance of the estimates used to create the log-rank test statistic incorporated SIPP design effects resulting from the unequal weighting of the spell observations and the clustered nature of the SIPP sample. The variance in the estimates was two to three times larger than it would have been under a simple random-sample design with the same number of spell observations.

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<sup>27</sup>One difference between our duration analysis and the analysis conducted by Burstein (1993) is that she used only participation spells that began on or after month five of the panel period. We replicated this sample in comparing our life table results with her results.

<sup>28</sup>The log-rank test compares actual to expected monthly hazard rates, where the expected rate is calculated under the null hypothesis that the monthly hazard rate is the same for each level of the subgroup variable (or each time period). If the aggregate difference between the actual and expected hazard rates was small relative to the aggregate variance of the difference, then we did not reject the null hypothesis that the spell distributions are the same across all levels of the subgroup variable. If the difference was large, however, we rejected the null hypothesis.

<sup>29</sup>We also conducted these tests using the Wilcoxin test statistic and obtained similar results. Both of these test statistics have a chi-square distribution with the degrees of freedom equal to one less than the number of life tables being compared. In comparing Burstein's life tables to ours, we were forced to use approximate test statistics, because the life tables shown in Burstein (1993) do not contain key information needed to construct the proper test statistics, and we approximated this information based on information that was available in the tables.

## **b. Results**

Table II.6 contains the life table of FSP participation spells. This life table includes only non-left-censored spells beginning on or after month two of the SIPP panel. The table shows the hazard rate, survivor rate, and cumulative exit rate from month 1 through month 30 of spells.

Most new FSP participants exit the program within one year. The median spell length for new participants is nine months, with 42 percent of spells ending within six months and 57 percent of spells ending within a year (Table II.6). Within two years, 71 percent of FSP participation spells have ended, implying that less than a third of spells last two years or longer. These results are generally consistent with Bartlett, Burstein, and Pan (1995) who measured spell duration during the early 1990s using administrative data, and found that the median spell length is eight months and that 62 percent of spells end within a year.

Although most FSP participation spells are relatively short, the spells grew longer between the mid-1980s and early 1990s. The median spell length was six months for spells beginning in the mid-1980s (Burstein 1993) compared with nine months for spells beginning in the early 1990s (Table II.7). In fact, the cumulative exit rate for spells beginning in the mid-1980s is about 10 percentage points higher at each month than the exit rate for spells beginning in the early 1990s. For example, 68 percent of spells beginning in the mid-1980s ended within a year, compared with 57 percent among spells beginning in the early 1990s. The overall distribution of spells is significantly different in the two time periods, according to the log-rank test statistic evaluated at the one percent level of statistical significance.

TABLE II.6

## LIFE TABLE OF FSP PARTICIPATION SPELLS

Month	Number of Spells at Beginning of Month	Number Exiting During Following Month	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
1	2,489	200	7.6	92.4	0.9	7.6
2	2,214	173	7.4	85.6	1.2	14.4
3	2,004	100	4.7	81.6	1.3	18.4
4	1,780	291	17.1	67.7	1.7	32.3
5	1,473	104	7.3	62.7	1.7	37.3
6	1,335	100	7.3	58.1	1.8	41.9
7	1,211	38	3.0	56.4	1.8	43.6
8	1,061	95	9.1	51.3	1.8	48.7
9	933	25	3.1	49.7	1.8	50.3
10	877	39	4.3	47.6	1.9	52.4
11	809	30	3.3	46.0	1.9	54.0
12	701	50	7.4	42.6	1.9	57.4
13	628	23	3.5	41.1	1.9	58.9
14	578	11	1.7	40.4	1.9	59.6
15	556	14	2.5	39.4	1.9	60.6
16	488	18	4.1	37.7	1.9	62.3
17	441	16	3.6	36.4	2.0	63.6
18	412	12	2.4	35.5	2.0	64.5
19	386	12	2.9	34.5	2.0	65.5
20	312	12	4.3	33.0	2.0	67.0

TABLE II.6 (continued)

Month	Number of Spells at Beginning of Month	Number Exiting During Following Month	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
21	268	5	1.8	32.4	2.0	67.6
22	246	1	0.4	32.3	2.0	67.7
23	241	15	6.6	30.2	2.1	69.8
24	162	6	3.0	29.2	2.1	70.8
25	139	6	4.2	28.0	2.2	72.0
26	111	1	0.7	27.8	2.2	72.2
27	86	0	0.0	27.8	0.0	72.2
28	31	0	0.0	27.8	0.0	72.2
29	18	2	8.0	25.6	3.8	74.4
30	1	0	0.0	25.6	0.0	74.4

SOURCE: 1991 SIPP panel.

NOTE: Estimates are based on all 2,489 non-left-censored spells that began during or after the second panel month.

<sup>a</sup>The hazard rate does not equal the number of individuals at risk of exiting divided by the number exiting because the hazard rate is based on weighted data whereas the number at risk and the number exiting are based on unweighted data.

TABLE II.7

## COMPARISON OF FSP EXIT RATES IN THE MID-1980s AND EARLY 1990s

Month	Cumulative Exit Rate (Percentages)	
	Mid-1980s	Early 1990s
1	12.7	7.2
2	22.2	13.4
3	27.3	17.5
4	41.1	32.2
5	45.2	37.1
6	50.9	41.8
7	54.0	43.3
8	60.4	48.9
9	61.7	50.2
10	64.2	52.4
11	65.3	53.8
12	68.1	57.2
13	69.0	58.3
14	69.7	59.1
15	70.9	59.5
16	73.5	61.4
17	74.3	62.5
18	74.8	62.7
19	77.1	63.9
20	77.4	65.5
21	77.5	66.2
22	77.5	66.4
23	80.3	68.3

TABLE II.7 (continued)

Month	Cumulative Exit Rate (Percentages)	
	Mid-1980s	Early 1990s
24	80.3	69.5
25	80.3	70.6
26	80.3	70.6
27	80.3	70.6
Median	6	9
Log-Rank Test Statistic to Test for Differences Between the Two Time Periods		26.9***

SOURCE: 1991 SIPP Panel and Exhibit III.1 in Burstein (1993).

NOTE: Estimates are based on all non-left-censored spells that began during or after the fifth panel month. The early 1990s estimates are based on 2,310 spells and the mid-1980s spells are based on 2,623 spells.

- \*Significantly different from zero at the .10 level, two-tailed test.
- \*\*Significantly different from zero at the .05 level, two-tailed test.
- \*\*\*Significantly different from zero at the .01 level, two-tailed test.

The rate at which FSP participants exit the program declines over time. Although the “seam problem” makes it difficult to compare the hazard rate from month to month, a comparison of the hazard rate in seam months (months that are multiples of four) shows that the rate declines over time.<sup>30</sup> For example, the hazard rate falls from 17 percent in month 4 to 9 percent in month 8, 7 percent in month 12, and 4 percent in months 16 and 20. The behavior of the hazard rate in later months is difficult to determine using only non-left-censored spells because sample sizes become small.

Based on data from the early 1990s, individuals’ initial spells of FSP participation appear to be shorter, on average, than repeat spells. The median length of initial spells is 7 months, compared with 11 months for repeat spells (Table II.8). In fact, 40 percent of initial spells are less than four months, compared with 29 percent of repeat spells.

There are strong differences in FSP participation by household type. Households with prime-age adults and no children have the shortest spells, with a median length of only four months (Table II.8). By contrast, households containing only elderly or disabled members have much longer spells, with a median length of 12 months. Households with children also have long participation spells. For example, single adults with children have a median spell length of 16 months and the FSP participation spells of only 59 percent of this group last less than two years (by contrast, 78 percent of prime-age adults with no children have spells lasting less than two years). Households with multiple adults and children have shorter spells than those with single adults and children, with

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<sup>30</sup>The seam problem arises because SIPP respondents give information on FSP participation over four-month periods in the SIPP wave interviews. In responding to these interviews, respondents tend to claim that their participation status during all four of the months is the same. Thus, SIPP data tend to show a greater change in FSP participation status between consecutive months in different waves

TABLE II.8  
DURATION OF FSP PARTICIPATION SPELLS, BY SUBGROUPS

Subgroup	Sample Size	Median (Months)	Cumulative Exit Rate			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
All Individuals	2,489	9	32	57	71	--
Spell Number						5.9**
Initial spell	759	7	40	63	73	
Repeat spell	1,714	11	29	55	69	
Household (HH) Type--I						23.4***
Individuals in HHs with only able-bodied, prime- age adults	110	4	52	76	78	
Individuals in HHs with only elderly or disabled members	206	12	32	54	67	
Individuals in HHs with elderly/disabled and able-bodied adults, no children	116	4	51	73	78	
Adults in single-adult HHs with children	148	16	17	44	59	
Children in single-adult HHs with children	243	13	19	49	64	
Adults in multiple-adult HHs with children	806	8	36	63	76	
Children in multiple-adult HHs with children	856	12	30	52	69	
HH Type--II						34.6**
All elderly/disabled members	206	12	32	54	67	
Some able-bodied, no children	226	4	51	74	78	
Female-headed HHs with children	456	19	19	43	56	
Married couple HHs with children	996	8	36	62	81	
Other HHs with children	601	9	31	57	66	
Income						22.0***
Less than poverty line	1,331	13	26	49	67	
Between one and two times poverty line	782	7	36	67	76	
More than two times poverty line	376	6	48	69	75	
Age						7.3**
Older than 60 years	153	10	33	57	67	
18 to 59 years	1,233	8	37	63	74	
Younger than 18 years	1,103	12	27	51	68	
Gender						4.0**
Male	1,096	8	36	61	73	
Female	1,393	11	29	55	69	

TABLE 11.8 (continued)

Subgroup	Sample Size	Median (Months)	Cumulative Exit Rate			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
<b>Race/Ethnicity</b>						22.0***
Hispanic	486	12	25	51	65	
Black, non-Hispanic	452	12	29	50	61	
White/other	1,551	8	36	63	77	
<b>HH Earnings Status</b>						21.6***
HH contains earners	1,555	8	36	63	76	
HH contains no earners	934	13	26	48	62	
<b>HH Education Status<sup>a</sup></b>						0.9
HH has high school graduate	1,469	8	35	59	70	
HH has no high school graduate	814	11	29	55	72	
<b>U.S. Citizenship<sup>b</sup></b>						0.6
Citizen	1,298	8	36	63	74	
Noncitizen	154	8	37	59	69	

SOURCE: 1991 SIPP Panel.

NOTE: Based on life table analysis (conducted separately by subgroup) of an entry cohort sample of FSP participants.

<sup>a</sup>Defined only for households with a nondisabled adult between ages 18 and 59.<sup>b</sup>Defined only for adults (age 18 or older).

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

a median length of 8 to 12 months, but these spells are still much longer than the spells of prime-age adults with no children.<sup>31</sup>

A clear result of the subgroup duration analysis is that individuals' households with greater resources have shorter participation spells than those with fewer resources. Among the near-poor (those with household incomes between one and two times the poverty line), for example, two-thirds of participation spells end within a year (Table II.8). Among the poor, by contrast, only half of these spells have ended within a year. Similar differences emerge when we compare households containing earners with households containing no earners.

The subgroup analysis also shows that children have longer spells than adults and females have longer spells than males.<sup>32</sup> In addition, black and Hispanic FSP participants have longer spells than white participants. Finally, although we showed previously that noncitizens are more likely than citizens to enter the FSP, the mean durations of the participation spells of the two groups are similar.

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<sup>31</sup>In addition to these household composition definitions, which are consistent with those in Burstein (1993), we defined households using alternative definitions. These definitions (shown in Table II.8), treat households with children differently by distinguishing between households in which all adults are female (female-headed households with children), those with a married couple and children, and those with other combinations of adults and children. Using this definition of households, we found that members of female-headed households with children have very long spells of participation, with a median length of 19 months and 56 percent lasting less than two years.

<sup>32</sup>The exception to the finding that children have longer spells than adults is among those in single adult households with children. In these households, adults have longer median spells than children (16 months versus 13 months). This result is caused by the substantial movement of children in and out of single parent households with multiple children. The median spell length is 14 months for both adults and children in single parent households with *one* child. In single parent households with *two or more* children, however, the median spell length is 19 months for adults but only 12 months for children. We examined household composition changes in these households and found that about 12 percent of the FSP spells of children in these households either started after the adult's spell started or ended before the adult's spell ended. This suggests that they either entered the household after the spell began or exited the household after the spell ended. Thus, we find that in large single adult households, children tend to have shorter spells than adults (whose spells tend to be relatively long).

### c. The Distribution of Long FSP Participation Spells

Because the SIPP panel period lasts only 32 months, the life table analysis of non-left-censored spells of FSP participation tells us only about the distribution of short- and medium-term spells. To get a sense of the distribution of long FSP participation spells, we added information on left-censored spells to the life tables.<sup>33</sup> Because sample members report when these spells began in the prepanel period, we can estimate the hazard, survivor, and cumulative exit rates for spells longer than 32 months. The results of this life table analysis are shown in Table II.9.<sup>34</sup> Because of the length of some spells, this life table groups the duration of spells into six-month periods.<sup>35</sup>

The hazard rate for long participation spells is relatively constant after the first two years. For the six-month periods, the hazard rate is generally around 10 percent for most periods between two and eight years following FSP entry. In other words, FSP participants tend to exit the program at a steady rate after the first two years (after exiting the program at a declining rate during the first two years).

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<sup>33</sup>However, since the characteristics of individuals having left-censored spells are not available in the first month of the spell (which took place during the prepanel period), we did not conduct the subgroup analysis using left-censored spells.

<sup>34</sup>This life table treats non-left-censored spells just as the life table presented in Table II.6 treated these spells--the spells contribute information to the table until they end or are right-censored. However, the life table treats left-censored spells somewhat differently. Left-censored spells contribute no information to the table during the months before they were left-censored. After this point, left-censored spells contribute information to the life table until they end or are right-censored. For example, if a spell began 10 months prior to the panel period it would not be included in the sample used to calculate the month 1 hazard rate. In fact, it would not be included in the life table in any of the first 10 months, appearing and being used to calculate the hazard rate only in month 11 and later (until it either ended or was right-censored).

<sup>35</sup>This life table probably understates the length of participation spells to some degree, because we feel that SIPP respondents who have left-censored spells underreported the length of time they received food stamps during the prepanel period (see Appendix B).

TABLE II.9  
LIFE TABLE OF LONG-TERM FSP PARTICIPATION SPELLS

Years	Number at Risk of Exiting	Number Exiting	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
2.0 or Less	2,489	1,815	66.1	34	66
2.1 to 2.5	844	50	6.2	32	68
2.6 to 3.0	761	73	10.7	28	72
3.1 to 3.5	471	58	13.4	25	75
3.6 to 4.0	396	40	10.2	22	78
4.1 to 4.5	338	32	10.0	20	80
4.6 to 5.0	266	21	8.0	18	82
5.1 to 5.5	250	22	9.8	17	83
5.6 to 6.0	229	17	7.3	15	85
6.1 to 6.5	228	30	15.7	13	87
6.6 to 7.0	174	16	9.3	12	88
7.1 to 7.5	168	12	7.7	11	89
7.6 to 8.0	155	7	5.6	10	90

SOURCE: 1991 SIPP Panel.

NOTE: The total sample includes 4,592 spells experienced by 3,688 individuals. The number at risk of exiting at the beginning of the first interval is less than the total number of spells because those with left-censored spells enter the life table after the first month of their spell (when the SIPP panel period begins.)

Although our earlier analysis showed that most FSP participation spells are relatively short, some spells are quite long. Approximately 28 percent of spells last at least three years, 22 percent last at least four years, and 18 percent last at least five years. About one in 10 individuals entering the FSP participates in the program continuously for at least eight years.

## **2. Cross-Sectional Cohort Analysis**

From the point of view of program administrators, the concept of an entry cohort sample is somewhat artificial. Many administrators and case workers are not interested in information on “the next 100 individuals who walk into the food stamp office to begin receiving food stamps” because they will never deal with those 100 people as a group. In other words, these 100 individuals will likely never all be receiving food stamps at the same time. The group that is of concern to administrators and case workers is the group receiving food stamps in a given month, regardless of when they began receiving food stamps. We refer to this group as a cross-sectional sample.

Administrators and caseworkers might be interested in answering two main questions about a given cross section of FSP participants. First, how many additional months will these individuals spend in the program before they finally exit? For example, one might want to know what proportion of the current caseload will still be on food stamps one year from now. We refer to the number of additional months that participants spend on food stamps as their *subsequent spell lengths*. Second, how long will individuals receiving food stamps in a given calendar month eventually have spent in their FSP participation spell before they finally exit? This information would tell administrators or case workers what proportion of the caseload are long-term participants versus short-term participants. We refer to the total number of months that participants spend on

food stamps as their *completed spell lengths*. We generated life tables of FSP participation among a cross-sectional sample that summarize both participants' subsequent and completed spell lengths.<sup>36</sup>

#### **a. Sample and Methods**

The cross-sectional sample includes all individuals receiving food stamps in February 1991.<sup>37</sup> We chose this calendar date to maximize the number of participants in the sample and to ensure that the observed follow-up period is long enough. We assigned individuals to subgroups on the basis of their characteristics in February 1991.

The cross-sectional sample consists of 2,133 spells. Nearly all of these spells began before February 1991; only three percent of spells began in that month. Furthermore, fewer than half (45 percent) of all spells ended within the panel period, with the remainder being right-censored.

The characteristics of the cross-sectional sample are reasonably close to the characteristics of the entry cohort sample, although groups with above-average spell durations are more heavily represented in the cross-sectional sample. For example, members of single-adult households with children make up one-third of the cross-sectional sample compared with 13 percent of the entry cohort sample. Households without children make up only 15 percent of the cross-sectional sample.

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<sup>36</sup>A third piece of information we might be interested in regarding a cross-sectional sample is the length of time they had already been receiving food stamps at the time the sample was drawn (or as of the current month). As noted above, however, the retrospective information on the current length of left-censored food stamp spells reported in the SIPP Wave 2 topical module is subject to recall error. In particular, participants appear to underreport the length of time they had been receiving food stamps during the prepanel period. Therefore, we feel that reporting the ongoing length of these spells might be misleading, with *reported* spell duration shorter than *actual* spell duration. This recall error also affects the life table of the completed length of FSP participation spells, but this error is attenuated somewhat by the presumably more accurate information on FSP participation during the panel period and we feel that this information is accurate enough to present.

<sup>37</sup>February 1991 is the fifth panel month for those in rotation group 2, the fourth panel month for those in rotation group 3, the third panel month for those in rotation group 4, and the second panel month for those in rotation group 1.

In addition, FSP participants in a given month are more likely to be women (61 percent) than men (39 percent), and more likely to be children (53 percent) than prime-age adults (38 percent) or elderly individuals (9 percent). Finally, just over half of FSP participants in a given month are white (or belong to the “other” race category), while 27 percent are black and 22 percent are Hispanic.

As with the entry cohort analysis, we used life tables to address the relevant questions. For the life table of subsequent spell lengths, February 1991 was treated as month 1 for all cross-sectional sample members, and the hazard rate (along with the survivor rate and cumulative exit rate) was calculated for each subsequent month among all “surviving” participants. For the life table of completed spell lengths, each individual contributed an observation for each month of his or her spell, from the beginning of the spell.

## **b. Results**

Even when we consider only participants’ subsequent spell lengths, the FSP participation spells of a cross section of FSP participants are much longer than the spells of an entry cohort sample, on average. The median subsequent spell length for the cross-sectional sample is longer than 30 months, compared with only 9 months for individuals in the entry cohort sample (Table II.10).<sup>38</sup> Among individuals receiving food stamps in a given month, an estimated 18 percent exit the program within six months, 27 percent exit within a year, and 43 percent exit within two years. By contrast, among those beginning FSP participation spells, an estimated 57 percent exit the program within a year and 71 percent exit within two years.

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<sup>38</sup>The panel period lasts a maximum of 30 months after February 1991 for the cross-sectional sample. Because less than half of the cross-sectional sample had exited the program within this period, we cannot determine the exact median spell length, and can only say that it is longer than 30 months.

TABLE II.10

## LIFE TABLE OF THE SUBSEQUENT SPELL LENGTH FOR THE FULL CROSS-SECTIONAL SAMPLE

Month	Number of Spells at Risk of Exiting After End of Month	Number Exiting During Following Month	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
1	2,133	79	3.7	96.3	0.7	3.7
2	2,054	79	3.8	92.7	1.0	7.3
3	1,975	37	1.8	91.0	1.1	9.0
4	1,938	69	3.6	87.7	1.2	12.3
5	1,869	42	2.4	85.6	1.3	14.4
6	1,827	62	3.6	82.5	1.4	17.5
7	1,765	42	2.4	80.5	1.5	19.5
8	1,723	27	1.9	79.0	1.5	21.0
9	1,696	39	2.1	77.3	1.6	22.7
10	1,657	31	1.9	75.8	1.6	24.2
11	1,626	31	1.9	74.4	1.6	25.6
12	1,595	25	1.6	73.2	1.6	26.8
13	1,570	26	1.7	71.9	1.7	28.1
14	1,544	42	2.7	70.0	1.7	30.0
15	1,502	54	3.6	67.5	1.7	32.5
16	1,448	26	1.8	66.2	1.7	33.8
17	1,422	28	2.2	64.8	1.8	35.2

TABLE II.10 (continued)

Month	Number of Spells at Risk of Exiting After End of Month	Number Exiting During Following Month	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
18	1,394	18	1.3	63.9	1.8	36.1
19	1,376	26	2.1	62.6	1.8	37.4
20	1,350	28	2.2	61.2	1.8	38.8
21	1,322	28	2.3	59.8	1.8	40.2
22	1,294	27	2.0	58.6	1.8	41.4
23	1,267	18	1.5	57.7	1.8	42.3
24	1,249	14	1.1	57.1	1.8	42.9
25	1,235	7	0.5	56.8	1.8	43.2
26	1,228	16	1.2	56.1	1.8	43.9
27	1,212	13	1.2	55.4	1.8	44.6
28	855	11	1.3	54.7	1.9	45.3
29	561	0	0.0	54.7	0.0	45.3
30	310	8	2.3	53.5	2.0	46.5

SOURCE: 1991 SIPP panel.

NOTE: Estimates are based on 2,133 spells that began or were in progress in February 1991. Subsequent spell length is measured starting from the month in which the cross-sectional sample was drawn (February 1991).

The longer spell duration among a cross-sectional sample of participants compared with an entry cohort sample is consistent with previous findings in both the FSP participation literature (Murphy and Harrell 1992) and the literature on AFDC participation (for example, Bane and Ellwood 1983). The reason for this result is that individuals with long spells are more heavily represented in a cross-sectional sample than in an entry cohort sample. Compared with individuals with short participation spells, those with long spells are likely to be sampled for a cross-sectional sample more often.

The patterns of subsequent spell lengths among subgroups of the cross-sectional sample (Table II.11) are similar to the patterns for the entry cohort sample, discussed earlier. For example, the spells of individuals in households with a single adult and children are relatively long, while those of able-bodied, prime-age adults with no children are short. In addition, the spells of individuals with greater household income and who are in households with employed members in the sample month are shorter than individuals in households with fewer resources or no employed members.

Since the cross-sectional sample's completed spell lengths have the pre-February 1991 period of participation added to subsequent participation, they are longer than the subsequent spell lengths. This makes the contrast with the duration of spells among the entry cohort sample even more striking. Only about 6 percent of the cross-sectional sample of participants have completed participation spells that last for six months or less, 11 percent have spells that last for no more than one year, and 23 percent have spells that last for no more than two years (Table II.12). At the other end of the spectrum, more than 60 percent of a cross section of FSP participants is estimated to have completed spell lengths of five years or longer and 52 percent have spells of eight years or longer.

TABLE II.11

DURATION OF SUBSEQUENT FSP PARTICIPATION SPELLS AMONG A CROSS-SECTION OF PARTICIPANTS,  
BY SUBGROUPS

Subgroup	Sample Size	Cumulative Exit Rate			Log-Rank Statistics to Test Differences Across Subgroups
		4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
All Individuals	2,133	12	27	43	
Spell Number					12.0***
Initial spell	1,354	11	23	39	
Repeat spell	754	16	35	50	
Household (HH) Type--I					49.2***
Individuals in HHs with only able-bodied, prime-age adults	30	19	40	55	
Individuals in HHs with only elderly or disabled members	229	12	27	33	
Individuals in HHs with elderly or disabled and able-bodied adults, no children	62	16	37	59	
Adults in single-adult HHs with children	230	5	15	30	
Children in single-adult HHs with children	488	4	14	27	
Adults in multiple-adult HHs with children	452	20	38	56	
Children in multiple-adult HHs with children	642	15	32	52	
HH Type--II					44.5***
All elderly/disabled members	229	12	27	33	
Some able-bodied, no children	92	17	38	58	
Female-headed HHs with children	843	5	17	31	
Married couple HHs with children	534	18	34	57	
Other HHs with children	397	20	35	52	
Income					31.4***
Less than poverty line	1,593	9	22	38	
Between one and two times poverty line	427	17	38	57	
More than two times poverty line	113	35	49	64	
Age					5.6*
Older than 60 years	195	11	25	34	
18 to 59 years	802	15	31	48	
Younger than 18 years	1,136	11	24	41	
Gender					3.9**
Male	839	14	29	47	
Female	1,294	11	25	40	
Race/Ethnicity					1.5
Hispanic	471	9	27	41	
Black, non-Hispanic	571	11	25	71	
White/other	1,091	15	28	45	
HH Earnings Status					62.8***
HH contains earners	908	20	40	58	
HH contains no earners	1,225	7	17	31	
HH Education Status <sup>a</sup>					20.4***
HH has high school graduate	1,024	17	33	52	
HH has no high school graduate	874	7	20	35	

TABLE II.11 (continued)

Subgroup	Sample Size	Cumulative Exit Rate			Log-Rank Statistics to Test Differences Across Subgroups
		4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
U.S. Citizenship <sup>b</sup>					0.4
Citizen	968	14	30	46	
Noncitizen	121	8	22	43	

SOURCE: 1991 SIPP panel.

NOTE: Based on life-table analysis of subsequent FSP participation spells (conducted separately by subgroup) for a cross-sectional sample of FSP participants.

<sup>a</sup> Defined only for households with a nondisabled adult between ages 18 and 59.

<sup>b</sup> Defined only for adults (age 18 or older).

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

TABLE II.12

LIFE TABLE OF THE COMPLETED LENGTH OF FOOD STAMP SPELLS  
FOR THE FULL CROSS-SECTIONAL SAMPLE

Years	Number at Risk of Exiting	Number Exiting	Hazard Rate (Percentage)	Survivor Rate (Percentage)	Cumulative Exit Rate (Percentage)
0.5 or Less	2,133	127	5.9	94.1	5.9
0.6 to 1.0	2,066	123	5.8	88.6	11.4
1.1 to 1.5	1,883	145	7.9	81.6	18.4
1.6 to 2.0	1,738	89	5.0	77.5	22.5
2.1 to 3.0	1,649	113	7.2	71.9	28.1
3.1 to 4.0	1,176	104	9.5	65.1	34.9
4.1 to 5.0	894	44	5.2	61.7	38.3
5.1 to 6.0	751	31	4.9	58.7	41.3
6.1 to 7.0	614	42	8.0	54.0	46.0
7.1 to 8.0	500	19	4.4	51.6	48.4

SOURCE: 1991 SIPP Panel.

NOTE: Estimates are based on 2,133 spells that began or were in progress in February 1991.

Among individuals receiving food stamps in February 1991, in other words, over half were in the midst of a spell that would ultimately last eight or more years, while only 6 percent were in the midst of a spell that would ultimately last only six months or less.

### **C. EXITING THE FSP**

In the previous section, we examined the rate at which individuals exit the FSP, which determines the length of FSP participation spells. We next examine the circumstances surrounding FSP exits. How do individuals' situations change to allow them to leave the program? Do they find jobs and leave the program because of increases in income or does their household situation change in such a way that participation is no longer necessary?

