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Dynamics of Food Stamp Program Participation, 2001-2003

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Dynamics of Food Stamp Program Participation, 2001-2003

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EXECUTIVE SUMMARY

The Food Stamp Program (FSP) is the cornerstone of America's food assistance policy. In 2006, nearly 27 million individuals received food stamp benefits each month. This monthly program caseload is not static; each month, new individuals enter the program while some participants exit.

Several factors can lead an individual to enter the program. Some may enroll as a result of a change in personal financial circumstances; others who are eligible but do not enroll may later apply for benefits because they recently learned about either the program or their eligibility through program outreach or other sources; still others may enroll because they are concurrently enrolled in other public assistance programs such as the Temporary Assistance to Needy Families (TANF) program or the Supplemental Security Income (SSI) program.

Once an individual is enrolled, numerous circumstances can affect the duration of a participation spell. A loss of eligibility, for instance, influences spell duration by triggering program exit. In general, FSP households are required periodically to report changes in income that may affect their eligibility and to be recertified for eligibility. Thus, individuals whose income increases beyond the eligibility limits are likely to exit the program at recertification or when they report their income. Other factors that may prompt a program exit include failure to comply with program rules, certain life events (moving out of state, moving into group quarters, or death), or simply a lack of interest in continuing to participate.

Patterns of entry into and exit from the FSP drive caseload patterns. Participation in the FSP has increased steadily since the early 2000s. The average monthly caseload increased from 17 million in 2000 to almost 27 million in 2006, bringing the number of participants close to the most recent caseload peak, which occurred in 1994.

Understanding what drives participation dynamics is critical to developing effective FSP policies. Well-designed studies of participation dynamics, for example, can inform policymakers about what factors lead individuals to enter and exit the FSP; how long they typically participate; and how their participation decisions are affected by changes in individual circumstances, overall economic conditions, and program policies.

The study documented in this report explored the following seven research questions on the dynamics of participation in the FSP:

1. What factors lead individuals to enter the FSP?
2. How long do individuals tend to participate?
3. What factors lead individuals to exit?
4. How frequent is program re-entry?

5. How much do individuals rely on the FSP over time?
6. How do participation patterns vary by subgroup?
7. How have participation patterns changed since the early, mid-, and late 1990s?

The data source for the study was the 2001 panel of the Survey of Program Participation (SIPP), a nationally representative, short-term longitudinal survey that collects detailed information on monthly labor force activity, earned and unearned income, cash and non-cash assistance, and family and household composition. It consists of approximately 35,000 households that are interviewed every four months over a three-year period.

The study was conducted in two stages. In the first stage, a descriptive analysis, we explored the characteristics of participation spells observed between from 2001 through 2003. We estimated rates of entry into the FSP among nonparticipants, the duration of participation spells, the likelihood of re-entering within the panel period, and events associated with entry into and exit from the FSP. In the report that follows, we also discuss these estimates in terms of the characteristics of entering and exiting individuals.

In the second stage, a multivariate analysis, we looked more closely at the factors associated with entry, duration, and re-entry. So while the descriptive analysis illustrates the relationship between individual-level characteristics and FSP participation, the multivariate analysis captures the relationship between several characteristics and participation patterns. As part of that analysis, we estimated a multivariate entry model and discrete-time hazard exit and re-entry models.

A. FSP ENTRY

On average, in 2001 to 2003, 41 out of every 1,000 individuals in low-income families¹ who were not receiving FSP benefits in December participated at some point in the next year, for an entry rate of 4.1. The likelihood of entry differed according to the family situation. For example, for those with an income under 300 percent of poverty at some point in the panel period, about 21 of every 1,000 nonparticipants who had not received food stamp benefits in the past entered in the next year, but about 145 of every 1,000 of those who had received benefits in the past entered in the next year. The importance of past receipt of benefits to program entry is also evident in our comparison of entrants to those “at risk” of entering, that is, individuals who were not participating but had an income under 300 percent of poverty at some point in the panel period. Almost 50 percent of individuals who entered the FSP in this period had previously received benefits, but the same is true for only 10 percent of those at risk of entering.

Age and earnings of family members also affect entry. During the panel period, about three-fourths of entrants were in families with children, compared with only 55 percent of individuals

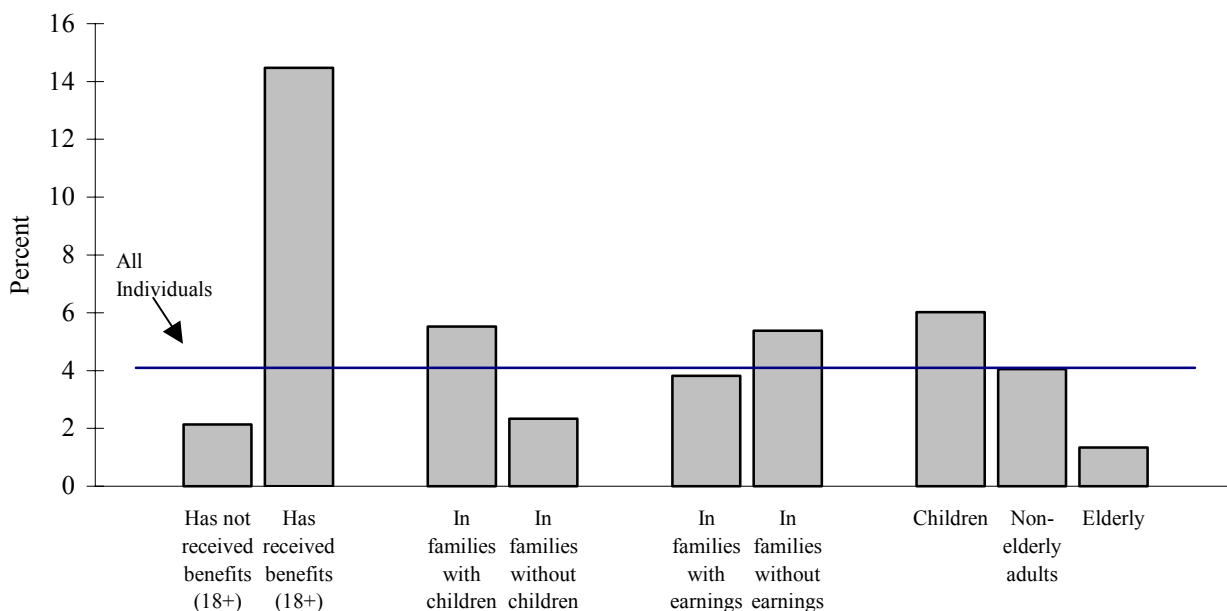
¹ Family income under 300 percent of poverty at some point in the panel period.

in the at-risk population. Almost 70 percent of entrants had earnings, relative to over 80 percent of those at risk, and only 6 percent of entrants were elderly, compared with 17 percent of those at risk.

Figure 1 illustrates the difference in the annual entry rate for several subgroups of individuals in families. That rate is the average across 2001 to 2003 of the number of individuals who were not participating in December, were under the income level, and participated at some point in the next calendar year.

FIGURE 1

AVERAGE ANNUAL ENTRY RATES AMONG NON-PARTICIPATING INDIVIDUALS WITH INCOME UNDER 300 PERCENT OF POVERTY AT SOME POINT IN PANEL PERIOD, 2001–2003



Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

With regard to age, the entry patterns of adults (18 and over) indicate that about 29 percent of adults entered the program at some point in their lives. Among the adults who entered the FSP at some point, about 15 percent entered when they were 18 to 20 years old; half of the adult entrants enrolled by the time they were age 30.

The most common events that trigger entry into the FSP are related to a drop in family earnings. Among those who entered the FSP in the panel period, 56 percent experienced a decrease in family earnings of at least 10 percent in the four months before they entered. If a family experienced a job loss, the pre-loss income played a significant role. Families with an income from 100 to 150 percent of poverty before the job loss were 19 percent less likely to

enter the FSP after a job loss than were families with income below poverty. Families with an income over 150 percent of poverty were even less likely to enter the FSP.

Entry triggers have a more pronounced effect when they represent a deviation from an individual's usual circumstance. While the loss of a job increased the likelihood of FSP entry for all individuals during the panel period, the increase was more substantial for individuals who do not experience frequent unemployment. Individuals who are more accustomed to volatile employment were less likely to enter the FSP after an employment loss. In addition, single parents were more likely than other individuals to enter the program after experiencing several changes in earnings.

In addition to personal factors, local labor market conditions are associated with the decision to enter the FSP. The probability of entering the program in a given month is positively related to a state's unemployment rate and negatively related to the state's mean wage, even after controlling for individual characteristics.

State policies play a role in FSP entry as well. Federal FSP policy requires recipients to report changes in their financial circumstances to state agencies at each recertification appointment or when changes in monthly income exceed \$25 (change reporting). More recently, states have been given the option of reducing either the frequency of reporting between certifications (simplified reporting) or the types of incidents that need to be reported (status reporting). All else equal, the odds of entering the FSP increase by 73, 37, and 60 percent, respectively, in states with simplified reporting only, status reporting only, and both simplified and status reporting when compared to states with change reporting only.

B. REPLACEMENT RATES

Whereas entry rates measure the number of entrants in a fixed period of time in relation to the population, replacement rates measure the number in relation to the caseload size. It is defined as the number of new entrants in a month divided by the number of participants in the previous month's caseload. The average annual replacement rate for 2001 to 2003 was 5.4 percent, appearing higher than the rate for the mid- and late 1990s.

C. DURATION OF FSP PARTICIPATION SPELL

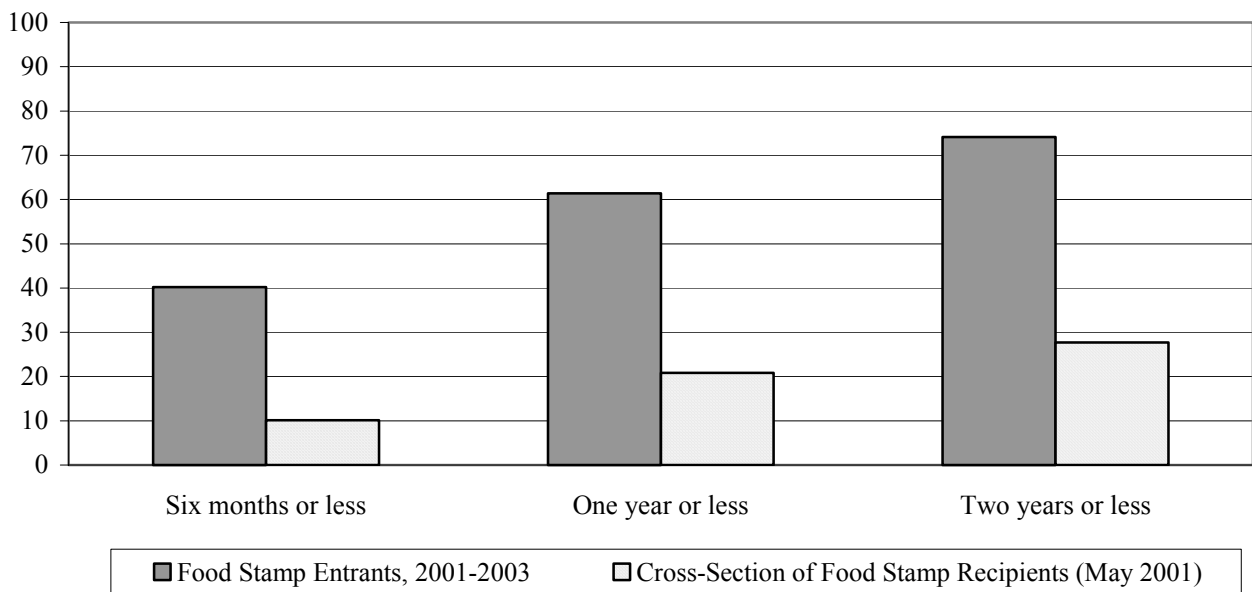
Over half of the individuals (61 percent) who entered the FSP during the panel period exited within one year (see Figure 2). The median participation spell among new entrants was about 8 months. However, among a cross-section of those participating in a given month early in the panel (May 2001), the median spell was about 48 months. We expect the spell duration to be longer for the cross-sectional sample than for those entering. For any month of the sample we choose to observe, we will miss many of the short spells that occur within the sample period—they are likely to have occurred before or to begin after our sample month. However, longer spells are more likely to include our sample month. For this reason, the longer spells are more heavily represented in the cross-sectional sample than in the entry sample.

Like entry rates, spell duration varies according to the characteristics of an individual. Individuals in families without earnings have longer spells than individuals in families with earnings. Children have longer spells than non-elderly adults, and elderly individuals generally have the longest spells. These patterns are markedly different from entry rate patterns, in which the elderly are the least likely to enter.

Past FSP receipt and length of the ongoing participation spell also influence spell duration. Individuals who have received benefits in the past are likely to have longer spells than those who have not, and those who have participated for long periods are less likely than shorter-term participants to exit the FSP. One factor that contributes to the significant difference between the spell duration for individuals in their first spell and those in a repeat spell is finding employment in the four months before exiting the FSP. This event leads to shorter spells for individuals in an initial spell compared to those in a repeat spell.

FIGURE 2

COMPARISON OF LENGTH OF FOOD STAMP PARTICIPATION SPELLS AMONG ENTRANTS AND A CROSS-SECTION OF PARTICIPANTS



Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

Individuals in states with simplified reporting or status reporting have longer participation spells than individuals in states with change reporting. The impact of living in a state with either simplified or status reporting is even more pronounced for families without children, elderly, or disabled individuals and for families with children and married adults compared to other family subgroups.

D. FSP TURNOVER

The turnover rate measures the size of the population that comes into contact with the FSP over the course of a year in relation to the size of the caseload. We estimate the average annual turnover rate from 2001 to 2003 as 1.5. Thus, caseworkers who had a caseload size of 100 in a single month handled an average of 150 different cases over the course of the year.

E. FSP EXIT

The most common trigger associated with an FSP exit is an increase in family income, with almost three-quarters of exiting participants experiencing an increase in income of at least 10 percent. During the panel period, about one-quarter of these participants left the FSP within four months of the increase. Other triggers we examined did not occur as often as the income increase, but they were associated with a similar percentage of participants exiting within four months. For example, for almost half of all participants, a family member, either with or without income, left the household. In about one-quarter of these cases, the participant also left the FSP within four months. Fewer than 20 percent of all participants experienced an increase in family size, but again, about one-quarter of these participants left the FSP within four months of the household change.

The decision to exit the FSP differs for people in different economic circumstances at the start of the spell. In the panel period, individuals in families with an income greater than 150 percent of poverty at the start of the spell were more likely to leave the FSP than were individuals in poorer families. Furthermore, prior employment and income history affect the magnitude of the association between exiting the FSP and a family's change in employment or income in the several months preceding exit. We found that for families with high employment volatility or high frequency of income changes, the likelihood of exiting the FSP increased by 37 and 100 percent, respectively for those who found jobs or had an increase in income. For those with a more stable year (lower employment volatility and less frequent income changes), the magnitude of these effects is less. This provides evidence that individual's longer-term employment and income experiences play an important role in predicting participation behavior after a job or income change.

F. FSP RE-ENTRY

More than half of the FSP participants who exited the program in the panel period re-entered within two years. Forty-five percent re-entered within one year of exiting, and another 10 percent re-entered within two years of exiting (see Table 1). Although we cannot be sure about who entered after the panel period, it appears that most people who re-enter the FSP do so within two years of exiting. However, individuals with longer duration of prior receipt of food stamps are more likely to re-enter than individuals with shorter spells.

TABLE 1
RATE OF FSP RE-ENTRY WITHIN THE PANEL PERIOD

Re-entering FSP within Panel Period	Percent
Within 6 Months	28
Within 12 Months	45
Within 18 Months	50
Within 24 Months	55

Whether a former participant is employed at the start of the nonparticipation spell does not predict re-entry; however, triggers related to job loss are strongly associated with re-entry. As revealed by the entry analysis, individuals who lose a job are more likely to re-enter the FSP if they have had a more stable year in terms of employment.

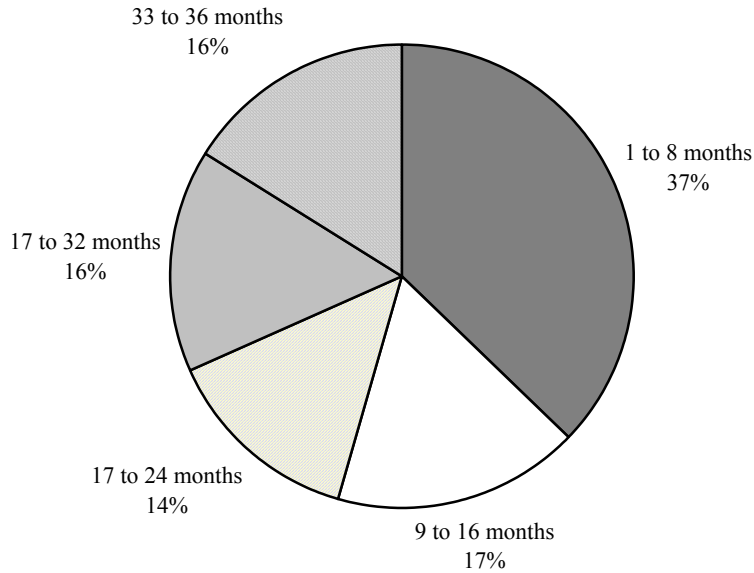
State-specific policies and labor market conditions are also important predictors of re-entry. Individuals in states with simplified reporting or quarterly reporting, lower mean wages, and higher unemployment rates are more likely to re-enter.

G. TOTAL TIME ON THE FSP DURING THE PANEL PERIOD

Total time on the FSP during the panel period is simply the number of the 36 months in the sample that a person receives FSP benefits. Of the individuals on the panel who received FSP benefits during the panel, 37 percent were in the program for a total of 8 months or less, and 16 percent participated for the entire panel (see Figure 3). The median total time was 15 months (or 40 percent of the possible 36 months). This finding suggests that individuals depend more heavily on the FSP than is indicated by the duration analysis (median duration was 8 months).

FIGURE 3

TOTAL TIME PARTICIPANTS SPENT ON FOOD STAMP PROGRAM DURING 36-MONTH PANEL



Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

H. SPELL TYPE

The measure of total time on the FSP suggests that many participants with short spells re-enter the FSP. Including spells that occurred prior to the 2001 SIPP panel, nearly two-thirds of participants had multiple spells. More participants had multiple spells in the early 2000s than in the early 1990s, and fewer had a single long spell.

I. CHANGES IN FSP DYNAMICS OVER TIME

Table 2 presents several of the measures of FSP dynamics discussed in this report alongside the estimates from earlier reports. Overall, entry rates in the early 2000s are similar to rates in the early 1990s, and the spell duration for those who entered in the panel period does not significantly differ from the spell duration in the early 1990s. Individuals who exited re-entered sooner, on average, than in earlier years, which means that there were more participants with several spells in the early 2000s than there were in the early 1990s. However, the entry and exit triggers have not changed. A decrease in income remains the predominant trigger of entry, and an increase in income remains the predominant trigger of exit.

TABLE 2

COMPARISON OF PRIMARY MEASURES OF FSP PARTICIPATION DYNAMICS

	1990-1993	1993-1996	1996-1999	2001-2003
Annual Entry Rate Among All Individuals (Percent)	2.6	NA	NA	3.3
Replacement Rate (Percent)	NA	4.2	3.8	5.4
Median Duration for Entry Cohort (Months)	9	8	8	8
Median Cross-sectional Completed Spell Length (Months)	>96	54	54	48
Median Time-Off Between Spells (Months)	20	NA	NA	16
Receiving Benefits for Total of Eight Months or Less in Panel Period (Percent)	27	NA	NA	37
Receiving Benefits for 36 Months (Percent)	NA	NA	NA	16
Multiple Spells (Percent)	51	NA	NA	63
Average Annual Turnover Rate	1.3	NA	NA	1.5

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I. INTRODUCTION

The Food Stamp Program (FSP) is the cornerstone of America's food assistance policy. In 2006, nearly 27 million individuals received food stamp benefits each month. This monthly program caseload is not static; each month, new individuals enter the program, while some participants exit. Understanding what drives these participation dynamics is critical to developing effective FSP policies. In particular, investigating caseload dynamics provides information about what factors lead individuals to enter the FSP, how long individuals typically participate, and what factors lead them to exit the program. Caseload dynamics studies can show how individuals' participation decisions are affected by changes in individual circumstances, by overall economic conditions and by program policies.

Typically, studies of program participation dynamics examine measures related to four key aspects of participation spells:

1. ***Program Entry.*** Key measures of entry are the number of people entering the program over a fixed period of time in relation to the size of the population (entry rate) and the number entering in relation to the caseload size (replacement rate). Examining changes in program entry and replacement rates over time can help to explain overall trends in caseloads. Moreover, examining individuals' circumstances before they enter the program can help identify the reasons individuals choose to participate in the program.
2. ***Duration of Program Participation.*** Estimates of the duration of participation spells can provide valuable insight into the degree to which individuals rely on the FSP once in the program. Duration is measured from a number of perspectives. Entry cohort analysis measures the length of stay of individuals who enter the FSP around the same time period. Cross-sectional analysis measures the length of stay for those who are participating at a specified point in time. The cross-sectional analysis usually indicates longer participation spells than the entry cohort because the cross-sectional analysis includes the accumulation of entrants that do not exit quickly. Finally, measures of turnover and months ever receiving benefits during a period indicate the prevalence of multiple spells.

3. ***Program Exit.*** Exit rates reflect the proportion of participants that exits the program over a fixed period of time. Like changes in entry rates, changes in exit rates over time can help explain changes in caseload size, and an examination of individuals' circumstances around the time of exit can help determine why individuals leave the program.
4. ***Program Re-entry.*** Re-entry patterns measure the extent to which individuals cycle on and off a program. These measures tell us much about how and why individuals use these programs.

This study examines participation dynamics for the FSP. It is conducted in two stages. In the first stage, we describe the characteristics of participation spells observed between early 2001 and late 2003. If the entry patterns observed over this time for adults remained constant over time, we estimate that 29 percent of adults (age 18 and over) would participate in the FSP at some point in their adulthood. In addition, each year, 3 out of every 100 people of all ages not receiving food stamp benefits at the start of the year would enter the program by the end of the year. While entry rates in the program have increased since the early 1990s, participation spells appear to have shortened; half of all participation spells end within eight months, and 62 percent end within one year. However, 45 percent of people that exit the FSP re-enter the program within 12 months.

In the second stage of the study, multivariate techniques are used to better understand the factors that influence participation dynamics. We find that the loss of employment is one of the most influential personal changes that can trigger entry into the FSP, and that this change is more likely to trigger entry into the program for individuals who have a stable employment history than for individuals with a volatile employment history. Regardless of what leads someone to enter the program, getting a job is one of the most influential personal changes that leads to exiting the FSP. Finally, we find that in states with simplified income reporting rules for

program participants, entry and re-entry rates tend to be higher, and participation spells tend to be longer than in states that have not adopted the new income reporting rules.

This rest of this chapter provides background on the FSP, reviews the previous research on the dynamics of poverty and FSP participation, describes the research objectives of this study, discusses the data used for the analysis, and presents an overview of the methods employed. Chapter II of this report discusses the characteristics of FSP participation spells observed in the 2001 to 2003 period. Chapter III presents the results of multivariate analyses used to better understand the factors that influence individuals' decisions to enter, exit, and re-enter the FSP.

A. BACKGROUND ON THE FOOD STAMP PROGRAM

The FSP provides monthly benefits that can be used to purchase food in over 160,000 authorized stores across the United States. Eligibility for the program is based primarily on financial need; in general, individuals must have income and assets below specified eligibility thresholds. Households without elderly or disabled members must have gross income equal to less than 130 percent of the poverty level, net income less than 100 percent of poverty, and countable assets less than \$2,000.² Households with elderly or disabled members must have net income less than 100 percent of poverty and countable assets less than \$3,000.³

Some households are identified as categorically eligible for the FSP, and are not subject to the income or asset screens. Households in which all members receive Supplemental Security Income or cash benefits through TANF are categorically eligible. In addition, states have

² Net income represents the amount of income households have available to use for food. It equals gross income less a standard deduction, an earnings deduction, and deductions for dependent care, medical expenses and shelter expenses. Countable assets are primarily financial assets and some vehicular assets.

³ During our analysis period, the asset limit for households with disabled members but no elderly members changed. Prior to October 2002, they were limited to \$2,000 in assets. In October 2002, the limit increased to \$3,000.

conferred categorical eligibility status to recipients of in-kind benefits from federally-funded TANF programs, though the FSP places an income limit of 200 percent of poverty for households receiving noncash TANF benefits that are largely funded from non-TANF sources.

Certain individuals are categorically ineligible for the FSP and cannot receive benefits even if they pass the income and asset requirements. During most of our analysis period, most legally resident noncitizens must have acquired 40 quarters of work before becoming eligible for the FSP. Children and disabled noncitizens who resided in the United States in August 1996 and elderly individuals who were both 65 and resident in August 1996 were eligible as long as they met the income and asset requirements.⁴

Over the past 10 years, all states have made the transition from providing benefits through paper coupons to providing benefits through electronic benefit transfer (EBT) cards. A household's food stamp benefit level equals the maximum FSP benefit for a household of that size less 30 percent of the household's net income. Maximum benefit levels are the same in all states, with the exception of Alaska and Hawaii, where cost of living adjustments are made. Maximum benefits are set equal to the cost of the Thrifty Food Plan, the USDA's lowest-cost food plan and are updated annually for higher food prices.

Several factors, alone or in combination, may lead an individual to enter the program. Some individuals may enroll as a result of a change in personal financial circumstances; others who are eligible to begin with may enroll because they recently learned about the program or about their own eligibility through program outreach or other sources; still others may enroll because they

⁴ The rules regarding noncitizen eligibility changed during our analysis period. In October 2002, all disabled noncitizens meeting the income and asset requirements became eligible. In April 2003, noncitizens who had been legally resident for five or more years became eligible, and in October 2003, noncitizen children became eligible, as long as the other eligibility conditions were met.

are concurrently enrolled in other public assistance programs, such as the Temporary Assistance to Needy Families (TANF) program or the Supplemental Security Income (SSI) program.

Once an individual is enrolled, the duration of the participation spell can be affected by numerous circumstances. A loss of eligibility, for instance, influences spell duration by triggering program exit. In general, FSP households are required to periodically report changes in income that may affect their eligibility and to be recertified for eligibility. Thus, individuals whose income increases beyond the eligibility limits are likely to exit the program at the time of income reporting or recertification.

In addition to loss of eligibility, the following other factors may prompt program exit:

- Failure to comply with program rules, including reporting requirements and the work requirements for nondisabled nonelderly childless adults⁵
- Life events, such as moving out of state, moving into group quarters, or death
- The household decides that benefits are too low to be worth the effort of complying with administrative requirements in the program
- Errors in the administration of the program or determination of benefits

For most FSP participants, there are no limits on the number of times they can participate in the program or on the total amount of time they can receive benefits as long as they meet the eligibility requirements. Thus, individuals whose financial circumstances and other needs fluctuate over time may have multiple spells of participation.

The program's rules have changed substantially over the past 10 years, first as a result of welfare reform in the late 1990s, and more recently as states have been given increasing

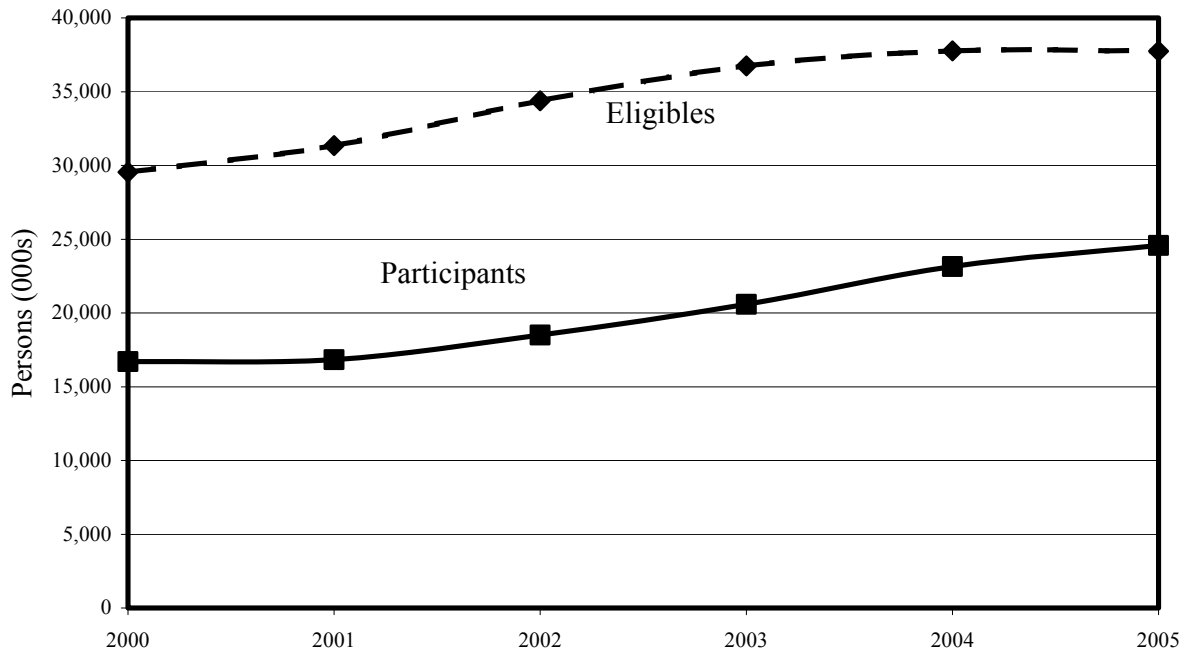
⁵ Nondisabled nonelderly childless adults are subject to time-limited benefits if they are not meeting the program's work requirements or exempt by waiver.

flexibility to alter program rules and procedures. Key program changes that have occurred include the following:

- ***Changes in Asset Eligibility Rules.*** States have the option to change asset eligibility rules to make the FSP more accessible to families that need vehicles to get to work.
- ***Expanded Categorical Eligibility.*** In many states, categorical eligibility (that is, qualifying for benefits without having to pass the income and asset eligibility tests) has been extended to large populations receiving noncash benefits through the state's TANF program.
- ***Outreach.*** States have substantially stepped up program outreach so that individuals in need of assistance know that FSP benefits are available and how to apply.
- ***Electronic Benefits.*** States implemented their EBT programs in the 1990s and early 2000s, reducing the stigma associated with using FSP benefits by making transactions at retailers appear similar to those using credit and debit cards.
- ***Changes in Certification Periods.*** The FSP certification period is the length of time a household has before it must effectively reapply for benefits. Certification periods typically range from 3 to 12 months, depending on the state guidelines and household circumstances. In recent years, many states have started providing longer certification periods for those individuals – such as individuals with earnings – who would previously have received a three-month certification period.
- ***Changes in Reporting Requirements.*** Reporting requirements govern how a participating household must report changes in their income during certification periods. Previous FSP rules required all income changes over \$25 to be reported. Recent policy options allow states to simplify these rules. Two policy options examined in this report are simplified reporting and status reporting. The *simplified reporting* option allows clients not to report any changes in income during their certification period, so long as their income does not exceed 130 percent of poverty. *Status reporting* requires a client to report only when a household member has a change in jobs, receives a different rate of pay, or shifts from part-time to full-time work (or has a similar change in employment status); income changes due to different hours of work do not need to be reported. These two policy options are not mutually exclusive.
- ***Transitional Benefits.*** States have the option to provide food stamp benefits for three months to FSP participants who exit the state TANF program regardless of whether the individuals are still eligible for food stamps.

Participation in the FSP has increased steadily since the early 2000s. The average monthly caseload increased from 17 million in 2000 to almost 25 million in 2005.⁶ While this increase is likely fueled by changes in the economy and by growth in the number of eligible individuals, it is also likely that program policy changes have influenced these trends by improving program access. As can be seen in Figure I.1, the number of eligibles did not increase much from 2004 to 2005 while the caseload size continued to grow.

FIGURE I.1
FSP PARTICIPANTS AND ELIGIBLES, 2000-2005



Source: Wolkwitz, Kari. "Trends in Food Stamp Program Participation Rates: 1999 to 2005." Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, June 2007

⁶ The totals for 2005 include disaster assistance provided to victims of Hurricanes Katrina and Rita.

B. PREVIOUS RESEARCH ON DYNAMICS

This study builds on a variety of previous studies examining the movement of people in and out of public assistance programs. Several studies have examined the dynamics of entry into and exit from poverty. These studies are relevant because they use methods similar to those of studies examining program participation dynamics, and they track the population generally targeted by the FSP. Other studies have examined FSP participation dynamics specifically. While these studies focus primarily on reasons for program entry and exit along with duration of program participation spells, some also examine program participation over an individual's lifetime, and others identify factors related to caseload growth and decline.

1. Research on Poverty

To a substantial degree, the populations eligible for the FSP overlap with the populations that are poor. Consistent findings emerging from the large body of poverty research are that (1) poverty touches many people at some point in their lifetime; (2) close to half of spells of poverty end within a year; (3) at any point in time, most people in poverty are in the middle of long-term poverty spells; (4) most poverty entries and exits are triggered by changes in employment—for various household members in addition to the household head; and (5) black and white individuals have markedly different poverty rates.

Studies of entry into poverty over a person's lifetime generally use the Panel Study of Income Dynamics (PSID) and include work by Duncan and Rogers (1988) and Rank and Hirschl (1999). The former focused on children, specifically those up to age 4 at the start of the PSID data collection in 1968. The authors found that about one-third of these children entered poverty within 15 years, and another 18 percent were near poor (defined as between 100 and 150 percent of poverty) during the same period. Twelve percent lived in poverty for 5 or more years.

Almost 80 percent of black children, however, were found to enter poverty for some period in these 15 years, and almost 47 percent would stay in poverty for 5 or more years. Rank and Hirschl (1999) found similarly high probabilities of poverty entry at some point in adult life; they estimated that by age 40, over one-third of adults (age 20 and over) would experience poverty, and that more than half would experience poverty by the time they were 65 years old. Again, the estimates varied substantially by race, so two-thirds of black adults could expect to enter poverty by the time they were 40 years old and 84 percent by the time they were 65 years old.

Other researchers also have noted that although a sizeable portion of the population has extended poverty spells, poverty spells are short for most people. Long-term spells accumulate over time so that even if a small proportion of poverty spells are long, the cumulative effect is that in a given month, most of the population in poverty is in the midst of a long spell. Duncan and Rogers (1988) estimated that the average spell for children over the 15-year period was 1.5 years (0.9 years for nonblack children and 5.5 years for black children). Bane and Ellwood (1986), who also used the PSID, found that about 45 percent of the population exit poverty within a year of entering. At a given point in time, though, the study estimated, slightly over 50 percent of the people in poverty would be in a spell that would last 10 or more years.

McKernan and Ratcliffe (2002), Bane and Ellwood (1986), and Duncan and Rogers (1988) examined household events that trigger entry into and exit out of poverty. Using the Survey of Income and Program Participation (SIPP) panels for the early 1990s and late 1990s, McKernan and Ratcliffe found that changes in employment were the most important triggers of poverty entry and exit in the late 1990s, although the role that earnings played reduced between the early and late 1990s. They noted that the very large number of poverty entry and exits prompted by an employment change was due, in part, to the fact that so many households experienced this event.

They found that even after controlling for other factors in a multivariate analysis, employment remained the primary influence on poverty entry and exit. Using the PSID, both Bane and Ellwood (1986) and Duncan and Rogers (1988) not only noted the importance of changes in earnings in relation to entries and exits, but also showed that any household member's earnings—not just the head's—could trigger an entry or exit. Indeed, these studies found that the employment of household members could be just as important as, and in the case of poverty exits, even more important than, a change in the household head's earnings.

According to Bane and Ellwood (1986), entry was also triggered by a birth of a child, the onset of a disability, and a shift from a household with two adults to one headed by a single female. For poverty exits, additional triggers included an increase in education and a shift from a household headed by a single female to one headed by two adults. McKernan and Ratcliffe (2002) also found that in the early 1990s, before welfare reform, the shift in marital status of the household head played a more prominent role in entries and exits than it did in the late 1990s.