As with entry trigger events, we cannot determine unambiguously why individuals stop receiving food stamps. However, we can examine their circumstances and behavior immediately around the time they exit the program to try to understand why they exited. In the analysis presented in this section, we used SIPP data on FSP participants' circumstances and behavior in order to define a set of exit trigger events that are analogous to the entry trigger events discussed in Section A. We then examined the degree to which these exit trigger events predict FSP exit and are relevant in explaining FSP exit.

#### **1. Methods**

The methods used to define FSP exit trigger events are analogous to those used to define entry trigger events. We first defined an FSP exit among those at risk of exiting. The at-risk population consists of all individuals who participated in the FSP during the previous month. We examined FSP exits in sample months 6 through 28 of the SIPP panel period, so individuals could contribute

more than one observation to the data set of at-risk months.<sup>39</sup> We defined exiting the FSP as not receiving food stamps in the sample month.<sup>40</sup>

We looked for exit trigger events during a four-month window period surrounding the sample month. In particular, the “trigger window” included the two months prior to the sample month, the sample month itself, and the month after the sample month. Changes in the circumstances of an individual occurring in any of these months (relative to circumstances in the previous month) were considered trigger events. Unlike the case of entry trigger events, we extended the window period to one month beyond the sample month because some participants may exit the FSP in anticipation of an event that has not yet occurred. We did not feel that individuals commonly enter the FSP in anticipation of an event that has not yet occurred.

As with the entry trigger events, our goal was to make exit trigger events relevant and predictive and to distinguish between household composition changes and income changes. The following set of exit trigger events was used in the analysis:

- Increase in household income, no change in household composition
  - Increase in household members’ earnings
  - Increase in household members’ other income
- No increase in household income, change in household composition
  - Departure of household member without income
  - Other household composition change

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<sup>39</sup>We limited the sample to months 6 through 28 (rather than 1 through 32) in order to have information on the period before FSP exit and the period after exit to look for trigger events.

<sup>40</sup>In practice, not receiving food stamps in a given month was considered as an exit only if the individual did not receive food stamps in the subsequent month as well. This was because of our practice of “closing up” one-month gaps in FSP participation. Thus, if a person received food stamps in month 1, did not receive food stamps in month 2, and received food stamps again in month 3, he or she was not considered to have exited the FSP.

- Increase in household income, change in household composition
  - New household member with income
  - Increase in household members' income and new household member with income
  - Increase in household members' income and departure of household member without income
  - Increase in household members' income and other household composition change
- Individual leaves the sample

We defined an increase in income to be a 20 percent increase in household income from one month to the next during any of the four months of the trigger window. If a 20 percent increase in income occurred in at least one of these months, we found the month with the largest increase and classified that increase into one of three categories: (1) an increase in household members' earnings, (2) an increase in household members' other income, (3) and a new household member with income.

Individuals may leave the sample if they die, are institutionalized, enter the armed forces (and live in army barracks), or leave the country. Usually, individuals are not eligible for the FSP after they leave the sample. Thus, we assumed that when FSP participants leave the sample, they exit the

FSP. Furthermore, regardless of other events in their lives (that is, whether they experienced any other trigger events), we assumed that leaving the sample is the trigger event that led to FSP exit.

## 2. Results

Table II.13 summarizes the results of the analysis of exit trigger events. The most common exit trigger event is an increase in household income. The results suggest that two-thirds of those who exit the FSP do so because of an increase in income, usually an increase in household earnings. For 53 percent of exiters, this increase in income occurs without an accompanying change in household composition, while 14 percent experience both an increase in income and a change in household

TABLE II.13

OCCURRENCE OF FSP EXIT TRIGGER EVENTS  
(ALL AT-RISK INDIVIDUALS,  
FOUR-MONTH WINDOW)

Trigger Event <sup>a</sup>	Percentage of the Full Sample Who Experienced the Event	Probability of Exiting the FSP, Conditional on Experiencing the Event (FSP Exit Rate)	FSP Exiters Who Experienced the Event
None	51.3	1.93	24.9
Income Increase Only			
Earnings	23.7	6.97	41.5
Other income	11.5	3.93	11.4
Change in Household (HH) Composition Only			
Member without income leaves	1.4	3.98	1.4
Other HH composition change	4.1	3.78	3.9
Income Increase and HH Composition Change			
New HH member with income	2.3	7.07	4.1
HH member's income increase and new HH member with income	0.6	13.38	2.2
HH member's income increase and HH member without income leaves	1.0	6.75	1.6
HH member's income increase and other HH composition change	4.0	6.42	6.4
Leaves the Sample <sup>b</sup>	0.1	100.00	2.7
Any Trigger Event	48.7	6.14	75.1
Total At-Risk Population	NA	3.98	NA
<b>Sample Size (Person Months)</b>	<b>51,430</b>	<b>51,430</b>	<b>2,047</b>

SOURCE: 1991 SIPP Panel.

NOTE: The sample includes an observation for all sample members in every month between 6 and 28 in which they had participated in the FSP in the previous month. The four-month window period for exit trigger events extends from two months before to one month after the sample month at risk.

<sup>a</sup>All trigger events are mutually exclusive.

<sup>b</sup>Individuals who leave the sample are defined as having exited the FSP. Therefore, their exit rate is 100 percent. In addition, those who leave the sample are assumed to have experienced no other exit trigger event.

NA = not applicable

With one exception, an increase in household income is a good predictor of exiting the FSP. Whereas the exit rate among those who do not experience a trigger event is two percent, the exit rate among those who experience an increase in income is approximately seven percent (Table II.13). However, an increase in unearned income, if not accompanied by a household composition change, does not have the same predictive power, as only four percent of those who experience this event exit the FSP.

Changes in household composition do not appear to be responsible for much FSP exit. Not only are household composition changes relatively rare in the at-risk population (about six percent of the at-risk population experiences a change in household composition in a given month), but they are not very predictive of FSP exit. The exit rate among those who experience a household composition change alone (four percent) is about the same as the exit rate among the overall at-risk population. Furthermore, experiencing a change in household composition on top of an increase in income (that is, knowing that they experienced multiple trigger events) does not make a person much more likely to exit the FSP than if they had experienced the increase in income alone. For example, the exit rate among those who experienced an increase in income and also had a household composition change is 7.18 percent (averaged over the four types of household composition changes) compared with 6.97 among those who experienced an increase in household earnings alone.

Overall, exit trigger events appear to be about as successful in explaining FSP exit as entry trigger events are in explaining FSP entry. The exit trigger events listed above account for about three-fourths of all FSP exits, making them reasonably relevant. They are also predictive. The exit rate among those who experience an exit trigger event is 6.14, compared with 1.93 among those who do not experience a trigger event.

Among those who exit the FSP without experiencing a trigger event, we explored possible alternative explanations for their exit and found that they are similar to the alternative explanations for otherwise unexplained entry to the FSP (discussed earlier). In particular, experiencing small gains in income (of between 5 and 20 percent) appear to be the most likely explanation. Among exiters without an identifiable trigger event, 41 percent experience a small gain in income during the window period. A second explanation involves exiters' health status. Just as health problems and unexpected medical costs may lead to FSP entry, improvements in health status and reductions in medical costs could lead to exit. Among exiters without a trigger event, 22 percent do not experience an income gain but are disabled and another 13 percent are non-disabled, elderly individuals. While not all of these individuals exited the FSP due to reductions in medical costs, this is a likely explanation for some of them. Overall, more than three-fourths of individuals who exit the FSP without a trigger event either experience a small income gain or are disabled or elderly.

### **3. Changes in Exit Trigger Events Over Time**

Based on the life table analysis presented in Section B, we know that FSP exit rates have declined between the mid-1980s and early 1990s, as participation spells have gotten longer. We now examine whether the circumstances surrounding exits have changed over this period, replicating the exit trigger analysis of Burstein (1993), who looked at exit trigger events during the mid-1980s.

As with entry trigger events, Burstein's analysis of exit trigger events differs slightly from the analysis we presented above. In particular, she used the SIPP wave as the unit of analysis and defined an exit as not receiving food stamp in any of the four months of a given wave after having received food stamps during at least one month of the previous wave. Burstein defined the following exit trigger events:

- Increase in household income
  - New household member with earnings
  - New household member with unearned income
  - Increase in household members' earnings
  - Increase in household members' unearned income
  - Other income increase
- Departure of household member without income
- Individual leaves the sample

After replicating Burstein's analysis, we found that the basic conclusions of the exit trigger analysis did not change between the mid-1980s and early 1990s. Table II.14 presents the distribution of exit trigger events among those who exited the FSP during the mid-1980s and early 1990s. In both cases, increases in household income explain most exits from the FSP. The most common exit trigger event is an increase in household members' earnings, experienced by more than half of FSP exiters.<sup>41</sup> Overall, Burstein's set of exit trigger events explain about four-fifths of all exits, for both time periods.

#### **D. REENTRY INTO THE FSP**

Thus far, our descriptive analysis of FSP participation has followed individuals as they enter the FSP, receive food stamps for a given interval, and then exit the program. We now focus specifically on reentry into the FSP.<sup>42</sup> This analysis is critical, since how we interpret the duration of an

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<sup>41</sup>There are a couple of minor differences in the distribution of exit trigger events in the two time periods. An increase in household members' earnings was a bit more common as an exit trigger event during the mid-1980s than during the early 1990s (57 percent versus 51 percent). Second, the departure of a household member with income was about twice as common among FSP exiters in the mid-1980s relative to the early 1990s (13 percent versus 6 percent).

<sup>42</sup>This reentry analysis overlaps to some extent with the entry analysis presented in Section B, since much of the entry analysis was not limited to those who had never previously received food  
(continued...)

TABLE II.14

DISTRIBUTION OF FSP EXIT TRIGGER EVENTS AMONG FSP EXITERS,  
MID-1980s AND EARLY 1990s

Trigger Event	Percentage of Exiters	
	Mid-1980s	Early 1990s
<i>Household (HH) Income Increase</i>		
New HH member with earnings	4.9	3.1
New HH member with unearned income	0.9	1.3
Increase in HH members' earnings	57.0	51.3
Increase in HH members' other income	11.2	15.5
Other HH income increase	0.6	0.8
Departure of HH Member Without Income	12.9	6.2***
Individual Left the Sample	4.4	5.6
<b>Any Trigger Event</b>	<b>81.3</b>	<b>78.8</b>

SOURCE: The 1991 SIPP panel is the source for trigger events during the early 1990s. There are 1,199 exiters in the 1991 SIPP panel sample. Burstein (1993), using a sample of 2,907 exiters from the 1984 SIPP panel, is the source for trigger events during the mid-1980s.

NOTE: The sample includes all sample members who exited the FSP between SIPP Waves 4 and 8.

\*Significantly different from proportion experiencing event in the mid-1980s at the .10 level, two-tailed test.

\*\*Significantly different from proportion experiencing event in the mid-1980s at the .05 level, two-tailed test.

\*\*\*Significantly different from proportion experiencing event in the mid-1980s at the .01 level, two-tailed test.

individual's participation spell depends upon whether the person leaves the FSP permanently or reenters the program shortly after exiting. In this section, we present a life table analysis of individuals' spells off of the FSP following a spell of participation. This exit rate from these "off-spells" is the reentry rate back into the FSP.

## 1. Sample and Methods

The sample we used for the reentry analysis consists of individuals who received food stamps during the panel period and who subsequently exited the FSP before the end of the panel period. Any off-spell beginning on or after month 2 of the panel period was included in the sample.<sup>43</sup> The analysis data set contains one observation per off-spell, so individuals may contribute more than one observation to the analysis (although only 18 percent of those in the reentry analysis contribute more than one off-spell). Individuals who contribute off-spells are assigned to subgroups based on their characteristics as of the first month of the off-spell.

The data set consists of 2,320 off-spell observations, of which about 61 percent are right-censored. Roughly 1,600 individuals contribute spell observations to the data set. About 44 percent of off-spells follow individuals' first spells of FSP participation, while the remaining 56 percent follow repeat participation spells.

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<sup>42</sup>(...continued)

stamps. The entry analysis used information from some individuals who reentered the FSP. However, the entry analysis did not use information on when individuals had last left the program and did not analyze the duration of time to reentry. In the reentry analyses in this section, by contrast, we analyze the duration of time between when the individuals exit the program and when (and if) they reenter.

<sup>43</sup>Left-censored off-spells that we first observe in month 1 of the panel period are excluded because we do not know when these spells began. Because of our practice of closing up one-month gaps of nonparticipation, all off-spells must last at least two months.

We used the same life table methods for the reentry analysis as we used for the duration analysis. We estimated hazard rates, survivor rates, and cumulative exit rates for the full sample and for subgroups, and we used the log-rank test statistic to test for differences in reentry rates between subgroups.<sup>44</sup>

A limitation to the reentry analysis was that we had a limited follow-up period. The maximum number of months of follow-up information we could have had was 30 (among those who exited the FSP following month 1 of the panel period), and the sample for whom we had more than 24 months of follow-up data is relatively small. However, we found that the reentry rate falls rapidly during the first 24 months of off-spells, so we believe that most former FSP participants who reenter the program do so within two years of exiting.

## **2. Results**

Returning to the FSP after exiting is very common. More than half of those who exit an FSP participation spell reenter the program within two years of exit (Table II.15). Many of those who reenter the FSP do so relatively quickly. For example, nearly half of those who reenter the program do so within the first four months after exiting. Among FSP exiters, 42 percent reenter during their first year off the program and only 11 percent reenter during their second year off the program. This result is similar to the findings of Blank and Ruggles (1994), who examined FSP reentry among single mothers and their children.

There are substantial differences in reentry rates across subgroups, which are summarized in Table II.16. Many, though not all, of these differences mirror the differences between these same

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<sup>44</sup>We did not, however, use the log-rank statistic to test for changes in the distribution of the length of off-spells between the mid-1980s and early 1990s, because Burstein (1993) did not include sufficient information on off-spell duration to permit such tests.

TABLE II.15

LIFE TABLE OF SPELLS OFF THE FSP  
(REENTRY RATES)

Month	Number of Off-Spells at Beginning of Month	Number Reentering the FSP During Following Month	Hazard Rate <sup>a</sup> (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Reentry Rate (Percentage)
1	2,320	0 <sup>b</sup>	0.0	100.0	0.0	0.0
2	2,283	162	7.1	92.9	0.9	7.1
3	2,075	113	5.4	87.9	1.2	12.1
4	1,790	251	15.1	74.6	1.6	25.4
5	1,512	39	2.6	72.6	1.7	27.4
6	1,447	52	3.3	70.3	1.7	29.7
7	1,382	34	2.3	68.6	1.7	31.4
8	1,183	65	5.7	64.7	1.8	35.3
9	1,090	21	2.2	63.3	1.8	36.7
10	1,050	35	3.4	61.2	1.9	38.8
11	993	15	1.5	60.2	1.9	39.8
12	858	36	4.4	57.6	2.0	42.4
13	794	19	2.4	56.2	2.0	43.8
14	737	15	2.3	54.9	2.0	45.1
15	701	7	1.2	54.2	2.0	45.8
16	557	17	3.6	52.3	2.1	47.7
17	513	2	0.4	52.1	2.1	47.9
18	495	8	1.7	51.2	2.1	48.8
19	468	0	0.0	51.2	0.0	48.8

TABLE II.15 (continued)

Month	Number of Off-Spells at Beginning of Month	Number Reentering the FSP During Following Month	Hazard Rate <sup>a</sup> (Percentage)	Survivor Rate (Percentage)	Standard Error of Survivor Rate (Percentage)	Cumulative Reentry Rate (Percentage)
20	388	8	2.9	49.7	2.2	50.3
21	368	3	0.7	49.4	2.2	50.6
22	333	9	2.8	48.0	2.3	52.0
23	309	3	1.1	47.4	2.3	52.6
24	219	5	2.3	46.3	2.4	53.7
25	194	0	0.0	46.3	0.0	53.7
26	175	0	0.0	46.3	0.0	53.7
27	157	4	2.2	45.3	2.5	54.7
28	57	0	0.0	45.3	0.0	54.7
29	44	0	0.0	45.3	0.0	54.7
30	22	0	0.0	45.3	0.0	54.7

SOURCE: 1991 SIPP Panel.

NOTE: Estimates are based on 2,320 spells in the early-1990s that ended on or after the second panel month.

<sup>a</sup>The hazard rate does not equal the number of individuals at risk of exiting divided by the number exiting because the hazard rate is based on weighted data, whereas the number at risk and the number exiting are based on unweighted data.

<sup>b</sup>No one reentered the FSP after month 1 because all one-month gaps of nonreceipt were closed up.

TABLE II.16  
REENTRY RATES INTO THE FSP, BY SUBGROUPS

Subgroup	Sample Size	Median (Months)	Cumulative Reentry Rate			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
All Individuals	2,320	20	25	42	54	--
Spell Number						2.2
Initial spell	1,019	22	24	40	51	
Repeat spell	1,287	18	26	45	57	
Household (HH) Type--I						12.5*
Individuals in HHs with only able-bodied, prime-age adults	86	27	8	40	47	
Individuals in HHs with only elderly or disabled members	176	>30	20	32	42	
Individuals in HHs with elderly or disabled and able-bodied adults, no children	127	>30	21	26	37	
Adults in single-adult HHs with children	130	22	25	36	55	
Children in single-adult HHs with children	240	20	27	39	53	
Adults in multiple-adult HHs with children	740	18	27	44	54	
Children in multiple-adult HHs with children	801	13	28	50	61	
HH Type II						7.7
All elderly or disabled members	176	>30	20	32	42	
Some able-bodied, no children	213	>30	16	31	40	
Female-headed HHs with children	387	20	27	41	55	
Married couple HHs with children	907	16	26	45	57	
Other HHs with children	443	22	27	42	50	
Income						60.6***
Less than poverty line	692	8	42	63	74	
Between one and two times poverty line	1,033	>30	22	37	50	
More than two times poverty line	441	>30	11	26	37	
Age						5.1*
Older than 60 years	144	>30	21	30	38	
18 to 59 years	1,116	22	24	40	52	
Less than 18 years	1,060	15	28	47	58	
Gender						0.0
Male	1,053	20	26	43	53	
Female	1,267	20	25	42	54	

TABLE II.16 (continued)

Subgroup	Sample Size	Median (Months)	Cumulative Reentry Rate			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less (Percentages)	12 Months or Less (Percentages)	24 Months or Less (Percentages)	
Race/Ethnicity						10.7***
Hispanic	448	16	34	48	57	
Black, non-Hispanic	434	13	32	49	63	
White/other	1,438	27	20	38	48	
HH Earnings Status						13.6***
HH contains earners	1,700	24	20	39	51	
HH contains no earners	600	9	40	53	63	
HH Education Status <sup>a</sup>						19.4***
HH has high school graduate	1,358	>30	20	37	48	
HH has no high school graduate	815	12	35	52	66	
U.S. Citizenship <sup>b</sup>						0.3
Citizen	1,191	22	25	40	52	
Noncitizen	132	>30	27	36	46	

SOURCE: 1991 SIPP Panel.

NOTE: Based on life table analysis (conducted separately by subgroup) of an entry cohort sample of FSP participants. Because of a limited follow-up period, the median spell length could not be determined for all subgroups. For some groups, all we know is that the median spell is longer than 30 months.

<sup>a</sup> Defined only for households with a nondisabled adult between ages 18 and 59.

<sup>b</sup> Defined only for adults (age 18 or older).

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

subgroups in the duration of FSP participation spells. In other words, subgroups that have long participation spells also tend to have high reentry rates.

The largest subgroup difference is with respect to household income. Among individuals in poor households (with household income measured in the month after these individuals exit the FSP), three-fourths reenter the FSP within two years (Table II.16). However, among those in households with incomes above least two times the poverty line, only 37 percent reenter the program within two years. Consistent with this finding is the fact that individuals in households that contain no earners are more likely to reenter the FSP than those in households that contain earners.

The age and household composition subgroups also show differences in reentry rates. Households without children are significantly less likely to reenter the FSP than those with children (Table II.16). This finding is particularly true among households without children containing elderly or disabled members. Although elderly individuals tend to have long participation spells, once they exit the program they generally do not reenter (only 38 percent reenter the program within two years). Similarly, although children in single-parent households had the longest participation spells relative to other household groups, children in multiple-parent households are most likely to return to the program after exiting (half returned within a year).<sup>45</sup>

Finally, although being in a household in which at least one adult member has a high school degree did not significantly affect the duration of FSP participation spells, it did affect reentry rates.

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<sup>45</sup>Blank and Ruggles (1994) examined reentry among single mothers with children using the 1986 and 1987 panels of SIPP and found slightly lower reentry rates. One difference between their study and this study is that when single mothers either marry or stop living with their children under 18, they treat this as a “demographic ending” to the spell. If these “demographic endings” are treated in the same way as right-censored spells, their results suggest that 37 percent of single mothers reenter the FSP within 20 months (whereas we find that 55 percent of female-headed households reenter within 24 months).

Individuals in households with a high school graduate are significantly less likely to reenter the FSP than those in households without high school graduates.

### **3. Change in FSP Reentry Over Time**

To examine whether FSP reentry rates changed between the mid-1980s and early 1990s, we compared our results with the results of Burstein (1993). Burstein reported the reentry rate at four points in time among a sample of individuals who exited the FSP during the mid-1980s. The comparison of the two time periods is summarized in Table II.17.

Reentry rates did not change substantially between the mid-1980s and early 1990s. For example, the percentage of former participants who reentered the program within 11 months was 38 percent in the mid-1980s and 40 percent in the early 1990s. After 15 months, the reentry rates were 44 percent in the mid-1980s and 46 percent in the early 1990s.

This result implies that the increase in the FSP caseload during the early 1990s cannot be explained by more frequent program reentry. This finding is consistent with our conclusion in Section B that overall entry rates did not substantially change over the two periods.

## **E. SUMMARY MEASURES OF FSP PARTICIPATION**

In the analysis of FSP participation dynamics presented throughout most of this report, we examine different perspectives of participants' contact with the FSP separately. It is also useful to summarize participants' overall program experiences. By examining the big picture, we can address questions such as:

- To what degree do FSP participants rely on the program over a given calendar period of time?

TABLE II.17

COMPARISON OF FSP REENTRY RATES IN THE  
MID-1980s AND EARLY 1990s

Month	Cumulative Reentry Rate (Percentages)	
	Mid-1980s	Early 1990s
3	11.6	12.1
7	30.3	31.4
11	38.3	39.8
15	44.2	45.8

SOURCE: 1991 SIPP Panel and Exhibit III.1 in Burstein (1993).

NOTE: Estimates are based on all non-left-censored off-spells that began during or after the fifth panel month. The early 1990s estimates are based on 2,320 spells and the mid-1980s estimates are based on 2,832 spells. Burstein (1993) presented reentry rates for selected months only.

- Do FSP participants have single, continuous contact with the program or is their participation intermittent? If their participation is continuous, is the duration of their participation short, medium, or long?
- How large is the rate of turnover in the FSP over the course of a year?

To address questions such as these, we analyzed three summary measures of FSP participation in this section. The first measures individuals' total time on the program during the 32-month SIPP panel period. The second measures whether participants are short-term, medium-term, or long-term participants or multiple-spell participants. The third measure is the FSP turnover rate.

### **1. Total Time On**

Total time on social welfare programs is a measure of the proportion of the available time (in a survey period) that individuals participate in a social program. This measure was suggested by Gottschalk and Moffitt (1994). In this context, the measure reflects the total number of months (of a maximum of 32) that SIPP respondents participated in the FSP.

The concept of total time on food stamps is useful as a summary measure that indicates the overall degree of dependence on, reliance on, or attachment to the FSP. Under certain circumstances, relying solely on an analysis of the exit rate from the FSP could lead to a misleading picture of dependence on the program. For example, if sample members had many short spells of participation, then the exit rate would be high, suggesting little dependence. However, these participants might end up spending a large amount of time on the FSP overall because of their repeated participation spells. The total-time-on measure more accurately reflects the true degree of individuals' dependence on the FSP over time.

To measure total time on, we calculated the total number of months during the SIPP panel period that each SIPP respondent received food stamps.<sup>46</sup> We present the distribution of this variable for the full sample and for individuals with at least one month of participation in Table II.18.

About 13 percent of the full population received food stamps at some point during the 32-month 1991 SIPP panel period (which extended between late 1990 and summer 1993). Nearly five percent of the full sample and about one-third of the sample of those with at least one month of FSP participation received food stamps during each of the 32 months of the panel period. On the other hand, a quarter of those who participated had relatively little contact with the program (one to eight months of participation).

Overall, examining FSP participation with the total-time-on measure yields a picture in which participants have more involvement with the FSP, compared to the degree of involvement suggested by the entry cohort analysis of participation spell duration. While the median participation spell duration is only 9 months, the median total time on the program out of a possible 32 months during the panel period is 20. This difference is largely due to the fact that FSP entrants frequently reenter relatively soon after exiting the program. As a result, the average participant spends almost two-thirds of possible months on the program during a two-and-two-thirds year period.

## **2. Characterizing FSP Participants by Spell Type**

A weakness of the total-time-on measure is that it does not tell us whether individuals participate in the FSP continuously or whether they move on and off the program. An alternative way of summarizing participants' FSP experiences is to characterize them as (1) single-spell, short-term participants, (2) single-spell, medium-term participants, (3) single-spell, long-term participants,

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<sup>46</sup>Individuals who leave the sample before the end of the panel period are included in the sample, and it is assumed that they do not participate in months in which they are out of the sample.

TABLE II.18  
TOTAL TIME ON THE FSP

Number of Months	All Respondents	Respondents with At Least One Month of Food Stamp Receipt
0	86.9	---
1 to 4	2.2	16.6
5 to 8	1.4	10.7
9 to 12	1.1	8.5
13 to 16	0.9	7.2
17 to 20	1.0	7.6
21 to 24	0.9	6.8
25 to 28	1.1	8.6
29 to 32	4.5	34.2
Mean	2.5	19.3
Median	0.0	20.0
<b>Sample Size</b>	<b>29,518</b>	<b>3,597</b>

SOURCE: 1991 SIPP Panel.

or (4) multiple-spell participants. This classification scheme informs us about both the extent of individuals' reliance on the program and whether this reliance is continuous or intermittent.

Murphy and Harrell (1992) used this classification scheme to characterize FSP participants using the 1987 panel of SIPP. Using a cross-sectional sample of participants from a single month, they concluded that most participants (59 percent) are long-term participants, with the majority of the rest (27 percent) being multiple-spell participants. A relatively small portion of their sample were short-term (seven percent) or medium-term (eight percent) participants.

We replicated the analysis of Murphy and Harrell and then focused on one limitation of their analysis--they understated the proportion of multiple-spell participants because they ignored spells of participation that ended prior to the panel period (and also had a limited follow-up period during which to look for reentry into the FSP). We attempted to get a better estimate of the proportion of multiple-spell participants in a similar cross-sectional sample of participants. We also estimated the proportion of an entry cohort sample that would fall into the categories listed above.

#### **a. Methods**

Murphy and Harrell based much of their analysis on a cross section of FSP participants selected in the first month of the 28-month 1987 SIPP panel period.<sup>47</sup> They defined the four groups listed above as follows:

- *Short-term participants* were those with a single participation spell during the panel period that lasted eight months or less.
- *Medium-term participants* were those with a single participation spell during the panel period that lasted between 9 and 23 months.

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<sup>47</sup>This is actually an artificial cross section, since the first month of the panel period is a different calendar month for different sample members, depending on their rotation group.

- *Long-term participants* were those with a single participation spell during the panel period that lasted 24 months or longer.
- *Multiple-spell participants* were those with more than one participation spell during the panel period.

Murphy and Harrell used information from the welfare history topical module to determine the prepanel length of participation spells. This prepanel length was added to the length of the spell during the panel period to determine the length of the completed spell. However, they did not use information on whether individuals had participation spells prior to their current spell as a way to identify multiple-spell participants. Thus, sample members had to have multiple spells during the panel period to be considered multiple-spell participants, regardless of how many spells they had prior to the panel period.