Iceland (1997) used the PSID to examine factors influencing poverty exits that were exogenous to the household, such as changes in the economic structure of metropolitan areas. Looking at two periods, 1970-1974 and 1979-1985, he found that a decline in the share of manufacturing jobs in metropolitan areas led to a decline in poverty exits for black individuals in both periods, and that an increase in the share of jobs in the service industry triggered a decline in poverty exits for black individuals during the second period. However, expansion in the retail/wholesale industry prompted more poverty exits for black individuals. With the exception of the growth in the service industry in the earlier period, which led to a rise in exits for white individuals, these changes in economic structure were not significant exit triggers for white individuals.

2. Research on FSP Participation Dynamics

Studies of FSP participation dynamics show that the events triggering FSP entry and exit are similar to those triggering poverty entry and exit, and that patterns of FSP entry and exit vary by subgroup, much like patterns of poverty entry and exit. In examining dynamics in the mid-1980s, Burstein (1993) found that the most common FSP entry trigger was a decline in a household member's earnings, and that the most common exit trigger was an increase in a household member's earnings. Similarly, Gleason et al. (1998), which investigated FSP participation dynamics in the early 1990s, also found that a drop in earnings preceded entry more often than other triggers.

These two studies, as well as an analysis by Cody et al. (2005) of entry and exit rates throughout the 1990s and by Murphy and Harrell (1992) of long-term participants in the late 1980s, contributed substantially to our understanding of FSP program dynamics. The following other important findings are generally consistent across the studies and confirm many of the results identified above for poverty:

- Household composition changes play a significant role in triggering entries, re-entries, and exit.
- Most people who enter the program exit within one year.
- At any one point in time, most participants are in the middle of a spell of four or more years.⁷
- Of those who exit the program, one-third or more re-enter within one year.
- Households that have earnings when they enter tend to exit sooner than households that do not have earnings when they enter.

⁷ Although most people who enter the FSP remain participants for a year or less, the longer term spells accumulate. Thus, over time, the cumulative effect is that more participants at a given point in time are in the midst of a long-term spell than in the midst of a short-term spell.

- Female-headed households with children rely on the FSP more than other household types.

However, these and other studies indicate some noteworthy differences in dynamics from one study period to the next. Burstein (1993) found that the median spell for persons entering the FSP in the early 1980s lasted six months, while Gleason et al. (1998) estimated it to be nine months by the early 1990s, and Cody et al. (2005) pegged the median spell duration at eight months on the basis of SIPP data for the 1990s. Wilde (2001) and Cody et al. (2005) also used the Food Stamp Program Quality Control (FSPQC) data to develop similar estimates for 1990-1999; Wilde estimated that the median spell duration for new entrants was seven months, while Cody et al. found it to be six months. When examining how entry and exit rates contributed to the growth and decline of the FSP caseload, Gleason et al. (1998) found that the increase in the caseload in the early 1990s was a result of an increase in the duration of FSP spells, whereas Cody et al. (2005) identified increasing entry rates as the larger contributor (though longer spells were found to play a substantial role). Table I.1 compares the time frames, data, and study objectives across several of these studies. Figure I.2 illustrates the change in the caseload size in relation to each of these study periods.

During the period covered by the current study, the FSP caseload grew, and the program underwent several changes. Figure I.2 clearly illustrates that the caseload size was increasing; it was also a period of increasing unemployment and increasing numbers living in poverty. In 2001 and 2002, states began to align the vehicle portion of the asset eligibility test to their eligibility tests under TANF, and several states implemented simplified reporting options. In 2002, the Farm Security and Rural Investment Act also made several changes to the FSP that began in 2003, including the restoration of benefits to many noncitizens. In addition, the legislation gave states the opportunity to expand the types of households that could be eligible

for simplified reporting, increased selected deductions, and simplified several other program rules.

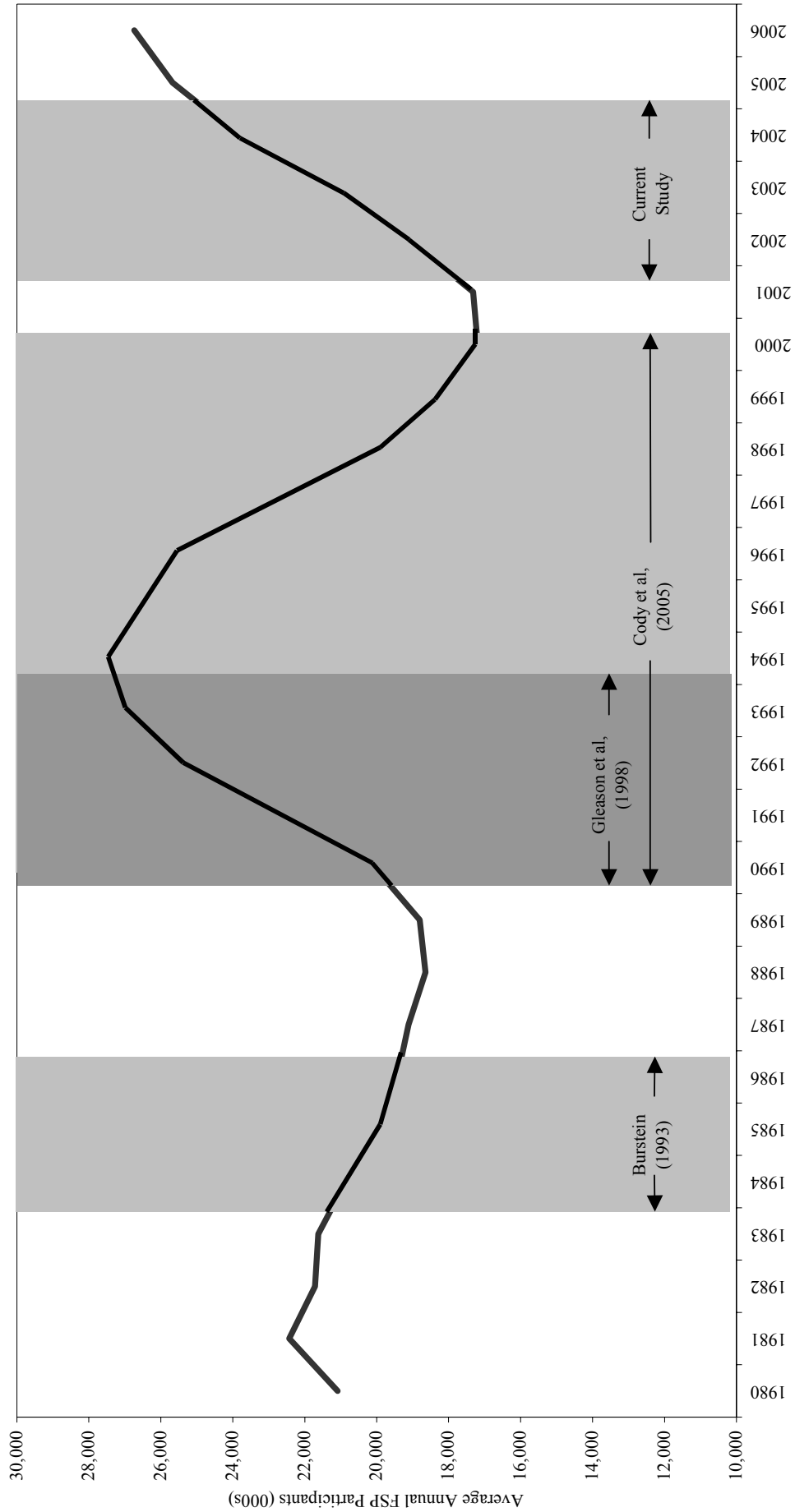
TABLE I.1
COMPARISON OF PREVIOUS STUDY TIME FRAMES, DATA,
AND STUDY OBJECTIVES WITH CURRENT STUDY

	Burstein (1993)	Gleason et al. (1998)	Cody et al. (2005)	Current
Time Period	1983-1986	1990 - 1993	1990-1999	2001 - 2003
Panel(s)	1984	1990, 1991	1990, 1991, 1992, 1993, 1996	2001
Sample Size	20,000 households	35,000 households	12,000-40,000 households	35,000 households
Historical FSP Data Used	No	Yes	No	Yes
Descriptive Analysis	Entry, exit, duration, re-entry, entry and exit triggers	Entry, exit, duration, re-entry, entry and exit triggers, total time on, turnover	Growth, replacement, exit, duration	Entry, exit, duration, re-entry, entry and exit triggers, growth, replacement, total time on, turnover
Primary At-Risk Definition for Entry Analysis	Non-participating individuals; household income under 300 percent of poverty	Non-participating individuals	N/A	Non-participating individuals; family income under 300 percent of poverty
Multivariate Analysis	N/A	Duration, re-entry	N/A	Entry, duration, re- entry

C. RESEARCH OBJECTIVES

The goal of this study is to update and extend previous research examining FSP participation dynamics, building primarily on the work of Burstein (1993), Gleason et al. (1998) and Cody et al. (2005). As in Burstein, we will limit much of our analysis to the population that is observed to be low income at some point in the panel period. However, when comparing our results to those of Gleason et al., we expand our sample to the larger population used in their study.

FIGURE I.2
PERIODS OF FSP CASELOAD CYCLE



NOTE: Fiscal year participation counts are based on data from the FSP Program Operations division.

Our first objective is to describe FSP dynamics using SIPP data from 2001 through 2003. This analysis (presented in Chapter II) describes patterns of program entry and exit, and provides descriptive statistics on participation spells observed over this period. The key research questions explored fall into four categories:

(1) FSP Entry

- What are the rates of entry into the FSP, and how do they vary by subgroup?
- How have entry rates changed since the late 1990s, when welfare reform was implemented?
- What trigger events precede FSP entries?
- What proportion enters the FSP at some point?

(2) Duration of FSP Participation

- What is the duration of participation spells among individuals entering the FSP, and does duration vary among subgroups?
- What is the median time on the FSP after program entry?
- What is the duration of spells for a cross-section of participants receiving benefits in the same month?
- What proportion of the caseload has single short-term spells, single medium-term spells, single long-term spells, and several spells?
- What is the total time individuals spend on the FSP over a specified period?

(3) FSP Exit

- What are the rates of exit from the FSP, and how do they vary by subgroup?
- What trigger events precede exit?

(4) FSP Re-entry

- What proportion of participants who exit the FSP return within less than a year?
- What is the median time off the FSP between spells?
- What trigger events precede FSP re-entries?

The study's second objective is to examine the factors that influence FSP entry, spell duration, exit, and re-entry. This analysis (presented in Chapter III) looks at a subset of those participation spells examined in Chapter II. Using multivariate techniques, we examine how individual circumstances and state policies affect the likelihood that individuals will enter the FSP, the duration of their participation spells, and the likelihood that they will re-enter the FSP. We further explore the work done by Gleason et al. (1998) to examine whether trigger events are more influential when they reflect a deviation from an individual's usual circumstances. The key research questions examined fall into the same four categories:

(1) FSP Entry

- Controlling for the long-term characteristics of individuals, what circumstances are most prevalent just before FSP entries?
- To what degree do prior circumstances regarding employment, marital status, annual income, receipt of food stamp benefits, and similar factors affect FSP entries?
- How do the effects of an entry trigger event differ when the event reflects a deviation from the individual's usual circumstances?
- What effects do state FSP policies have on the probability that an individual will enter the FSP?

(2) Duration of FSP Participation

- How do FSP spell durations vary by type of entry trigger event? Do they vary by whether the event was a deviation from the individual's usual circumstances?
- How are durations of participation spells affected by state FSP policies?

(3) FSP Exit

- Controlling for the long-term characteristics of individuals, what circumstances are most prevalent just before FSP exits?

(4) FSP Re-entry

- How do FSP re-entry rates vary by characteristics of the individual at the time of exit from the previous FSP participation spell?
- How is the probability of re-entry affected by the stability of the individual's circumstances after exiting the FSP?
- How are re-entry rates affected by state FSP policies?

D. DATA AND METHODOLOGY

This study relies on data from the 2001 panel of the SIPP. This section provides background on the SIPP data and discusses key issues regarding potential response errors in the SIPP. This section also provides an overview of the methodology used in this report. Additional details on the methodology are provided in Chapters II and III.

1. Data: The Survey of Income and Program Participation 2001 Panel

The SIPP is a short-term longitudinal survey that collects detailed monthly data on labor force activity, earned and unearned income, cash and noncash assistance, family and household composition, and several additional items. (See Table I.2 for a summary of the 2001 SIPP panel.) It follows a representative sample of civilian noninstitutionalized persons over time, collecting monthly data by means of interviews conducted at four-month intervals. All members of the households interviewed in the first “wave” remain eligible to be interviewed in subsequent waves, even if they move away from the original sample address, provided that they remain in the survey universe and do not miss more than one consecutive interview.⁸

⁸ The exceptions are (1) children under 15 who move without an accompanying adult panel member and (2) persons who move too far from the nearest SIPP primary sampling unit.

TABLE I.2

SUMMARY OF THE 2001 SIPP PANEL

Purpose	Collect income, labor force information, program participation, demographic characteristics
Design	Multistage-stratified sample; longitudinal
Sample Size	Approximately 35,000 households in Wave 1
Interview Period	Households interviewed every four months about previous four months; February 2001 to January 2004
Data Time Period	Four months preceding interview: October 2000 – December 2003
Historical Data	Program participation (e.g., Food Stamp receipt) prior to 1 st month of household's panel period
Universe	Civilian, noninstitutionalized population
Weighting	Full panel weights assigned to those with data (possibly imputed) for full duration of panel or who left the universe or died before the end of the panel period; weighted to population eligible for SIPP in January 2001; cross-sectional weights available for each wave but not used in this analysis
Respondent	Household members age 15 and over; proxy interview for unavailable household members

Each interview asks panel members and everyone living with them at the time about their activities during the preceding four months. Each interview includes a common set of core questions that collect information on household and family composition, personal demographic characteristics, employment, income, and participation in a wide range of government assistance programs. Periodic “topical modules” collect data on specialized subject areas such as previous participation in public assistance programs (also called “reciprocity history”), employment history, citizenship, child care costs, assets and liabilities, shelter costs, and work-related expenses.

The length and sample size of SIPP panels has varied over time. The first SIPP panel was fielded in 1984 with a sample of nearly 20,000 households interviewed over a period of two and one-half years. New panels of generally similar size started in nearly every year between 1984 and 1993, before a redesign replaced the overlapping panel design with an abutting panel design

that allowed larger and generally longer-running panels. A four-year panel with nearly 40,000 households started in 1996 followed by a three-year panel of about 35,000 households in 2001.

While the SIPP is fundamentally a longitudinal survey, it is designed to support cross-sectional as well as longitudinal analysis. To that end, the initial sample of households is divided at random into four equally sized rotation groups that are interviewed on a staggered schedule—one rotation group per month (see Table I.3). For example, the first rotation group is interviewed in February, June, and October of each year and asked to provide data for the preceding four months (e.g., in October, respondents are asked to provide information on June, July, August and September). In addition to distributing the workload evenly over the calendar year and thus permitting a set of interviewers to be dedicated to the SIPP, the rotation group design ensures that the data collected for any given calendar month are obtained in roughly equal proportions from respondents reporting on their activities of one, two, three, and four months ago. Accordingly, no calendar month of data is affected more or less than any other by recall bias or other error associated with distance from the interview.

For longitudinal analysis, the SIPP includes two types of longitudinal weights: full panel weights and calendar year weights. This study uses the full panel weights for all analysis. The full panel weight is assigned to persons with complete data (including imputed data) for the full duration of the panel or to people who left the panel universe (died, moved abroad or into an institution, or joined the military) before the end of the panel but had complete data otherwise. The full panel sample is weighted to represent the population eligible for the SIPP in the month to which the full panel weight is calibrated (January 2001 for the 2001 panel).

TABLE I.3
DESIGN OF THE 2001 SIPP PANEL

Rotation Group	Wave	Interview Month	Data Months
1	1	February 2001	Oct. 2000 - Jan. 2001
2	1	March 2001	Nov. 2000 - Feb. 2001
3	1	April 2001	Dec. 2000 - Mar. 2001
4	1	May 2001	Jan. 2001 - Apr. 2001
1	2	June 2001	Feb. 2001 - May 2001
2	2	July 2001	Mar. 2001 - June 2001
3	2	August 2001	Apr. 2001 - July 2001
4	2	September 2001	May 2001 - Aug. 2001
1	3	October 2001	June 2001 - Sep. 2001
2	3	November 2001	July 2001 - Oct. 2001
3	3	December 2001	Aug. 2001 - Nov. 2001
4	3	January 2002	Sep. 2001 - Dec. 2001
1	4	February 2002	Oct. 2001 - Jan. 2002
2	4	March 2002	Nov. 2001 - Feb. 2002
3	4	April 2002	Dec. 2001 - Mar. 2002
4	4	May 2002	Jan. 2002 - Apr. 2002
1	5	June 2002	Feb. 2002 - May 2002
2	5	July 2002	Mar. 2002 - June 2002
3	5	August 2002	Apr. 2002 - July 2002
4	5	September 2002	May 2002 - Aug. 2002
1	6	October 2002	June 2002 - Sep. 2002
2	6	November 2002	July 2002 - Oct. 2002
3	6	December 2002	Aug. 2002 - Nov. 2002
4	6	January 2003	Sep. 2002 - Dec. 2002
1	7	February 2003	Oct. 2002 - Jan. 2003
2	7	March 2003	Nov. 2002 - Feb. 2003
3	7	April 2003	Dec. 2002 - Mar. 2003
4	7	May 2003	Jan. 2003 - Apr. 2003
1	8	June 2003	Feb. 2003 - May 2003
2	8	July 2003	Mar. 2003 - June 2003
3	8	August 2003	Apr. 2003 - July 2003
4	8	September 2003	May 2003 - Aug. 2003
1	9	October 2003	June 2003 - Sep. 2003
2	9	November 2003	July 2003 - Oct. 2003
3	9	December 2003	Aug. 2003 - Nov. 2003
4	9	January 2004	Sep. 2003 - Dec. 2003

Note: The cross-sectional entry analysis focuses on participants in May 2001. The May 2001 data was collected in Wave 2.

Since the earliest panel, SIPP users have had to grapple with the potential impact of response errors that arises from the SIPP's design and implementation. We examined the extent

to which sample loss, seam bias, under-reporting and topical module problems are apparent in the 2001 SIPP panel. These results, which are discussed in detail in Appendix A, are summarized below.

a. Sample Loss

Sample loss generally occurs when members of a household sampled for the survey either cannot be located or refuse to participate. In the 2001 SIPP panel, about 13 percent of households originally sampled did not respond or could not be identified for the wave 1 interview (this is higher than the wave 1 nonresponse rates from the three preceding SIPP panels, which ranged from 8.4 to 9.3 percent). Among those individuals who were interviewed, over 40 percent had stopped participating in the survey by the end of the 2001 panel (see Appendix A).

The SIPP observations used in this study are limited to those having complete data for every month that they are in the SIPP universe (these observations receive the full panel weights). In this context, sample loss involves individuals for whom information is not complete for those months that they are in the SIPP universe. This includes individuals who stop responding to the SIPP, as well as individuals for whom at least two consecutive waves of the SIPP are missed, and therefore missing wave imputations cannot be completed. We refer to these two types of sample loss as attrition. Additionally, in the 2001 SIPP panel, a randomly selected portion of the SIPP sample was intentionally dropped to reduce the costs of administering the survey. About 14 percent of those individuals responding in wave 1 were dropped in wave 2.

Our analysis of sample loss in the 2001 SIPP panel leads us to conclude that there is some evidence of bias from sample loss, but such bias is not a significant concern. We examined the characteristics of those SIPP respondents in wave 1 who ultimately left the SIPP survey. While almost half of the wave 1 sample is not included in the full panel analysis file, the full panel weights appear to adequately correct for this sample loss. Annual estimates generated using

these weights tend to track closely estimates from other surveys, such as the Annual Social and Economic (ASEC) Supplement, administered as part of the Current Population Survey (CPS). These findings are consistent with previous studies examining sample loss in the SIPP (Cody et al. 2003, Weinberg 2004).⁹

b. Seam Bias

In the SIPP, the “seam effect” reflects the tendency of individuals to report changes in status on seams—the months that represent the start or end of each four-month reference period. The seam effect can influence the estimated duration of participation spells as well as the timing of program entry and exit relative to other changes. Our analysis of the 2001 SIPP panel reveals a pronounced SIPP seam effect. For the FSP, 67.5 percent of reported entries into the program occur on the first month of a reference period, and 73.8 percent of exits occur on the last month of the reference period (see Appendix A). If there were no bias, we would expect each month to account for about 25 percent of reported transitions.

Unfortunately, it is not possible to determine which reported transitions actually occurred during a seam month and which occurred during a different month. Therefore, we must conduct the analysis of participation dynamics in a way that does not rely on the short-term timing of transitions. In particular, we use observation “windows” of more than four months to determine whether one event, such as a change in income, may trigger entry into or exit from the FSP. Using these four-month windows assumes that while the event may be reported in the wrong month, it is reported in the correct wave.

⁹ For this study, we modify the Census Bureau full panel weights to account for two issues related to sample loss. First, we conduct missing wave imputations for individuals who missed one wave of the 2001 panel, giving us information for all nine waves and allowing us to include these individuals in the analysis. We recompute the panel weights to account for the addition of these individuals. Second, we adjust the panel weights of women based on their fertility throughout the panel rather than on their status at the beginning of the panel (as is done by the Census Bureau). This accounts for the fact that pregnant women and new mothers are more likely to drop out of the SIPP survey.

c. Pre-panel Program Participation Data

Data on FSP participation spells prior to the start of the panel are collected in the wave 1 topical module. These data are collected for spells that are active in the first month of the panel in order to determine when those participation spells began. Gleason et. al. (1998) found evidence that these data were problematic in the 1991 SIPP. The authors attributed the problems to the fact that, for that panel, the reciprocity history data were collected in wave 2, eight months *after* the first month of the panel. As a result, they concluded, many respondents were led to report that their participation spell began more recently than it actually had. Because of these problems, they decided to exclude the month 1 spells from the main spell analysis. We find that the 2001 reciprocity history data are markedly better than the 1991 data, although some problems persist (see Appendix A). Despite these problems, we were able to incorporate the reciprocity history data in our estimates of FSP participation dynamics.

2. Overview of Methodological Approach

Our general methodological approach consists of two parts. First, we analyze the characteristics of participation spells observed in the 2001 through 2003 period of the SIPP. Second, we conduct a multivariate analysis of the factors that influence participation dynamics.

a. Descriptive Analysis of Participation Dynamics

The descriptive analysis of participation dynamics is based on a sample of *individuals* from the 2001 SIPP panel. Alternatively, we could have examined the FSP dynamics of *households*. However, examining FSP household dynamics is difficult because the composition of a household 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. Because of the challenges posed by

these changes, and to be consistent with earlier studies of FSP participation dynamics, this report focuses on the dynamics of individuals.

Our descriptive analysis follows the logic of the chronological contact that a hypothetical individual has with the FSP. We begin by examining FSP entry, then discuss the duration of participation spells, next discuss the events that lead individuals to exit the program, and finally examine whether and when individuals re-enter the program. We also provide some summary measures of individuals' overall reliance on the FSP.

Much of the analysis presented here is consistent with the descriptive analysis of dynamics conducted by Gleason et al. (1998), Burstein (1993), and Cody et al. (2005). This consistency facilitates comparisons of FSP participation dynamics in the early 2000s with those of the mid-1980s and the 1990s. In particular, we followed the procedure used by these three previous studies to “close up” one-month gaps in participation (i.e., we assumed that sample members received food stamps in a given month if they received food stamps in the previous and subsequent month). We also followed approaches similar to theirs for estimating participation dynamics, including our approach to defining triggers that could lead to program entry, our approach to measuring the distributions of the length of participation spells (both for individuals newly entering the FSP and for a cross-section of participants in a given month), and our approach to defining triggers that could lead to program exit. Where possible, if we develop an assumption that differs from that used by Gleason et al., we test the impact of that assumption on our results.

For example, one difference from the earlier studies is the grouping of individuals by families rather than households as had been done previously to determine some of their characteristics, including income and family composition. Neither grouping reflects the actual FSP unit, which is driven by the food purchase and preparation practices of the household

members. Immediate family members (spouses, children under age 22, and the immediate family members of children under age 22) are required to be in the same unit, but other family members and unrelated household members may be in separate households. The largest impact of this change will likely be for measures that look at family characteristics (such as families with earnings or families with elderly members). However, our comparisons of entry rates using households and families show very little difference between the two measures.

b. Analysis of Factors that Influence Participation Dynamics

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 outcome of interest, they do not show the relationships between groups of characteristics and an 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 characteristics that vary over time (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 re-entry 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 re-entry into the program.

The multivariate analysis is divided into three components. First, we analyze the determinants of entry into the FSP. This analysis enables us to identify the short-term and long-term factors that cause individuals to enter the program. Second, we analyze the determinants of

the duration of FSP participation. We examine the factors associated with long periods of food stamp benefit receipt and how these factors differ from those that influence the decision to enter the program. Third, we analyze the determinants of re-entry into the FSP. We explore whether the characteristics associated with longer durations of FSP participation also lead to greater likelihoods of re-entry.

The independent variables in these models include individual characteristics, household characteristics, and state-level economic and program characteristics, some of which vary over time. 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).

All of our models also explore how individuals' decisions are affected when they experience certain trigger events, such as changes in employment, income, or marital status. Although previous research has included trigger events in multivariate analyses of FSP entry, duration, and re-entry, we make three contributions to the FSP dynamics literature. First, in the multivariate analyses for FSP duration and re-entry, we estimate several model specifications in which we include both entry and exit triggers. For example, when analyzing the determinants of the length of FSP participation spells, we control for the events that initially triggered entry into the program as well as the events that subsequently triggered exit from the program. Previous analyses performed by Gleason et al. (1998) included entry triggers only.

Second, we include variables that measure an individual's "usual circumstances" over a certain amount of time preceding the window in which a trigger event can occur. Gleason et al. (1998) estimated a model that controlled for an individual's usual circumstances when analyzing the effect of trigger events on entry in the FSP. The authors found that an event such as a

decrease in income increases the probability of entry into the FSP by a greater amount for individuals with higher mean incomes than individuals with lower mean incomes. Thus, the size of the effect of the trigger event on the probability of entry into the FSP depends on whether this event marks a deviation from an individual's usual circumstances. Whereas Gleason et al. (1998) controlled for an individual's usual circumstances only when estimating the effect of trigger events on entry into the FSP, we control for an individual's usual circumstances in our entry, duration, and re-entry models.

Third, we include various sensitivity analyses that are important in investigating program participation dynamics, discussing the results that stand out as different from the full sample estimates or from other family subgroups. These include estimations using subsamples based on the characteristics of family subgroups at the start of spells (participation and nonparticipation) and on whether participants are first-time users or repeaters who cycle on and off the program.

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II. DESCRIPTION OF PARTICIPATION DYNAMICS

Participation dynamics in the FSP can be characterized by three separate events. First, individuals enter the FSP, often in response to changes in their personal or household circumstances. Second, after receiving benefits for some duration, they exit the program, again often in response to changes in personal or household circumstances. Finally, some of those individuals that exit the program re-enter at a subsequent date. In fact, some individuals may enter and exit the FSP multiple times in their lifetimes.

These patterns of entry and exit not only determine the characteristics of the caseload at any point in time, but also determine whether the size of the caseload increases or decreases over a period of time. For the caseload to increase, as it did from 2001 to 2003, either more people are entering than exiting the program, or people who are entering are participating for longer periods of time.

In this chapter, we examine patterns of FSP dynamics for different cohorts of the U.S. population in the early 2000s.¹⁰ While there is no one “typical” FSP participation spell, we find the following participation patterns:

- ***About 41 out of every 1,000 nonparticipants with income under 300 percent of poverty at some point in the panel period who were not participating at the end of one year participate at some point in the next year.***

¹⁰ We do not limit ourselves to studying dynamics among the FSP-eligible population. Measuring eligibility precisely is difficult, since most surveys do not collect enough information to determine who is eligible for program benefits each month. While several studies have examined participation rates among eligible individuals (e.g., Barrett and Poikolainen 2006; Cunnyngham 2004), these studies examine the FSP at one point in time. In this study, we are examining patterns over time. Replicating the eligibility determination procedures in a time-series analysis is beyond the scope of this study.

- ***If participation patterns seen in 2001 through 2003 remained constant over time, we estimate that 29 percent of adults participate in the FSP at some time in adulthood.*** Of those who participate as adults, half enter the program by age 30.
- ***Half of all new entrants leave within 8 months; 61 percent leave within a year.*** Participation spells in the early 2000s are similar to the early 1990s when half ended within 9 months and 57 percent within one year.
- ***Half of the individuals participating in the FSP in May 2001 have spells less than four years.*** However, most of those who have spells longer than four years have spells longer than eight years.
- ***Families with children are three times more likely to enter the FSP and have longer participation spells than families without children.*** Children living with one adult or multiple unmarried adults have four times the entry rate of children living with married adults.
- ***Elderly people are much less likely to enter the FSP than other adults, although they have longer participation spells than younger adults.*** They are also much less likely to re-enter the program once they have left.
- ***Of those who exit the program, 45 percent return within one year.*** The rate of re-entry is the highest for the poorest families.
- ***A decrease in family earnings is the most common trigger event that precedes entry, while an increase in family earnings is the most common trigger event that precedes exit.***
- ***The annual turnover rate during the 2001 panel period ranged from 1.4 to 1.5.*** About 40 to 50 percent more individuals participated over the course of a year than participated in an average month.

In this chapter, we present the patterns; in the next chapter, we explore the relationships between the entry, exit, and re-entry patterns and the individual-level characteristics of the participants.

A. ENTRY INTO THE FSP

For individuals entering the FSP, whether for the first time or not, we generally are interested in the following questions, which we address in this section:

- At what rate do individuals enter the program?
- What events in their lives lead them to enter the FSP?

- How do the entry rates in 2001-2003 compare with rates from other periods of increasing caseloads?

1. The FSP Entry Rate

a. Sample and Methods

The entry rate, that is, the rate at which individuals enter the FSP over a given period of time, is defined as the number at risk of entering who subsequently enter divided by the number at risk of entering.¹¹

To determine the entry rate, we must decide on both the at-risk population and the time period over which we wish to measure entry rates. One possibility is to define the at-risk population as all individuals. While informative, the entry rates calculated for all individuals tend to obscure the differences between changes in the rate among eligibles and changes in the size of the eligible population that could enter the program. For instance, a decreasing entry rate could reflect a lower tendency for individuals to participate, or it could reflect a shrinking population of people that potentially could participate. An alternative measure would be to examine entry rates over all individuals that are eligible for benefits. However, such a measure may be too narrow, since an individual could be ineligible for the FSP in one month, but eligible and participating two months later.

We develop five definitions of the population of individuals that are “at risk” of entering the FSP. These definitions range from strict—in which most or all members of the population are likely eligible for the FSP—to the most lenient—one that includes all individuals. By using these five definitions, we develop a better understanding of the sensitivity of our rates to our

¹¹ By “at-risk,” we mean individuals who are not receiving food stamp benefits in a given month, and, depending on the definition in use, have income under a certain level. The entry rate measure provides us with an estimate of the proportion of the nonparticipating population that enters the FSP in a given time period.

choice of at-risk population, and we are also able to compare our new estimates with previous estimates of entry rates. The five definitions are based on income and assets over the full analysis period:¹²

1. Individuals with income under 100 percent of poverty at some point in the analysis period
2. Individuals with income under 300 percent of poverty and financial assets below \$5,000 at some point in the analysis period
3. Individuals with income under 300 percent of poverty and financial assets below \$10,000 at some point in the analysis period
4. Individuals with income under 300 percent of poverty at some point in the analysis period (our primary measure in this analysis)
5. All individuals (the primary measure used by Gleason et al. (1998))

The first definition provides entry rates among those likely to be eligible; however, FSP eligibility is not limited to those under poverty, so it has the disadvantage of excluding many who would likely be at risk of entering at some point in the panel. The income threshold of 300 percent of poverty captures individuals likely to be eligible without considering that there are some individuals in this group whose income never gets so low as to truly be at risk of entering. The asset limits in the second and third definitions limit the sample to individuals who may not have the means to sustain themselves through a temporary income loss.¹³ Although we present entry rates for all of these definitions of the at-risk population, the fourth definition, restricting income but not resources, will be our primary definition. It has been used in similar studies of

¹² Ideally, we would measure a person's income in the same way that it would be measured for the purposes of FSP eligibility determination. However, the SIPP data do not indicate which household members would apply for benefits together, so we calculate each person's income as the sum of the income of all individuals in the family, including members of related subfamilies.

¹³ We use asset values higher than the federal FSP asset limits of \$2,000 and \$3,000 because most households in some states are not subject to the federal asset limits.

entry rates (e.g., Burstein 1993). For our comparisons over time, we will use the fifth definition, which places no restrictions on income or assets; this was the definition generally used in Gleason et al. (1998) for estimating entry rates in the early 1990s.¹⁴

In addition to considering multiple definitions of the at-risk population, we consider three time periods for computing entry rates. Specifically, we compute:

- (1) *Monthly entry rate*, which reflects the percentage of all at-risk individuals who enter the FSP in the current month after not receiving food stamp benefits during the previous two months (at least).¹⁵
- (2) *Wave-based entry rate*, which reflects the percentage of individuals that were not receiving food stamp benefits at the end of a SIPP four-month reference period (a “wave”) but that enter the FSP during the subsequent wave.¹⁶
- (3) *Annual entry rate*, which reflects among all individuals not participating at the end of one calendar year the proportion who participate at some point in the next calendar year.

The monthly entry rate is the easiest to understand, in the sense that it measures how often a person moves from not participating in one month to participating in the next. However, the annual entry rate may be more useful because it provides a broader view of how often at-risk individuals enter the program. The monthly and annual entry rates have the disadvantage of

¹⁴ Gleason et al. also categorize individuals by their household status rather than their family status, which we use in this report.

¹⁵ The at-risk population is restricted to those who had not received food stamp benefits for the previous two months, because of our practice of closing one-month gaps in FSP participation. Under this practice, we assume that sample members received food stamp benefits in a given month if they received food stamp benefits in the previous month and also in the subsequent month. In effect, sample members have to be out of the program for two months to be considered nonparticipants (and “at risk” of entering the program). Similarly, we close one-month gaps in nonparticipation, so that sample members have to be participating in the program for at least two months to be considered an entrant. A sample member will be counted as entering the program each time they enter following a lapse in participation of at least two months.

¹⁶ We examine entry rates at the wave level because some SIPP survey respondents have a tendency to report changes in status at the start or end of each four-month reference period, even if the status changed in the middle of the period. This entry rate is probably the most accurate, because it is not subject to the seam bias that can cause biased distributions in monthly and annual entry rates.

being subject to seam bias, since individuals whose status truly changed between December and the first few months of the next calendar year may not be accounted for.¹⁷ The wave-based entry rate may be the most accurate, since it accounts for the seam bias that can cause biased distributions in monthly and annual entry rates.

To create the entry analysis file, we pulled from the SIPP a sample of person-month records—one record for each person for each month that they were in the SIPP universe. We then limited the sample to those who were at risk of entering, based on the definitions described above. For example, a person whose family income was under 300 percent of poverty at some point during the panel period would contribute one record to the fourth sample described above for every month they were not receiving food stamp benefits. Each month they were not receiving benefits, they were considered to be at risk of entering. If they subsequently entered the program, they would stop contributing to the sample unless they stopped receiving benefits, in which case they would once again contribute to the sample.

Using person months allows us to differentiate between a person who, for example, enters the program after two months of being at risk and a person who enters the program after two years of being at risk. The former will contribute an entry rate of 100 percent to the sample (entering at the first opportunity); the latter will contribute an entry rate of approximately 4 percent to the sample (entering after 23 possible opportunities).

To provide the reader with a sense of the magnitude of the sample sizes for each analysis, we provide unweighted counts in most tables. The unweighted counts may be a count of persons included in the analysis or counts of person months. Providing sample sizes in person months

¹⁷ Seam bias is the tendency of some SIPP survey respondents to report changes in status at the start or end of each four-month reference period, even if the status changed in the middle of the period.

for some tables is necessary because each person in the SIPP sample contributes a different number of months to the analysis, depending on the number of months they are not participating in the FSP and are thus at-risk of entering. The relative sizes of the populations can be determined by comparing the number of person months in each type of analysis.

b. FSP Entry Among the At-Risk Populations

We calculate the monthly entry rates using months 3 to 35 of the SIPP panel period so a given sample member may contribute up to 33 months of data to the calculation of the rate.¹⁸ The wave-based entry rates use months 5 to 36 of the data, and the annual rates use months 12 to 36.