After replicating the analysis of Murphy and Harrell, we extended this analysis. The primary extension was to take into account whether individuals had prepanel spells of FSP participation when classifying participants. In order to be a single-spell participant, we required an individual to be in their first spell of FSP participation at the time the sample was drawn and to have only a single spell during the SIPP panel period. Multiple-spell participants included those who had more than one spell during the panel period and those who had a participation spell at some time prior to their current spell. Even this procedure understated multiple spell participants, however, since some individuals classified as single-spell participants may have reentered the FSP at some time after the end of the panel period.

Ideally, we would have performed this analysis on both a cross-sectional sample and an entry cohort sample. The entry cohort sample analysis would enable us to answer questions like: “Of the next 100 people who come into the FSP office to begin receiving food stamps for the first time, how many are single-spell (short-term, medium-term, and long-term) participants and how many are

multiple-spell participants?” However, the SIPP panel period is not long enough to permit this analysis, especially because many individuals in the sample do not begin their participation spells until relatively late in the panel period.

However, we could use the results of our earlier descriptive analysis of FSP entry, spell duration, and reentry to characterize an “artificial entry cohort sample” of FSP participants. In doing this, we were not characterizing individual SIPP respondents according to their observed participation patterns; instead, we were using the entry cohort analysis of FSP participation dynamics to characterize entering FSP participants as a group.

The artificial entry cohort sample analysis involved two steps. First, among FSP entrants who had not previously received food stamps, we used our life table analysis of spell duration among first-time participants to determine the proportions exiting their first participation spells in the first 8 months, in months 9 through 23, and in months 24 or later. These proportions determined who would potentially fall into the short-term, medium-term, and long-term, single-spell groups. Second, we estimated what proportions of these three groups would eventually reenter the program and change from single-spell participants to multiple-spell participants. We used our life table analysis of reentry to estimate the proportion of individuals exiting their initial FSP participation spells who would reenter the program within 24 months (implicitly assuming that all who return to the FSP do so within 24 months).<sup>48</sup> These reentrants became multiple-spell participants (and were added to the proportion determined in the first step), while the remaining proportion in the three groups were our

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<sup>48</sup>Ideally, we would have calculated separate 24-month reentry rates among those whose initial participation spells were 1 to 8 months long, 9 to 23 months long, and 24 months and longer. However, we did not have enough data to estimate all three of these rates reliably, and thus assumed that the reentry rates among the three groups were the same. The multivariate reentry analysis (Chapter III) indicates that the probability of reentry is positively (and significantly) related to the length of the participation spell but that this relationship is not very strong.

final estimates of the proportion of the entry cohort sample that were single-spell (short-term, medium-term, and long-term) participants. This procedure understated the proportion of multiple-spell participants, since former participants may have returned to the program after 24 months. However, we do not believe the degree of bias is large, since the reentry analysis shows that most former participants who return to the program do so relatively soon after their exit.

To summarize, the estimated proportion of the entry cohort sample that are single-spell, short-term participants was calculated as the product of two estimates: (1) the proportion of participants in their initial spell who exited the FSP in the first 8 months, and (2) the proportion of individuals exiting their first spells who did not reenter the program within 24 months. The other single-spell groups were calculated analogously. The multiple-spell group was estimated by using the proportion of individuals exiting their first spell who reentered the program within 24 months.

## **b. Results**

Table II.19 contains the results of the analysis designed to characterize FSP participants. The table lists the percentage of participants falling into single-spell (short-term, medium-term, and long-term) participation, as well as multiple-spell groups under Murphy and Harrell's original analysis using the 1987 SIPP panel (column 1); our replication of their analysis using the 1991 SIPP panel (column 2); our extension of their analysis taking previous spells into account (column 3); and our analysis of an artificial entry cohort sample (column 4).

Our replication of Murphy and Harrell yields similar results--most FSP participants are characterized as either long-term participants (61 percent) or multiple-spell participants (28 percent). Compared to Murphy and Harrell, we find even fewer single-spell, short-term (four percent) and medium-term (seven percent) participants. This is consistent with the finding presented in Section B that participation spells were longer in the early 1990s than in the mid-1980s.

TABLE II.19  
CHARACTERIZATION OF FSP PARTICIPANTS  
(Percentages)

	Murphy and Harrell (1992)	Replication of Murphy and Harrell	Include Data on Previous Spells of FSP Participation <sup>a</sup>	Artificial Entry Cohort Analysis
<b>Single-Spell Participants</b>				
Short-term (1 to 8 months) participants	6.7	3.9	2.9	27.4
Medium-term (9 to 23 months) participants	7.8	6.9	3.2	7.8
Long-term (more than 23 months) participants	58.9	61.2	42.6	13.7
<b>Multiple-Spell Participants</b>	26.6	28.0	51.3	51.1

SOURCE: 1991 SIPP Panel and Table 1, Murphy and Harrell (1992)

NOTE: Murphy and Harrell (1992) distinguished between single-spell and multiple-spell participants on the basis of whether they had more than one participation spell during the 1987 SIPP panel period. They ignored participation spells that took place entirely before the SIPP panel period. However, in determining the length of participation spells, they did take into account the full length of the left-censored spells, including the portion of the spells that took place before the panel period.

<sup>a</sup>This classification scheme takes into account participation spells that take place entirely before the panel period in distinguishing between single-spell and multiple-spell participants. Otherwise, this scheme replicates Murphy and Harrell's classification scheme.

<sup>b</sup>This artificial entry cohort analysis classifies a sample of individuals beginning their first FSP participation spells. This classification scheme uses the results of our entry cohort analysis and is described more fully in the text.

When information on spells taking place prior to the panel period is taken into account, we find even stronger evidence that most participants are either long-term or multiple-spell participants. Only 6 percent of the cross-sectional sample is either a single-spell, short-term or medium-term participant, compared with 43 percent who are single-spell, long-term participants and 51 percent who are multiple-spell participants. In a cross-sectional sample, most participants either have been or will be connected with the FSP either for a long time or on repeated occasions.

In the analysis of the artificial entry cohort sample, we also find that just over half of all participants are multiple-spell participants, an estimate that would have been higher if we could follow FSP exiters for longer than 24 months. Unlike the case of the cross-sectional sample, a substantial portion of the entry cohort sample are single-spell, short-term participants (27 percent), while relatively few are single-spell, long-term participants (14 percent). So while very few participants in a cross-sectional sample receive food stamps for a short time and then never reenter the program, we estimate that among *all* individuals who ever receive food stamps during their lifetimes, more than one-fourth are one-time, short-term participants.

### **3. FSP Turnover Rate**

The two previous summary measures of FSP participation were from the point of view of individual participants. We next summarize FSP participation from the perspective of the program, by presenting estimates of the FSP turnover rate during calendar years 1991 and 1992. We also compare these turnover rates to estimated turnover rates for 1984 and 1985, as estimated by Burstein (1993).

If the overall FSP caseload remains relatively constant, the turnover rate is a useful measure of how often individuals move into and out of the system. With a low turnover rate, the program will

handle the same participants over long periods of time with few participants entering or exiting in a given month. With a high turnover rate, by contrast, the program will handle large numbers of individuals, even if the number of cases they have to handle remains steady. In any given month, there will be many new faces in the food stamp office, and many others who had participated in the past will no longer participate.

The turnover rate estimates are based on a sample of 2,892 individuals who received food stamps in 1991 and 3,007 individuals who received food stamps in 1992. The turnover rate is defined as the total number of individuals who received food stamps during the year divided by the mean number receiving food stamps in a month.<sup>49</sup>

FSP participants received food stamps an average of 9.2 months in 1991 and 9.1 months in 1992. These figures equal a turnover rate of approximately 1.3 in each year. This suggests that there is not a great deal of turnover in the FSP caseload over the course of a year. Caseworkers who have a caseload of size 100 in a single month will handle an average of 130 different cases over the course of a year. Burstein (1993) found that the turnover rate in both 1984 and 1985 was 1.4. Given that the duration of spells increased since the mid-1980s and early 1990s, it is not surprising that the turnover rate decreased.

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<sup>49</sup>The turnover rate can also be calculated as 12 divided by the mean number of months that participants received food stamps.

### III. EXPLORING THE DETERMINANTS OF FSP PARTICIPATION DYNAMICS

The descriptive analysis of FSP participation dynamics in the previous chapter provided a thorough description of individuals' experiences with the FSP, looking separately at entry, spell duration, and reentry. Among other things, this descriptive analysis showed that most FSP participation spells are relatively short but that reentry into the program is common. The analysis found also that certain subgroups of individuals are more likely to have long spells or return to the program than are other subgroups of individuals.

This chapter expands on the work in the previous chapter by exploring the factors affecting individuals' FSP participation dynamics in a multivariate framework. In contrast to the descriptive analysis, which examined the relationship between single characteristics and the outcomes of interest, the multivariate analysis controls for other factors affecting participation dynamics while examining these relationships.

In our descriptive analysis, for example, we found that the median FSP participation spell duration is longer among black participants than among white participants. However, the descriptive analysis did not tell us whether the longer spell duration of black participants is due to their race or to some other characteristic (such as income). Multivariate analysis, however, allows us to examine whether the apparent effect of race is actually due to income differences between blacks and whites by controlling for income in a multivariate model. We can examine spell duration for individuals of different races but who have the same income, thus holding income "fixed" to determine whether it is race per se that affects entry. Similarly, we can examine whether or not the effect of any particular variable on spell duration is due to some other controllable factor.

The purpose of the multivariate analysis is to provide policymakers with a description of the characteristics of individuals most likely to have a particular set of experiences with the program and the circumstances under which these experiences are most likely to occur. This analysis will enable us to answer questions such as:

- What are the short- and longer-term factors that cause individuals to enter the program?
- What types of participants in what kinds of settings stay on the program for a long time or are likely to reenter the program after exiting?
- Are the factors affecting FSP dynamics similar for all groups of individuals or are the factors different for different groups of individuals?
- Do similar factors affect FSP spell duration and reentry?

To answer questions such as these, we present the results of a multivariate analysis of the duration of FSP participation spells and reentry into the FSP. We also conducted multivariate analysis of FSP entry, focusing on the conditions preceding entry, and present the results of that analysis in Appendix D.<sup>1</sup> The multivariate analysis of FSP duration and reentry involved the estimation of discrete time hazard models to examine the relationship among individual, household, and state-level characteristics and participation in the FSP.

Our results indicate that employment status and household income are the strongest determinants of FSP spell duration. Adults who are employed and who live in households with high incomes at the time they enter the FSP tend to have the shortest participation spells. Among adults

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<sup>1</sup>The multivariate analysis of entry is exploratory and suggestive of future work. We find that both short-term events and longer-term events are important determinants of FSP entry. We also find that the effects of short-term events and conditions on FSP entry are different for different individuals, depending on their longer-term situation. Adverse short-term events are more likely to trigger entry among those who have relatively stable long-term situations. For example, our results indicate that being unemployed in a given month has a greater effect on inducing entry for those who have relatively high average employment levels in the past than for those who have low average employment levels.

who are not working when they begin receiving food stamps, participation spells are shortest among those who have been most recently employed. Once employment and household income have been controlled, however, the state unemployment rate affects spell duration only for able-bodied, prime-age adults without children. Another factor that affects spell duration is household structure--female-headed households and households with only elderly and disabled members have longer spells than other groups, all else being equal. In addition, among female-headed households, the number of children in the household is negatively related to the probability of leaving food stamps.

Once employment, household income, and other characteristics have been controlled, however, the state unemployment rate affects spell duration only for able-bodied, prime-age adults without children. Most of this group is subject to the part of the PRWORA legislation limiting FSP participation in any 36-month period to only three months during which they are not working. Our unemployment rate result suggests that in areas of high unemployment, a large number of able-bodied, prime-age adults without children could be forced off the FSP by such a time limitation. Thus, the PRWORA exemption to this time limit to those living in areas with an unemployment rate of at least 10 percent or where there are not a "sufficient number of jobs" seems to be a reasonable way to protect this group from losing benefits when and where it is most difficult to get a job.

Consistent with its effect on spell duration, household income has a strong effect on FSP reentry. Adults in more well-off households when they exit the FSP are least likely to return to the program. Reentry rates also tend to be lower among those not receiving Aid to Families with Dependent Children (AFDC) when they exit the FSP and among those with relatively high education levels.

This chapter consists of three sections. First, we present our general methodological approach to estimating the multivariate models of FSP exit and reentry. Second, we discuss results from the analysis of the duration of FSP participation spells. The duration analysis involves the estimation

of hazard models and examines the full range of factors affecting the length of FSP participation spells. Third, we discuss results from the analysis of FSP reentry. This reentry analysis is similar to the duration analysis in its use of hazard models and focus on the factors correlated with reentry.

#### **A. METHODOLOGICAL APPROACH**

We estimated discrete-time multivariate hazard models of FSP participation spell duration and reentry using maximum likelihood estimation techniques. The basic building block of the discrete-time hazard model is the monthly hazard rate--the probability that an individual exits a particular state during a particular month, conditional on having "survived" in that state up to that month. For example, the hazard function in the FSP duration analysis represents the probability that an individual exits the FSP in a particular month given that the individual received food stamps in the previous month.

The data we used to estimate the hazard models consist of *one observation per spell month*. The dependent variable for a particular analysis is a binary variable equal to 0 in months when an individual's spell was still in progress and equal to 1 in the month the spell ended. In the duration analysis, for example, suppose that an individual receives food stamps for three months and then exits the FSP. This individual would contribute four observations to the data set--the dependent variable would be 0 during the first three months of the spell and 1 during the fourth month. The dependent variable is 0 in all spell months for individuals with right-censored spells.

The explanatory variables for a spell month observation are the characteristics of the sample member at the calendar date corresponding to that observation. We included several types of explanatory variables in the analysis--demographic characteristics of individuals, education and employment status, household income and welfare receipt, household structure, and state unemployment and public assistance. The values of some explanatory variables are constant over

time (for example, race/ethnicity), whereas other variables are time-varying (for example, state unemployment rates). The explanatory variable set also includes binary variables indicating the number of months the spell had been in progress prior to that spell month (referred to as duration terms). The coefficient estimates on these duration terms allow us to examine the degree to which the hazard rates change over time, after controlling for the effects on the hazard rate of observable characteristics.

We estimated a discrete-time hazard model instead of a continuous-time model for three reasons. First, since food stamps are issued monthly, it is conceptually appropriate to measure spell duration in one-month units rather than using a continuous measure of spell duration. Second, the estimation of a continuous-time hazard model generally involves selecting a parametric form for the baseline hazard rate as a function of time.<sup>2</sup> Previous research has shown, however, that parameter estimates from continuous time models are sensitive to the choice of this functional form (Trussell and Richards 1985). In our discrete-time approach, on the other hand, this parametric assumption is not necessary since the duration terms enter the hazard function nonparametrically. Third, the inclusion of time-varying covariates is simpler in discrete-time models, and many of the key explanatory variables in the models vary over time.

We estimated the hazard models in this chapter using unweighted data. We did not use weights in these models because there is no theoretical reason to use weights in a regression context when sampling probabilities vary for subgroups of sample members defined by explanatory variables

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<sup>2</sup>Selecting a parametric form for the baseline hazard rate implies that even before we estimate the relationship we are choosing a general shape to represent the relationship between the probability of leaving the FSP and time. For example, we might choose a straight line to represent the relationship (a linear functional form) or a single curved line to represent the relationship (for example, an exponential functional form). The estimation of the model then provides estimates of the parameters of this functional form, which tell us the precise position of the function representing the relationship between the probability of leaving the FSP and time.

(DuMouchel and Duncan 1983).<sup>3</sup> Weighting would have been appropriate if sampling probabilities varied by subgroups defined by the *dependent* variable (that is, in the presence of choice-based sampling). However, the Survey of Income and Program Participation (SIPP) design did not systematically oversample those on food stamps or those whose characteristics were directly correlated with food stamp receipt.

Our discrete-time hazard models controlled for observable differences in duration distributions among sample members but did not control for potential *unobserved* differences that remain after controlling for the effect of observable variables. In the presence of unobserved heterogeneity, the parameter estimates on the duration terms in the hazard models could be downwardly biased.<sup>4</sup> The estimated coefficients on the other explanatory variables included in the models may also be biased in the presence of unobserved heterogeneity, although the magnitude and direction of this bias will depend on the degree of correlation between the duration terms and the explanatory variables.

In this report, we did not test or control for the potential presence of unobserved heterogeneity in the multivariate analysis. The reason for this was that the main goal of the analysis was to obtain reasonable estimates of the factors associated with the dynamics of FSP participation, rather than to obtain precise estimates of the duration dependence terms. Models that control for unobserved heterogeneity are often difficult to estimate, and estimating this type of model was beyond the scope

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<sup>3</sup>In this case, the parameter estimates obtained using weighted data are no better than estimates obtained using unweighted data because the parameter estimates using the weighted data are not weighted correctly (that is, are not weighted averages of the parameter estimates that would be obtained if separate models were estimated in each of the sampling strata).

<sup>4</sup>For example, suppose in the duration analysis, there are two types of individuals: "employable"

of this report. Thus, the estimates presented in this chapter present an important first step in exploring the determinants of FSP participation dynamics, though it is important to keep in mind the possibility of unobserved heterogeneity bias.

The sample used in the multivariate analysis includes original sample members who were assigned positive longitudinal weights by the U.S. Bureau of the Census. We used the individual as the unit of analysis. The multivariate models, however, were estimated on only those sample members who were *at least age 18* at the start of their spells. Youths under age 18 were excluded from the analysis because the purpose of the multivariate analysis is to identify factors that determine the dynamics of FSP participation, and the actions and decisions of adults primarily influence the degree to which children participate in the FSP.

## **B. DETERMINANTS OF THE DURATION OF FSP PARTICIPATION SPELLS**

The sample for the multivariate duration analysis includes all participation spells that began on or after the second SIPP panel month. Left-censored spells were excluded from the analysis.<sup>5</sup>

We included spells from both the 1990 and 1991 SIPP panels in the multivariate duration analysis, rather than using only the 1991 SIPP panel (as we did in the descriptive analysis), for three reasons. First, the life table analysis indicated that the distribution of food stamp spell durations was similar using the 1990 and 1991 panels for the full sample and for key subgroups. Second, we estimated the duration model separately using the two panels in exploratory work and found that the

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<sup>5</sup>We excluded left-censored spells for three reasons. First, as discussed in Appendix B, we have concerns about the quality of the Wave 2 topical module food stamp reciprocity history data. Second, many of the explanatory variables pertaining to the characteristics of sample members at the start of their spells would be missing for those with left-censored spells because the Wave 2 topical module does not contain sufficient information to define these measures. Third, the effects of the explanatory variables on spell exit rates may differ for left-censored and non-left-censored spells because of changes over time in economic conditions and attitudes towards the receipt of food stamps.

difference between the parameter estimates on key explanatory variables obtained using the 1990 and 1991 SIPP samples was not statistically significant at the five percent level. Finally, as discussed below, separate regression models were estimated for subgroups defined by the composition of individuals' households at the start of their spells, and pooling data from the 1990 and 1991 panels substantially increased sample sizes for these subgroups.

We estimated the hazard models using the full sample and for five key subgroups, defined by the composition of individuals' households at the start of their spells. These subgroups are:

1. Households containing only individuals who were at least age 60 or who were disabled
2. Households containing at least one able-bodied individual less than age 60 and no children less than age 18
3. Households containing female adults and children<sup>6</sup>
4. Households containing a married couple with children
5. Other households with children<sup>7</sup>

We selected these subgroups because we believe they capture the key features of the different types of households that receive food stamps and because our descriptive analysis showed that spell duration distributions and spell exit rates differ across these subgroups. In addition, the multivariate analysis shows that the factors associated with spell lengths differ across the subgroups.<sup>8</sup>

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<sup>6</sup>This subgroup contains households with only one female adult, as well as those with two or more female adults.

<sup>7</sup>This subgroup contains a hybrid of households with children--including households with single fathers, married couples living with their parents, and several relatives and nonrelatives living together.

<sup>8</sup>We performed various chi-squared likelihood ratio tests to test the null hypotheses that the parameters in the models are the same for each of the five subgroups. We rejected the null hypothesis at the one percent significance level when the parameters in all five subgroup models  
(continued...)

The remainder of this section discusses in detail the explanatory variables included in the models and presents the results of the multivariate analysis.

## 1. Explanatory Variables

We used three main criteria to select the explanatory variables to be included in the multivariate duration models. First, we included variables that have been shown in previous research to be good predictors of food stamp spell durations. Second, we included variables we believe to have policy relevance. Third, we required that the variables must be uncorrelated with unobservable factors influencing spell exit rates (that is, they must be “exogenous” variables), because the parameter estimates on all variables could be biased if “endogenous” variables are included in the explanatory variable set. For example, the models do not include monthly earnings measures as time-varying covariates because household members are likely to make employment and food stamp participation decisions jointly. The models do, however, include earnings variables measured at the *start* of the food stamp spell because these variables are exogenous to future decisions regarding FSP participation.

The duration models include the following groups of explanatory variables:

- ***Demographic Characteristics of Individuals.*** These binary variables include measures of the individuals’ gender, race/ethnicity, age, U.S. citizenship status, and disability status.
- ***Education Level and Employment Status of Individuals.*** Three binary variables measure individuals’ educational attainment. These three variables indicate whether individuals have completed 9 to 11 years of school, 12 years of school, or more than 12 years of school. The employment status measures are binary variables indicating whether the individual is employed at the start of the food stamp spell, and if not, the number of months they have been nonemployed (less than 6 months, 7 to 12 months, or more than 12 months). Previous multivariate analyses have measured the effect of

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<sup>8</sup>(...continued)

were compared or when the parameters in any two subgroup models were compared.

employment status on FSP participation (Carr et al. 1984; and Burstein and Visher 1989), but none has examined the length of nonemployment as a determinant of spell duration. Finally, we include a binary variable indicating whether any individual in the household was designated as an FSP work registrant.

- ***Household Income and Welfare Receipt.*** Four binary variables indicate whether individuals' household income at the start of the spell is (1) below the poverty line, (2) between 1 and 1.5 times the poverty line, (3) between 1.5 and 2 times the poverty line, and (4) more than 2 times the poverty line.<sup>9</sup> In addition, the models estimated on the subgroups of households with children include two AFDC-related variables. The first indicates whether any household members were receiving AFDC at the start of the spell, and the second indicates whether household members were not currently receiving but had previously received AFDC (prior to the start of the spell).
- ***Household Structure.*** The models estimated on the subgroups of individuals in households with children include explanatory variables indicating the number of children less than age 6 and the number of children between ages 6 and 18 in the household at the start of the spell. Selected models also include variables indicating the number of adults in the household at the start of the spell. Two binary variables indicate whether the individual was married at the start of the spell, and if not, whether the individual was previously married.<sup>10</sup>
- ***Entry Trigger Events.*** Five binary variables indicate the trigger events that preceded entry into the FSP. These variables are based on the entry trigger definitions presented in Chapter II and may provide information on individuals' situations when they are receiving food stamps. The entry trigger event variables are based on events that may or may not have occurred during the four months prior to the month they entered to the FSP.<sup>11</sup> In particular, these variables may capture longer-term events that affected sample members during the period prior to their entry into the FSP. The five binary entry

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<sup>9</sup>Food stamp households that do not include elderly or disabled members are eligible for food stamps only if the gross income of the unit is less than 130 percent of the poverty line. We find, however, that a substantial number of households have incomes more than 130 percent of the poverty line. Possible reasons for this finding are that (1) household income may be an overestimate of the income of the food stamp filing unit because a large number of households contain multiple food stamp filing units (or individuals not in the filing unit who have income), (2) individuals misreport their income, and (3) individuals experience transitory changes in income levels that are not reported to the food stamp offices.

<sup>10</sup>We also estimated models where the household structure variables were time-varying, and found similar results to the models where the household structure variables were defined according to their values at the start of the spell. We do not present the results of the time-varying model in this report.

<sup>11</sup>The models including the entry trigger events were estimated using a sample of spells that began on or after panel month 5.

trigger event variables indicate: (1) whether the individual's household had no identifiable trigger event, (2) whether there was a decrease in income to household members with no change in household composition, (3) whether there was a change in household composition with no decrease in household income, (4) whether there was a decrease in income to household members and a change in household composition, and (5) whether the individual's household had recently begun receiving another form of public assistance.

- **State Employment Measures.** The models include time-varying measures of the unemployment rate and the average hourly wage in the manufacturing industry in the state in which each sample member lives during each month of their spell.
- **State Public Assistance Measures.** The models also include three time-varying measures of state public assistance programs: (1) the maximum AFDC benefit for a family of four, (2) the AFDC-Unemployed Parent (UP) caseload as a percentage of the total AFDC caseload, and (3) the General Assistance (GA) caseload as a percentage of the AFDC caseload.
- **Regional Measures.** Six time-varying binary variables indicate which of the seven FCS regions sample members reside in during their spells. These variables should capture additional differences in factors affecting FSP spell duration across regions that are not captured by the other state-level variables.<sup>12</sup>
- **Spell Information.** Three sets of binary variables provide additional information about individuals' FSP participation spells. These include variables measuring: (1) whether individuals were in their first food stamp spell; (2) whether the spell started in 1989, 1990, 1991, 1992, or 1993; and (3) whether the spell was obtained from the 1990 or 1991 SIPP panel. Finally, we measure spell duration using four binary duration terms. These terms indicate whether the current duration of the spell was 4 months or less, 5 to 8 months, 9 to 12 months, 13 to 16 months, or more than 16 months.<sup>13</sup>

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<sup>12</sup>We did not, instead, add binary variables signifying the state in which sample members lived during each spell month because certain states include only a small number of sample members. Small sample sizes are a serious problem in the estimation of binary choice models because standard errors on the parameter estimates are very large if an explanatory variable does not vary across individuals for a particular level of the dependent variable. In our context, for example, the dependent variable never takes on the value of 1 for those who lived in Hawaii because all Hawaii spells are right-censored. Hence, the "*sample separation*" problem would exist if a Hawaii state binary variable were included in the model.

<sup>13</sup>We included the Wave-specific (four-month) duration terms rather than separate duration terms for individual months because spell lengths are usually in multiples of four since sample members tend to report the same value of a characteristic for all four months of a reference period ("the seam problem"). In addition, we included only one duration dependence term for spells that last more than 16 months to avoid the sample selection problem discussed in the previous footnote.

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## 2. Descriptive Statistics for the Explanatory Variables

The section describes the characteristics of and circumstances faced by adults beginning FSP participation spells, as measured by our sample drawn from the 1991 panel of SIPP. Table III.1 presents spell information and the mean values and frequencies of the explanatory variables for the full sample and for each household subgroup. The means and frequencies were calculated using a data set that contains one observation for each spell in the sample (and not for each spell month).<sup>14</sup> Thus, the table describes the average characteristics of individuals having participation spells, a group referred to throughout this report as an entry cohort sample. This descriptive information can be used to answer the question: *Among the next 100 people to walk into the food stamp office to begin a participation spell, what will their average characteristics be?* These average characteristics will not necessarily be the same as the average characteristics of all people receiving food stamps at a given point in time (referred to as the cross-sectional sample).

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<sup>13</sup>(...continued)

For example, very few individuals in the sample exited the FSP more than 16 months after their spells began; hence, the dependent variable rarely takes on the value of 1 for spells that lasted at least 16 months.

<sup>14</sup>The means and frequencies were calculated using the longitudinal panel weights, so that population estimates can be obtained. As discussed, however, the panel weights were not used in the estimation of the multivariate hazard models.

TABLE III.1  
SUMMARY INFORMATION ON THE MULTIVARIATE DURATION ANALYSIS SAMPLE,  
BY HOUSEHOLD SUBGROUP

Variables	Household Subgroup					
	Full Sample	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Spell Information</b>						
Spell Duration Within the Panel Period (Mean Number of Months)	8.7	10.3	7.1	10.6	7.8	8.8
Right-Censored Spells (Percentage)	42.1	47.1	33.5	53.5	38.0	43.2
First Spells (Percentage)	31.8	33.2	39.7	24.5	28.8	34.0
In 1991 SIPP Panel <sup>a</sup> (Percentage)	41.8	41.1	42.8	35.2	45.9	40.2
<b>Individual Demographic Characteristics<sup>a</sup> (Percentage)</b>						
Male	41.1	43.4	49.7	0.0	50.8	47.9
<b>Race</b>						
White, non-Hispanic	55.9	63.0	59.9	48.8	64.6	42.0
Black, non-Hispanic	22.6	23.3	26.7	38.4	9.4	26.7
Hispanic	17.5	11.3	10.5	10.5	21.6	25.2
Other	4.0	2.4	2.9	2.4	4.4	6.1
<b>Age</b>						
18 to 29 years	41.9	9.4	45.6	46.7	43.3	53.6
30 to 49 years	39.9	23.9	29.3	48.4	53.0	34.2
50 to 64 years	10.6	27.3	19.6	3.3	3.3	8.5
65 and older	7.6	39.5	5.6	1.6	0.4	3.6
Mean age years	36.0	56.7	36.5	31.3	31.6	31.9
Disabled	28.7	68.4	22.3	18.2	23.2	23.5
U.S. Citizen	89.0	91.5	92.3	93.6	86.8	85.3
<b>Education Levels and Employment Status<sup>b</sup> (Percentage)</b>						
<b>Highest Grade Completed</b>						
8 or less	16.3	36.5	13.7	8.9	13.2	15.1
9 to 11	27.0	24.0	24.7	26.4	28.0	29.3
12	40.9	26.3	41.9	48.5	43.2	40.9
13 or greater	15.8	13.2	19.6	16.2	15.7	14.8

TABLE III.1 (continued)

Variables	Household Subgroup					
	Full Sample	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Employment Status</b>						
Currently working	33.3	11.8	32.4	40.1	44.1	28.4
Nonemployed for 6 months or less	24.0	13.6	27.5	24.9	25.6	25.1
Nonemployed for 7 to 12 months	5.4	2.5	6.1	5.2	5.9	6.3
Nonemployed for more than 12 months	20.8	28.5	18.0	18.4	19.7	21.3
Never worked	16.2	42.9	15.5	11.3	4.8	18.8
FSP Work-Registrant	32.0	0.0	55.8	22.7	22.4	52.9
<b>Household Income and Welfare Receipt<sup>b</sup> (Percentage)</b>						
<b>Ratio of Household Income to Poverty Level</b>						
Less than 1	52.9	51.2	39.9	72.2	57.8	44.2
1.0 to 1.5	23.6	27.9	20.8	20.4	26.2	21.8
1.5 to 2.0	8.7	8.7	12.9	3.9	8.5	9.0
2.0 or more	14.8	12.2	26.5	3.5	7.5	25.1
<b>AFDC Receipt</b>						
Currently	15.3	0.0	0.0	34.6	15.5	19.6
Previously	NA	NA	NA	20.9	NA	NA
Never	NA	NA	NA	44.5	NA	NA
<b>Household Size and Marital Status<sup>b</sup></b>						
Number of Adults	2.2	1.6	2.4	1.4	2.0	3.2
Number of Children	1.5	0.0	0.0	1.9	2.4	2.2
Number of children less than age 6	0.6	0.0	0.0	0.8	1.1	0.8
Number of children between ages 6 and 18	0.9	0.0	0.0	1.1	1.3	1.4
<b>Marital Status (Percentage)</b>						
Currently married	46.1	21.1	31.3	0.0	100.0	30.4
Previously married	25.8	54.7	25.3	60.4	0.0	20.8
Never married	28.1	24.2	43.4	39.6	0.0	48.8

TABLE III.1 (continued)

Variables	Household Subgroup					
	Full Sample	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Entry Trigger Events</b>						
Not Identified	30.2	59.0	33.1	24.0	19.6	28.7
Income Decrease Only	45.8	25.3	44.7	39.6	60.2	44.0
Household Composition Change Only	4.7	0.8	3.9	4.5	4.4	8.0
Income Decrease and Household Composition Change	17.5	13.0	17.2	30.6	12.7	18.3
Receipt of Other Forms of Public Assistance	1.8	1.8	1.1	1.3	3.1	1.1
<b>State and Regional Measures<sup>b</sup></b>						
<b>State Employment Measures</b>						
Unemployment rate (mean percentage)	6.8	6.8	6.8	6.5	6.9	7.0
Average hourly wage rate in the manufacturing sector (dollars)	10.94	10.90	10.99	10.83	10.99	10.94
<b>State Public Assistance Measures<sup>b</sup></b>						
Maximum AFDC benefit for a family of four (dollars)	371.41	375.05	365.40	385.85	364.51	373.29
Ratio of the AFDC-UP to AFDC caseloads	5.0	4.7	5.0	4.9	5.2	4.9
Ratio of the GA to AFDC caseloads	19.0	21.0	21.4	19.8	16.6	18.8
<b>Region of Residence</b>						
Northeast	9.8	13.2	11.2	10.4	7.3	9.7
Midatlantic	9.7	11.1	11.5	8.5	7.8	10.9
Midwest	18.2	14.1	18.7	20.2	20.0	16.8
Southeast	23.1	24.9	23.6	23.9	21.8	22.8
Southwest	16.2	14.2	14.3	10.3	20.0	17.5
Mountain	6.4	6.7	7.8	11.4	4.8	4.3
West	16.3	15.2	12.6	15.0	18.2	18.0
<b>Unweighted Sample Size</b>	<b>3,316</b>	<b>501</b>	<b>528</b>	<b>506</b>	<b>1,057</b>	<b>724</b>

SOURCE: 1990 and 1991 SIPP Panels for those age 18 and older at their spell start dates.

NOTE: The variable means were generated using a dataset that contained one observation for each spell in the sample (and not for each spell month). The longitudinal panel weights were used to calculate the means.

<sup>a</sup>These figures are unweighted means.

<sup>b</sup>These variables are measured at the start of the food stamp spells.

NA = Not applicable.

**a. Full Sample**

The sample contains 3,316 spells--58 percent from the 1990 SIPP panel and 42 percent from the 1991 panel.<sup>15</sup> About 30 percent of the spells in the sample are individuals' first spells on the FSP. The mean spell length observed *during the panel period* is about 8.5 months, and more than 42 percent of spells are right-censored. The 3,316 spells generate 26,985 spell-month observations that we use to estimate the discrete-time multivariate hazard models.

Among adults in the full sample, 59 percent are female and 41 percent are male, and 56 percent are white, 23 percent are black, and 18 percent are Hispanic. In addition, about 90 percent of FSP participation spells were those of U.S. citizens, and about 29 percent report being disabled (having a health problem that limits the amount of work they can do). The average age of adults starting participation spells is 36, and about 80 percent are less than age 50.

Overall, about 46 percent of those having participation spells are married at the start of the spell (with another 25 percent unmarried though previously married). In addition, individuals live in households with a mean of 2.2 adults and 1.5 children.

Education and income levels for our sample members are relatively low. At the time they begin receiving food stamps, 57 percent of adults have a high school degree and only about one-third are employed. Another 25 percent have been nonemployed for less than six months, and 20 percent have been nonemployed for at least one year. More than half the adults are in households with incomes below the poverty line at the beginning of their spells, and almost 85 percent are in households with incomes below 1.5 times the poverty line. About 15 percent of those beginning FSP participation spells are receiving AFDC at the time.

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<sup>15</sup>This sample is smaller than the sample used in the descriptive analysis in Chapter II because individuals less than age 18 are excluded from the multivariate analysis.

Adults beginning participation spells are relatively evenly dispersed throughout the regions of the United States. Meanwhile, the mean unemployment rate in their states is about 6.8 percent, and their states' average hourly wage rate in the manufacturing sector is almost \$11. In addition, the GA caseload relative to the AFDC caseload is about 20 percent in the states where the sample members lived, and the AFDC-UP caseload relative to the AFDC caseload is 5 percent.

As discussed in Chapter II, a decrease in household income is the main reason that participants enter the FSP. Within the four-month period prior to FSP entry, almost one-half of individuals had a significant income loss and another 18 percent had both an income loss and lived in households that had a composition change. Less than five percent of individuals had only a household composition change as an entry trigger event. A large percentage of recipients (nearly one-third), however, had no identifiable trigger event during the four months prior to entry.

#### **b. Household Subgroups**

With the exception of the household subgroup containing married couples with children, the household subgroups are relatively evenly distributed across the sample. About one-third of individuals (adults) having participation spells live in households with a married couple and children, 15 percent live in female-headed households with children, and 22 percent live in other households with children. The two household subgroups without children--those containing only elderly and disabled and those that include prime-age, able-bodied adults--each make up about 15 percent of the sample.

We observe substantial differences in the mean values of the variables across the five subgroups, suggesting that the dynamics of FSP participation differ across the subgroups (see Table III.1).

These differences may shed light on the differences in hazard results across the household subgroups, presented in Section B.3.

**Elderly and Disabled Households.** Among individuals in the first category of households, 33 percent are elderly but not disabled, 45 percent are disabled but not elderly, and 22 percent are both elderly and disabled. A key characteristic of adults living in households containing only elderly and disabled members is that they are much less likely than other groups to be employed when they begin receiving food stamps. Only 12 percent of elderly and disabled household members are currently working at the start of their spells, compared with 33 percent in the full population; 43 percent of these adults have never been employed. In addition, elderly and disabled household members have lower education levels than do other sample members. Furthermore, we could not identify an entry trigger event for a large proportion of these sample members (nearly 60 percent) compared to 30 percent for the full sample. This finding is consistent with Chapter II, where we found that nearly 40 percent of those without an identified entry trigger event were elderly or disabled individuals. One possible explanation for this finding is that these individuals may have faced unexpected medical costs that may have triggered their entry into the FSP.

**Households with Able-Bodied, Prime-Age Adults and No Children.** A distinguishing feature of the households with at least one able-bodied member (and no children) is that they have higher incomes at the start of their spells, on average, than do other households in the sample.<sup>16</sup> For example, less than 40 percent of individuals in able-bodied households have incomes below the

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<sup>16</sup>This finding seems to contradict the finding of Stavrianos, Cody, and Lewis (1997) that “compared to FSP adults, able-bodied adults are much less likely to have income, and if they do have income, it is likely to be of a smaller amount.” However, this apparent contradiction is resolved by the fact that Stavrianos et al. (1997) use “able-bodied adults” as a shorthand label for “able-bodied, *non-working*, childless adults.” Since we did not restrict our sample of households with able-bodied adults without children to those where the adults were not working, it is not surprising that we find this group to have higher income than do Stavrianos et al. (1997).

poverty line as compared to 53 percent for all sample members. Similarly, more than one-quarter have incomes more than 2 times the poverty line, as compared to 15 percent for the full sample. Even though they have higher incomes, however, these individuals are no more likely than other sample members to be employed or to have been employed recently.

**Female-Headed Households with Children.** Individuals in female-headed households with children have lower incomes, on average, than do sample members in other types of households.

These households are also more likely to have had previous food stamp spells than most other households. More than 60 percent of these households suffered a significant income loss (without a household composition change) that triggered their entry into the FSP, a much larger figure than for any other household type.

**Other Households with Children.** The other households with children subgroup tends to have larger households, and adults in these households are more likely to be noncitizens and to be Hispanic than those in other households. On average, these households consist of more than three adults and two children. Overall, this subgroup consists of a hybrid of households with multiple generations and a mixture of relatives and nonrelatives living together. For example, some of these households consist of a married couple, their children, and other adults, as about 30 percent of these household members are married. Less frequently, these households consist of single fathers and their children. Overall, five percent of the adults in these households are single fathers. The remaining households in this category consist of combinations of male and female adults living together with children. Not surprisingly, individuals in this subgroup are more likely to have experienced household composition changes prior to entering the FSP than individuals in any other household subgroup.

### **3. Estimation Results**

In this section, we present estimation results from several discrete-time hazard models. We first present results using the full sample. Following that, we present results where separate models are estimated for each of the five household composition subgroups.

TABLE III.2

ESTIMATED EFFECTS OF EXPLANATORY VARIABLES ON PROBABILITY  
OF EXITING THE FSP--FSP DURATION HAZARD MODEL  
(Standard Errors in Parentheses)

Explanatory Variables	(1) Model Without Entry Trigger Events	(2) Model with Entry Trigger Events
<b>Individual Demographic Characteristics<sup>a</sup></b>		
Male	.19*** (.05)	.18*** (.06)
Race (Hispanic Category Is Omitted)		
White, non-Hispanic	.28*** (.08)	.26*** (.09)
Black, non-Hispanic	.11 (.09)	.09 (.10)
Other	.31*** (.16)	.28* (.17)
Age (18-to-29-Year-Old Category Is Omitted)		
30 to 49	-.11* (.06)	-.09 (.07)
50 to 64	-.33*** (.10)	-.28*** (.11)
65 and older	-.42*** (.14)	-.32** (.15)
U.S. Citizen	.05 (.10)	.07 (.10)
<b>Education Levels and Employment Status<sup>a</sup></b>		
Highest Grade Completed (0-to-8 Category Is Omitted)		
9 to 11	-.01 (.09)	-.03 (.09)
12	-.02 (.08)	.00 (.09)
13 or greater	.04 (.10)	.00 (.10)
Employment Status (Never-Worked Category Is Omitted)		
Currently working	.46*** (.10)	.43*** (.11)
Unemployed for 6 months or less	.40*** (.10)	.32*** (.11)
Unemployed for 7 to 12 months	.28** (.14)	.26* (.14)
Unemployed for more than 12 months	.06 (.11)	.07 (.11)
FSP Work-Registrant	.10* (.06)	.09 (.06)

TABLE III.2 (continued)

Explanatory Variables	(1) Model Without Entry Trigger Events	(2) Model with Entry Trigger Events
<b>Household Income and Welfare Receipt<sup>a</sup></b>		
Ratio of Household Income to Poverty Level (Less-than-1 Category Is Omitted)		
1.0 to 1.5	.30*** (.06)	.34*** (.07)
1.5 to 2.0	.39*** (.09)	.40*** (.10)
2.0 or more	.23*** (.09)	.27*** (.09)
Currently Receiving AFDC	-.64*** (.08)	-.63*** (.09)
<b>Household Composition<sup>a</sup></b>		
Household Size		
Number of adults	.03 (.03)	.04 (.03)
Number of children less than age 6	-.10*** (.03)	-.09** (.04)
Number of children between ages 6 and 18	.01 (.02)	.00 (.02)
Marital Status (Never-Married Category Is Omitted)		
Currently married	.24*** (.07)	.17** (.07)
Previously married	.01 (.08)	-.04 (.09)
<b>Entry Trigger Events (Income-Decrease-Only Category Is Omitted)</b>		
Not Identified		-.17** (.07)
Household Composition Change Only		-.04 (.13)
Income Decrease and Household Composition Change		-.09 (.08)
Receipt of Other Forms of Public Assistance		.02 (.21)
<b>State and Regional Measures<sup>b</sup></b>		
State Employment Measures		
Unemployment rate	-.02 (.02)	-.02 (.02)
Average hourly wage rate in the manufacturing sector	.01 (.04)	.03 (.04)

TABLE III.2 (continued)

Explanatory Variables	(1) Model Without Entry Trigger Events	(2) Model with Entry Trigger Events
<b>Region of Residence (West Category Is Omitted)</b>		
Northeast	-.25** (.10)	-.26** (.11)
Midatlantic	-.29*** (.10)	-.27** (.11)
Midwest	-.25*** (.10)	-.29*** (.10)
Southeast	-.20* (.12)	-.13 (.13)
Southwest	-.23** (.10)	-.18* (.10)
Mountain	-.16 (.12)	-.16 (.13)
<b>Spell Information</b>		
<b>Spell Duration (More-than-16-Months Category Is Omitted)</b>		
4 months or less	1.68*** (.12)	1.82*** (.14)
5 to 8	1.43*** (.13)	1.57*** (.15)
9 to 12	1.26*** (.14)	1.39*** (.16)
13 to 16	.73*** (.16)	.83*** (.18)
First Spell	.21*** (.06)	.20*** (.06)
In 1991 Panel	.11 (.07)	.07 (.07)
<b>Spell Start Year (1991 Category Is Omitted)</b>		
1989	.08 (.24)	
1990	.13* (.07)	.09 (.07)
1992	-.12* (.07)	-.11 (.07)
1993	-.30** (.15)	-.27* (.15)
-2 × Log Likelihood	12,835***	11,523***
<b>Number of Spell-Month Observations</b>	<b>28,820</b>	<b>26,019</b>

SOURCE: 1990 and 1991 SIPP Panel.

NOTE: The sample used to estimate the models in column (1) includes non-left-censored spells that began on or after the second panel month. The sample used to estimate the model in column (2) includes non-left-censored spells that began on or after the fifth panel month (see footnote 11 on page 109). All parameter estimates are unweighted.

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>These variables are time-varying covariates.

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

**a. Full Sample**

Table III.2 contains logit parameter estimates from two discrete-time hazard models of the duration of FSP participation spells. The first column shows estimation results from a model where the entry trigger event variables were not included as explanatory variables, and where the estimates were obtained using a sample of non-left-censored spells that began after the first panel month. The model in column (2) is similar to the model in column (1) except that it also includes the entry trigger event variables. The column (2) estimates were obtained using a sample of spells that began after the fourth panel month because the entry trigger event measures were not defined for spells that began before that time.

The coefficient estimates in Table III.2 refer to the effects of the explanatory variables on the FSP hazard rate, or exit rate. A positive and significant coefficient on a given variable implies that this variable is positively and significantly related to the FSP exit rate, after controlling for the effects of the other explanatory variables in the model. In other words, higher values of the variable imply higher exit rates and consequently shorter FSP participation spells. For example, the coefficient on the variable MALE is positive and significant (0.19). This implies that males have higher exit rates and shorter participation spells than females. Conversely, a negative coefficient on an explanatory variable implies a negative relationship between the variable and the exit rate, meaning that higher values of the variable imply lower exit rates and longer participation spells.

To further help interpret the estimation results, Table III.3 shows regression-adjusted median spell durations and cumulative exit rates for various values of selected explanatory variables. In effect, this table shows the estimated duration of FSP participation spells for various subgroups of the full population, after controlling for the effects of other independent variables in the model.

TABLE III.3  
REGRESSION-ADJUSTED CUMULATIVE EXIT RATES  
FOR KEY SUBGROUPS

Explanatory Variables	Median Spell Duration Months	Percentage Receiving Food Stamps for			
		4 Months or Less	8 Months or Less	12 Months or Less	16 Months or Less
<b>Individual Demographic Characteristics<sup>a</sup></b>					
Sex					
Male	8	36.2	53.6	64.4	68.1
Female	10	31.4	47.3	57.7	61.3
Race					
White, non-Hispanic	8	35.6	52.7	63.4	67.1
Black, non-Hispanic	10	31.2	47.1	57.4	61.1
Hispanic	12	28.5	43.4	53.3	56.9
Other	8	36.4	53.8	64.5	68.2
Age					
18 to 29 years	8	36.4	53.8	64.7	68.4
30 to 49 years	9	33.3	49.9	60.6	64.3
50 to 64 years	12	28.0	42.7	52.7	56.3
65 years and older	13	25.9	39.9	49.6	53.1
<b>Employment and Work- Registrant Status<sup>a</sup></b>					
Employment Status					
Currently working	7	37.6	55.5	66.5	70.3
Nonemployed for 6 months or less	8	36.1	53.5	64.5	68.3
Nonemployed for 7 to 12 months	9	32.9	49.4	60.2	63.9
Nonemployed for more than 12 months	12	28.2	43.2	53.3	57.0
Never worked	12	26.4	40.7	50.5	54.1
FSP Work-Registrant Status					
FSP work-registrant	8	35.1	52.1	62.7	66.4
FSP non-work-registrant	9	32.6	48.8	59.2	62.9
<b>Household Income and Welfare Receipt<sup>a</sup></b>					
Ratio of Household Income to Poverty Level					
Less than 1.0	11	29.9	45.4	55.7	59.4
1.0 to 1.5	7	37.6	55.5	66.4	70.1
1.5 to 2.0	6	40.0	58.4	69.3	73.0

TABLE III.3 (continued)

Explanatory Variables	Median Spell Duration Months	Percentage Receiving Food Stamps for			
		4 Months or Less	8 Months or Less	12 Months or Less	16 Months or Less
2.0 or more	8	35.9	53.3	64.2	67.9
<b>AFDC Receipt</b>					
Currently receiving	>16	21.1	33.1	41.8	44.9
Not currently receiving	8	35.5	52.8	63.7	67.5
<b>Household Size and Marital Status<sup>a</sup></b>					
Number of Children Less Than Age 6					
Zero	8	35.1	52.1	62.7	66.4
One	9	32.4	48.7	59.1	62.7
Two	11	29.9	45.4	55.5	59.1
Marital Status					
Currently married	8	36.5	53.9	64.7	68.4
Previously married	11	30.3	45.9	56.1	59.8
Never married	11	30.3	45.8	56.1	59.7
<b>Entry Trigger Events</b>					
Not Identified	10	30.6	46.2	56.2	59.4
Income Decrease Only	8	35.1	52.0	62.4	65.7
Household Composition Change Only	8	33.8	50.4	60.7	63.9
Income Decrease and Household Composition Change	9	33.0	49.4	59.6	62.8
Receipt of Other Forms of Public Assistance	8	35.5	52.6	63.0	66.2
<b>Regional Measures<sup>b</sup></b>					
Region of Residence					
Northeast	9	32.1	48.3	58.7	62.4
Midatlantic	10	31.1	46.9	57.2	60.9
Midwest	9	32.3	48.5	59.0	62.7
Southeast	9	32.7	49.1	59.5	63.3
Southwest	9	32.4	48.6	59.1	62.8
Mountain	8	33.9	50.7	61.2	65.0
West	7	38.6	56.6	67.4	71.1

TABLE III.3 (continued)

Explanatory Variables	Median Spell Duration Months	Percentage Receiving Food Stamps for			
		4 Months or Less	8 Months or Less	12 Months or Less	16 Months or Less
<b>Spell Information</b>					
<b>First Versus Repeat Spells</b>					
First spell	8	37.1	54.7	65.4	69.1
Repeat spell	10	31.6	47.7	58.0	61.7

SOURCE: 1990 and 1991 SIPP Panel.

NOTE: The sample used to estimate the figures include non-left-censored spells that began on or after the second panel month. The parameter estimates in Table III.2, column (1) were used to calculate the figures except for the entry trigger event figures that were calculated using the parameter estimates in Table III.2, column (2).

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>These variables are time-varying covariates.

**Economic Circumstances.** A person's current economic situation is the most important determinant of the length of the FSP participation spell. Two variables that have strong effects on spell duration are employment status and household income. Consistent with previous research (Carr et al. 1984; and Burstein and Visser 1989), those who are working at the time they enter the FSP are more likely to exit the FSP in a given month than those who are not working.<sup>17</sup> However, we find that spell duration also depends on how long participants have been out of work. The regression-adjusted median spell duration is 7 months among those who are working when they enter the FSP, 8 months among those who last worked within the last six months, and 12 months among those who had last worked more than a year before entering the FSP (Table III.3). Thus, it matters little if individuals are not working at entry as long as they worked recently. However, previous employment experience does not shorten participants' spells at all if the experience occurred more than a year before entry.

Even after controlling for employment status, household income is a major determinant of FSP exit rates. Spell exit rates are much lower for those in households with incomes below the poverty line than for those in households with higher incomes. The median spell duration is about 11 months for those below the poverty line, compared with 7 months for those above the poverty line.

Another variable that potentially reflects individuals' economic situation is their AFDC status. Receiving AFDC makes individuals significantly less likely to exit the FSP, a finding that is consistent with previous research (Coe 1979; Carr et al. 1984; and Burstein and Visser 1989). Holding other factors constant, the median spell duration among AFDC recipients is more than 16

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<sup>17</sup>We do not believe that the employment measures are capturing the effects of the food stamp benefit amount because the models also control for household income levels. However, the estimates on the employment measures would be biased downwards if the variables were capturing some of the effects of the benefit amounts because income and benefit levels are inversely related and because FSP participation is positively related to benefit amounts (see Allin and Beebout 1989).

months, compared with 8 months among those not receiving AFDC when they enter the FSP. Since the model already controls for household income, AFDC receipt is not simply representing income; it may be proxying for unobserved economic factors, such as having low asset balances or high expenses. Alternatively, AFDC receipt may be negatively related to exiting the FSP because it proxies for individuals' attitudes toward receiving government assistance or it reflects low costs to individuals of participating in a second government assistance program. Since Fraker and Moffitt (1988) find a positive correlation between the determinants of FSP and AFDC participation, the strong and statistically significant negative coefficient on AFDC participation in the duration model probably reflects both a positive effect of AFDC participation on spell length and the effect of unobserved variables.

In addition to the variables reflecting individuals' economic conditions, we also measure macroeconomic conditions using two variables--the state unemployment rate and the average wage in the manufacturing industry in the state. The coefficients on both of these variables are statistically insignificant. This finding contrasts with previous research, which found that the unemployment rate has a statistically significant negative effect on the FSP exit rate (Burstein and Visher 1989).

However, we feel that the lack of significant estimated effects of the unemployment and wage rates on the FSP exit rate does not necessarily imply that macroeconomic forces are unimportant in determining FSP spell length, for two reasons. First, these estimated effects were based on the full (adult) FSP population, including individuals not closely tied to the labor market, such as elderly and disabled members and some single parents caring for children. While wages and the unemployment rate may not be relevant for these groups, these macroeconomic conditions may be relevant for other groups of FSP participants. In fact, when we reestimated the duration model separately by household type (presented later in this chapter), we found that the unemployment rate and the

average manufacturing wage have strong and significant effects (in the expected directions) on the FSP exit rate among prime-age adults without children.

Second, in addition to the macroeconomic variables, the full sample duration model includes control variables for individuals' current employment status, previous employment history, and current earnings at the start of their FSP participation spell. The macroeconomic conditions affecting individuals' spell durations may be more effectively captured by these individual employment variables than by the macroeconomic variables.<sup>18</sup> To explore this possibility, we reestimated the duration model in column 1 after excluding the employment and income variables and found that the coefficient on the unemployment rate doubled and became statistically significant at the 10 percent level.<sup>19</sup>

The entry trigger event variables included in the model in column (2) also may reflect individuals' economic situation at the time they enter the FSP. For example, FSP entrants who experience multiple trigger events prior to entry are more likely to be in a difficult economic situation than those who experience a single trigger event. The results of the estimation of this model indicate that households that experience these multiple trigger events--a decrease in household income and a change in household composition--have somewhat longer FSP participation spells than those who experience *either* a decrease in household income *or* a change in household composition but not *both*. However, entering the FSP without an identifiable trigger event leads to the longest FSP spells. In Chapter II, we postulated that some of those without entry trigger events may have been elderly or disabled individuals who entered the FSP due to unexpected medical expenses or

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<sup>18</sup>In finding the significant negative effect of the unemployment rate on the FSP exit rate, Burstein and Visher (1989) did not control for individuals' past employment history.

<sup>19</sup>The coefficient on the average manufacturing wage remained insignificant, however.

other factors such as small decreases in income. It may be difficult for this group to change their economic circumstances and exit the FSP.

**Household Structure.** We find that being married and living in households with no children under age six lead to shorter spells. For example, the median spell duration is 8 months for married individuals as compared to 11 months for those who were not married. Similarly, the median spell duration is 8 months for those in households with no children under age six and 11 months for those in households with two children under age six. The number of adults in the household and the number of children between ages 6 and 18, however, do not significantly affect spell duration.<sup>20</sup> These results suggest that individuals in households where child care issues are most challenging tend to have the longest participation spells.

**Demographic Characteristics.** The estimated effects of the demographic characteristics on FSP spell duration in the multivariate analysis are similar to the descriptive analysis subgroup results discussed in Chapter II. Females have significantly longer FSP participation spells than males, even after controlling for all the observable variables in our model. The regression-adjusted median spell duration is 10 months for females and 8 months for males. This result is consistent with our finding that male sample members moved across households more than female sample members and were less likely to report the receipt of food stamps than were females in the same food stamp filing unit (implying that they may be more likely to underreport food stamp receipt). Spell durations are longest for Hispanics and shortest for whites and for those of other races. The median spell duration is 8 months for whites and those of other races, 10 months for blacks, and 12 months for Hispanics.