The monthly FSP entry rate ranges from 0.4 percent for all individuals to 0.9 percent for those whose income dipped below the poverty level at some point during the analysis period (see Table II.1). This suggests that for every 1,000 individuals not receiving food stamp benefits at the beginning of the month, about 4 enter during the month. When we restrict the population under consideration to those whose income was under 300 percent of poverty at some point in the analysis period, approximately 4 people in 1,000 will still enter during the month.¹⁹ If we restrict the population even further, to those whose incomes were under poverty at some point in the period, approximately 9 in 1,000 will enter in the month.

¹⁸ We begin examining the monthly entry rates in month 3 because we require that a person have a two-month spell of nonparticipation before they could be considered at risk for entering the program. We end in month 35 because we also require that a person have a two-month participation spell to be considered an entrant. In later analyses, we will begin in later months so that we can look for events that trigger entry during a period prior to the sample month.

¹⁹ About 80 percent of the population had their income dip below 300 percent of poverty for at least one month in the panel period. Thus, results for the entire population are very similar to results for this slightly restricted population. The entry rate is the same for these two populations when it is rounded to the nearest tenth.

TABLE II.1

ENTRY RATES BY AT-RISK POPULATION (PERCENT)

At Risk: Not receiving FSP benefits for at least 2 months
 Reference Months: 3 to 35 for monthly estimates; 5 to 36 for wave-based estimates; 12 to 36 for annual estimates
 Sample: Person months

	All Individuals	Income Under 300 Percent of Poverty	Income Under 300 Percent of Poverty and Assets Under \$10,000	Income Under 300 Percent of Poverty and Assets Under \$5,000	Income Under 100 Percent of Poverty
Monthly	0.4	0.4	0.5	0.6	0.9
Wave-based	1.4	1.8	2.1	2.1	3.4
Annual	3.3	4.1	5.0	5.0	7.9
Sample Size—Total Person-Months	1,715,947	1,364,167	1,164,899	1,085,826	604,372

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

Monthly entry rates may appear low because they refer to entry in a given month, rather than entry over a period of time. The wave-based entry rate of 1.8 for individuals with incomes under 300 percent of poverty suggests that approximately 18 out of every 1,000 of these nonparticipants will enter the program in the next four-month wave. Similarly, the annual rate of 4.1 percent implies that 41 out of every 1,000 nonparticipants with incomes under 300 percent of poverty who are not participating at the end of one year will participate at some point in the next year.

When we restrict the at-risk population to those who are poor at some time during the analysis period, we find that the monthly, wave-based, and annual entry rates were all about twice as large as the rates for those under 300 percent of poverty. Approximately 34 out of every 1,000 who were not participating at the beginning of the wave will enter during the wave, and approximately 79 out of every 1,000 who were not participating at the beginning of the year will enter during the year.

c. FSP Entry Among Subgroups

Since participation in the FSP varies substantially according to characteristics such as age, income, and citizenship (Cunningham 2003), we expect that FSP entry rates will also differ across subgroup characteristics. In the previous section, we discussed how rates increase as the at-risk population under consideration is restricted; we now limit most of our analysis to one at-risk population—those with incomes under 300 percent of poverty at some point during the analysis period. As in the previous section, our analysis sample consisted of person-month records, so each person in the SIPP data contributed a record to the sample for each month they did not participate in the FSP. This allowed us to capture entries across all months of the SIPP panel, giving us an average entry rate.

Before we examine the entry rates among subgroups of the population, we first consider the characteristics of the at-risk population and entrants (see Table II.2), paying particular attention to the subgroup characteristics that differ substantially between those two populations. For example, while only 10 percent of at risk individuals—those with incomes below 300 percent of poverty at some point in the analysis period—had received food stamp benefits in the past, almost 50 percent of individuals who entered the FSP in this period had previously received them. About three-fourths of entrants were in families with children, but only 55 percent of our at-risk population was in families with children. Almost 70 percent of entrants had earnings, while more than 80 percent of those at risk had earnings, and only 6 percent of entrants were elderly (making up 17 percent of those at risk).

Where we see large differences between the characteristics of the at-risk population and the entrants, such as the previous receipt of food stamp benefits, we also expect to see large differences in entry rates (see Table II.3). Among at-risk individuals who previously had not received food stamp benefits at any time in their adult lives, only about 2 in 1,000 entered the

program in a given month; over the course of a year, about 21 in 1,000 entered. The entry rate among those who previously had received food stamp benefits was much higher—about 17 in 1,000 in a given month and 145 in 1,000 in a given year. At-risk individuals in families with children entered at a rate of about 6 in 1,000 per month (55 in 1,000 per year), while those without children entered at a rate of about 2 in 1,000 per month (23 in 1,000 per year). Adults and children in families with a married head had entry rates that were about one-fourth as large as the entry rates for adults and children in families with one adult or multiple unmarried adults. Among at-risk individuals with earnings, about 4 in 1,000 entered each month, but about 8 in 1,000 of at-risk individuals without earnings entered each month.

We also examine entry rates by age, race and ethnicity, and education. Age was negatively correlated with FSP entry—about 13 in 1,000 at-risk adults over age 60 entered each year, 41 in 1,000 age 18 to 59, and 60 in 1,000 under age 18. The entry rates among blacks was almost four times the entry rate among whites, and the entry rate among Hispanics was more than twice as high as the entry rate among whites. In addition, the annual entry rate among individuals in families in which no one has a high school degree was more than double the entry rate among individuals in families with at least one high school graduate.²⁰

²⁰ Table II.2 clearly indicates that some categories, such as “Children in child-only families” and “individuals in families with TANF” have small sample sizes. Care must be taken in drawing conclusions for these individuals in these categories.

TABLE II.2

DISTRIBUTION OF THE CHARACTERISTICS OF THE AT-RISK POPULATIONS AND FSP ENTRANTS

At Risk: Not receiving FSP benefits for at least 2 months

Reference Months: 3 to 35

Sample: Person months for entry rates; persons for percent of entrants

Subgroup (as of Month 2 of Panel)	All Individuals	For at Least One Month in 2001 Panel				
		Income Under 300 Percent of Poverty	Income Under 300 Percent of Poverty and Assets Under \$10,000	Income Under 300 Percent of Poverty and Assets Under \$5,000	Income Under 100 Percent of Poverty	Percent of All FSP- Entrants
Total: All Person-Months	100.0	100.0	100.0	100.0	100.0	100.0
Food stamp benefit receipt						
Never received food stamps (age 18 and older)	91.2	89.6	88.2	87.6	84.8	51.5
Previously received food stamps (age 18 and older)	8.8	10.4	11.8	12.4	15.2	48.5
Individuals in families with children	52.7	55.3	57.4	57.4	58.8	75.9
Adults in families with children and one adult	2.7	3.2	3.6	3.8	4.6	9.2
Children in families with children and one adult	4.1	5.0	5.6	5.9	7.6	17.4
Adults in families with children and a married head	22.8	22.7	22.8	22.4	20.6	17.5
Children in families with children and a married head	18.6	19.1	19.3	19.0	18.7	16.0
Adults in families with children and multiple unmarried adults	2.8	3.3	3.7	3.8	4.1	8.2
Children in families with children and multiple unmarried adults	1.6	1.9	2.2	2.3	2.7	7.0
Children in child-only families	0.1	0.2	0.2	0.2	0.4	0.5
Individuals in families without children	47.3	44.7	42.6	42.6	41.2	24.1
Individuals in families with elderly members	19.7	19.8	16.8	16.6	13.6	6.9
Individuals in families with disabled members	2.6	2.9	3.2	3.3	3.6	6.2
Individuals in families without any elderly or disabled members	25.0	21.9	22.6	22.7	24.1	11.0
Presence of earnings						
Individuals in families with earnings	83.9	81.5	83.3	83.2	78.1	69.2
Individuals in families without earnings	16.1	18.5	16.7	16.8	21.9	30.8
Age						
Children (under age 18)	24.5	26.2	27.3	27.4	29.4	40.9
Nonelderly adults (age 18 - 59)	58.6	56.6	58.3	58.5	58.7	53.1
Elderly adults (age 60 and over)	16.9	17.3	14.4	14.1	11.8	6.0
Race/Ethnicity						
White Non-Hispanic	72.8	69.4	66.4	65.1	63.1	44.1
Black Non-Hispanic	10.6	12.0	13.5	14.2	14.2	30.0
Hispanic	11.9	13.9	15.5	16.1	17.7	21.2
Asian/Pacific Islander	3.9	3.7	3.6	3.6	3.7	2.2
American Indian	0.9	1.0	1.1	1.1	1.3	2.5
Education						
Individuals in families with HS graduate	92.1	90.2	89.1	88.5	86.0	76.6
Individuals in families with no HS graduate	7.9	9.8	10.9	11.5	14.0	23.4
Citizenship						
Citizen	91.8	90.8	90.0	89.7	88.1	88.4
Noncitizen	5.7	6.4	7.0	7.2	8.4	6.7
Unknown citizenship	2.5	2.8	3.0	3.1	3.5	4.9
Citizen children living with noncitizen adults in the family	2.8	3.2	3.6	3.7	4.7	5.7

Table II.2 (continued)

Subgroup (as of Month 2 of Panel)	For at Least One Month in 2001 Panel					
	All Individuals	Income Under 300 Percent of Poverty	Income Under 300 Percent of Poverty and Assets Under \$10,000	Income Under 300 Percent of Poverty and Assets Under \$5,000	Income Under 100 Percent of Poverty	Percent of All FSP- Entrants
Presence of TANF						
Individuals in families with TANF	0.5	0.7	0.8	0.8	1.1	6.3
Individuals in families without TANF	99.5	99.3	99.2	99.2	98.9	93.7
Sex						
Male (age 18 and older)	48.5	47.5	47.4	47.3	45.5	39.0
Female (age 18 and older)	51.5	52.5	52.6	52.7	54.5	61.0
Sample Size -- Total Person-Months	1,715,947	1,364,167	1,164,899	1,085,826	604,372	6,194
Sample Size -- Total Ever At-Risk Persons Ever in Category ^a	56,398	45,299	38,605	36,139	21,232	5,031

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

^a The distributions are estimated based on person-months. To assist the reader, we also provide the number of persons ever at risk (not receiving FSP benefits for at least 2 months) and ever in each of the income categories.

Note: Two categories are limited to adults age 18 and over. Data on previous receipt of FSP benefits is only available for adults. We compute the entry rates for male and female adults because we do not expect entry rates to vary for male and female children.

TABLE II.3

MONTHLY, WAVE-BASED, AND ANNUAL ENTRY RATES BY INDIVIDUALS IN SUBGROUPS
(Percent)

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
 Subgroup Characteristics: As of month 2 for monthly estimates, month 4 for wave-based estimates, and month 11 for annual estimates
 Reference Months: 3 to 35 for monthly estimates; 5 to 36 for wave-based estimates; 12 to 36 for annual estimates
 Sample: Person months

Individuals at risk	FSP Entry Rate		
	Monthly	Wave-based	Annual
Total individuals with income under 300 percent of poverty for at least one month	0.4	1.8	4.1
Food stamp benefit receipt			
Never received food stamps (age 18 and older)	0.2	0.8	2.1
Previously received food stamps (age 18 and older)	1.7	6.5	14.5
Individuals in families with children	0.6	2.4	5.5
Adults in families with children and one adult	1.3	4.8	9.8
Children in families with children and one adult	1.6	5.9	11.1
Adults in families with children and a married head	0.3	1.4	3.5
Children in families with children and a married head	0.4	1.6	3.9
Adults in families with children and multiple unmarried adults	1.1	4.4	11.0
Children in families with children and multiple unmarried adults	1.6	6.4	13.4
Children in child-only families	1.3	5.1	10.8
Individuals in families without children	0.2	0.9	2.3
Individuals in families with elderly members	0.2	0.6	1.4
Individuals in families with disabled members	1.0	3.6	8.5
Individuals in families without any elderly or disabled members	0.2	0.9	2.4
Presence of earnings			
Individuals in families with earnings	0.4	1.5	3.8
Individuals in families without earnings	0.8	2.7	5.4
Age			
Children (under age 18)	0.7	2.8	6.0
Nonelderly adults (age 18 - 59)	0.4	1.6	4.1
Elderly adults (age 60 and over)	0.2	0.6	1.3
Race/Ethnicity			
White Non-Hispanic	0.3	1.1	2.7
Black Non-Hispanic	1.1	4.4	9.9
Hispanic	0.7	2.7	6.5
Asian/Pacific Islander	0.3	1.0	1.8
American Indian	1.1	4.1	8.3
Education			
Individuals in families with HS graduate	0.4	1.5	3.6
Individuals in families with no HS graduate	1.1	4.2	8.5
Citizenship			
Citizen	0.4	1.7	4.0
Noncitizen	0.5	1.9	4.7
Unknown citizenship	0.8	2.9	7.4
Citizen children living with noncitizen adults in the family	0.8	3.4	6.8

Table II.3 (continued)

Individuals at risk	FSP Entry Rate		
	Monthly	Wave-based	Annual
Presence of TANF			
Individuals in families with TANF	4.3	16.6	26.3
Individuals in families without TANF	0.4	1.7	4.0
Sex			
Male (age 18 and over)	0.3	1.2	3.0
Female (age 18 and over)	0.4	1.6	3.9
Sample Size (Person-months)	1,362,235	329,750	82,790

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel.

Notes: The annual entry rates are the averages of the percentages of at-risk individuals in Month 8 who participate at some point in Months 9 to 20 and at-risk individuals in Month 20 who participate at some point in Months 21 to 32.

Two categories are limited to adults age 18 and over. Previous receipt of FSP benefits is only available for adults. We compute the entry rates for male and female adults because we do not expect entry rates to vary for male and female children.

The annual entry rates are the averages of the percentages of at-risk individuals in Month 8 who participate at some point in Months 9 to 20 and at-risk individuals in Month 20 who participate at some point in Months 21 to 32.

An alternate approach to understanding entry into the FSP is to examine the age at which adults first enter the program. Table II.4 presents estimates of the ages at which a cohort of adults initially enter the FSP (if they enter at all).²¹ We limit this analysis to adults because the history of FSP receipt is not available for children. The cumulative entry rate shows that about 8 percent of adults participated in the FSP between ages 18 and 30. Overall, we estimate that 29 percent of these adults participated in the FSP at some point in their adult lives. The cumulative

²¹ The estimates in Table II.4 are based on a cross section of individuals as of month 4 of the SIPP panel period. For this sample, we examine whether they had ever received food stamp benefits and, if they had, calculate the age at which they first entered the program, using data from the Wave 1 Topical Module. We then used this information to construct a “life table” for an artificial cohort of individuals (see Section B of this chapter for a description of the life table methodology). For every possible age between 18 and 80, this life table estimates yearly initial entry rates by calculating the percentage of the sample entering the FSP 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 are 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 a 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.

TABLE II.4

INITIAL ADULT FSP ENTRY BY AGE

At Risk: All adults not receiving FSP benefits for at least 2 months who had not received benefits prior to panel period
 Reference Months: 3 to 35
 Sample: Person months; age 18 and older, present in Wave 1 of SIPP panel

Age	Cumulative Entry Rate	Cumulative Entry Rate Among FSP Entrants	Percentage of Initial FSP Entrants
18 to 20	2.3	15.3	15.3
21 to 30	7.9	49.8	34.5
31 to 40	12.3	71.9	22.0
41 to 50	15.5	83.9	12.0
51 to 60	18.8	91.9	8.0
61 to 70	21.7	96.2	4.3
Older than 70	29.1	100.0	3.8

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

Note: Participation before age 18 is ignored. The methodology assumes all individuals will live to be at least 71.

entry rate among entrants suggests that 15 percent of all new entrants started participating between the ages of 18 and 20 and half by the time they were age 30. We also infer that about 16 percent of adult entrants entered for the first time after age 50.

d. Changes in FSP Entry Over Time

Gleason et al. (1998) examined entry rates for all individuals using the SIPP for 1991 to 1992, another period of increasing caseload sizes. In almost all of the subgroups we examine, the entry rates in the early 1990s were slightly lower than the entry rates in 2001 to 2003. For example, Gleason et al. found that 0.3 percent of all at-risk individuals who were not participating at the beginning of the month entered the FSP during the month, slightly lower than our entry rate of 0.4 percent for this same at-risk population (see Table II.5). Similarly, while they found that 2.6 percent of at-risk individuals entered annually, we find that 3.3 percent entered. They also presented an annual entry rate of 4.3 percent for at-risk children, while we

find that 5.2 percent of at-risk children entered annually. The only subgroups with higher entry rates in the Gleason et al. study were noncitizens and individuals in families with no high school graduate. Entry rates for noncitizens, compared to citizens, have changed since the early 1990s. Although the entry rates for these two groups are now more similar, they are both much higher than their respective entry rates from the early 1990s. For at-risk individuals in households with no high school graduate, Gleason et al. found an annual entry rate of 8.7 percent while we show an entry rate of 8.3 percent.

TABLE II.5

MONTHLY AND ANNUAL ENTRY RATES BY SUBGROUP, EARLY 1990s AND EARLY 2000s

At Risk: Not receiving FSP benefits for at least 2 months
 Reference Months: 3 to 35
 Sample: Person months; age 18 and older

Subgroup	Early 1990s		Early 2000s	
	Monthly	Annual	Monthly	Annual
Total Individuals	0.3	2.6	0.4	3.3
Never received food stamps (age 18 and over)	0.1	1.6	0.2	1.7
Previously received food stamps (age 18 and over)	1.4	8.4	1.6	13.4
Children (under age 18)	0.5	4.3	0.6	5.2
Nonelderly adults (age 18 - 59)	0.3	2.3	0.3	3.2
Elderly adults (age 60 and over)	0.1	1.1	0.1	1.1
Individuals in families with earnings	0.3	2.4	0.3	3.0
Individuals in families without earnings	0.5	3.7	0.7	4.9
Individuals in families with HS graduate	0.2	2.2	0.3	2.9
Individuals in families with no HS graduate	1.3	8.7	1.1	8.3
Citizens	0.2	2.0	0.3	3.2
Noncitizens	0.5	3.7	0.4	4.3

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel for the early 2000s. Gleason et al. (1998) for the early 1990s.

Finally, we examine changes in entry into the FSP by estimating replacement rates over time. Cody et al. (2005) estimated replacement rates throughout the 1990s and found that, during the caseload growth of the early 1990s, the replacement rate, defined as the number of new FSP entrants in a month divided by the number of participants in the previous month's

caseload, was 5.3, decreasing slightly throughout that period. Then, in the mid-1990s, a period of caseload decline, the replacement rate hovered around 4.2 percent. This was followed by another caseload decline in the late 1990s and a replacement rate of 3.8 percent. In this analysis of the early 2000s, we see that the replacement rate returned to its value of the early 1990s, ranging from 5.7 percent in 2001 to 5.0 percent in 2003 (see Table II.6).

TABLE II.6
ANNUAL ENTRY AND REPLACEMENT RATES
Averages Monthly Number of Persons and Rates

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
Sample: Person months

	Individuals Entering FSP	At-Risk Individuals in Previous Month	Entry Rate	FSP Participants, in Previous Month	Replacement Rate
Average 2001 (June to December)	935,203	207,969,524	0.45	16,440,215	5.7
Average 2002 (January to December)	932,806	206,280,792	0.45	17,021,830	5.5
Average 2003 (January to September)	911,047	204,414,872	0.45	18,350,007	5.0
Average 2001-2003	926,411	206,103,215	0.45	17,303,340	5.4

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel

2. Entry Trigger Events

Individuals typically enter the FSP in response to a change in their life circumstances—for example, a loss of income or the addition of a family member. Although we cannot necessarily identify the direct cause of a person’s entry, we can examine his or her family income and the composition of their family immediately preceding entry. Observed changes will help policymakers understand the events that at least indirectly led that person to enter the program (that is, the entry trigger events), and help identify points of intervention to help reduce the need for people to enter.

a. Methods

To examine entry trigger events, we define FSP entry as participation in the FSP in a given month after at least two consecutive months of nonparticipation. To ensure that the period prior to entry will be long enough to observe possible entry trigger events, we change our analysis period. When we examine potential entry trigger events over a four-month window immediately preceding an entry, we limit our sample months to months 6 to 35. When we examine potential entry trigger events over an eight-month window immediately preceding an entry, we limit our sample to months 10 to 35.

We define our entry trigger events based on previous research (including Burstein 1993 and Gleason et al. 1998) and to be consistent with independent information collected in the SIPP concerning reasons for entry. Specifically, we include the following trigger events:

- Recently unemployed family member
 - Self
 - Other family member

- Decrease in family income²²
 - Earnings (10 percent or more)
 - TANF (any decrease)
 - Other income (10 percent or more)

- Change in family composition
 - Pregnant/new infant in family
 - New dependent (non-infant) in family

²² If we observe a decrease in income during any month of the trigger window, it is considered a trigger event, regardless of what happened to income in other months of the trigger window. Thus, if a sample member experienced a 10 percent decrease in family income in one month and gained the income back in a subsequent month, it is still considered a trigger event. On the other hand, if a sample member experienced a series of 5 percent decreases in family income in consecutive months during the trigger window, this is not considered a trigger event.

- Newly separated or divorced
- Other composition change²³

b. Distribution of Entry Trigger Events

In Table II.7, we present the primary results of the entry trigger analysis. The first column shows the percentage of the at-risk population that experienced each trigger event *at some point during the sample*.²⁴ In the second column, we look forward four months from the time of the trigger event and indicate the percentage of those experiencing the trigger event that entered the FSP within those four months. In the third column, we look backward four months from the FSP entry to find the percentage of entrants who experienced the trigger event prior to entry. Similarly, the fourth and fifth columns provide the percentage entering within eight months of the trigger event and the percentage of entrants who experienced the trigger event in the eight months prior to entry, respectively. The trigger-centered view, that is, looking forward from the trigger, identifies how often a trigger leads to entry. But this measure alone does not provide enough information because a trigger event that does not occur often but usually leads to entry

²³ This category includes cases that change composition as defined by the groups listed in Table II.2: individuals (adults or children) in families with children and one adult; individuals in families with children and a married head; individuals in families with children and multiple adults (not married head); children in child-only families; individuals in families with elderly members; individuals in families with no elderly members but with disabled members; individuals in families without any disabled or elderly members. For example, if a cohabiting couple with children marries, the individuals would change from “individuals in families with children and multiple adults” to “individuals in families with children and a married head.” If a 17-year-old in a family with children and one adult turns 18, the individuals would change from “individuals in families with children and one adult” to “individuals in families with children and multiple adults.”

²⁴ Entry rates among groups with small percentages experiencing the event in the panel period are less reliable (e.g., those experiencing a decrease in TANF income and those experiencing no trigger event).

TABLE II.7

OCCURRENCE OF FSP ENTRY TRIGGER EVENTS AND RATE OF ENTRY FOLLOWING TRIGGER EVENT

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
Reference Months: 3 to 35

Sample: Persons for percent experiencing event at some point; person-months for percent entering within specified number of months of experiencing event; persons entering FSP for percent of entrants

Trigger Event -- Not Mutually Exclusive	Percent of At-Risk Group Experiencing Event At Some Point in Panel	Percent of People Experiencing an Event Who Entered the FSP within 4 Months of Experiencing the Event	Percent of FSP Entrants who Experienced the Event in Previous 4 Months	Percent of People Experiencing an Event Who Entered the FSP within 8 Months of Experiencing the Event	Percent of FSP Entrants who Experienced the Event in Previous 8 Months
Recently unemployed family member					
Self	15.3	3.8	5.9	6.0	9.2
Other family member	25.6	3.9	11.3	6.1	16.7
Decrease in family income					
Earnings (10% or more)	86.4	1.9	56.0	3.1	69.2
TANF	2.0	13.5	2.7	21.9	3.8
Other income (10% or more)	79.2	1.6	24.1	2.7	36.8
Change in family composition					
Pregnant/New infant in family	10.8	4.5	6.1	7.2	9.8
New dependent (non-infant) in family	5.0	6.4	2.7	9.7	3.8
Newly separated or divorced	4.5	6.5	2.3	9.0	3.3
Other composition change	17.7	3.2	5.6	4.8	8.3
Experienced no trigger events	4.1	NA	29.2	NA	18.0
Experienced any one trigger event	16.5	NA	38.0	NA	31.8
Experienced multiple events	79.3	NA	32.8	NA	50.1
Experienced any trigger event	95.9	2.0	70.8	3.3	82.0
Sample Size (Person Months)	45,344	312,653	5,291	272,876	4,481

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

when it does occur only helps us identify the trigger events for a small percentage of entrants. By looking backward from the entry for the occurrences of trigger events, we develop a clearer picture of the impact that each trigger event has on entry into the FSP.

As in previous studies, we find that the identified trigger events play key roles in FSP entry. Seventy-one percent of all entries were preceded within four months by at least one of these trigger events.

The most common events experienced just prior to entry are related to decreases in family income. Among those who entered the FSP, 56.0 percent experienced a 10 percent decrease in family earnings during the prior four months. As can also be seen in the third column, 24.1 percent of entrants experienced a loss in other family income (aside from earnings and TANF) in the prior four months.

A decrease in family income commonly precedes entry because it is extremely common in the at-risk population with income under 300 percent of poverty at some point during the panel. In this at-risk population, 86.4 percent experienced a 10 percent decrease in family earnings at some point during the analysis period, and 79.2 percent experienced a 10 percent decrease in other types of family income. Then, looking forward to see how many of the at-risk individuals entered the program, column 2 indicates that 1.9 percent of those who experienced a loss of earnings entered within four months; 1.6 percent of those who experienced a loss of other income entered within four months.

Triggers that do not occur as often in this entire at-risk population are more predictive of FSP participation. For example, only 10.8 percent of the at-risk population experienced a pregnancy or birth in the family at least once during the analysis period, but, looking forward, 4.5 percent of the pregnancies and births were associated with entry into the FSP within four months. Separations and divorces in the family occurred less often and were associated with an entry within four months in 6.5 percent of the cases where it occurred.

In addition to examining the four-month period prior to entry, we examine the eight-month period prior to entry. We know that some events may not lead to immediate or near-term entry into the FSP. For example, for the first few months after a job loss, a family may be able to survive by drawing down assets. If, however, they are unable to replace the income after more

than four months, they may decide to enter the FSP. In this case the job loss would still be the trigger to entry, but would not be observed immediately preceding the entry.

The eight-month window increased the percentage of FSP entries preceded by a trigger event, from 70.8 percent to 82.0 percent (see Table II.7). It also increased the percentage of the at-risk population that entered the FSP who experienced a trigger event: 2.0 percent entered within four months of any trigger and 3.3 percent entered within eight months. Of those who experienced a pregnancy or birth, 7.2 percent entered within eight months. Of those who experienced a separation or divorce, 9.0 percent entered within eight months.

One difficulty in studying entry rates based on triggers is that triggers can, and often do, occur together. For example, the birth of a child may lead a parent to stay home to care for the child, leading to a loss of income. In fact, Table II.7 indicates that 32.8 percent of entrants experienced multiple events in the four months prior to their entry, an amount that is nearly half of the 70.8 of entrants that experienced at least one trigger event in the previous four months. In the eight months prior to their FSP entry, 50.1 percent experienced multiple events.

In Table II.8, we again examine how often these same trigger events precede FSP entry by four and eight months, but we order the trigger events to make each row mutually exclusive. We first identify the entries that were preceded by the unemployment of a family member. Next, we identify the entries that were not preceded by the unemployment of a family member, but were preceded by a decrease in family income (earnings, TANF, or other income). Finally, we identify entries that were not preceded by the unemployment or income decreases, but were preceded by a family composition change. We see that 16.6 percent of entrants experienced the unemployment of a family member in the four months prior to entry, and another 43.0 percent

TABLE II.8

OCCURRENCE OF FSP ENTRY TRIGGER EVENTS, MUTUALLY EXCLUSIVE CATEGORIES

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
 Reference Months: 3 to 35
 Sample: Person months

Trigger Event—Mutually Exclusive Order	Percent of At-Risk Group Experiencing Event	Percent of FSP Entrants who Experienced the Event in Previous 4 Months	Percent of FSP Entrants who Experienced the Event in Previous 8 Months
Recently unemployed family member (either self or other)	35.5	16.6	24.2
No unemployment, decrease in family income			
Decrease in earnings (10% or more)	51.5	43.0	48.2
Decrease in TANF, no decrease in earnings	0.2	1.5	1.1
Other income (10% or more)	8.3	6.4	5.8
No unemployment, no decrease in income, change in family composition			
Pregnant/New infant in family	0.1	1.7	1.3
New dependent (non-infant) in family	0.1	0.4	0.5
Newly separated or divorced	0.0	0.3	0.3
Other composition change	0.1	0.8	0.7
Total	95.9	70.8	82.0
Sample Size (Person Months)	45,344	5,291	4,481

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

experienced a decrease in earnings that was not through unemployment. Among those entrants who did not experience an income decrease, 1.7 percent of FSP entrants experienced a pregnancy or birth in the prior four months.

In Table II.9 we combine the triggers into three categories (unemployment, income decrease, and change in family composition) and examine the overlap for entrants. We see that 15.4 percent of entrants experienced a change in family composition in the four months prior to entry, but for 3.8 percent of entrants it was accompanied by the unemployment of someone in the family, and for 11.6 percent of entrants it was accompanied by a decrease in family income. When we increase the window to eight months, we find that 22.4 percent of entrants experienced a change in family composition, but for 6.8 percent of entrants, the family composition change

was accompanied by the unemployment of a family member and for 19.3 percent by a decrease in family income. Low-income families 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.

TABLE II.9
OVERLAP IN TRIGGER EVENTS

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
Reference Months: 3 to 35
Sample: Person months

Trigger Event -- Mutually Exclusive Order	Percent of FSP Entrants who Experienced the Event in Previous 4 Months	Percent of FSP Entrants who Experienced the Event in Previous 8 Months
Recently unemployed family member	16.6	24.2
Experiencing additional decrease in family income (10% or more)	14.1	22.2
Experiencing change in family composition	3.8	6.8
Decrease in family income (10% or more)	65.0	77.2
With recently unemployed family member	14.1	22.2
Experiencing change in family composition	11.6	19.3
Change in family composition	15.4	22.4
With recently unemployed family member	3.8	6.8
Experiencing additional decrease in family income (10% or more)	11.6	19.3

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

We also examine the reasons for entry identified by individuals who entered within the panel period. Respondents were asked to choose up to two reasons from the given list for up to two FSP entries that occurred in the four-month reference period. In Table II.10, we compare the reasons identified by the respondent with the trigger events we observe in the data in the four months prior to the FSP entry. For each of the reasons, we provide in the second column the percentage of all new entrants that selected that reason. In columns 3 through 6, we present the number of new entrants that we observe experiencing an event as a percentage of the entrants

that listed each event as a reason. We see that 34.1 percent of entrants identified a loss of a job or wages as a reason for entry. Of those, we observed in the data that 71.2 percent had a decrease in income in the previous four months. We see also that 13.0 percent reported the pregnancy or birth of a child as their reason for entry. Of that 13.0 percent, we observed from the data that 15.9 percent had a child in the previous four months. A change in income was also common for those identifying a pregnancy or birth as a reason; 67.5 percent of these new entrants who selected pregnancy or birth as a reason also experienced an income decrease in the previous four months.

TABLE II.10

COMPARISON OF REPORTED ENTRY REASONS AND OBSERVED TRIGGER EVENTS

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
Reference Months: 3 to 35
Sample: Person months; entries during the sample period

Self Reported Reason for Entering the FSP	Total	Column Percent	Percent Experiencing Trigger Event in Previous 4 Months (Row Percent)			
			Decrease in Income	Pregnancy/Birth of Child/ New Dependent	Separated/ Divorced	Loss of Employment
Total New Entrants	26,572,273	100.0	65.0	8.6	2.3	16.6
Reasons						
Pregnancy/Birth of Child	3,447,655	13.0	67.5	15.9	2.2	18.8
Received for Another Dependent	770,609	2.9	57.8	19.0	0.0	13.1
Separated/Divorced	1,603,252	6.0	68.7	10.3	14.1	19.5
Loss of Job/Wages (Own/Partner's)	9,070,073	34.1	71.2	8.3	1.5	22.1
Loss of Other Support Income	8,051,597	30.3	60.8	7.5	2.6	11.7
Just Learned About the Program	284,003	1.1	54.6	1.8	0.0	12.4
Just Got Around to Applying	1,591,629	6.0	58.5	7.4	0.2	17.3
Became Disabled	1,582,368	6.0	51.0	3.0	1.4	9.8
Other	2,375,626	8.9	63.0	6.4	2.7	15.1

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

We also use this information to help us understand the reasons for entry among the 18 percent of the entrants who do not experience one of the trigger events that we identify in the four months prior to entry. Six percent responded that they “just got around to applying” and so may not have experienced a trigger event in the previous four months. One percent responded that they had just learned about the program. In addition, 6 percent responded that they became disabled, which could make them eligible for other public assistance and also lead them to the FSP, without substantially decreasing their income. Finally, 9 percent chose “Other” and did not identify family composition changes or income changes as the reason.

The final method we use to examine entry triggers into the FSP is to look at the triggers in the context of how often they occur in the family. For example, if changes in family composition are common in a household, is that trigger event less likely to lead to FSP entry than if it is an uncommon event? In Table II.11, we present the entry rates according to the deviation of the trigger event from the family’s usual circumstances. We find that entry rates among those who experienced a family composition change in the previous four months were higher for those who had experienced multiple composition changes in the past 24 months than for those with just one composition change. Among those experiencing the unemployment of a family member in the previous four months, the highest entry rates were among the individuals for whom this was a less common experience. Individuals with a total unemployment spell of less than 6 months in the previous 24 months had a monthly entry rate of 3.6 while individuals with a total employment spells of 13 to 24 months in the previous 24 months had a lower entry rate of 2.7. Similarly, individuals with one or two unemployment spells in the previous 24 months had entry rates of 3.5 and 3.6, respectively, whereas individuals with 3 or more unemployment spells in the previous 24 months had a lower entry rate of 2.4. In addition,

among those who had experienced a decrease in unearned income in the previous four months, those whose incomes fluctuated the most from their average income had the highest entry rates.

TABLE II.11

FSP MONTHLY ENTRY RATES AMONG AT-RISK INDIVIDUALS EXPERIENCING A TRIGGER EVENT
BY DEGREE OF DEVIATION FROM USUAL CIRCUMSTANCES

At Risk: Not receiving FSP benefits for at least 2 months and income under 300 percent of poverty at some point during the panel
Reference Months: 3 to 35
Sample: Person months

Trigger Event	FSP Entrants	At-Risk Sample	FSP Monthly Entry Rate
Change in family composition in previous 4 months (Sample size)	33	898	NA
In previous 24 months, family experienced (Weighted percent)			
One composition change	31.0	55.0	2.0
More than one composition change	69.0	45.0	5.6
Unemployed family member in previous 4 months (Sample size)	58	2,161	NA
Individual unemployed in previous 24 months (Weighted percent)			
1-6 months	71.1	66.6	3.6
7-12 months	22.0	24.6	3.0
13-24 months	7.0	8.7	2.7
Individual's unemployment spells in previous 24 months (Weighted percent)			
1 spell	59.4	58.0	3.5
2 spells	32.8	30.7	3.6
3 or more spells	7.9	11.2	2.4
At least a 10 Percent Decrease in Earnings in previous 4 months (Sample size)	130	11,350	NA
Number of times family earnings increased or decreased by more than one standard deviation in previous 24 months (Weighted percent)			
1 fluctuation	4.8	5.6	1.2
2 fluctuations	15.5	12.7	1.7
3 or more fluctuations	79.7	81.7	1.4
Entry Month's Earnings as Percent of Average Earnings in previous 24 Months (Weighted percent)			
0 to under 50	16.8	12.0	2.0
50 to under 100	32.1	36.4	1.2
100 or more	51.2	51.6	1.4
At least a 10 Percent Decrease in Other Income in previous 4 months (Sample size)	46	5,178	NA
Number of times family earnings increased or decreased by more than one standard deviation in previous 24 months ^a (Weighted percent)			
1 fluctuation	4.9	12.6	0.3
2 fluctuations	28.5	39.5	0.6
3 or more fluctuations	66.6	47.9	1.1

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

^a Standard deviation computed across all changes in family earnings during the panel period.