Older food stamp recipients have longer spell durations than younger recipients, all else being equal. The difference in spell durations across the age groups is large. For example, the median

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<sup>20</sup>The coefficient estimate on the variable signifying the number of adults in the household, however, is statistically significant at the 5 percent level when the household structure variables are included in the model as time-varying covariates.

spell length is 8 months for those between ages 18 and 30 at the start of their spells, compared to 13 months for those older than 65.

**Policy-Related Variables.** The multivariate hazard models of FSP participation spells include two variables with direct policy relevance for the program--work-registrant status and U.S. citizenship. The work-registration program of the FSP requires certain participants to register for work, accept a suitable job if one is offered, and comply with whatever job search or training requirements are in place in their state. We find that individuals in households with a work registrant were somewhat more likely to exit the FSP than households without a work registrant, but this effect is quite small and only marginally significant (at the 10 percent level). The median spell duration for the work registrant group is one month shorter than the duration for other participants.

U.S. citizenship is policy relevant in that the recently enacted welfare reform legislation cuts most legal immigrants from the FSP rolls completely. Understanding the FSP participation dynamics of immigrants may help us understand how they will be affected by this legislation. Consistent with our subgroup results presented in Chapter II, we find that being a noncitizen has no significant effect on FSP participation spell duration. The distribution of spells among citizens and noncitizens are statistically indistinguishable.

**Spell Characteristics.** The final set of variables listed in Table III.2 provides information about individuals' FSP participation spells. The coefficients on the duration terms indicate that there is negative duration dependence during the first two years of FSP participation spells. Over this time period, the longer the spell lasts, the less likely participants are to exit the program.<sup>21</sup> In addition,

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<sup>21</sup>The degree of negative duration dependence in the multivariate hazard models is similar to the degree of duration dependence evident in the simple life tables shown in Chapter II. This suggests that the estimates in the simple life tables were not biased downwards. However, it is still possible that unobserved heterogeneity leads to such a bias.

individuals in repeat participation spells are likely to remain on the program longer than those in their initial spell, all else being equal.<sup>22</sup>

Finally, there is some evidence that the durations of new spells became somewhat longer between 1989 and 1993, even after controlling for observable factors (including the unemployment rate). Between 1990 and 1993, spells were significantly longer (at the 10 percent level) in each subsequent year. These effects are consistent with the general upward trend in the FSP caseload over this period. These coefficients are probably capturing unobservable factors across time that affected spell durations. For example, the year effects may reflect macroeconomic trends not captured by the wage and unemployment variables. Alternatively, the year effects could reflect changes in public attitudes toward food stamp receipt or some other unobserved factor.

#### **b. Household Subgroups**

Table III.4 contains parameter estimates from the multivariate hazard models of FSP participation spell duration when separate models are estimated for each of the five household subgroups. The purpose of estimating separate models for the household subgroups is to shed additional light on our multivariate duration results based on the full population of participants. Because this population is a heterogeneous group, whose experiences on the FSP vary considerably and are affected by different factors, a single model does not provide as much detailed information on participation dynamics as do separate models for each of the household subgroups. In presenting

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<sup>22</sup>We also tested whether the determinants of FSP participation dynamics among those in repeat spells and those in their initial spells were different from one another. We did this by estimating multivariate hazard models of initial and repeat spells separately and conducting a chi-square test to determine whether the coefficients of the two models are the same. We found some significant differences between the two models, although the general conclusions that we have drawn from the multivariate duration analysis do not change when we estimate the model separately for initial and repeat spells.



TABLE III.4 (continued)

Explanatory Variables	Elderly and Disabled Members	Ablebodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Household Income and Welfare Receipt*</b>					
Ratio of Household Income to Poverty Level (Less than 1 Category Is Omitted)					
1 to 1.5	.56*** (.18)	.06 (.18)	-.03 <sup>c</sup> (.16)	.31*** (.11)	.37** (.15)
1.5 to 2	.44 (.32)	.43** (.22)		.51** (.17)	.39* (.21)
2 or more	.65** (.28)	.04 (.19)		.67*** (.17)	.14 (.17)
AFDC Receipt (Never Received AFDC Category Is Omitted)					
Currently receiving			-.84*** (.19)	-.51*** (.15)	-.83*** (.17)
Previously			-.21 (.18)	-.01 (.11)	-.04 (.18)
<b>Household Composition*</b>					
Household Size					
Number of adults	.032 (.12)	-.10 (.07)	.23* (.14)		.00 (.06)
Number of children less than 6 years old			-.35*** (.12)	-.07 (.06)	.01 (.06)
Number of children between 6 and 18 years old			-.02 (.08)	.03 (.04)	-.01 (.05)
Marital Status (Never-Married Category Is Omitted)					
Currently married	.4037 (.25)	.51*** (.17)			.24 (.15)
Previously married	.062 (.21)	.02 (.19)	.34* (.18)		-.02 (.18)
<b>State and Regional Measures*</b>					
State Employment Measures					
Unemployment rate	.078 (.06)	-.21*** (.05)	-.04 (.06)	-.02 (.04)	.00 (.05)
Average hourly wage rate in the manufacturing sector	.031 (.11)	.30*** (.11)	-.13 (.12)	.03 (.07)	-.10 (.09)
State Public Assistance Measures					
Maximum AFDC benefit for a family of four (dollars)			.002*** (.001)	.000 (.001)	.001 (.001)

TABLE III.4 (continued)

Explanatory Variables	Elderly and Disabled Members	Ablebodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
Ratio of the AFDC-UP to AFDC caseloads				2.75* (1.5)	1.35 (1.88)
Ratio of the GA to AFDC caseloads	-.08 (.52)	.08 (.42)			
<b>Spell Information</b>					
Spell Duration (Wave 5 Category Is Omitted)					
4 months or less	1.50*** (.30)	2.45*** (.42)	1.27*** (.32)	1.51*** (.20)	1.67*** (.29)
5 to 8	.86*** (.32)	1.89*** (.44)	.90*** (.33)	1.48*** (.21)	1.71*** (.29)
9 to 12	1.32*** (.32)	1.82*** (.46)	1.10*** (.34)	1.18*** (.23)	1.26*** (.32)
13 to 16	.57 (.38)	1.42*** (.52)	.80** (.39)	.55* (.29)	.89** (.36)
First Spell	.29** (.16)	.08 (.14)	.27* (.17)	.35*** (.10)	.00 (.12)
-2 × Log Likelihood	1,706***	2,012***	1,767***	4,297***	2,807***
<b>Number of Spell-Month Observations</b>	<b>5,194</b>	<b>3,686</b>	<b>5,163</b>	<b>8,512</b>	<b>6,265</b>

SOURCE: 1990 and 1991 SIPP Panels.

NOTE: The sample used in the analysis includes only non-left-censored spells that began on or after the second panel month. The parameter estimates are unweighted. The model also includes binary variables signifying the year in which the spell began, in which region the individual lived, and whether the spell was obtained from the 1990 or 1991 SIPP panel.

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>These variables are time-varying covariates.

<sup>c</sup>Category refers to those in household with incomes above the poverty line.

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

the subgroup results, we focus primarily on results that provide additional insights not evident in the full population model results.

The explanatory variables differ across the five subgroup models because some variables are not relevant for certain types of households and because subgroup sample sizes are small for certain levels of other variables. For example, an indicator variable for whether the individual is male is not included in the models pertaining to households with female adults with children, and AFDC receipt measures are not included in models pertaining to households without children.<sup>23</sup>

**Elderly and Disabled Households.** Although, employment is an important determinant of spell duration generally, this is not true to the same extent for households containing only elderly and disabled members. Working at the time of FSP entry positively affects the FSP exit rate of members of elderly and disabled households, but the effect is statistically insignificant at the 10 percent level. This lack of importance of employment status probably reflects the fact that elderly and disabled household members are unlikely to exit the FSP due to an increase in earnings. Since these individuals do not generally exit the FSP through employment, their employment status at entry does not strongly affect their exit rate.

Generally, few factors affect spell duration for this subgroup. Just as we have difficulty identifying the reasons that elderly and disabled household members enter the FSP, as described in Chapter II, we also have difficulty identifying the factors that affect their length of stay on the

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<sup>23</sup>Although not displayed in the table, all models include binary variables indicating individuals' region, the year in which the spell began, and whether the spell is from the 1990 or 1991 SIPP panel. The models, however, do not include the entry trigger event measures because only spells that began on or after month 5 (rather than month 2) could be used if these measures are included in the models, and we did not want to reduce the already small number of observations within each household subgroup. Although not shown, we estimated models that include these entry trigger event measures and found that their inclusion did not affect the parameter estimates of the other explanatory variables. In general, these trigger event measures were not statistically significant.

program. The main factor that affects spell duration among elderly and disabled household members is their household income at entry. Those in households with incomes below the poverty line are significantly less likely to exit the FSP in a given month (and hence have longer spells) than those with higher income levels. In addition, disabled individuals have longer spells than non-disabled individuals.

**Households with Able-Bodied, Prime-Age Adults and No Children.** Individuals in these households (“able-bodied households”) appear to use the FSP as a way to compensate for interruptions in their labor market careers. For this group, current employment status and length of nonemployment significantly affect spell duration. Furthermore, in contrast to the other subgroups, the state unemployment rate and mean wages in the manufacturing industry influence the probability that these individuals exit the FSP. When the unemployment rate falls or when wages are high, those in able-bodied households are more likely to exit the program.

Although the unemployment rate and wages influence spell duration for this subgroup, the household income at FSP entry of these individuals’ does not strongly affect the length of time they spend on the program. For this subgroup alone, general labor market conditions appear to be more important than individual economic circumstances in determining the length of FSP participation spells. The results for this subgroup suggest that even those whose income is very low in the month they enter the program are able to exit the program if the economy improves. The reverse side of the same argument is that those whose income is not that low at FSP entry tend to remain on the program as long as the economy is poor.

**Female-Headed Households with Children.** This is the only household subgroup for whom household size--both the number of adults and the number of children under age six--significantly affects the spell exit rate. In these households, a decrease in the number of adults and an increase in the number of children under age six lead to lower exit rates and longer FSP participation spells. This result shows the importance of day care issues for single females with children. With fewer adults to provide child care and more children who need care, these household members have a harder time exiting the program. Furthermore, individuals in these households who were previously married have shorter spells than those who were never married. A possible explanation for this finding is that former spouses are able to provide child care or other support to these household members.

In addition to finding that AFDC receipt is negatively related to the FSP exit rate, we were able to examine the effect of the generosity of a state's AFDC benefits on FSP spell duration using this subgroup.<sup>24</sup> We find that the maximum AFDC benefit level for a family of three in a state is positively related to the FSP exit rate.<sup>25</sup> In other words, those in states with higher AFDC benefit levels have shorter FSP participation spells. A possible explanation for this finding is that in states with higher AFDC benefits, individuals' FSP benefit levels may be lower, since FSP benefits are calculated after taking into account a household's AFDC income. Alternatively, the AFDC benefit may proxy for some unobserved state characteristics that affects FSP spell duration.<sup>26</sup>

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<sup>24</sup>We examined the effects of the relative size of the AFDC-UP and GA programs on FSP spell duration using other subgroups, but found that these state policy variables have little explanatory power in the models.

<sup>25</sup>Blank and Ruggles (1993) found that maximum AFDC benefits are insignificantly related to the FSP exit rate for this group.

<sup>26</sup>This possibility is supported somewhat by the fact that we found that the maximum AFDC benefit level positively affects spell duration for both AFDC recipients and those who do not receive AFDC.

**Married-Couple Households with Children.** The factors associated with spell exit rates for individuals in married-couple households with children are similar to those for female-headed households with children, though there are a couple of notable exceptions. For both groups, current employment status and the length of nonemployment significantly affect spell duration (those with closer ties to the labor market have shorter spells). However, household income is a much stronger predictor of spell duration for those in married-couple households than it is for those in female-headed households. On the other hand, FSP participation spells among those in married-couple households are not strongly affected by the state unemployment rate. This finding is also true for those in female-headed households, but the unemployment rate does matter for those in prime-age, able-bodied households without children.

Unlike the case of female-headed households, household size does not strongly affect spell length for married-couple households, suggesting that day care issues are less problematic for this group. In particular, the number of children less than age 6 and the number of children between age 6 and 18 do not significantly affect FSP participation spell length for individuals in married-couple households with children.

Finally, married-couple and female-headed households are similar with respect to the estimated effects of AFDC. For each group, AFDC participation is associated with significantly longer FSP participation spells and characteristics of the state welfare program affect spell duration as well. While the maximum AFDC benefit was a significant determinant of spell duration for those in female-headed households, it is the size of the AFDC-UP program in a state that affects spell duration for those in married-couple households. In particular, the participation spells of married-couple households are longer in states where AFDC-UP caseloads are large than in states with fewer households on AFDC-UP.

**Other Households with Children.** As discussed previously, the subgroup of other households with children consists of a diverse set of households with various types of living arrangements. The factors associated with spell exit rates for individuals in these households, however, are similar to those for married-couple households with children.

**c. Implications of PRWORA Legislation on FSP Participation**

The duration model results presented in this section shed light on three major aspects of the PRWORA legislation that potentially influence FSP participation. These three legislative changes are (1) removing most legal immigrants from the FSP, (2) limiting FSP access to able-bodied, prime-age adults without children, and (3) a variety of major changes to the AFDC program such as time limits and work requirements.

**Legal Immigrant Restrictions.** In Chapter II, we showed that noncitizens are more likely than citizens to enter the FSP. Thus, even though noncitizens make up only 6 percent of the population not receiving food stamps in a given month, they make up 11 percent of the population entering the program in the following month. In this sense, they rely on the FSP and will be heavily affected by being denied access to the program by PRWORA legislation. On the other hand, we also found that once noncitizens enter the FSP they receive food stamps for about the same length of time as citizens. Thus, noncitizen FSP participants are no more heavily dependent on food stamp benefits than participants who are citizens once they enter the program.

**Childless, Able-Bodied Adult Restrictions.** The PRWORA legislation limits prime-age, able-bodied, childless adults to three months of FSP participation when they are not working during every 36-month period. The legislation includes possible exceptions to this regulation for those in areas where the unemployment rate exceeds 10 percent or where there are not a sufficient number of jobs.

A major finding from our estimation of the FSP duration model on prime-age, able-bodied adults is that macroeconomic factors play a large role in the length of this group's participation spells. Those facing higher unemployment rates and lower wages in the manufacturing industry tend to stay on food stamps longer than those living in areas with more favorable macroeconomic conditions.<sup>27</sup> This result supports the wisdom of the exemption to the three-month time limit to those in economically depressed areas. When economic conditions are good, able-bodied, prime-age, childless adults seem to be able to leave the program relatively quickly. When economic conditions are poor, however, a three-month time limit might force members of this group to exit the program without alternative means of support. Relaxing the time limit in these circumstances would help members of this group support themselves until the economy improved.

**Changes to the AFDC Program.** The PRWORA legislation changed the AFDC program in a major way, basically converting it to a block grant program to states (Temporary Assistance to Needy Families, or TANF). Although TANF can take a form similar to that of AFDC, it also differs from the previous program in a number of important ways. While AFDC was an entitlement program, with qualified families legally entitled to assistance, the TANF program has no such entitlement status. The new program includes a five-year time limit on benefit receipt during an individual's lifetime, and allows states the freedom to set stricter time limits. The PRWORA legislation also imposed work requirements on states to ensure that a sufficient fraction of a state's TANF participants are employed. Finally, states now have the freedom to expand TANF coverage to groups not previously covered by AFDC.

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<sup>27</sup>The unemployment rate is not as strongly related to reentry into the FSP for this group. We show in Section C that the unemployment rate is insignificantly related to the probability of reentry for childless, able-bodied, prime-age adults.

Most analysts believe that the overall effects of these changes in the provision of welfare will be to reduce the number of AFDC/TANF recipients.<sup>28</sup> As former recipients leave welfare, they will lose welfare income. However, the PRWORA changes should also lead to an increase in the number of welfare recipients or former recipients working, and thus an increase in earned income. Thus, while the changes should lead to a decrease in AFDC/TANF participation and an increase in employment among recipients or former recipients, the effect on household income is ambiguous.

The FSP participation spell duration model includes dummy variables indicating an individual's employment status, level of household income, and AFDC participation status. Estimates from the model indicate that employment and income are negatively related to FSP participation spell length while AFDC participation is positively related to spell length. To interpret these results, we assume that the PRWORA legislation will lead to a reduction in welfare participation and an increase in employment, and its effect on household income (which is ambiguous, as noted above) will be relatively small. If we also assume that our estimates reflect causal relationships between the independent variables and FSP participation spell duration, the results suggest that the PRWORA changes will lead to a reduction in the length of FSP participation spells. In other words, because FSP entrants will be less likely to be receiving AFDC and more likely to be employed, they will exit the FSP sooner.

As noted previously, however, care must be taken in interpreting the coefficients on both the AFDC and employment variables in the duration model. In particular, our findings of a positive relationship between AFDC receipt and FSP participation spell length and a negative relationship between employment and FSP participation spell length might simply reflect the influence of

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<sup>28</sup>The PRWORA changes do not unambiguously lead to a reduction in the number of welfare recipients, however. For example, under the legislation states may expand TANF to cover some families not previously eligible for AFDC.

unobserved variables rather than a causal relationship. For example, rather than AFDC receipt in some way causing individuals to stay on the FSP longer, AFDC receipt and FSP participation might be correlated because people familiar with the public welfare system, without any aversion (or feelings of stigma) toward receiving welfare, or whose economic situation (beyond what can be measured through income and employment) is particularly bad may be more likely both to receive AFDC and to have longer FSP participation spells. These individuals would have the same characteristics even if they did not receive AFDC, so making them ineligible for welfare would not affect the length of their FSP participation spells. A similar argument could be made explaining the relationship between employment and FSP participation spell duration.

We believe that the estimated relationships of AFDC receipt and employment with FSP participation spell duration probably result from a combination of a causal relationship and a spurious relationship caused by unobserved variables. However, we are not certain of the relative importance of each of these possible explanations. If the causal explanation is more important, then we would expect the PRWORA changes to lead to a decrease in FSP participation spell duration. If the unobserved variables explanation dominates, then we would expect the PRWORA changes to have little influence on FSP participation spell duration.

**d. Duration Model Implications for the Caseload Increase from the Mid-1980s to Early 1990s**

The duration model results potentially could be used to explain the increase in the duration of FSP participation spells between the mid-1980s and early 1990s. In particular, by comparing the characteristics of FSP entrants in the mid-1980s with those of entrants in the early 1990s, we might be able to determine whether a change in one or more of these characteristics led to the increase in

participation spell duration.<sup>29</sup> In order for a characteristic to contribute to the spell duration increase, however, not only would its distribution among FSP entrants have to have changed over this period, but the characteristic must have a strong effect on spell duration in the model we estimated.

Martini and Allin (1993) compared selected characteristics of FSP entrants in the mid-1980s and early 1990s. They used administrative data from the Integrated Quality Control System (IQCS) to compare entrant characteristics in the first two quarters of fiscal years 1990-92 (FY90-92) with those of entrants in the first two quarters of FY86-88. In addition, they used SIPP data from 1987-1988 and 1990-1991 to compare (1) the economic experiences of FSP entrants in during the eight-month period prior to the start of their spells, and (2) the patterns of FSP participation of all persons in the SIPP samples classified into four groups on the basis of their economic status in January 1987 and January 1990.<sup>30</sup>

Martini and Allin found that the characteristics of FSP entrants changed only slightly between the mid-1980s and early 1990s (Martini and Allin 1993). The IQCS analysis showed that the characteristics of entrants in *the month they started receiving food stamps* changed little between

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<sup>29</sup>The procedure for doing this would involve combining data on the distribution of the model's explanatory variables among FSP entrants in the mid-1980s with the model's parameter estimates to predict model-based FSP participation spell durations in the 1980s. Any differences between the mean of these spell durations and the mean spell duration from the early 1990s would be attributable to changes in values of the explanatory variables between these periods. A closer examination of which explanatory variables changed along with which variables significantly affect spell duration would allow us to assess what observable factors (if any) led to the increase in spell duration. One assumption of this procedure, however, is that the parameters in the duration models remained constant between the mid-1980s and early 1990s. This "stationarity" assumption cannot be tested unless we were to estimate duration models using SIPP data from the mid-1980s, which is beyond the scope of this project.

<sup>30</sup>Although these time periods do not precisely match the time periods we are comparing in our study (1984-1986 and 1990-1993), they are close enough to give us an idea of the relevant changes over the period in which we are interested.

these two time periods. The SIPP analysis indicated that the *pre-application characteristics* of entrants changed little since the mid-1980s. The SIPP analysis indicated also, that entrants who were classified as economically “secure” or “precarious,” as opposed to economically “distressed” or “on the edge,” entered the FSP at a rate in the early 1990s that was higher than in the late 1980s, although participation among the latter two groups was still a rare event.

Macroeconomic conditions, as indicated by the unemployment rate, also remained relatively stable between the mid-1980s and early 1990s. The mean monthly unemployment rate was 7.2 percent during the 1984 to 1986 calendar years and 6.7 percent during the 1990 to 1993 calendar years. These figures suggest that, if anything, macroeconomic conditions were better in the early 1990s than in the mid-1980s so that one would have expected FSP spell duration to be shorter in the early 1990s.<sup>31</sup>

The results of Martini and Allin (1993), along with the unemployment rate figures, provide no evidence that changes in the economic characteristics of FSP entrants or macroeconomic conditions can explain the increase in FSP participation spell duration between the mid-1980s and early 1990s. Other characteristics of FSP entrants may have changed over this period (such as demographic characteristics), but since the estimated effects of these characteristics on spell duration were not as large as the estimated effects of economic variables, it is unlikely that changes in these characteristics had much of an effect on spell duration. Thus, we are not optimistic that using our current model to explain the increase in spell duration (and the resulting caseload increase) between the mid-1980s and early 1990s would be fruitful.

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<sup>31</sup>One factor not accounted for in our model is the general trend of the unemployment rate, and there may have been a difference between the mid-1980s and early 1990s in this respect. In particular, the unemployment rate was generally falling during the 1984-1986 period and rising during the 1990-1993 period.



the FSP exit trigger variables; these variables are analogous to the FSP entry trigger variables used in the multivariate duration analysis.

The sample used in the multivariate reentry analysis contains 2,768 off-spells. The average spell duration during the panel period lasts 10.8 months, and 60 percent of spells are right-censored. About 42 percent of the spells are first off-spells (that is, they are the off-spells following individuals' first participation spells). The sample contains 338 individuals in elderly and disabled households, 444 in able-bodied households without children, 447 in female-headed households with children, 902 in married-couple households with children, and 637 in other households with children. In all, the sample includes 27,674 spell-month observations.

## **2. Estimation Results**

In general, we expected that factors would have consistent effects on reentry as they had on the duration of FSP participation spells. In other words, we expected the factors that positively influence spell duration would positively influence the reentry rate, and vice versa (particularly in the subgroup analysis). As described below, this relationship holds for several factors but not all.

### **a. Full Sample**

Table III.5 contains parameter estimates from two discrete-time hazard models of FSP reentry for the full sample. The structure of this table is similar to the structure of Table III.2, which presented the duration model results. Table III.6 presents regression-adjusted, cumulative reentry rates for key subgroups.

The interpretation of the coefficients from the reentry models in Table III.5 are analogous to the interpretation of the duration models. The coefficient on a given explanatory variable reflects the estimated relationship between the variable and the hazard rate out of the spell of nonparticipation, or the reentry rate. A positive coefficient implies that this relationship is positive, or that higher

TABLE III.5

FSP REENTRY HAZARD MODEL:  
ESTIMATED EFFECTS OF EXPLANATORY VARIABLES  
ON PROBABILITY OF REENTERING THE FSP  
(Standard Errors in Parentheses)

Explanatory Variables	(1) Model Without Exit Trigger Events	(2) Model with Exit Trigger Events
<b>Individual Demographic Characteristics<sup>a</sup></b>		
Male	-.05 (.07)	-.05 (.08)
Race (Hispanic Category Is Omitted)		
White, non-Hispanic	-.08 (.10)	-.07 (.11)
Black, non-Hispanic	-.01 (.11)	.10 (.12)
Other	.04 (.19)	.12 (.21)
Age (18-to-29-Year-Old Category Is Omitted)		
30 to 49	-.09 (.08)	-.10 (.09)
50 to 64	-.34** (.13)	-.31*** (.15)
65 and older	-.43** (.17)	-.48*** (.19)
U.S. Citizen	.12 (.12)	.06 (.14)
<b>Education Levels and Employment Status<sup>a</sup></b>		
Highest Grade Completed (0-to-8 Category Is Omitted)		
9 to 11	.01 (.10)	.00 (.11)
12	-.06 (.10)	-.14 (.12)
13 or greater	-.29** (.13)	-.30** (.14)
Employment Status (Never-Worked Category is Omitted)		
Currently working	-.12 (.08)	-.04 (.09)
Nonemployed for 6 months or less	.05 (.11)	.06 (.12)
Nonemployed for 7 to 12 months	-.21 (.17)	-.21 (.18)
Nonemployed for more than 12 months	-.07 (.21)	-.09 (.22)
<b>Household Income and Welfare Receipt<sup>a</sup></b>		
Ratio of Household Income to Poverty Level (Less-than 1 Category Is Omitted)		
1 to 1.5	-.41*** (.08)	-.39*** (.09)
1.5 to 2	-.73*** (.11)	-.68*** (.11)
2 or more	-.86*** (.11)	-.86*** (.12)

TABLE III.5 (continued)

Explanatory Variables	(1) Model Without Exit Trigger Events	(2) Model with Exit Trigger Events
Currently Receiving AFDC	.46*** (.14)	
<b>Household Composition<sup>a</sup></b>		
Household Size		
Number of adults	.06 (.04)	.04 (.04)
Number of children less than age 6	.05 (.04)	.05 (.04)
Number of children between ages 6 and 18	.05* (.03)	.06** (.03)
Marital Status (Never-Married Category Is Omitted)		
Currently married	.19** (.09)	.13 (.10)
Previously married	-.09 (.11)	-.16 (.12)
<b>Entry Trigger Events (Income-Decrease-Only Category Is Omitted)</b>		
Not Identified		-.06 (.09)
Household Composition Change Only		.05 (.18)
Income Decrease and Household Composition Change		.00 (.10)
<b>State and Regional Measures<sup>b</sup></b>		
State Employment Measures		
Unemployment rate in the manufacturing sector	.01 (.03)	.00 (.03)
Average hourly wage rate in the manufacturing sector	.04 (.05)	.10* (.05)
Region of Residence (West Category Is Omitted)		
Northeast	.28** (.14)	.28* (.15)
Midatlantic	.13 (.13)	.13 (.15)
Midwest	-.01 (.13)	-.17 (.14)
Southeast	.33** (.16)	.42** (.18)
Southwest	.16 (.12)	.15 (.14)
Mountain	.38** (.17)	.25 (.19)
<b>Spell Information</b>		
Spell Duration (More-than-16-Months Category Is Omitted)		
4 months or less	1.29*** (.14)	1.14*** (.17)
5 to 8	.77*** (.15)	.59*** (.18)
9 to 12	.44*** (.16)	.24 (.19)
13 to 16	.20 (.18)	.01 (.21)

TABLE III.5 (continued)

Explanatory Variables	(1) Model Without Exit Trigger Events	(2) Model with Exit Trigger Events
First Off-Spell	- .21*** (.07)	- .26*** (.08)
Duration in Months of Previous On-Spell	.002** (.001)	.001* (.001)
In 1991 Panel	.04 (.09)	-.05 (.11)
Spell Start Year (1991 Category Is Omitted)		
1989	.50 (.33)	
1990	.13 (.09)	.14 (.10)
1992	-.22** (.09)	-.15 (.10)
1993	-.52** (.21)	-.32 (.28)
-2 × Log Likelihood	8,778***	7,134***
<b>Number of Spell-Month Observations</b>	<b>27,605</b>	<b>21,747</b>

SOURCE: 1990 and 1991 SIPP Longitudinal Panel.

NOTE: The sample used to estimate the models in column (1) includes all off-spells that began during the panel period. The sample used to estimate the model in column (2) includes off-spells that began between months 6 and 28. All parameter estimates are unweighted.

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>These variables are time-varying covariates.

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

TABLE III.6  
REGRESSION-ADJUSTED, CUMULATIVE REENTRY RATES  
FOR KEY SUBGROUPS

Explanatory Variables	Median Off-Spell Duration <sup>b</sup>	Percentage Reentering the FSP Within				
		4 Months	8 Months	12 Months	16 Months	20 Months
<b>Individual Demographic Characteristics</b>						
Age						
18 to 29 years	16	14.4	33.5	42.0	48.7	52.8
30 to 49 years	19	13.3	31.1	39.3	45.7	50.3
50 to 64 years	>22	10.5	25.2	32.1	37.7	41.3
65 years and older	>22	9.6	23.2	29.8	35.0	38.4
<b>Education Levels<sup>a</sup></b>						
Highest Grade Completed						
Less than 9	17	13.9	32.4	40.8	47.3	51.3
9 to 11	17	14.0	32.6	41.1	47.6	51.7
12	21	13.1	30.8	38.9	45.2	49.1
13 or more	>22	10.6	25.4	32.4	38.0	41.5
<b>Household Income and Welfare Receipt<sup>a</sup></b>						
Ratio of Household Income to Poverty Level						
Less than 1.0	10	18.0	40.9	50.9	58.4	63.0
1.0 to 1.5	21	12.3	29.5	37.7	44.1	48.2
1.5 to 2.0	>22	9.1	22.5	29.1	34.5	38.0
2.0 or more	>22	8.2	20.3	26.4	31.4	34.6
AFDC Receipt						
Currently receiving	9	19.7	43.6	53.6	61.0	65.4
Not currently receiving	>22	12.8	30.2	38.2	44.4	48.3
<b>Household Size and Marital Status<sup>a</sup></b>						
Number of Children						
Zero	>22	12.4	29.3	37.1	43.2	47.1
One	21	13.1	30.7	38.7	45.0	49.0
Two	19	13.7	32.1	40.4	46.8	50.9

TABLE III.6 (continued)

Explanatory Variables	Median Off-Spell Duration <sup>b</sup>	Percentage Reentering the FSP Within				
		4 Months	8 Months	12 Months	16 Months	20 Months
<b>Marital Status</b>						
Currently married	17	14.8	34.1	42.8	49.5	53.7
Never married	>22	12.3	28.9	36.7	42.7	46.6
<b>Spell Information</b>						
<b>First Versus Repeat Off-Spells</b>						
First spell	>22	11.7	27.9	35.4	41.4	45.1
Repeat spell	18	14.2	33.0	41.5	48.1	52.1

SOURCE: 1990 and 1991 SIPP Longitudinal Panel.

NOTE: The sample used to estimate the figures include off-spells that began during the panel period. The parameter estimates in Table C.1, column (1) were used to calculate the figures.

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>Because of the limited length of the SIPP panel period, we could not precisely measure median spell duration for long off-spells. For these spells, we know only that the median spell duration exceeds 22 months.

values of the variable imply higher reentry rates (or shorter spells of nonparticipation). A negative coefficient implies that the relationship is negative, or that higher values of the variable imply lower reentry rates (or longer spells of nonparticipation). The coefficient on MALE in Table III.5 is negative (though not statistically significant), implying that males have an (insignificantly) lower reentry rate and longer nonparticipation spells than do females.

Consistent with its effect on spell duration, household income has a particularly strong and statistically significant effect on FSP reentry. Just as low income leads to long participation spells, it also leads to a higher probability of reentry. All else equal, 63 percent of those in households with incomes below the poverty line return to the FSP within 20 months of exiting the program, compared with about 40 percent of those in households with incomes above the poverty line. Similarly, AFDC receipt has a strong effect on the probability of reentry, with AFDC receipt leading to an estimated increase in the 20-month reentry rate from 48 percent to 65 percent.

Once household income and AFDC receipt are controlled, however, employment status does not affect FSP reentry (although employed individuals undoubtedly have higher incomes than nonemployed individuals). In column (1), neither the current employment variable nor any of the variables indicating the length of nonemployment is statistically significant at the 10 percent level.<sup>32</sup> Furthermore, neither the state unemployment rate nor the average wage in the manufacturing industry are significantly related to FSP reentry.

Several factors affect FSP reentry differently from the way they affect spell duration. For example, while seniors tend to have longer participation spells than younger individuals, they are much less likely to reenter the FSP. Our model suggests that approximately 38 percent of those 65 and older reenter the program within 20 months of exit, compared with more than 50 percent among

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<sup>32</sup>In addition, none of the exit trigger events (including income changes potentially related to employment) significantly affect the reentry rate.

those less than age 50. In addition, while married individuals have shorter participation spells than single individuals, they are more likely to reenter the FSP after exiting.

Education variables, which did not significantly affect participation spell durations, have some explanatory power in the reentry models. We find that more highly educated individuals return to the FSP at a slower rate than do those with lower education levels. For example, the proportion who reenter the FSP within 20 months was over 50 percent among those without a high school diploma but was only about 40 percent for those who had some college education. A possible explanation for this finding is that although educated individuals may find jobs no more quickly than less-educated individuals, the jobs they ultimately find are higher-paying and more stable.

Like participation spells, spells off the FSP show negative duration dependence--the longer an individual stays off the program, the less likely he or she is to reenter. The type of participation spell an individual experiences also seems to affect their likelihood of returning to the program. Following initial spells of FSP participation, individuals are less likely to reenter the FSP than they are following a repeat spell. In addition, the longer the participation spell, the more likely the participant is to reenter the program after exiting. This effect is statistically significant, but its magnitude is small. For example, the median off-spell duration is 20 months for those whose participation spell lasted 3 months, compared with 19 months for those whose participation spell lasted 36 months. Finally, there is some evidence that reentry rates declined somewhat over time among spells beginning during the 1990 through 1993 time period.

#### **b. Household Subgroups**

The effects of the explanatory variables on FSP reentry rates differ across the five household subgroups, although less so than in the duration analysis (see Table III.7). A possible explanation for this finding is that those who exit the food stamp program are a more homogeneous group than

TABLE III.7

FSP REENTRY HAZARD MODEL, BY HOUSEHOLD SUBGROUP:  
ESTIMATED EFFECTS OF EXPLANATORY VARIABLES  
ON PROBABILITY OF REENTERING THE FSP  
(Standard Errors in Parentheses)

Explanatory Variables	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Individual Demographic Characteristics</b>					
Male	-.02 (.22)	-.06 (.19)		-.15 (.12)	1-.05 (.14)
Race (Hispanic Category Is Omitted)					
White, non-Hispanic	.26 (.36)	.33 (.34)	-.24 (.27)	-.36* (.18)	-.13 (.20)
Black, non-Hispanic	.44 (.40)	.39 (.37)	.12 (.26)	-.44* (.24)	.00 (.20)
Other	1.38* (.74)	-.45 (.84)	-.25 (.60)	.37 (.33)	-.11 (.34)
Age (Years)	.00 (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)	-.02*** (.01)
U.S. Citizen	.45 (.45)	-.50 (.47)	.26 (.45)	.55** (.22)	-.18 (.23)
Disabled	.60** (.29)				
<b>Education Levels and Employment Status*</b>					
Highest Grade Completed (0-to-8 Category Is Omitted)					
9 to 11	.14 (.26)	-.44 (.30)	-.20 (.30)	.17 (.19)	-.25 (.22)
12	-.06 (.33)	-.22 (.29)	-.55* (.28)	-.14 (.20)	.15 (.21)
13 or greater	.25 (.35)	-.81** (.39)	-.58* (.32)	-.48** (.24)	-.08 (.27)
Employment Status (Never-Worked Category Is Omitted)					
Currently working	.29 (.32)	-.40 (.26)	-.19 (.22)	.08 (.15)	-.24 (.17)
Nonemployed for 6 months or less		.02 (.31)	-.52 (.35)	.37** (.19)	.11 (.20)
Nonemployed for 7 to 12 months		-.55 (.45)	.56 (.40)	.10 (.27)	-.56 (.42)
Nonemployed for more than 12 months		.07 (.58)	- 1.31* (.76)	-.02 (.39)	.34 (.33)

TABLE III.7 (continued)

Explanatory Variables	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Household Income and Welfare Receipt*</b>					
Ratio of Household Income to Poverty Level (Less than 1.0 Category Is Omitted)					
1.0 to 1.5	-.28 (.24)	-.08 (.24)	.55*** (.18)	-.67*** (.14)	-.22 (.18)
1.5 to 2.0	-.80** (.37)	-1.24** (.43)		-1.01*** (.17)	-.29 (.23)
2.0 or more	-.85** (.38)	-.64** (.30)		-.88*** (.19)	-.88*** (.22)
Currently Receiving AFDC			.25 (.25)	.15 (.28)	.76*** (.25)
<b>Household Composition*</b>					
Household Size					
Number of adults	-.08 (.21)	.04 (.11)	-.17 (.14)		.08 (.07)
Number of children less than age 6			-.14 (.11)	.05 (.07)	.03 (.07)
Number of children between ages 6 and 18			-.07 (.08)	.04 (.06)	.03 (.06)
Marital Status (Never-Married Category Is Omitted)					
Currently married	.75 (.37)	.22 (.28)			.31 (.21)
Previously married	-.22 (.32)	.15 (.29)	.00 (.20)		.10 (.23)
<b>State and Regional Measures*</b>					
State Employment Measures					
Unemployment rate in the manufacturing sector	-.21** (.09)	-.09 (.08)	-.05 (.06)	.10* (.05)	.02 (.06)
Average hourly wage rate in the manufacturing sector	.10 (.14)	.26* (.14)	.13 (.12)	.07 (.09)	-.13 (.11)
State Public Assistance Measures					
Maximum AFDC benefit for a family of three (dollars)			-.001 (.001)	-.001 (.001)	.000 (.001)
Ratio of the AFDC-UP to AFDC caseloads				-1.06 (1.72)	-.49 (2.43)
Ratio of the GA to AFDC caseloads	-.62 (.69)	-.52 (.62)			

TABLE III.7 (continued)

Explanatory Variables	Elderly and Disabled Members	Able-Bodied, Prime-Age Without Children	Female Adults with Children	Married Couples with Children	Other Households with Children
<b>Spell Information</b>					
Spell Duration (Wave 5- Category Is Omitted)					
4 months or less	.72** (.35)	1.05*** (.36)	1.32*** (.35)	1.20*** (.23)	1.49*** (.40)
5 to 8	-.05 (.39)	.97*** (.37)	.64* (.38)	.64*** (.25)	1.26*** (.41)
9 to 12	-.71 (.48)	.36 (.42)	.71* (.38)	.41 (.26)	.91** (.43)
13 to 16	-.24 (.46)	-.38 (.55)	.27 (.44)	.17 (.29)	.79* (.47)
First Spell	.03 (.21)	-.27 (.21)	-.17 (.17)	-.34*** (.12)	.01 (.15)
Duration in Months of Previous On-Spell	.000 (.002)	.003 (.002)	.002 (.002)	-.002 (.002)	.004*** (.001)
-2 × Log Likelihood	995***	1,123***	1,506***	2,952***	1,992***
<b>Number of Spell-Month Observations</b>	<b>3,562</b>	<b>4,894</b>	<b>4,622</b>	<b>8,768</b>	<b>5,759</b>

SOURCE: 1990 and 1991 SIPP Panels.

NOTE: The sample used in the analysis includes only off-spells that began during the panel period. The parameter estimates are unweighted. The model also includes binary variables signifying in which region the individual lived, the year in which the spell began, and whether the spell was obtained from the 1990 or 1991 SIPP panel.

<sup>a</sup>These variables are measured at the start of the food stamp spells.

<sup>b</sup>These variables are time-varying covariates.

<sup>c</sup>Category refers to those in households with incomes above the poverty line.

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

are food stamp recipients. This is because food stamp recipients include those who will never leave the program as well as those who leave the program, while potential reentrants include only those who leave the program.

As in the duration analysis, we find very few factors that influence reentry rates for those in elderly and disabled households. Hence, the explanatory variables included in our analysis do not adequately describe the factors associated with FSP participation for this subgroup.

While the employment status variables are strong predictors of the FSP exit rates across all household subgroups, they are weak predictors of the FSP reentry rates for all household subgroups. Household income effects, however, are large across all the subgroups. The receipt of AFDC has a small effect on reentry rates in female-headed households and married households with children, although we found that AFDC receipt is a strong determinant of the duration of FSP spells for those in these households. However, AFDC participation is positively related to FSP reentry among those in other households with children. The parameter estimates on the household composition and state and regional measures are statistically insignificant, in general. Finally, the full population finding that reentry rates are higher for those in repeat spells than for those in first spells is largely due to these effects for those in the married-couple households with children.



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**APPENDIX A**

**1990 AND 1991 SIPP PANEL ESTIMATES OF THE FSP PARTICIPATION RATE**



In this report, we use data from the 1990 and 1991 panels of SIPP to describe FSP participation dynamics during the early 1990s. This appendix examines differences in the reported participation rates between the two panels. In particular, the appendix documents these differences, explores possible explanations for the differences, and describes our strategy for dealing with these differences.

The participation rates from the two panels over the time period covered by both panels differ in a nontrivial way. During the 1991 calendar year, the estimate of the participation rate (defined as the percentage of all individuals who receive food stamps) based on the 1991 panel is higher than the estimate based on the 1990 panel. In both panels, we weighted the sample using a 1991 calendar year weight, designed to make the sample representative of the civilian, noninstitutionalized population in the United States as of January 1991. Monthly participation rates from the two panels are shown below:

Month	1990 Panel (Percentages)	1991 Panel (Percentages)	Difference (Percentages)	Standard Error of Difference	P-Value <sup>a</sup>
January 1991	7.28	7.69	0.41	0.35	.239
February 1991	7.46	7.65	0.19	0.35	.592
March 1991	7.37	7.83	0.46	0.35	.188
April 1991	7.32	7.75	0.43	0.35	.221
May 1991	7.43	7.97	0.54	0.35	.125
June 1991	7.45	7.99	0.54	0.36	.129
July 1991	7.42	8.02	0.60	0.36	.092
August 1991	7.54	7.93	0.39	0.36	.277
September 1991	7.51	7.91	0.40	0.35	.253
October 1991	7.54	8.10	0.56	0.36	.116
November 1991	7.56	8.12	0.56	0.35	.111
December 1991	7.65	8.11	0.46	0.35	.192

<sup>a</sup>The p-value shows the level at which the difference between the 1990 and 1991 panel estimates of the participation rate would be statistically significant.

These monthly participation rates depend both on the estimated number of participants and the estimated population size. The differences between the panels in the participation rates primarily are the result of differences in the estimated number of participants. For example, in August 1991, the 1990 panel estimate of the number of participants is 18.6 million and the 1991 panel estimate is 19.7 million (both of which are below the FSP administrative count of 23.7 million participants, U.S. Department of Agriculture 1997).

There are at least four reasons why the 1990 and 1991 panels might produce different participation figures for the same period of time: (1) sampling variability (or chance), (2) differences in the panels' 1991 calendar year weights, (3) differences in the panels' imputation procedures, and (4) time-in-the-sample bias. We describe each of these reasons in turn below and then discuss the implications of these participation rate differences and our strategy for dealing with them.

#### **A. SAMPLING VARIABILITY**

Since participation behavior is based on different samples of households in the two panels, the resulting participation rates may differ by chance, or because of sampling variability.<sup>1</sup> We can measure the likelihood that these observed differences are due to chance (the greater the difference, the smaller the likelihood that it is due to chance). Based on this likelihood, we can determine whether a particular difference between the panels is statistically significant at a given level of significance.

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<sup>1</sup>Although the participation rates of the two panels in any given month may differ by chance, the participation rate from month to month within a panel is based on the same sample and is correlated. Therefore, the difference in the participation rates of the two panels should also be correlated over time, rather than randomly varying from month to month. This turns out to be the case, with the 1991 panel estimate of the participation rate being about 0.5 percentage points higher than the 1990 panel estimate in each month of 1991.

If we use a five percent level of significance as our standard and take into account SIPP's sample weights and the complex sample design, we find that none of the differences between the 1990 and 1991 panels in the 1991 monthly participation rates is statistically significant.<sup>2</sup> This suggests that chance (or sampling variability) may explain the difference between the panels. However, the issue is less clear-cut if we use a less strict standard for determining statistical significance. At a significance level of 10 percent, three of the monthly differences are statistically significant. At a significance level of 20 percent (which is rarely used in practice), eight of the differences are statistically significant.

Thus, depending on how conservative or liberal we are in defining statistical significance, we might consider "chance" to be an adequate explanation for the difference in participation rates between the 1990 and 1991 panels, or we might feel the need to explore the issue further. In the interest of being thorough, we explore other differences between the 1990 and 1991 panels and these differences' potential impact on participation rates.

## **B. DIFFERENCES IN THE PANELS' 1991 CALENDAR YEAR WEIGHTS**

Both the 1990 and 1991 panels of SIPP include a 1991 calendar year weight. The 1991 calendar year weight can be applied to the sample of individuals who were in the sample in January 1991 and who remained in the sample throughout the 1991 calendar year (or who left the sample due to death, emigration, institutionalization, or entry into the armed forces). When applied to this sample, the 1991 calendar year weight makes it representative of the resident, noninstitutionalized, U.S. population as of January 1991. In principal, the construction of these weights should allow us to make valid comparisons of 1991 FSP participation rates based on the 1990 and 1991 SIPP panels.

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<sup>2</sup>When we do not take into account SIPP's complex sample design, assuming instead that SIPP is based on a simple random sample, 11 of the 12 differences are statistically significant.

However, a subtle difference in the way the weights were constructed in the two panels leads to a problem in making these comparisons. To construct these weights, we had to know the size and a few simple characteristics of the population in January 1991. In the 1991 SIPP panel, this information was based on 1990 census data, updated to January 1991 using vital records showing births and deaths and using data on immigration to and emigration from the United States. The 1990 SIPP panel uses a similar procedure to calculate the 1991 calendar year weight, except that at the time the weight was calculated, 1990 census data were not available. Therefore, the 1990 panel determined the January 1991 characteristics of the population by using 1980 census data, updated using vital records and immigration/emigration data. Furthermore, the 1990 census population controls used by the 1991 SIPP panel were adjusted to account for the probable undercount by the census of hard-to-find individuals. The 1980 census population controls had no such undercount adjustment.

These differences led to conceptual differences between the weights of the 1990 and 1991 SIPP panels. In particular, we are estimating the parameters of different populations when we make weighted population estimates using the 1990 and 1991 panels. For example, the size of the U.S. population in January 1991 is 248.7 million according to the 1990 panel and 251.2 million according to the 1991 panel. Furthermore, since the 1991 panel uses population controls that have been adjusted for the census undercount, the 1991 panel's underlying population includes more low-income individuals (who the Census Bureau has a more difficult time finding) who are likely to participate in the FSP than does the 1990 panel. This could be a factor in explaining the higher participation rates in the 1991 panel.

### **C. DIFFERENCES IN THE PANELS' IMPUTATION PROCEDURES**

As noted above, the sample in which the 1991 calendar year weight is applied includes all those in the SIPP sample between January 1991 and December 1991, or who left the sample during the 1991 calendar year because of death, emigration, institutionalization, or entry into the armed forces. Individuals who could not be located or who refused to respond to the SIPP survey during this period were not included in the sample (and received a calendar year weight of 0). The calendar year weights attempt to take into account this sample attrition, at least with respect to a few observable characteristics.

There is one major difference between the two panels with respect to sample attrition. In the 1991 panel, when respondents missed one wave interview but were interviewed in the preceding and following wave, the data for the missing wave were imputed and the respondent was included in the calendar year (and full panel) sample. In the 1990 panel, by contrast, respondents who missed a single wave were excluded from the calendar year (and full panel) sample, regardless of whether they were interviewed again later. In principal, the calendar year weights accounted for this difference, but the weights may not fully account for this slight difference in sample design.

### **D. TIME-IN-THE-SAMPLE BIAS**

Since SIPP respondents are interviewed every four months during the 32-month panel period, they are interviewed 8 times. One possible side-effect of this interviewing schedule is that respondents may become savvy to the interviewing process over time and may alter their answers to minimize the inconvenience of responding to the SIPP survey. For example, respondents who report that they received government assistance (including food stamps) must go on to answer a series of questions about what aid they received, who in their household received it, how much they received, and what months they received it. By the time they have gone through the process of

answering these questions several times, those receiving government assistance may realize that they can shorten the interview if they report that they received no government assistance during the reference period.

If this type of time-in-the-sample bias is common, there will be a negative bias in the reported number of FSP participants that becomes more pronounced over the course of the panel period. In addition, when comparing participation rates at a given point in time between the 1990 and 1991 panels, the negative bias present in the 1990 panel data will be greater than the negative bias present in the 1991 panel. This is because any point in time that is covered by both panels will occur later in the 1990 panel than in the 1991 panel.

There is some evidence of this type of bias. In August 1990 and August 1991 for the 1990 panel, we compared the estimated number of participants according to SIPP with the estimated number of participants according to administrative data. The SIPP estimate as a percentage of the administrative estimate decreased from 81.0 percent to 78.7 percent between August 1990 and August 1991, which is consistent with there being time-in-the-sample bias. Similarly, the 1991 panel showed that the SIPP estimate as a percentage of the administrative estimate decreased from 83.4 percent to 79.6 percent between August 1991 and August 1992. In other words, SIPP underestimates the number of participants to a greater extent later in the panel period than earlier in the panel period.

#### **E. IMPLICATIONS OF THE DIFFERENCES BETWEEN PANELS**

Together, these four explanations probably account for most of the difference in estimated participation rates based on the 1990 and 1991 SIPP panels. The difference in the estimated participation rates could show up in any aspect of FSP participation dynamics--initial FSP entry, the duration of participation spells, or FSP reentry. Tables A.1 through A.3 summarize the differences

TABLE A.1  
FSP MONTHLY ENTRY RATES, BY SUBGROUP--1990 and 1991 SIPP PANELS  
(Percentages)

Subgroup	1990 Panel	1991 Panel
All Individuals	0.29	0.31
Previous FSP Participation		
Never received food stamps	0.10	0.12
Previously received food stamps	1.30	1.35
Income		
Less than poverty line	1.74	1.98
Between one and two times poverty line	0.67	0.68
Between two and three times poverty line	0.19	0.19
More than three times poverty line	0.05	0.05
Household (HH) Type		
Individuals in HHs with only able-bodied, prime-age adults	0.06	0.07
Individuals in HHs with only elderly or disabled members	0.13	0.14
Individuals in HHs with elderly/disabled and able-bodied adults, no children	0.18	0.21
Adults in single-adult HHs with children	0.88	0.89
Children in single-adult HHs with children	1.07	1.08
Adults in multiple-adult HHs with children	0.35	0.37
Children in multiple-adult HHs with children	0.46	0.48
Age		
Older than 60 years	0.11	0.11
18 to 59 years	0.25	0.27
Yonger than 18 years	0.53	0.54
Gender		
Male	0.27	0.28
Female	0.31	0.34
Race/Ethnicity		
White/other	0.21	0.21
Black, non-Hispanic	0.68	0.78
Hispanic	0.71	0.78
HH Earnings Status		
HH contains earners	0.27	0.27
HH contains no earners	0.39	0.53
HH Education Status <sup>a</sup>		
HH includes high school graduate	0.24	0.24
HH includes no high school graduate	1.14	1.30
<b>Sample Size (Person Months)</b>	<b>898,570</b>	<b>633,448</b>

SOURCE: 1990 and 1991 SIPP Panels.

NOTE: FSP entry rate is defined as the percentage of at-risk population who begin to receive food stamps in a given period (month or year).

<sup>a</sup> Defined only for households that include nondisabled adults between ages 18 and 59.

TABLE A.2  
COMPARISON OF CUMULATIVE ESTIMATED FSP EXIT RATES BASED ON THE 1990 AND 1991 SIPP PANELS  
(Percentages)

Month	1990 SIPP Panel	1991 SIPP Panel
1	7.2	6.4
2	13.4	14.6
3	17.5	19.8
4	32.2	33.3
5	37.1	36.7
6	41.8	40.8
7	43.3	43.3
8	48.9	48.7
9	50.2	51.6
10	52.4	53.3
11	53.8	56.1
12	57.2	59.9
13	58.3	61.7
14	59.1	62.3
15	59.5	63.1
16	61.4	65.9
17	62.5	66.4
18	62.7	66.9
19	63.9	67.4
20	65.5	68.4
21	66.2	69.1
22	66.4	69.4
23	68.3	69.8
24	69.5	71.4
25	70.6	71.6
26	70.6	71.6
27	70.6	71.6
<b>Median</b>	<b>9</b>	<b>9</b>

SOURCE: 1990 and 1991 SIPP Panels.

NOTE: Estimates are based on all non-left-censored spells that began during or after the second panel month. The 1990 panel estimates are based on 3,297 spells and the 1991 panel estimates are based on 2,310 spells.

TABLE A.3

COMPARISON OF CUMULATIVE ESTIMATED FSP REENTRY RATES BASED ON THE 1990 AND 1991 SIPP PANELS  
(Percentages)

Month	1990 SIPP Panel	1991 SIPP Panel
1	0.0	0.0
2	7.7	6.9
3	13.5	11.9
4	24.6	25.9
5	28.3	27.5
6	30.0	30.0
7	32.6	31.7
8	37.2	35.7
9	38.4	37.1
10	40.3	39.3
11	41.2	40.2
12	44.3	43.0
13	44.8	44.2
14	45.6	45.5
15	46.1	46.3
16	48.2	48.5
17	49.8	48.7
18	50.2	49.7
19	50.9	49.7
20	53.4	51.4
21	55.9	51.7
22	56.8	53.4
23	56.8	54.0
24	59.4	54.4
25	59.4	54.4
26	60.3	54.4
27	60.5	54.8
Median	18	20

SOURCE: 1990 and 1991 SIPP Panels.

NOTE: Estimates are based on all non-left-censored off-spells that began during or after the fifth panel month. The 1990 panel estimates are based on 3,042 spells and the 1991 panel estimates are based on 2,214 spells.

between the panels with respect to entry, spell duration, and reentry.<sup>3</sup> The entry rate is most strongly affected by differences between the panels' participation rate estimates. Table A.1 shows that the overall estimate of the monthly entry rate is 0.29 percent according to the 1990 panel and 0.31 percent according to the 1991 panel. This difference occurs primarily in entry into initial participation spells. Among those who have never previously received food stamps, the entry rate is 20 percent higher according to the 1991 panel relative to the 1990 panel (0.12 percent versus 0.10 percent). Among those who have previously received food stamps, by contrast, the entry rate is only about four percent higher according to the 1991 panel (1.35 percent versus 1.30 percent).

On the other hand, estimates of the duration of participation spells based on the two panels are similar. In both cases, the median spell length is 9 months (Table A.2). In addition, the cumulative exit rate in any given month of a spell (up to month 27) is about the same whether 1990 or 1991 panel data are used. Similarly, the two panels' estimates of reentry rates among those who have exited the FSP are very close.

For example, the percentage of former participants who return to the program within one year of exiting is 44 percent according to the 1990 panel and 43 percent according to the 1991 panel.

Throughout the descriptive analysis presented in Chapter II of the report, we use the 1991 panel. We use the 1991 panel rather than the 1990 panel for three reasons. First, the 1991 panel weights are based on population controls from the most recent census data and have been adjusted to account for the census undercount of hard-to-find individuals. By contrast, the 1990 weights are based on unadjusted population controls from the 1980 census data. Second, the 1991 panel is a more

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<sup>3</sup>In addition to the issues laid out in this appendix, Tables A.1 through A.3 do not compare the two panels over the same time period. The 1990 panel estimates cover October 1989 through August 1992 and the 1991 panel estimates cover October 1990 through August 1993. This time period difference is another possible explanation for the 1990 panel versus 1991 panel differences evident in Tables A.1 through A.3.

inclusive sample, by not excluding those who missed only a single interview. Third, the 1991 panel covers the more recent time period.<sup>4</sup>

However, in the multivariate analysis presented in Chapter III, we combine both panels of data. This allows us to have larger sample sizes after we limit the analysis to adults and examine household subgroups separately. In addition, using both panels gives us a broader time period (October 1989 through August 1993) over which to measure the influence of time-varying variables (such as the unemployment rate or state AFDC policy parameters) on FSP participation dynamics. In these multivariate models, we are careful to adjust for whether an observation comes from the 1990 or 1991 panel.