B. DURATION OF FSP PARTICIPATION SPELLS

Having examined patterns of FSP entry and the triggers that lead to entry, we turn to the length of stay in the program. We address the following questions:

- How long will new entrants participate?
- How many more months will individuals who are participating in a given month continue to participate?
- How many total months will individuals who are participating in a given month participate?
- How many different individuals are covered by the FSP over the course of the year?

We examine the length of participation spells by using “life table analysis” to estimate the rate at which individuals ended their participation spell in each month following program entry. We examine the turnover rate by contrasting the number of individuals who have been in the program over the course of the year with the average monthly caseload.

We examine 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 began a spell of FSP participation during a given calendar period, in this case, within the SIPP panel period. This allows us to partially answer the first question above, concerning how long the new entrants will participate. The cross-sectional sample of FSP participation includes all individuals receiving food stamps at a given point in time, regardless of when they began receiving food stamp benefits, and allows us to answer the second and third questions.

Finally, for the fourth question, we look at the turnover rate, which measures the size of the population that has come into contact with the FSP during a year in relation to the size of the caseload in an average month.

1. Entry Cohort Analysis

a. Sample and Methods

The entry cohort analysis uses a sample from the 2001 panel in which each observation represents a single participation spell of an individual. We limit our sample to spells that began in month 3 or later (and therefore are not left-censored) and allow sample members to contribute more than one spell to the analysis.

For each spell, we are able to observe the length of the spell during the panel period, and we know whether the spell was still in progress at the end of the panel period (that is, whether the spell was right-censored). We also identify characteristics of the individuals during the month prior to the start of the spell for our subgroup analysis, similar to those used in the FSP entry subgroup analysis.

The 2001 SIPP panel contains a total of 9,838 FSP spells from 7,428 individuals. Most of these individuals (almost 75 percent) contributed only one spell to the data set. About 35 percent of spells are left-censored, including 20 percent that ended within the panel period and 15 percent that are both left- and right-censored. Another 3 percent of spells are not left-censored, but began before month 3 or after month 34; including these spells would not give us the number of months we need to establish at least two months of participation before we record an exit. The remaining 62 percent of spells that form our entry cohort are not left-censored, including 36 percent that are neither left- nor right-censored and 26 percent that are right-censored.

To estimate spell duration, we construct life tables. Life tables allow us to use information we have about the length of a spell, while ignoring information we do not have. For example, if an individual participated for the last 12 months of the sample, and thus has a right-censored

spell, we use the only fact that the individual did not exit the program after any of his or her first 11 months on the program. We then ignore this person beyond month 12 of the life table.

In our life tables we generally consider participation spells by month. For each month, we show the weighted estimates of survivor, hazard, and cumulative exit rates. 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 spell remains in progress more than a given number of months. Finally, 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.

For our analysis, we focus on a few summary measures from the life table: the cumulative exit probabilities and the median spell duration. The cumulative exit probabilities measure the proportion of participants who exit the FSP within a given number of months; we focus on 4, 12, and 24 months. In the month that the cumulative exit probability reaches 50 percent, we have the median spell duration—half of all spells are shorter and half of all spells are longer. We provide these summary measures for all participants and key subgroups.

b. Results

Table II.12 indicates that most FSP participants who entered any time after month 3 of the panel exited within the next year. The median spell length for these participants was approximately eight months, with 40.2 percent of spells ending within six months and 61.4 percent ending within a year. Within two years, 74.1 percent of FSP participation spells ended, so just over one-quarter of spells lasted two years or longer. These results are similar to Cody et al. (2005) who found that the median spell duration during the late 1990s was eight months, and that 64.1 percent ended within one year. Along the same lines, Gleason et al. (1998) measured

spell duration during the early 1990s and found that the median spell length was nine months, and that 57 percent of spells ended within a year.²⁵

The rate at which FSP participants exit the program decreases as duration increases, as can be seen by examining the hazard rates. Analysis of these rates requires caution because seam bias causes them to jump at four-month intervals; however, the rate at these four-month intervals generally decreases over time. For example, the hazard rate falls from 24.3 percent in month 4 to 14.5 percent in month 8, 11.0 percent in month 12, and 7.5 percent in month 16, before increasing to 8.9 percent in month 20. Small sample sizes beyond month 20 make subsequent changes difficult to interpret.

²⁵ Differences not significant at the 0.10 level.

TABLE II.12

LIFE TABLE OF PARTICIPATION SPELLS

Reference Months: 3 to 35
Sample: FSP spells

Month	Number of Spells at Beginning of Month (a)	Number In-Sample in Following Month (b)	Number Exiting During Following Month (c)	Survivor Rate (d)	Hazard Rate (e)	Cumulative Exit Rate (f)	Standard Error of Survivor Rate (g)
1 ^a	30,686,670	30,610,210	0	100.0	0.0	0.0	0.0
2	30,610,210	30,552,064	2,048,513	93.3	6.7	6.7	0.3
3	28,503,551	28,318,083	1,287,506	89.1	4.5	10.9	0.4
4	27,030,577	24,451,495	5,941,174	67.4	24.3	32.6	0.6
5	18,510,320	17,988,529	893,202	64.1	5.0	35.9	0.6
6	17,095,327	16,804,756	1,111,544	59.8	6.6	40.2	0.7
7	15,693,212	15,478,913	733,749	57.0	4.7	43.0	0.7
8	14,745,164	12,972,205	1,874,935	48.8	14.5	51.2	0.7
9	11,097,270	10,987,498	619,962	46.0	5.6	54.0	0.7
10	10,367,536	10,135,510	356,381	44.4	3.5	55.6	0.7
11	9,779,128	9,636,977	215,183	43.4	2.2	56.6	0.7
12	9,421,794	8,129,749	896,909	38.6	11.0	61.4	0.7
13	7,232,840	6,996,725	159,605	37.7	2.3	62.3	0.7
14	6,837,120	6,666,805	142,265	36.9	2.1	63.1	0.7
15	6,524,539	6,353,284	122,886	36.2	1.9	63.8	0.7
16	6,230,398	5,277,069	395,789	33.5	7.5	66.5	0.7
17	4,881,280	4,727,507	162,128	32.3	3.4	67.7	0.7
18	4,565,379	4,414,037	102,078	31.6	2.3	68.4	0.7
19	4,311,959	4,252,560	101,144	30.8	2.4	69.2	0.7
20	4,151,416	3,359,811	300,560	28.1	8.9	71.9	0.8
21	3,059,251	2,875,361	13,162	28.0	0.5	72.0	0.8
22	2,862,199	2,799,063	53,298	27.4	1.9	72.6	0.8
23	2,745,765	2,716,242	55,225	26.9	2.0	73.1	0.8
24	2,661,017	2,226,120	84,173	25.9	3.8	74.1	0.8
25	2,141,947	2,046,668	60,995	25.1	3.0	74.9	0.8
26	1,985,673	1,897,559	7,188	25.0	0.4	75.0	0.8
27	1,890,371	1,815,881	49,522	24.3	2.7	75.7	0.8
28	1,766,359	1,085,616	76,795	22.6	7.1	77.4	0.9
29	1,008,822	926,228	14,374	22.2	1.6	77.8	0.9
30	911,854	837,561	25,808	21.5	3.1	78.5	0.9

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: Column (a) represents the number of FSP spells that have lasted at least the indicated number of months, regardless of when the spell first started. Column (b) indicates the number of the spells from (a) that we continue to observe in the following month (that is, spells that are not right censored). Column (c) is the number of spells from (b) that exit the FSP in the following month. The hazard rate (e) is $100*(c)/(b)$. The cumulative exit rate (f) is sum of the previous row's cumulative exit rate and the product of the current row's hazard rate and previous row's survivor rate, divided by 100. The survivor rate is $100-(f)$. For example, Month 12 indicates that 9,421,794 spells have lasted at least 12 months or longer. We observe the 13th month for 8,129,749 spells. Of those that we observe, 896,909 end after the 12th month. Then the hazard rate is $100*896,909/8,129,749 (=11.0)$. The cumulative exit rate is $56.6+11.0*43.4/100 (=61.4)$.

^a We do not observe exits after one month because we fill one-month gaps in nonparticipation.

We can compute life tables for key subgroups of participants as well. In Table II.13 we present selected results from the subgroup life tables: the median participation spell and exit rates for 4, 12, and 24 months. Then, using the log-rank statistic within each category of subgroups (e.g., household composition), we test the significance of the difference in the durations of FSP receipt.

There are sharp contrasts in the duration of FSP participation spells among participant subgroups. Adults living in families without any children, elderly, or disabled members had the shortest spells, with a median length of only 5 months, while the elderly and those living with the elderly (and no children) had long spells, with a median of 12 months. Males ages 18 and over had shorter spells than females ages 18 and over (median duration of 6 and 9 months, respectively). Furthermore, individuals in families with earnings, individuals in families without TANF, and individuals in families with a high school graduate each had median spells of 8 months and one-quarter had spell durations longer than 24 months. In contrast, individuals in families without earnings, individuals with TANF, and individuals without a high school graduate each had long median spell durations of 12 months, and about one-third had spell durations longer than 24 months.

The subgroup analysis also shows that children living with multiple adults had shorter spell durations than children living with one adult. Children living with a married family head had a median spell duration of 8 months, and children living with multiple adults had a median spell duration of 9 months. In contrast, children living with one adult had a median spell duration of 12 months. Similarly, adults living in families with multiple adults, whether married or not, had a median spell duration of 8 months, while adults living in single-adult families with children had a median spell duration of 11 months.

Another result provided by the subgroup duration analysis is that those living in families with incomes below poverty had longer spells than those living in families with income above poverty. Slightly more than half of individuals living in families with incomes under the poverty threshold had spell durations of less than one year. For those with incomes from 100 to 200 percent of poverty, two-thirds had durations of less than one year, and for those with incomes over 200 percent of poverty, almost three-quarters had durations of less than one year.

TABLE II.13

DURATION OF FSP PARTICIPATION SPELLS BY SUBGROUPS

Reference Months: 3 to 3; Sample: FSP spells

Subgroup	Sample Size	Median Participation Spell (Months)	Cumulative Exit Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
All Individuals	6,135	8	32.6	61.4	74.1	
Household Composition						173.3***
Individuals in families with children	4,734	9	30.6	61.0	74.1	
Adults in families with children and one adult	546	11	25.5	55.4	69.0	
Children in families with children and one adult	1,097	12	23.2	50.9	67.3	
Adults in families with children and multiple adults	459	8	39.1	67.2	76.5	
Children in families with children and multiple adults	437	9	26.0	59.9	76.6	
Adults in families with children and a married head	1,111	8	38.1	68.2	78.3	
Children in families with children and a married head	1,053	8	31.3	65.2	78.5	
Children in child-only families	31	16	23.2	46.1	56.0	
Individuals in families without children	1,401	8	38.9	62.8	74.4	
Individuals in families with elderly members	469	12	30.5	54.2	64.2	
Individuals in families with disabled members	368	9	35.1	53.9	71.8	
Individuals in families without any elderly or disabled members	564	5	46.6	73.7	82.7	
Family Income						165.2***
Under 50 percent of poverty	916	10	27.8	53.9	71.7	
50 to under 100 percent of poverty	1,663	12	24.1	55.2	69.2	
100 to under 200 percent of poverty	1,827	8	37.5	67.1	79.1	
More than 200 percent of poverty	1,138	6	44.5	73.9	84.3	
Presence of Earnings						96.2***
Individuals in families with earnings	4,170	8	35.2	65.9	78.7	
Individuals in families without earnings	1,965	12	26.5	51.1	64.1	
Age						61.5***
Children (under age 18)	2,618	10	26.9	58.0	73.0	
Nonelderly adults (age 18 - 59)	3,085	8	37.3	65.3	76.4	
Elderly adults (age 60 and over)	432	12	30.2	50.1	60.9	

Table II.13 (continued)

Subgroup	Sample Size	Median Participation Spell (Months)	Cumulative Exit Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
Race/Ethnicity						31.3***
White Non-Hispanic	2,681	8	32.2	61.9	74.3	
Black Non-Hispanic	1,816	9	29.6	58.1	73.4	
Hispanic	1,294	8	37.3	65.3	76.0	
Asian/Pacific Islander	149	8	40.8	71.2	79.0	
American Indian	195	10	28.3	50.1	60.3	
Education						38.5***
Individuals in families with HS graduate	4,664	8	34.8	63.8	76.2	
Individuals in families with no HS graduate	1,471	12	25.5	53.6	67.7	
Citizenship						13.5**
Citizen	5,405	8	32.1	61.1	73.9	
Noncitizen	425	7	42.9	69.3	78.3	
Unknown citizenship	305	9	26.5	55.9	73.8	
Citizen children living with noncitizen adults in the family	351	7	37.5	72.0	84.3	
TANF Income						18.4***
Individuals in families with TANF	413	12	27.1	51.7	65.0	
Individuals in families without TANF	5,722	8	33.0	62.0	74.7	
Sex						36.0***
Male (age 18 and over)	1,331	6	42.6	70.7	80.7	
Female (age 18 and over)	2,186	9	32.7	59.4	71.2	

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: The log-rank test compares the estimated monthly hazard rate to the expected monthly hazard rate, where the expected rate is calculated based on the null hypothesis that the hazard rate is the same for each time period of the subgroup category. We do not reject the null hypothesis that the distributions are the same across categories if the aggregate difference between the estimated and expected hazard rate is small relative to the aggregate variance of the difference. We reject the null hypothesis if the difference is large.

* 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

2. Cross-Sectional Analysis

While a cohort analysis provides a wealth of information about those just entering the FSP, it does not inform us about those already participating, so we turn to our cross-sectional sample, which consists of all individuals participating in the FSP in a given month. For this group, we

consider such questions as: How many additional months will they spend in the program? What will be the total duration of their spell? For the first question, we estimate *subsequent spell lengths*, and for the second, we estimate *completed spell lengths*.

a. Sample and Methods

Our cross-sectional sample includes all individuals receiving food stamp benefits in May 2001.²⁶ It is the month in the second wave of data that all respondents have in common. We then use characteristics of individuals in May 2001 to assign them to subgroups, similar to those we use in the entry and entry cohort duration analyses. The cross-sectional sample consists of 3,516 spells. Slightly more than 60 percent ended within the panel period, with the remainder being right-censored.

As with the entry cohort analysis, we use life tables to address the relevant questions. For the life table of subsequent spell lengths, May 2001 is treated as month 1 for all cross-sectional sample members. For the life table of completed spell lengths, the first month of the spell is treated as month 1.

b. Results

For subsequent spell lengths of our cross-sectional sample, average spells were much longer than in our new entry cohort, even though we only consider the spell duration from May forward. The median subsequent spell length for the cross-sectional sample was about 19 months, compared with 8 months for individuals in the entry cohort sample (see Table II.14).

²⁶ May 2001 is the fifth panel month for those in rotation group 4, the sixth panel month for those in rotation group 3, the seventh panel month for those in rotation group 2 and the eighth panel month for those in rotation group 1.

TABLE II.14

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

Reference Months: May 2001 and subsequent months
 Sample: FSP spells

Month	Number of Spells at Beginning of Month (a)	Number In-Sample in Following Month (b)	Number Exiting During Following Month (c)	Survivor Rate (d)	Hazard Rate (e)	Cumulative Exit Rate (f)	Standard Error of Survivor Rate (g)
1	16,284,579	16,221,368	897,710	94.5	5.5	5.5	0.4
2	15,323,658	15,284,238	959,246	88.5	6.3	11.5	0.5
3	14,324,992	14,277,012	827,094	83.4	5.8	16.6	0.6
4	13,449,918	13,432,747	599,774	79.7	4.5	20.3	0.7
5	12,832,972	12,826,615	577,586	76.1	4.5	23.9	0.7
6	12,249,029	12,220,942	500,201	73.0	4.1	27.0	0.7
7	11,720,741	11,703,802	352,235	70.8	3.0	29.2	0.8
8	11,351,567	11,351,567	287,235	69.0	2.5	31.0	0.8
9	11,064,332	11,055,003	339,733	66.9	3.1	33.1	0.8
10	10,715,270	10,687,024	379,829	64.5	3.5	35.5	0.8
11	10,307,195	10,297,341	355,124	62.3	3.4	37.7	0.8
12	9,942,217	9,934,614	363,574	60.0	3.7	40.0	0.8
13	9,571,040	9,564,956	172,215	58.9	1.8	41.1	0.8
14	9,392,741	9,374,354	252,395	57.3	2.7	42.7	0.8
15	9,121,959	9,083,256	182,690	56.2	2.0	43.8	0.8
16	8,900,565	8,852,292	374,137	53.8	4.2	46.2	0.8
17	8,478,155	8,468,892	293,191	51.9	3.5	48.1	0.8
18	8,175,701	8,166,044	177,978	50.8	2.2	49.2	0.8
19	7,988,066	7,988,066	270,237	49.1	3.4	50.9	0.9
20	7,717,829	7,708,539	173,162	48.0	2.2	52.0	0.9
21	7,535,377	7,527,491	135,084	47.1	1.8	52.9	0.9
22	7,392,406	7,386,205	92,531	46.5	1.3	53.5	0.9
23	7,293,674	7,281,968	244,206	45.0	3.3	55.0	0.9
24	7,037,762	7,033,928	367,625	42.6	5.2	57.4	0.8
25	6,666,303	6,658,593	86,166	42.1	1.3	57.9	0.8
26	6,572,427	6,572,427	132,407	41.2	2.0	58.8	0.8
27	6,440,020	6,440,020	86,479	40.7	1.3	59.3	0.8
28	4,851,138	6,338,761	200,987	39.3	4.1	60.7	0.8
29	2,867,063	4,631,583	0	39.1	0.0	60.9	0.8
30	1,518,467	2,862,724	2,249	39.0	0.1	61.0	0.9

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: Column (a) represents the number of FSP spells that have lasted at least the indicated number of months, regardless of when the spell first started. Column (b) indicates the number of the spells from (a) that we continue to observe in the following month (that is, not right censored). Column (c) is the number of spells from (b) that exit the FSP in the following month. The hazard rate (d) is $100 \cdot (c)/(b)$. The cumulative exit rate (f) is sum of the previous row's cumulative exit rate and the product of the current row's hazard rate and previous row's survivor rate, divided by 100. The survivor rate is $100 - (f)$.