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<sup>4</sup>There are two advantages to using the 1990 panel. First, the 1990 panel consists of more individuals. Second, the 1990 panel oversamples low-income individuals, who are more likely to be FSP participants. For these reasons, the 1990 panel contains a larger sample of FSP participants or potential participants.



## **APPENDIX B**

### **USING MONTH 1 SPELLS IN THE DURATION ANALYSIS**



We conducted the duration analysis presented in this report primarily using a sample of food stamp spells that began after the first panel month (month 1). The report also presents some results where spells in progress at the start of the panel were included in the analysis sample. These spells include those that were reported to have started in month 1 and those that started before month 1. The inclusion of these spells substantially increases the sample size of spells and provides information on spells that last longer than the panel period. However, as we discuss in this appendix, there is reason to question the quality of the retrospective information in the Wave 2 topical module on the start dates of these spells.

We find evidence that individuals with month 1 spells underreport the ongoing length of their spells as of the beginning of the Survey of Income and Program Participation (SIPP) panel. The duration of non-left-censored spells that were reported to have started in month 1 was much longer, on average, than were non-left-censored spells that started after month 1. This suggests that individuals were reporting that their spells started in month 1 when, in fact, they started before this month. In addition, the duration of month 1 spells that were reported to have started a certain number of months prior to month 1 was longer, on average, than would be expected of spells that were truly of that elapsed length. Instead, their duration suggested that these spells actually began before their reported start dates. Because of these problems, our main analysis of spell durations did not rely on the use of month 1 spells.

This appendix contains four sections. First, we discuss the data used for the analysis. Second, we discuss how we constructed variables indicating how long ongoing month 1 spells had been in progress during the prepanel period. Third, we discuss our approach for assessing the accuracy of this retrospective information and discuss analysis findings. Finally, we present our conclusions and strategy for including month 1 spells in the duration analysis.

## **A. DATA**

The analysis is conducted using the 1991 longitudinal panel of SIPP and SIPP data from the Wave 2 topical module. The longitudinal panel is used to construct spell observations for spells that started after the first panel month and to determine the duration of ongoing month 1 spells during the panel period. The Wave 2 topical module contains the start dates of spells-in-progress during month 1 and is used to determine whether an individual who reported receiving food stamps in the first panel month began that spell in the first panel month or prior to the panel period. Spells that started prior to the first panel month are left-censored spells, whereas spells that started during or after month 1 are non-left-censored spells. In addition, the Wave 2 topical module is used to determine the duration of left-censored spells during the prepanel period.

We conducted the analysis using spell observations, where one-month gaps of food stamp nonreceipt are *not* closed up. This approach is different from that used in other analyses presented in this report because we want to ensure that month 1 spells are comparable to spells that started after month 1. The Wave 2 topical module does not contain enough information to close up one-month gaps of food stamp nonreceipt during the prepanel period.

Our sample includes spell observations of only original sample members (that is, those in households that were sampled in Wave 1) who were assigned positive longitudinal weights by the U.S. Bureau of the Census. All estimates in the life tables are constructed using the SIPP panel weights.

## **B. DURATION OF MONTH 1 SPELLS IN THE PREPANEL PERIOD**

During the Wave 2 interview, individuals were asked to report the month and year in which their food stamp reciprocity began. The reciprocity questions were asked, however, *only* of sample members authorized to receive the benefits (the food stamp “reference persons”). Each food stamp

unit contains a single reference person. Hence, households with more than one food stamp unit contain more than one food stamp reference person, and the SIPP data contain information of spell start dates from each reference person.

The analyses presented in this appendix use the individual as the unit of analysis. It is necessary to determine the start dates of left-censored spells for *all* members of recipient households (including both food stamp reference persons and other household members). The start date of a left-censored spell for a food stamp reference person was obtained using the start date reported in the Wave 2 topical module. The start date of a left-censored spell for an individual who was not the food stamp reference person but who lived in the same household as the food stamp reference person during the first panel month was calculated using the following four rules:

1. If the individual was a child of a food stamp reference person and less than age 18, the child's start date was the start of the reference person's spell if the spell began after the child was born, and the child's birth date otherwise.
2. If the individual was more than age 18, we determined when the individual and the food stamp reference person moved into their current residence using information in the Wave 2 topical module. The spell start date of the individual was then calculated using information on the calendar order of the move dates and the spell start date. For example, if the individual moved into his or her month 1 address after the reference person did but before the reference person's spell started, the spell start date of the individual was set to the start date of the reference person's spell.<sup>1</sup>
3. If the individual was a child of an adult in the household who was not a reference person, the start date of the child was the start date of the parent (as calculated using rule 2) if the child was born before that start date or the child's birth date.
4. If the individual was a child unrelated to any household member, then we used rule 2 if the child was at least age 15, and rule 1 otherwise. We used this procedure because the residence history questions were not asked of children who were less than age 15.

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<sup>1</sup>In some instances, we also used Wave 2 topical module information on the prior residences of household members before they moved into their current addresses.

Tables B.1 displays information on the proportion of cases with month 1 spells with missing and imputed spell start date information. The table also displays information on the proportion of cases that reported that their spells started before, during, and after month 1. Table B.2 displays information on the distribution of the reported number of years that month 1 spells were in progress during the prepanel period. We calculated the figures in the tables using data on those individuals who reported receiving food stamps during the first panel month and tabulated them for the whole sample and separately for food stamp reference persons and other household members.

Table B.1 indicates that a small fraction of cases (5 percent) have missing spell start information. Missing information occurred because 5.6 percent of households whose members reported receiving food stamps during the first panel month did not have a food stamp reference

person who responded to the Wave 2 typical weekly food stamp recipient history question. We

TABLE B.1  
SUMMARY INFORMATION ON MONTH 1 SPELLS, BY  
FOOD STAMP REFERENCE PERSON STATUS  
(Percentages)

	All Cases	Food Stamp Reference Persons	Other Household Members
Missing Spell Start Date Because Household Members were not Asked Recipency History Questions	4.7	n.a.	n.a.
Nonmissing Spell Start Dates	95.3	n.a.	n.a.
Number of Elapsed Years Spell Was in Progress			
Less than zero	10.1	8.4	11.1
Zero	4.9	4.2	5.4
Greater than zero	85.0	87.4	83.5
Imputed Start Dates	45.8	48.0	44.5
Number of Elapsed Years Spell Was in Progress <sup>a</sup>			
Less than zero	13.1	12.2	13.7
Zero	7.0	6.5	7.3
Greater than zero	79.9	81.3	79.0

SOURCE: 1991 SIPP Wave 2 topical module.

NOTE: Estimates are based on 2,110 cases who reported receiving food stamps in the first panel month (742 food stamp reference persons and 1,368 other Wave 1 household members).

<sup>a</sup>Data pertain to those with nonmissing and nonimputed values.

n.a. = Not applicable.

TABLE B.2

ELAPSED YEARS OF LEFT-CENSORED SPELLS  
DURING THE PREPANEL PERIOD

Number of Elapsed Years	Cumulative Weighted Percentage of Spells		
	All Cases	Food Stamp Reference Persons	Other Household Members
0.5 or Less	18.7	17.0	19.8
0.6 to 1.0	30.2	27.3	32.0
1.1 to 1.5	38.6	37.0	39.6
1.6 to 2.0	44.3	44.1	44.5
2.1 to 3.0	54.7	53.6	55.4
3.1 to 4.0	62.9	60.6	64.4
4.1 to 5.0	67.7	65.7	68.9
5.1 to 6.0	75.3	72.8	76.8
6.1 to 10	88.6	86.7	89.8
More than 10	100.0	100.0	100.0
<b>Median</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>
<b>Mean</b>	<b>4.2</b>	<b>4.7</b>	<b>3.9</b>

SOURCE: 1991 SIPP Wave 2 topical module.

NOTE: Estimates are based on 1,708 left-censored spells that began prior to the panel period (649 spells of food stamp reference persons and 1,059 spells of other Wave 1 household members).

reference persons were imputed either because the spell start dates of the food stamp reference persons in the household were imputed or because prepanel residence information was imputed.

Even though the longitudinal panel data shows they were receiving food stamps in month 1, the Wave 2 topical module data indicates that about 10 percent of all these individuals reported that their food stamp spell started *after* the first panel month (Table B.1).<sup>3</sup> In addition, about five percent of cases reported that their month 1 spells started in month 1 and were non-left-censored spells. Accordingly, about 85 percent of spells were reported to have started before month 1 and were left-censored spells.<sup>4</sup>

The Wave 2 topical module data indicates that about 19 percent of the left-censored spells had been in progress for six months or less before month 1, and about 30 percent had been in progress for one year or less (see Table B.2). About 25 percent of spells had been in progress for more than six years. The median elapsed time was about 2.5 years, and the mean elapsed time was more than four years, reflecting that a significant proportion of spells had been in progress for many years when the SIPP panel began. As expected, the elapsed spell durations were greater for reference persons than for other household members, although the two spell duration distributions are similar.

The finding that a large fraction of spell start dates for the reference persons was imputed suggests that individuals may have had problems recalling their spell start dates. Thus, it is important to assess the quality of the retrospective reciprocity history data.

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<sup>3</sup>About 44 percent of these spells were reported to have started one month after the first panel date, 26 percent were reported to have started two months after the first panel month, and 29 percent were reported to have started three months after the first panel month.

<sup>4</sup>The proportion of spells that were reported to have started after month 1 increases when cases with imputed spell start dates are excluded from the tabulations. In addition, the proportion of spells that were non-left-censored increases when imputed cases are excluded.

### C. RELIABILITY OF THE FOOD STAMP RECIPIENCY HISTORY INFORMATION

The retrospective food stamp participation information in the Wave 2 topical module may not be accurate for three reasons. First, individuals who reported receiving food stamps at the start of the panel period were not asked about the start dates of these spells until the Wave 2 interview, which was eight months later. Thus, food stamp recipients may not have accurately recalled the start dates of their spells. Second, the retrospective spell start date information may suffer from recall error for recipients whose spells started a long time prior to the start of the panel. Similarly, an individual who had many short spells during the prepanel period may not have accurately recalled the start date of the spell in progress at the start of the panel. Finally, the wording of the question that asks about the start date of month 1 spells is ambiguous.

The ideal approach for assessing the quality of the Wave 2 topical module reciprocity history data would be to compare this data to administrative food stamp records for our sample members. The collection of this data, however, is beyond the scope of our study.<sup>5</sup> Instead, we use the following five “in-sample” methods to assess the accuracy of the retrospective information:

1. We compare the proportion of month 1 spells that are not left-censored (that is, that were reported in the Wave 2 topical module to have started *in* month 1) with the proportion of spells that are not left-censored during each of the other 31 panel months.
2. We compare the distributions of spell durations within the panel period for non-left-censored spells that began in month 1 with those for non-left-censored spells that began after the first panel month.
3. We compare the distributions of spell durations of left-censored spells for various samples, defined by how long the spells were in progress during the prepanel period.

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<sup>5</sup>Miller and Martini (1991) compared administrative Aid to Families with Dependent Children (AFDC) data with retrospective SIPP data on AFDC receipt and found that the start dates of month 1 AFDC spells were similar using the two data sources. However, they did not obtain administrative food stamp records.

4. We construct “artificial” left-censored spells by assuming that non-left-censored spells that began after the first panel month were sampled at the twelfth panel month. Then, we compare the life tables constructed using these artificial left-censored spells to those constructed using actual left-censored spells that had been in progress for one year or less during the prepanel period.
5. We compare the distribution of the number of months left-censored spells were in progress during the prepanel period to the distribution of the number of months they were in progress during the 32-month panel period.

Our analysis addresses the accuracy of the retrospective reciprocity data using the whole sample, not separately for population subgroups.

Next, we discuss the five analysis methods in more detail and present our analysis findings.

## **1. Method 1**

First, we determine whether the proportion of all month 1 spells that were not left-censored (that is, that began in month 1) is similar to the proportion of all ongoing spells in other panel months that were not left-censored. If the Wave 2 topical module information is accurate, then the month 1 proportions should be similar to the proportions in other panel months.

Table B.3 displays the proportion of ongoing spells that were not left-censored for each of the 32 panel months. The month 1 figures were calculated assuming that spells that were reported to have started after the first panel month are not left-censored. We believe that this is a reasonable assumption because all these spells were reported to have started within three months of the first panel month. However, we also performed the month 1 tabulations excluding these spells.

TABLE B.3

PERCENTAGE OF ONGOING SPELLS THAT ARE NON-LEFT-CENSORED,  
BY PANEL MONTH

Panel Month	Percentage of Spells That Are Non-Left-Censored	Panel Month	Percentage of Spells That are Non-Left-Censored
1 <sup>a</sup>	15.0	17	8.3
2	2.0	18	1.1
3	3.3	19	3.0
4	3.3	20	3.1
5	10.1	21	7.5
6	3.9	22	2.7
7	3.1	23	2.9
8	3.5	24	3.4
9	8.1	25	8.8
10	1.6	26	2.8
11	3.4	27	3.1
12	3.3	28	1.9
13	9.6	29	8.0
14	2.8	30	2.2
15	3.7	31	3.3
16	4.0	32	1.7

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

NOTE: Estimates are based on 4,992 spells (1,807 month 1 spells).

<sup>a</sup>Month 1 spells that were reported to have started after the first panel month were assumed to be non-left-censored spells. If these spells are excluded from the calculations, the month 1 figure is 5.5 percent.

The proportion of ongoing spells that were non-left-censored spells is higher in month 1 than for any other panel month. About 15 percent of month 1 spells were non-left-censored spells, compared to about 9 percent for other months corresponding to the first reference months at each wave (that is, months 5, 9, 13, 17, 21, 25, and 29).<sup>6,7</sup> This result suggests that some individuals may have reported that their month 1 spells began more recently than they actually did and, hence, that some spells that are classified as non-left-censored spells may actually be left-censored spells.

A possible explanation for this phenomenon is that the meaning of the question in the Wave 2 topical module on the start date of month 1 spells may be ambiguous. The actual question from the module reads: “*During our last visit we recorded that [NAME] received food stamps sometime during the period [8 MONTHS AGO] through [5 MONTHS AGO]. When did [NAME] first begin to receive food stamps?*” It is not clear what “first begin to receive food stamps” means. It could be interpreted as meaning the first month during the Wave 1 reference period that the case received food stamps. In this case, some month 1 recipients may have reported that their spell began in month 1 even though it began prior to that time. Hence, some month 1 spells may be misclassified as being non-left-censored spells.<sup>8</sup>

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<sup>6</sup>The proportion of ongoing spells which are non-left-censored spells is about 3 percent in other panel months. The figures are higher for months corresponding to the first reference month for each wave than for other months because respondents are more likely to report that their food stamp spells began at the start of the reference period than at other times. This is referred to as the “seam” problem.

<sup>7</sup>If month 1 spells that were reported to have started after the first panel month are excluded from the tabulations, the proportion of month 1 spells that are not left-censored reduces to 5.5 percent. This figure is lower than for other comparable months.

<sup>8</sup>The ambiguous phrase can also be interpreted as meaning the first spell *ever* experienced by the sample member. In order to test this, we used topical module Wave 2 data to construct the dates that month 1 food stamp recipients received food stamps for the *first* time. The sample only included those who received food stamps prior to their month 1 spells. We found that the start dates of the first spells of receipt were always *before* the start dates of the month 1 spells. It is likely that  
(continued...)

## 2. Method 2

Second, we compare life table entries describing food stamp spell durations during the panel period for month 1 spells and non-left-censored spells that began after month 1. For this analysis, we use the following five samples of spells:

1. Non-left-censored spells that started on or after the second panel month
2. Non-left-censored spells that started during the fifth panel month
3. Month 1 spells that were reported to have started in the first panel month
4. Month 1 spells that were reported to have started after the first panel month
5. Month 1 spells that were reported to have started one to six months prior to the first panel month

The life table constructed using the sample of non-left-censored spells that started on or after the second panel month are based on data in the longitudinal files. We believe that the figures in this life table are accurate, so they are the standard against which other life tables should be compared. We constructed life tables for a sample of spells that started *in* the fifth panel month because the first and fifth panel months are comparable in that the first panel month is the first reference month of the Wave 1 interview, and the fifth panel month is the first reference month of the Wave 2 interview. We constructed separate life tables for month 1 spells that were reported to have started in month 1 and those that were reported to have started after month 1, because the spell duration distributions may differ for these two groups of recipients.

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<sup>8</sup>(...continued)

interviewers were trained to clarify the question for those respondents who misinterpreted it as the date they first received food stamps. Interviewers could have noticed such inconsistencies once they obtained information on the number of spells the respondents ever received prior to the Wave 1 spells and information on first spell dates.

We constructed life tables pertaining to month 1 spells that were reported to have started one to six months prior to the panel period, because recipients with these spells were not likely to have misinterpreted the ambiguous wording of the reciprocity history question. We expect these left-censored spells to be a little longer, on average, than typical non-left-censored spells because they had already been in progress for several months at the start of the panel, and because, as discussed in Chapter II, spells that had been in progress for longer periods had lower exit (hazard) rates than spells that had been in progress for shorter periods. However, because these left-censored spells were in progress for only a short time during the prepanel period, we expect that the distribution of spell durations during the panel period should be similar for these “near” non-left-censored spells and typical non-left-censored spells.

Table B.4 displays estimated unconditional probabilities that a spell ended within a given number of months within the panel period (that is, the monthly cumulative exit rates) using the five analysis samples. Month 1 spells that are non-left-censored (or nearly non-left-censored) are much longer than the non-left-censored spells that began after month 1. The median spell length is eight months for all non-left-censored spells that began after month 1 or that began in month 5.<sup>9</sup> The median spell length, however, is 28 months for those who reported that their month 1 spells began in month 1, 16 months for those who reported that their month 1 spells began after month 1, and 23 months for those who began their spells between one and six months prior to the start of the panel. Furthermore, for *each* panel month, the cumulative exit rates are higher for the spells that began after month 1 than for the month 1 spells.

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<sup>9</sup>The median spell length reported in Chapter II was nine months because the life tables displayed in that chapter were constructed using data where one-month gaps of food stamp nonreceipt were closed up.

TABLE B.4

WEIGHTED CUMULATIVE EXIT RATES FOR FIVE SAMPLES OF  
NON-LEFT-CENSORED SPELLS, BY MONTH  
(Percentages)

Month	Non-Left-Censored Spells Starting in or After Month 2	Non-Left-Censored Spells Starting in Month 5	Month 1 Spells with Zero Elapsed Durations	Month 1 Spells with Negative Elapsed Durations	Month 1 Spells with Elapsed Durations of One to Six Months
1	9.6	7.4	5.3	3.0	3.1
2	17.2	13.8	11.6	5.2	5.8
3	22.2	18.3	12.7	5.7	6.7
4	36.0	40.9	17.4	20.7	13.4
5	40.9	41.3	17.4	22.4	15.4
6	45.5	44.5	18.2	25.2	18.4
7	47.5	46.1	18.2	26.4	20.9
8	52.7	52.9	23.3	30.8	28.0
9	54.2	53.3	26.5	32.5	30.6
10	56.2	53.3	26.5	32.5	33.4
11	57.6	54.6	26.5	32.8	35.2
12	61.2	60.5	32.9	36.2	37.1
13	62.6	61.6	32.9	38.0	38.7
14	63.2	61.6	32.9	42.0	41.1
15	64.4	64.0	33.8	43.7	42.6
16	66.1	66.0	38.5	51.5	44.8
17	67.3	71.0	41.4	51.5	45.1
18	68.1	71.5	43.0	56.0	46.0
19	69.1	71.5	43.0	56.0	48.1
20	70.4	73.3	48.2	57.1	49.6
21	71.3	74.3	48.2	57.1	49.6
22	71.5	74.3	48.2	57.1	49.9
23	73.1	74.3	48.2	57.1	50.3
24	73.6	75.6	49.1	58.2	51.5
25	74.7	75.6	49.1	58.2	51.5
26	74.9	75.6	49.1	58.7	52.0
27	74.9	75.6	49.1	60.3	52.0
28	74.9	n.a.	52.2	60.3	54.4
29	76.7	n.a.	52.2	60.3	54.7
30	76.7	n.a.	52.2	60.3	54.7
<b>Sample Size</b>	<b>2,844</b>	<b>219</b>	<b>99</b>	<b>202</b>	<b>336</b>

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

n.a. = Not applicable.

These results suggest again that individuals on food stamps in month 1 spells are reporting in the Wave 2 topical module that their spells began more recently than they actually did. The average duration of the non-left-censored month 1 spells was much longer than we would expect from a sample of truly non-left-censored spells. As noted next, the spell duration distribution of these month 1 spells more closely resembles the distribution of left-censored month 1 spells than the distribution of the non-left-censored spells which began after month 1.

### 3. Method 3

Third, we compare the cumulative exit rates during the 32-month panel period for left-censored month 1 spells for various samples defined by the amount of time the spells were in progress during the prepanel period. The cumulative exit rates during the panel period should be smaller for spells that were in progress for a long time than for spells that were in progress for a shorter period. This pattern should occur because our analysis of non-left-censored spells indicates that the probability that a food stamp spell ended in a given month decreased with the elapsed duration of the spell.<sup>10</sup>

Table B.5 displays cumulative exit rates for the following samples of left-censored month 1 spells:

1. Those that had been in progress for 1 to 6 months
2. Those that had been in progress for 7 to 12 months
3. Those that had been in progress for 13 to 24 months
4. Those that had been in progress for more than 24 months

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<sup>10</sup>Method 3, however, is valid only if the distribution of spell durations has not changed over time. If this *stationarity* assumption does not hold, then it may not be the case that exit (hazard) rates from the food stamp program are higher for spells that have been in progress for a long time than for shorter spells. Thus, the findings from this analysis should be interpreted with caution.

TABLE B.5

WEIGHTED CUMULATIVE EXIT RATES FOR MONTH 1 LEFT-CENSORED SPELLS.  
BY PANEL MONTH AND ELAPSED SPELL DURATION  
(Percentages)

Panel Month	Spells with Elapsed Durations of 1 to 6 Months	Spells with Elapsed Durations of 7 to 12 Months	Spells with Elapsed Durations of 13 to 24 Months	Spells with Elapsed Durations of More than 24 Months	All Left-Censored Spells
1	3.1	0.4	1.4	0.4	1.1
2	5.8	3.6	3.1	1.2	2.6
3	6.7	6.0	5.2	4.1	4.9
4	13.4	16.0	9.1	9.5	10.9
5	15.4	16.0	10.3	10.7	12.1
6	18.4	20.8	10.3	10.7	13.3
7	20.9	27.9	11.4	11.9	15.3
8	28.0	31.6	16.0	18.3	21.3
9	30.6	31.6	16.4	19.7	22.6
10	33.4	34.6	20.1	19.8	24.1
11	35.2	34.6	20.3	20.8	25.0
12	37.1	37.6	22.2	25.0	28.3
13	38.7	37.6	23.0	25.0	28.7
14	41.1	37.6	23.0	25.3	29.4
15	42.6	39.0	23.5	25.7	30.1
16	44.8	42.0	27.0	29.5	33.4
17	45.1	42.0	28.4	29.9	33.9
18	46.0	42.0	32.0	30.1	34.7
19	48.1	42.0	33.0	30.6	35.5
20	49.6	43.0	36.4	34.7	38.7
21	49.6	43.0	37.0	34.7	38.8
22	49.9	43.5	37.4	34.9	39.1
23	50.3	44.0	39.6	35.3	39.7
24	51.5	52.6	45.0	38.7	43.6
25	51.5	52.6	45.0	38.8	43.6
26	52.0	53.7	46.2	39.0	44.1
27	52.0	53.7	46.2	39.5	44.4
28	54.4	54.4	46.7	41.4	46.0
29	54.7	54.4	46.7	41.7	46.3
30	54.7	54.4	46.7	42.0	46.5
<b>Sample Size</b>	<b>336</b>	<b>196</b>	<b>248</b>	<b>928</b>	<b>1,708</b>

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

The spell duration distributions in the panel period are similar for spells that were reported to have been in progress for 1 to 6 months and those that were reported to have been in progress for 7 to 12 months. The cumulative exit rates, however, are smaller for spells with elapsed durations of between 13 and 24 months than they are for spells with elapsed durations of 12 months or less. This finding is consistent with the interpretation that information on the month that the spell started is less precise than information on the year that the spell started.

The cumulative exit rates are similar for spells with elapsed durations of between 13 and 24 months and those with elapsed durations of greater than 24 months (although a larger proportion of the latter group of spells lasted longer than the 2.5 year panel period). This finding may be due to the “flattening” of hazard rates over time, although the follow-up period is not long enough to test this hypothesis using non-left-censored spells.

These findings weakly confirm our expectations that the cumulative exit rates are smaller for month 1 left-censored spells which were in progress for longer periods during the prepanel period than for those in progress for shorter periods.<sup>11</sup>

It is important to note that the spell duration distribution of month 1 spells that were reported to have started in month 1 (as shown in Table B.4) are more similar to the distribution of month 1 spells that were reported to have started prior to month 1 (that is, all left-censored spells) than to the distribution of non-left-censored spells that started after month 1. This finding supports the hypothesis that some individuals may have misunderstood the Wave 2 topical module question pertaining to the start date of month 1 spells.

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<sup>11</sup>Although not displayed, the estimated cumulative exit rates using samples of only food stamp reference persons or those with nonimputed spell start dates are very similar to those displayed in Table B.5.

#### 4. Method 4

Fourth, we construct “artificial” left-censored spells from our sample of non-left-censored spells that started after month 1 and compare the estimated cumulative exit rates of these artificial spells with those of comparable month 1 left-censored spells. To construct the sample of artificial left-censored spells, we selected all food stamp spells that began between panel months 2 and 12 and that ended during or after panel month 12. Then, we calculated the cumulative exit rates for these spells *from panel month 12* to the end of the panel period. We compared these cumulative exit rates to those for the sample of left-censored month 1 spells that were reported to have been in progress for less than 12 months during the prepanel period. The distributions of spell durations should be similar for the two samples if the Wave 2 topical module information on the start dates of month 1 spells is accurate.<sup>12</sup>

Table B.6 reports our findings using method 4. The cumulative exit rates for the artificial left-censored spells are substantially larger than they are for the month 1 left-censored spells (about 10 percentage points higher for each panel month). For example, about 46 percent of the artificial spells ended within 12 months, compared to only about 37 percent of the month 1 spells. Similarly, the median spell length is 15 months for the artificial spells and 24 months for the month 1 spells.<sup>13</sup> These results indicate again that individuals with left-censored spells are reporting that their spells began more recently than they actually did.

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<sup>12</sup>The stationarity assumption pertaining to the constant distribution of spell durations over time is not likely to be violated using this procedure because all spells in the sample began within 24 months of each other.

<sup>13</sup>The log-rank statistic to test the hypothesis that the spell durations’ distributions are similar is 5.7 with 1 degree of freedom. Hence, we reject the null hypothesis at the 5 percent level of significance.

TABLE B.6

WEIGHTED CUMULATIVE EXIT RATES FOR ACTUAL VERSUS  
ARTIFICIAL LEFT-CENSORED SPELLS, BY PANEL MONTH  
(Percentages)

Panel Month	Artificial Left-Censored Spells	Month 1 Left-Censored Spells with Elapsed Durations of 1 to 12 Months
1	4.2	2.1
2	6.9	5.0
3	21.8	6.5
4	24.5	14.4
5	26.4	15.6
6	27.9	19.3
7	37.3	23.5
8	40.3	29.3
9	41.3	31.0
10	41.9	33.8
11	44.8	35.0
12	45.9	37.3
13	46.6	38.3
14	47.2	39.8
15	52.6	41.2
16	52.6	43.7
17	53.8	43.9
18	54.9	44.5
19	NA	45.8
20	NA	47.1
21	NA	47.1
22	NA	47.5
23	NA	47.9

TABLE B.6 (continued)

Panel Month	Artificial Left-Censored Spells	Month 1 Left-Censored Spells with Elapsed Durations of 1 to 12 Months
24	NA	51.9
25	NA	51.9
26	NA	52.7
27	NA	52.7
28	NA	54.4
29	NA	54.6
30	NA	54.6
<b>Sample Size</b>	<b>726</b>	<b>532</b>

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

NA = Not available: the follow-up period is only 18 months because the life table is constructed as of month 12.

## 5. Method 5

Finally, we compare the distribution of the number of months that left-censored spells were in progress during the prepanel period with the distribution of the number of months that these spells were in progress during the 32-month panel period. Assuming that the distribution of food stamp spell durations has not changed over time, then left-censored spells should be, on average, in the middle of their spells in month 1. Thus, the backward and forward spell duration distributions

should be similar if this “stationarity” assumption is valid and if the Wave 2 topical module reciprocity history information is accurate.

Table B.7 displays the backward and forward spell duration distributions. The figures indicate that the spell durations constructed from the retrospective data are somewhat shorter than those constructed from the longitudinal SIPP data. For example, about 27 percent of spells started within a year prior to the start of the panel, whereas only 24 percent of spells ended within a year after the start of the panel. Similarly, about one half of the spells were in progress for 30 months or less

TABLE B.7

WEIGHTED FORWARD AND BACKWARD SPELL DURATION DISTRIBUTIONS  
OF MONTH 1 LEFT-CENSORED SPELLS, BY MONTH

Month	Backward (Prepanel) Elapsed Duration, Cumulative Distribution	Forward (Within-Panel) Cumulative Exit Rates
1	3.2	1.3
2	6.3	2.9
3	9.2	4.8
4	12.0	9.2
5	15.3	11.1
6	17.0	11.6
7	19.3	13.5
8	21.1	18.1
9	23.3	19.3
10	24.3	20.9
11	25.9	21.8
12	27.3	24.3
13	27.9	24.8
14	29.6	25.5
15	31.3	26.4
16	32.9	29.5
17	36.1	29.9
18	37.0	30.6
19	38.1	31.7
20	39.1	33.8
21	40.9	34.0
22	41.6	34.4
23	43.0	35.0
24	44.1	39.1

TABLE B.7 (continued)

Month	Backward (Prepanel) Elapsed Duration, Cumulative Distribution	Forward (Within-Panel) Cumulative Exit Rates
25	45.6	39.2
26	46.8	39.9
27	47.4	40.2
28	48.1	41.4
29	49.2	41.7
30	50.1	41.8
<b>Sample Size</b>	<b>649</b>	<b>649</b>

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

to have occurred, due to changes in the economy and program legislation. Second, our methods can, in general, only be used to address the quality of the start dates of month 1 spells that were reported to have started within a couple years prior to the panel period, due to the relatively short within-panel follow-up period.

Despite these study limitations, however, our analysis suggests that there is reason to question the accuracy of the information on the start date of month 1 spells. We found that a large percentage of spell start dates were imputed. In addition, the following evidence strongly indicates that individuals with month 1 spells may have reported that their spells began more recently than they actually did:

- *The percentage of ongoing spells in a month that started in that month was greater in the first panel month than in any of the other 31 panel months.* Thus, some month 1 spells classified as non-left-censored spells may actually be left-censored spells.
- *The durations of non-left-censored spells that started in month 1 were substantially longer than the durations of non-left-censored spells that started after month 1.* This suggests that some non-left-censored month 1 spells were actually left-censored because left-censored spells are usually longer than are typical spells.
- *The durations of left-censored spells that started prior to month 1 were substantially longer than the durations of “artificial” month 12 left-censored spells that started between months 2 and 12 and ended after month 12.* This suggests that some of the month 1 left-censored spells had been in progress for longer than 12 months prior to the first panel month.
- *The duration of left-censored spells in the prepanel period were shorter than the duration of these spells during the panel period.* This asymmetry suggests that some month 1 recipients started their spells less recently than reported.

To summarize these findings, we calculated cumulative exit rates for a 30-month follow-up period for a sample that included only non-left-censored spells that began after month 1 and for a sample that also included month 1 spells (see Table B.8). As expected, durations of spells are longer when month 1 spells are included in the calculations than when they are excluded. For example, the

TABLE B.8

WEIGHTED CUMULATIVE EXIT RATES FOR SAMPLES THAT INCLUDE  
AND EXCLUDE MONTH 1 SPELLS, BY MONTH  
(Percentages)

Month	Non-Left-Censored Spells Starting After Month 1	Month 1 Spells and Non-Left-Censored Spells Starting After Month 1
1	9.6	8.9
2	17.2	15.8
3	22.2	20.0
4	36.0	33.1
5	40.9	37.1
6	45.5	41.3
7	47.5	43.1
8	52.7	47.3
9	54.2	49.1
10	56.2	51.1
11	57.6	52.4
12	61.2	55.3
13	62.6	57.0
14	63.2	58.0
15	64.4	59.4
16	66.1	61.6
17	67.3	62.6
18	68.1	64.1
19	69.1	64.8
20	70.4	65.9
21	71.3	66.7
22	71.5	67.7
23	73.1	68.6

TABLE B.8 (continued)

Month	Non-Left-Censored Spells Starting After Month 1	Month 1 Spells and Non-Left-Censored Spells Starting After Month 1
24	73.6	69.2
25	74.7	69.7
26	74.9	70.1
27	74.9	70.3
28	74.9	70.8
29	76.7	71.0
30	76.7	71.2
<b>Sample Size</b>	<b>2,844</b>	<b>4,633</b>

SOURCE: 1991 SIPP longitudinal panel and Wave 2 topical module.

median spell length is 8 months when month 1 spells are excluded from the calculations and is 10 months when the month 1 spells are included. Similarly, the percentage of spells that ended within 30 months was nearly 77 percent when the month 1 spells are excluded from the sample, compared to 71 percent when month 1 spells are included.

On the basis of analysis findings, we did not include month 1 spells in the descriptive analysis of spell durations during the two-and-a-half-year follow-up period. This is because the short-term dynamics of FSP participation is crucial to the analysis, since more than three-quarters of spells end within 30 months. As discussed above, the distribution of spell durations during this period changes somewhat when month 1 spells are included in the sample. For example, the median spell length increases from 8 to 10 months when month 1 spells are included in the construction of the life tables. Thus, study findings concerning the proportion of spells that end within a given time period could be seriously affected by including month 1 spells.

We did, however, include month 1 spells in the analysis sample to assess the duration of spells that last longer than the panel period. As discussed, the methods used in this appendix cause us to doubt the validity of start-date information on spells that were reported to have started within a couple years prior to the panel period. The methods, however, cannot be used to definitely assess the quality of the start date information for month 1 spells that started many years prior to the panel period. However, the accuracy of the information when month 1 spells began is less important for spells that started many years prior to the panel period than it is for month 1 spells that were in progress for a short period during the prepanel period. This is because the probability that an individual's spell ends during the next month becomes relatively constant after the individual has received food stamps for a long period of time. For example, exit rates from the food stamp program are likely to be similar for those who have been on the program for six or seven years.

Thus, as long as the spell start date information is somewhat accurate, we can obtain reasonable life table estimates for spells that have been in progress for long periods of time.

## **APPENDIX C**

### **DURATION ANALYSIS USING THE HOUSEHOLD AS THE UNIT OF ANALYSIS**



This appendix describes key results from a descriptive analysis of the duration of FSP spells where the household rather than the individual is the unit of analysis. We present life table estimates using the two approaches to assess the sensitivity of study findings to the choice of the analysis unit. In addition, we compare household-level cumulative exit rates in the mid-1980s and the early 1990s.

This appendix is in two sections. First, we discuss the data and methods used for the analysis. Second, we present analysis results.

## **A. DATA AND METHODS**

In order to conduct a longitudinal analysis of FSP spell durations using the household as the unit of analysis, we must define when a household spell begins and ends. This is difficult because the composition of households can change over time. For example, individuals can move into or out of a household, two separate households can merge to form a single household, or a single household can split and become more than one household.

We linked households across panel months using the SIPP definition of a longitudinal household. This definition specifies that a household continues from one month to the next if it has the same household reference person (the householder) and the householder's spouse (if present in the household) and if it is the same household type. The household types are (1) married-couple households, (2) other family household with a male householder, (3) other family household with a female householder, (4) nonfamily household with a male householder, and (5) nonfamily household with a female householder. The householder (or spouse of the householder) must be a person who was a member of the household interviewed during Wave 1 for a household to be considered a longitudinal household.

This longitudinal household definition was used to determine the duration of household-level food stamp spells. For example, suppose that a household receiving food stamps remained intact

for three months, but then split into two new households, one of which received food stamps for an additional four months. These households, then, contribute two spell-observations to our dataset; the original household contributes a spell which lasted three months, while one of the split households contributes a spell which lasted four months.

The 1991 panel of SIPP was used for the analysis, and the sample included only non-left-censored spells which began after the first panel month. All one-month gaps of food stamp nonreceipt were closed up. The estimates were computed using the SIPP longitudinal household weights.

The dataset for the household-level analysis contains 1,183 food stamp spells, and about 40 percent of spells were right-censored. The average within-sample mean spell duration was 7.9 months as compared to 9.2 months for spells used in the individual-level analysis. This finding reflects the likelihood that households receiving food stamps split into new households that continued to receive food stamps. In these households, individual-level spells are longer than household-level spells.

## **B. ANALYSIS RESULTS**

In the early 1990s, the duration of FSP spells obtained using the household-level data are slightly shorter than those obtained using the individual-level data (see Table C.1, columns [2] and [3]). For example, the median spell duration was 8 months using the household-level data and was 9 months using the individual-level data. Similarly, 71.3 percent of *households* exited the FSP within 24 months, whereas 69.5 percent of *individuals* exited the FSP within the same time interval. The distribution of spell durations, however, are similar using the two approaches.

The household-level analysis supports the finding from the individual-level analysis that food stamp spell durations were longer in the early 1990s than in the mid-1980s. For example, the median

TABLE C.1  
 COMPARISON OF CUMULATIVE FSP EXIT RATES IN THE MID-1980s AND EARLY 1990s  
 USING THE HOUSEHOLD AS THE UNIT OF ANALYSIS  
 (Percentages)

Month	(1) Mid-1980s	(2) Early 1990s	(3) Early 1990s Using the Individual as the Unit of Analysis
1	14.1	10.6	7.2
2	23.4	19.2	13.4
3	30.3	24.5	17.5
4	40.8	34.2	32.2
5	45.2	39.7	37.1
6	51.9	45.1	41.8
7	55.1	47.9	43.3
8	59.3	51.8	48.9
9	61.0	53.3	50.2
10	63.1	56.5	52.4
11	64.4	58.0	53.8
12	67.0	60.5	57.2
13	68.3	61.5	58.3
14	69.9	62.2	59.1
15	71.6	63.4	59.5
16	73.1	64.5	61.4
17	74.4	65.2	62.5
18	75.6	66.3	62.7
19	77.3	68.0	63.9
20	77.7	69.3	65.5
21	77.7	69.5	66.2
22	77.7	69.9	66.4
23	80.0	70.8	68.3
24	80.0	71.3	69.5
25	80.0	71.3	70.6
26	80.0	72.1	70.6
27	80.0	73.4	70.6
Median	6	8	9
Log-Rank Test Statistic to Test for Differences Between the Two Time Periods		1.34	

TABLE C.1 (continued)

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SOURCE: 1991 SIPP Panel and Exhibit III.3 in Burstein (1993).

NOTE: Estimates in column (2) and (3) are based on all non-left-censored spells that began during or after the second panel month, while estimates in column (1) are based on non-left-censored spells that began during or after the fifth panel month. The early 1990s household-level estimates are based on 1,183 spells and the mid-1980s estimates are based on 963 spells.

household spell duration was six months in the mid-1980s, compared to eight months in the early 1990s. Similarly, the proportion of households that exited the FSP within 24 months was 80 percent in the mid-1980s as compared to 71.3 percent in the early-1990s. The log-rank statistic to test for differences in the distribution of household spell durations between the two time periods, however, indicates that this difference is statistically insignificant at the 10 percent level.



## **APPENDIX D**

### **MULTIVARIATE ANALYSIS OF THE DETERMINANTS OF FSP ENTRY**



As discussed in Chapter III, multivariate analysis can help us assess whether findings about the influence of various factors on participation that are suggested by the descriptive analysis, which typically examine the effects of one variable at a time, hold up when we control for other variables. Using descriptive analysis, for example, we might find that entry rates are lower for households with older adults, but if income rises with age we would not know whether the entry rate was due to the effect of age or income. Multivariate analysis, however, allows us to determine whether the age effect is primarily a result of an increase in income by controlling for income in a multivariate model. We can examine households with adults of different ages but who have the same income, holding income “fixed,” to determine whether it is age *per se* that affects entry. Similarly, we can examine whether or not the effects of any particular variable on entry is due to some other controllable factor.

The multivariate entry models described below estimate the effects of various factors on FSP entry. Multivariate analysis allows us to control for long-term individual or household characteristics (for example, having low income or low educational attainment) before examining the conditions or events that trigger FSP entry. This eliminates the possibility that short-term factors appear to lead to entry only because they are proxying for other, more permanent, characteristics that lead to FSP entry. For example, families who are usually low income may also be more likely to experience sudden drops in income. We can determine whether the sudden drop in earnings is partly proxying for the low income in general.

Another difference between entry reported here and the descriptive analysis of entry reported in Chapter II is that the “window” during which events are examined is lengthened significantly here (specifically, to 24 months), to allow us to look at long-term factors affecting entry. While descriptive analyses could employ a window of that size as well, the flexibility of a multivariate

analysis more easily permits multiple triggers and other characteristics over varying lengths of time, as will be described below.

In addition to using a longer window period, the multivariate entry analysis uses a slightly different notion of what constitutes an entry trigger. Rather than specifically defining an “event,” such as a decline in income from one month to the next or a change in household composition, we look at an individual’s circumstances in the previous month. In particular, we look at conditions in the previous month while controlling for conditions over the 24-month window. In this context, an entry trigger might be defined as having low income in the previous month and higher income over the longer term. Thus, we see that a given set of circumstances in a single month may affect one individual very differently from the way it affects another individual, depending on their long-term characteristics.

The multivariate entry analysis is exploratory. It uses a simple specification and tests only a few entry triggers to indicate the importance of both short- and long-term events. The analysis also examines whether triggers may affect individuals differently, depending on their long-term situation. The results from this exploratory analysis suggest future avenues for examining entry triggers.

#### **A. SAMPLE**

The sample for the entry analysis includes only adults ages 18 to 49 from the 1991 SIPP panel. We limit the sample to adults because we focus on individual-specific factors (employment status, marital status) that affect children only indirectly. (Adults older than age 49 have low entry rates and are excluded from the analysis.) In addition, we restrict the sample to individuals with 12 or fewer years of education and with household income less than the U.S. median to concentrate on a population in which FSP participation is relevant. Further, because we wish to have a 24-month potential window in which to measure past events in an individual’s life, we conduct our analysis

in SIPP months 25 through 32. Because we are interested in *entry*, we also restrict the sample to individuals who were not receiving food stamps in the month prior to the month at which we examine entry. Our final data set consists of 31,941 total person months in the 1991 panel in months 25 to 32, each person month denoting a period of FSP nonparticipation.

## **B. RESULTS**

Table D.1 shows that the mean monthly entry rate of this sample, taken over all eight months, is .009 (or 0.9 percent), compared to .003 for the total population, including those of all education and income levels. The table shows the means of some of the demographic characteristics used in the multivariate analysis. The sample is about half female, half male; about 16 percent nonwhite; about 33 years old; has a mean education less than high school; and almost two-thirds are married.

Table D.2 lists the variables we examine. We study the trigger events of household income, individual earnings, employment status, marital status, and AFDC status in the month prior to FSP entry.<sup>1</sup> The nontrigger variables are the average characteristics of the individual or household during the preceding 24 months. We calculate average household income, average individual earnings, employment status (fraction of time spent employed), marital status (fraction of time married), and AFDC status (fraction of time on AFDC). We include two measurements of an individual's stability--the number of employment transitions and the number of marital transitions in the past two years.

Table D.3 shows how entry varies with these past average characteristics. The table shows that entry rates are higher for individuals with low average household income, low past individual

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<sup>1</sup>In some of our descriptive analysis earlier, we defined these triggers over the past four months instead. The results in this multivariate analysis would not have changed if we had defined triggers according to an individual's status over the previous four months.

TABLE D.1  
CHARACTERISTICS OF THE SAMPLES

	Full Sample	Analysis Sample
Entry Rate (Percent)	00.3	00.9
Female (Percent)	50.9	50.8
Nonwhite (Percent)	13.7	16.6
Age (Years)	34.0	33.5
Education (Years)	13.6	11.2
Married (Percent)	60.7	59.0
<b>Sample Size</b>	<b>110,319</b>	<b>31,941</b>

SOURCE: 1991 SIPP Panel.

NOTE: Full sample includes all adults ages 18 to 49 who were not on food stamps prior to the month in question. The analysis sample includes adults in families with household income less than the median and who have completed schooling of 12 years or less. Sample includes all months 25 to 32 in the SIPP and the sample size counts all adults in all those months. The entry rate is the fraction of the sample who were observed to be on food stamps in the current month.

TABLE D.2  
VARIABLE DEFINITIONS

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<b>Triggers</b>	
Household (HH) Income Last Month	Household income in the previous month
Earnings Last Month	Individual earnings in the previous month
Employed Last Month	Binary variable equal to 1 if individual was employed last month
Married Last Month	Binary variable equal to 1 if individual was married last month
On AFDC Last Month	Binary variable equal to 1 if on AFDC last month
 <b>Characteristics of Past 24 Months</b>	
Mean Past HH Income	Average monthly household income during past 24 months
Mean Past Earnings	Average monthly individual earnings during past 24 months
Current Earnings Ratio	Ratio of last month's earnings to mean past earnings
Past Time Employed	Fraction of last 24 months in which the individual was employed
Past Time Married	Fraction of last 24 months in which the individual was married
Past Time on AFDC	Fraction of last 24 months in which the individual was on AFDC
Marital Transitions	Number of times marital status changed in last 24 months
Employment Transitions	Number of times employment status changed in last 24 months

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TABLE D.3

ENTRY RATES OF STUDY SAMPLE, BY PAST AVERAGE CHARACTERISTICS  
(Percentages)

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Mean Past Household Income	
High	0.3
Low	1.5
Mean Past Earnings	
High	0.3
Low	11.5
Current Earnings Ratio	
Greater than 1	0.5
Less than 1	1.2
Less than .8	1.5
Past Time Employed	
More than 50 percent of time	0.6
Less than 50 percent of time	1.6
Past Time Married	
High	0.7
Low	1.0
Past Time on AFDC	
More than 50 percent of time	5.6
Less than 50 percent of time	0.8
Marital Transitions	
One or more	1.6
None	0.8
Employment Transitions	
Two or more	1.5
Less than two	0.7
<b>All Observations</b>	<b>0.9</b>

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SOURCE: 1991 SIPP Panel.

NOTE: The analysis sample includes adults in families with household income less than the median and who have completed schooling of 12 years or less. Sample includes all months 25 to 32 in the SIPP and the sample size counts all adults in all those months. The entry rate is the fraction of the sample who were observed to be on food stamps in the current month.

earnings, whose ratio of last month's earnings to average earnings is low, who have been less often married, and/or who have had frequent marital-status changes. Individuals also have higher entry rates if they have been on AFDC more in the past, if they have low levels of employment, and high numbers of employment transitions.

These results raise the issue of whether recent events that are ordinarily associated with triggers are proxying for individuals having generally disadvantaged situations. It also raises the issue of whether triggers have different effects on individuals depending on the levels of past characteristics. For example, is a drop in household income more likely to induce FSP entry among relatively high-average income individuals or low-average income individuals? Either could be the case. On the one hand, a drop in income among families that are already low-income may be more likely to lead to FSP entry because few alternative resources are at hand to assist them. On the other hand, individuals with low average income are more likely to be on food stamps already, and thus not be at risk of entering the program. Other low-average income individuals who are not receiving food stamps may have already adjusted to instability in their flow of income, so low income in a single month will not necessarily cause them to enter the program. High-average income individuals, on the other hand, may feel they need food stamps for temporary assistance when an unexpected drop in income occurs, because they have not prepared for this possibility.

Table D.4 shows the results of a simple multivariate analysis that begins to address these issues. Column (1) shows the effect of the trigger variable for household income--household income last month--along with the influence of age, gender, race, education, and marital status. Last month's household income is negatively and significantly related to FSP entry. This result shows that the descriptive analysis, which produced a similar result, still holds up when we control for a simple set of demographic characteristics.

TABLE D.4

ENTRY-RATE MULTIVARIATE ANALYSIS: PROBIT COEFFICIENTS  
(Standard Errors in Parentheses)

	Entry Rate Model 1	Entry Rate Model 2
Household (HH) Income Last Month	-0.030*** (0.003)	-0.019*** (0.003)
Mean Past HH Income	--	-0.023*** (0.004)
Age	-0.017*** (0.003)	-0.017*** (0.003)
Female	0.103** (0.048)	0.096** (.048)
Nonwhite	0.254*** (0.054)	0.230*** (0.055)
Education	-0.020 (0.012)	-0.014 (0.012)
Married	0.087*** (0.009)	0.113** (0.055)
Intercept	-1.210	-1.055
<b>Analysis Sample Size</b>	<b>31,941</b>	<b>31,941</b>

SOURCE: 1991 SIPP Panel.

The column (2) in Table D.4 shows the effect of adding average household income over the previous 24 months to the equation. Average household income has a negative and significant effect on FSP entry in this model, implying that individuals who come from households that are generally better off are less likely to be receiving food stamps. The effect of last month's income is still negatively associated with entry, but the magnitude of the effect drops by about a third, implying that part of the trigger effect in column (1) was a result of low-average income over the long term rather than specific conditions in the previous month.

In Table D.5, this issue is explored in more depth. Column (1) shows results from adding trigger variables (defined as of last month) and average variables (defined over the past two years) representing additional individual characteristics--earnings, employment status, marital status, and AFDC status. Each of these sets of variables was added separately and independently to the entry equation. Thus, column (1) actually contains results from five separate FSP entry models, each of which also contains the same set of control variables shown in Table D.4. Column (2) shows the results from the estimation of five similar models, each including an additional term representing the interaction between the trigger and average variables for each characteristic. Column (3) shows the results of adding all sets of triggers and average characteristics into one equation (the interaction variables are excluded to prevent multicollinearity).

The last month trigger variables are, by and large, more influential on entry than the average variables (column 1). While average household income has a negative effect on entry, as Table D.4 showed and as Table D.5 repeats, average earnings, average employment status, and average marital status do not have a major impact on entry. However, average past AFDC participation has a positive and significant impact on entry; in fact, its effect is stronger than that of last month's AFDC

TABLE D.5

INFLUENCE OF TRIGGER AND MEAN CHARACTERISTICS ON ENTRY RATE  
(Probit Coefficients)

	Triggers and Average Variables-- Separate Models	Triggers, Average Variables, and Interactions-- Separate Models	Triggers and Average Variables--Single Model
Household (HH) Income Last Month	-0.019*** (0.003)	-0.022*** (0.007)	-0.017*** (0.004)
Mean Past HH Income	-0.023*** (0.004)	-0.025*** (0.006)	-0.006 (0.005)
HH Income Last Month × Mean Past HH Income	--	.002 (.003)	--
Earnings Last Month	-0.031*** (0.006)	-0.025*** (0.008)	-0.014* (0.008)
Mean Past Earnings	-0.002 (0.006)	-0.001 (0.007)	-0.003 (0.009)
Earnings Last Month × Mean Past HH Earnings	--	-0.006 (0.006)	--
Employed Last Month	-0.347*** (0.076)	0.045 (0.120)	-0.198** (0.096)
Past Time Employed	-0.042 (0.093)	0.233** (0.110)	0.190 (0.126)
Employed Last Month × Past Time Employed	--	-0.654*** (0.168)	--
Married Last Month	-0.069 (0.132)	-0.272 (0.156)	-0.093 (0.141)
Past Time Married	0.066 (0.140)	0.465*** (0.171)	0.170 (0.150)
Married Last Month × Past Time Married	--	-0.740*** (0.232)	--
On AFDC Last Month	0.220 (0.170)	1.159*** (0.242)	0.800*** (0.176)
Past Time on AFDC	1.024*** (0.157)	1.326*** (0.160)	-0.362** (0.184)

TABLE D.5 (continued)

	Triggers and Average Variables-- Separate Models	Triggers, Average Variables, and Interactions-- Separate Models	Triggers and Average Variables--Single Model
On AFDC Last Month × Past Time on AFDC	--	-1.758*** (0.0394)	--
Past Time on Food Stamps	--	--	1.483*** (0.114)

SOURCE: 1991 SIPP Panel.

NOTES: The analysis sample includes adults in families with household income less than the median and who have completed schooling of 12 years or less. Sample includes all months 25 to 32 in the SIPP and the sample size counts all adults in all those months. The entry rate is the fraction of the sample who were observed to be on food stamps in the current month.

Standard errors in parentheses.

All equations also include control variables for age, female, nonwhite, education, and married (not shown).

Coefficients on HH income and earnings multiplied by 100; coefficients on HH income and earnings interactions multiplied by 100,000.

\*Significantly different from zero at the .10 level, two-tailed test.

\*\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .01 level, two-tailed test.

status. No doubt receiving AFDC in the prior month is itself not a trigger for food stamp entry; the influence of AFDC participation is more long lasting.

The coefficients on the interactions in column (2) are not significant for income or earnings but are significant for employment status and marital status. In both cases the interaction effect is negative, suggesting that deviations from individuals' usual circumstances, rather than difficult circumstances themselves, lead to FSP entry. In the case of employment status, for example, the negative interaction term implies that the effect of being unemployed last month has a greater effect on inducing entry for those who have high-average employment levels in the past than for those who have low-average employment levels. In fact, the effect of being unemployed last month has no significant effect on entry for those with very low past employment levels. This finding suggests that effects of losing one's job on FSP entry is more important for those who are ordinarily employed, and who may therefore wish to use food stamps as a short-term solution. For those who are usually unemployed, by contrast, being unemployed for one additional month has no effect on FSP entry.

Likewise, the results for marital status imply that the absence of a spouse has a larger impact on those who have been married throughout most of the past two years than those who have not. Those who have been married in the past may find themselves suddenly and unexpectedly without a major source of income and support they had been accustomed to receiving. By contrast, those who have not been married in the past or who were married for little time during the past two years have become accustomed to the absence of spousal support.

Column (3) shows the effect of adding the triggers and average characteristics for all the variables simultaneously in a single equation model of FSP entry (this equation also includes the control variables shown in Table D.4). All of the previous month trigger variables still are

significant determinants of entry and most average characteristics are not significant determinants.<sup>2</sup>

It is likely that many of those who have low-average earnings, household income, employment levels, and marital probabilities are receiving food stamps already. Hence, those who are not receiving food stamps are likely to have made a decision or found the means to stay off the program.

The results from the multivariate analysis of FSP entry suggest future work on the sources and determinants of FSP entry, especially that trigger events affect individuals differently. In particular, individuals facing negative events or circumstances are more likely to enter the program if these events/circumstances represent a deviation from their usual situation than if they represent a continuation of their usual situation. It would be of interest to explore individuals' pasts more fully to see how past experiences are related to FSP entry. We would also like to see how the past and current conditions of FSP entrants affect the duration of their FSP participation spells, to determine which entrants are the "short-termers" and which entrants are the "long-termers" discussed in policy discussions and other analyses of FSP participation.

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<sup>2</sup>An exception occurs for AFDC status, where short-term receipt now has a large positive effect on FSP entry and average AFDC receipt in the past actually has a negative effect on entry.