We estimate that 27 percent exited the program within six months, 40 percent within a year, and 57 percent within two years. In contrast, among those beginning FSP spells during the panel period, 41 percent exited within six months, 62 percent within a year, and 75 percent within two years.

As in previous studies, we expect to see the longer spell durations within the cross-sectional sample, when compared with the entry cohort (Gleason et al. 1998; Cody et al. 2005). For any month of the sample we choose, we will miss many of the short spells that occur within the sample period—they are likely to be completed before or begin after our sample month. However, longer spells are more likely to include our sample month. For this reason, the longer spells are more heavily represented in the cross-sectional than in the entry cohort sample.

Patterns of subsequent spell lengths among subgroups of the cross-sectional sample (see Table II.15) are similar to the patterns for the entry cohort (see Table II.13). Adults living in families without any children, elderly, or disabled members had the shortest spells, with a median subsequent length of only 5 months, while the elderly and those living with the elderly (and no children) had the longest subsequent spells, with a median length of at least 24 months. Individuals in families with disabled members also had subsequent spell months of at least 24 months. Adult males had shorter spells than adult females, those with earnings had shorter spells than those without earnings, and those with incomes above poverty had shorter spells than those with incomes below poverty.

We also measured the completed lengths of participation spells (adding receipt prior to May 2001 to the subsequent receipt) for the cross-sectional sample of participants. Only about 10 percent of participants in May 2001 had a completed spell duration of six months or less, 21 percent had spells that lasted for one year or less, and 35 percent had spells that lasted two years

TABLE II.15

DURATION OF SUBSEQUENT SPELL LENGTH FOR THE FULL CROSS-SECTIONAL SAMPLE

Reference Months: May 2001 and subsequent months
Sample: FSP spells

Subgroup	Sample Size	Median Participation Spell (Months)	Cumulative Exit Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
All Individuals	3,516	19	20.3	40.0	57.4	
Household composition						292.3***
Individuals in families with children	2,718	18	20.2	40.6	59.4	
Adults in families with children and one adult	443	23	17.1	35.1	53.6	
Children in families with children and one adult	899	22	16.8	35.6	55.7	
Adults in families with children and multiple adults	216	14	25.6	48.0	63.8	
Children in families with children and multiple adults	258	24	15.2	37.8	53.1	
Adults in families with children and a married head	453	12	27.8	50.1	66.7	
Children in families with children and a married head	443	16	23.0	44.8	67.9	
Children in child-only families	6	> 24	27.5	27.5	39.0	
Individuals in families without children	798	24	20.7	38.1	50.4	
Individuals in families with elderly members	393	> 24	12.7	29.7	39.6	
Individuals in families with disabled members	290	> 24	17.9	33.0	46.8	
Individuals in families without any elderly or disabled members	115	5	47.9	71.6	86.6	
Family Income:						231.1***
Under 50 percent of poverty	904	22	15.0	30.1	56.2	
50 to under 100 percent of poverty	1,311	24	15.4	35.8	51.7	
100 to under 200 percent of poverty	781	12	26.0	50.9	63.8	
More than 200 percent of poverty	281	7	39.5	59.2	69.9	
Presence of earnings						144.1***
Individuals in families with earnings	1,900	16	24.7	46.8	64.7	
Individuals in families without earnings	1,616	> 24	14.9	31.5	48.2	
Age						49.8***
Children (under age 18)	1,606	19	18.2	38.4	58.4	
Nonelderly adults (age 18 - 59)	1,516	17	23.8	43.7	59.9	
Elderly adults (age 60 and over)	394	> 24	13.8	30.3	40.0	
Race/Ethnicity						11.2***
White Non-Hispanic	1,313	19	19.5	38.6	57.3	
Black Non-Hispanic	1,208	20	19.9	39.0	57.3	
Hispanic	764	18	22.9	42.2	57.0	
Asian/Pacific Islander	117	11	26.0	56.6	64.0	
American Indian	114	24	9.2	36.0	55.6	

Table II.15 (continued)

Subgroup	Sample Size	Median Participation Spell (Months)	Cumulative Exit Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
Education						99.8***
Individuals in families with HS graduate	2,256	16	23.1	44.5	63.2	
Individuals in families with no HS graduate	1,260	> 24	15.3	31.8	46.6	
Citizenship						15.7***
Citizen	3,095	19	19.4	39.0	56.8	
Noncitizen	253	12	31.5	50.1	64.9	
Unknown citizenship	168	18	19.0	43.0	56.8	
Citizen children living with noncitizen adults in the family	201	19	19.9	39.3	58.4	
Presence of TANF income						18.0***
Individuals in families with TANF	846	> 24	12.6	31.7	50.0	
Individuals in families without TANF	2,670	17	22.8	42.6	59.7	
Sex						19.6***
Male (age 18 and over)	578	14	28.0	47.1	64.3	
Female (age 18 and over)	1,332	22	19.4	38.7	53.0	

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: The log-rank test compares the estimated monthly hazard rate to the expected monthly hazard rate, where the expected rate is calculated based on the null hypothesis that the hazard rate is the same for each subgroup category. We do not reject the null hypothesis that the distributions are the same across categories if the aggregate difference between the estimated and expected hazard rate is small relative to the aggregate variance of the difference. We reject the null hypothesis if the difference is large.

* 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

or less (see Table II.16). Half of the cross section of FSP participants exited the program within four years. However, it is estimated that most of those who stay in the program for at least four years will be participants for at least eight years, since only another 11 percent exited the program in the next four years.

TABLE II.16

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

Sample: FSP spells that were underway in May 2001

Years	Number of Spells at Beginning of Month (a)	Number In- Sample in Following Month (b)	Number Exiting During Following Month (c)	Survivor Rate (d)	Hazard Rate (e)	Cumulative Exit Rate (f)
0.5	16,141,471	16,085,371	1,622,435	89.9	10.1	10.1
1.0	14,462,937	14,421,540	1,718,280	79.2	11.9	20.8
1.5	12,703,260	12,654,759	1,103,867	72.3	8.7	27.7
2.0	11,550,892	11,493,739	1,102,473	65.4	9.6	34.6
3.0	10,391,266	8,750,144	1,528,117	53.9	17.5	46.1
4.0	7,222,027	5,822,171	589,518	48.5	10.1	51.5
5.0	5,232,652	4,607,375	427,700	44.0	9.3	56.0
6.0	4,179,675	3,726,055	161,682	42.1	4.3	57.9
7.0	3,564,373	3,349,101	127,858	40.5	3.8	59.5
8.0	3,221,243	2,948,944	228,465	37.3	7.7	62.7

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: Column (a) represents the number of FSP spells that have lasted at least the indicated number of months, regardless of when the spell first started. Column (b) indicates the number of the spells from (a) that we continue to observe in the following month (i.e., not right censored). Column (c) is the number of spells from (b) that exit the FSP in the following month. The hazard rate (e) is $100 \cdot (c)/(b)$. The cumulative exit rate (f) is sum of the previous row's cumulative exit rate and the product of the current row's hazard rate and previous row's survivor rate, divided by 100. The survivor rate is $100 - (f)$.

The estimates of completed spell length shown here are similar to those found in Cody et al. for the mid-1990s (2005) but differ markedly from Gleason et al. (1998) for the early 1990s.²⁷ Cody et al. estimated that the median completed spell among those participating in March 1996 was 4.5 years. Gleason et al. estimated that the median completed spell among those participating in February 1991 was more than eight years. The difference may be due to policy changes such as occurred through welfare reform or impacts of the economy that led to lower levels of participation overall. Another possible explanation is that the Gleason et al. study relied

²⁷ The difference from Gleason et al. is statistically significant at the 0.01 level.

on SIPP data concerning pre-panel FSP receipt that may not have been as reliable as later SIPP pre-panel receipt information.²⁸

3. FSP Turnover Rate

The turnover rate measures the size of the population that has come into contact with the FSP over the course of a year in relation to the size of the caseload. We calculate it as the total number of individuals who received food stamp benefits during the year, divided by the mean number receiving food stamp benefits in a month.

We estimate the FSP turnover rate to be 1.5 in each of calendar years 2001 and 2002, and 1.4 in fiscal year 2003 (see Table II.17). The turnover rate for the full period, from January 2001 to September 2003, was 2.1. Thus, caseworkers who had a caseload size of 100 in a single month handled an average of 150 different cases over the course of the year. Gleason et al. (1998) calculated the turnover rate for the early 1990s to be 1.3.

TABLE II.17
FSP TURNOVER RATE

Calendar Months: January 2001 to September 2003
Sample: FSP spells

	(a)	(b)	(c)
	Total Receiving Benefits in At Least One Month	Average Monthly Number Receiving Benefits	Turnover Rate (a/b)
January 2001-December 2001	24,549,821	16,269,571	1.5
January 2002-December 2002	25,819,693	17,204,142	1.5
October 2002-September 2003	26,445,119	18,351,314	1.4
January 2001-September 2003	35,687,585	17,223,082	2.1

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

²⁸ Cody et al. (2005) provide additional details on the differences between their estimates and those in Gleason et al. (1998).

C. EXITING THE FSP

Our duration analysis tells us how long individuals stay in the FSP before they exit. We now turn to examining the life events that might lead to their exit, addressing the following questions:

- What types of events most often precede an FSP exit?
- How often is an exit preceded by an observed trigger event?
- Do trigger events differ with characteristics of the participants?

As with entry trigger events, we cannot directly identify the reason individuals stop receiving food stamp benefits, but we can examine their life circumstances (and changes in their life circumstance) immediately around the time they leave the program to try to understand more about why they exited. In this analysis, we use SIPP data on FSP participants' circumstances to define a set of trigger events that are analogous to the entry trigger events discussed in Section A. We then examine the extent to which these exit trigger events precede FSP exit.

1. Methods

We choose our exit and entry triggers in much the same way, primarily based on the triggers found relevant in previous studies, such as Gleason et al. (1998) and Burstein (1993). We define exits only for the at-risk population, which consists of all individuals who participated in the FSP for the previous two months. We examine FSP exits in sample months 6 through 34 of the SIPP panel period and allow individuals to contribute more than one observation to the data set. We define exiting the FSP as not receiving food stamp benefits in the sample month or the following month.²⁹

²⁹ Because of our practice of closing up both one-month gaps in participation and one-month spells, a true exit must consist of two months of participation followed by two months of nonparticipation.

We look for exit trigger events that occurred during the sample month or any of the three previous months. Unlike the definitions used for entry trigger events, we shift the window to include the sample month, because some participants may exit the FSP in the same month that their circumstances change. In entry, the circumstances may need to have changed for a person to become eligible, but they may exit knowing that circumstances are about to change (for example, that he or she is starting a new job the following week).

We use the following trigger events in this analysis:

- Increase in family earnings (10 percent or more)
- Increase in other family income (10 percent or more)
- Departure of family member without income
- Departure of family member with income
- New adult family member
- New child family member

2. Results

In Table II.18, we present the results of the analysis of exit trigger events. As seen in previous studies, the most common exit trigger event was an increase in family income, with almost three-fourths of the sample experiencing the event at some time during the panel. About one-quarter of the participants who experienced an increase in income left within four months of the increase.

Although the other trigger events were not as common as income increases, we see that the triggers led to similar exit rates. In nearly half of the participants families, a family member, with or without income, left; one-quarter of the participants experiencing this left the FSP within four months. Fewer than 20 percent of participants experienced an increase in family size; yet

again about one-quarter of the participants left the FSP within four months of this household change.

Exit rates differed based on the participants' characteristics in the month before the spell began (see Table II.19). For example, children in single-parent families were most likely to exit the FSP within four months of someone leaving the family, but children in married-parent families were least likely to exit the FSP after someone leaving and more likely to exit when there was an increase in family income. Individuals living with no elderly or disabled family members were more than twice as likely to exit following any of the trigger events as individuals living with elderly.

TABLE II.18

OCCURRENCE OF FSP EXIT TRIGGER EVENTS

At Risk: Individuals receiving FSP benefits for at least 2 months
Reference Months: 3 to 35

Sample: Persons for percent experiencing event at some point during panel; person-months of participants for percent exiting within specified number of months of experiencing event; persons exiting FSP for percent of exiters

Trigger Event -- Not Mutually Exclusive	Percent of FSP Participants that Experienced the Event during Panel	Percent of Persons Experiencing a Trigger who Exited the FSP within the 4-Month Window	Percent of FSP Exiters who Experienced the Trigger within the 4-Month Window
Increase in Income			
Increase in Earnings	72.3	26.7	61.1
Other income	58.3	20.7	29.9
Change in Family Composition			
Family Size Decreases			
Member without income leaves	46.7	25.3	22.6
Member with income leaves	44.2	26.1	22.3
Family Size Increases			
New Child	15.8	20.3	4.6
New Adult	17.7	31.8	7.8
Other	1.8	17.3	0.6
Leaves the Sample ^a	2.3	100.0	3.0
Experienced no trigger events	9.4	NA	16.5
Experienced any one trigger event	20.6	NA	36.9
Experienced multiple events	69.9	NA	46.6
Experienced any trigger event	90.6	24.6	83.5
Sample Size	7,334	108,906	4,997

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

^aIndividuals who die, are institutionalized, enter the armed forces and live in army barracks, or leave the country are removed from the SIPP sample. We assume that any one of these reasons would also lead to FSP exit and assign the sample exit as the exit trigger.

TABLE II.19

OCCURRENCE OF FSP EXIT EVENTS BY SUBGROUPS

At Risk: Individuals receiving FSP benefits for at least 2 months

Reference Months: 3 to 35

Sample: Person-months of those experiencing trigger event

Subgroups: Characteristics in month before FSP spell began

Subgroup	Probability of Exit with 4 Months Given Trigger Event, Not Mutually Exclusive					
	None	Increase in Earnings	Increase in Other Income	Increase in family Size	Decrease in family Size	Any Trigger ^a
All Individuals	17.7	26.7	20.7	26.9	29.4	24.8
Individuals in families with children	18.0	25.5	19.9	24.5	28.5	23.5
Adults in families with children and one adult	13.2	22.2	14.3	27.3	41.9	19.1
Children in families with children and one adult	13.4	20.5	14.9	25.0	34.6	18.1
Adults in families with children and multiple adults	23.5	30.3	25.5	24.6	35.2	28.5
Children in families with children and multiple adults	17.6	21.9	18.8	18.4	23.3	19.7
Adults in families with children and a married head	24.7	29.3	28.5	22.3	32.9	29.5
Children in families with children and a married head	23.8	28.7	27.1	26.8	18.8	27.8
Children in child-only families	21.1	29.8	10.2	44.9	0.0	23.7
Individuals in families without children	16.8	37.5	26.2	39.2	38.1	34.3
Individuals in families with elderly members	11.7	20.3	21.5	34.0	41.0	24.8
Individuals in families with disabled members	14.4	29.4	20.0	18.8	22.8	27.0
Individuals in families without any elderly or disabled members	39.2	53.3	42.9	52.0	57.4	49.3
Family income						
Under 50 percent of poverty	11.8	20.4	13.4	16.0	22.0	17.3
50 to under 100 percent of poverty	13.2	23.4	19.9	26.9	22.7	22.2
100 to under 200 percent of poverty	25.5	34.5	29.8	34.5	29.0	33.0
More than 200 percent of poverty	34.1	38.9	38.1	38.0	41.7	39.1
Presence of Earnings						
Individuals in families with earnings	23.1	26.9	23.8	31.4	31.0	26.3
Individuals in families without earnings	12.8	25.8	16.8	22.4	24.5	21.0
Age						
Children (under age 18)	16.9	23.9	18.5	24.1	22.3	21.7
Nonelderly adults (age 18 - 59)	20.1	30.6	23.4	29.7	35.1	28.5
Elderly adults (age 60 and over)	11.3	16.5	20.4	22.0	37.7	22.0

Table II.19 (continued)

Subgroup	Probability of Exit with 4 Months Given Trigger Event, Not Mutually Exclusive					
	None	Increase in Earnings	Increase in Other Income	Increase in family Size	Decrease in family Size	Any Trigger ^a
Race/Ethnicity						
White Non-Hispanic	18.3	27.4	23.8	33.6	27.4	26.5
Black Non-Hispanic	16.3	25.4	15.6	21.6	34.5	22.0
Hispanic	19.3	27.5	23.4	26.0	24.4	26.1
Asian/Pacific Islander	19.8	31.6	28.5	46.4	19.3	27.2
American Indian	14.5	22.3	16.7	2.7	39.4	19.8
Education						
Individuals in families with HS graduate	20.1	28.7	23.7	31.7	30.9	27.1
Individuals in families with no HS graduate	13.3	21.1	14.0	17.8	24.2	18.9
Citizenship						
Citizen	17.3	26.5	20.5	27.6	29.6	24.5
Noncitizen	22.3	29.3	23.7	20.9	29.6	28.3
Unknown citizenship	19.0	27.4	23.2	19.6	25.8	26.1
Citizen children living with noncitizen adults in the family	24.5	25.6	23.2	31.3	8.8	24.9
Presence of TANF						
Individuals in families with TANF	12.0	18.0	10.7	12.6	19.0	15.2
Individuals in families without TANF	19.3	28.7	23.8	32.6	34.3	27.3
Sex						
Male (age 18 and over)	23.6	36.6	31.3	40.3	45.9	36.2
Female (age 18 and over)	15.9	26.2	20.0	25.2	31.1	24.3
Sample size (person-months)	13,717	4,377	1,707	383	346	6,139

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

^a This column also includes the trigger event of leaving the sample due to death, institutionalization, entry into the armed forces and living in army barracks, or exit from the country. We assume that any one of these reasons would also lead to FSP exit and assign the sample exit as the exit trigger. Thus, the exit rates for this group are 100 percent. The unweighted sample size for this group is 150 person-months.

Not surprisingly, among those who had relatively high incomes at the start of the FSP spell, an increase in income of 10 percent or more was more likely to lead to exiting the FSP than among those who had very low incomes. A 10 percent increase in earnings was followed by an exit from the FSP in one-fifth of families who started their FSP spells with incomes under 50 percent of poverty, but in almost two-fifths of families who started with family incomes over 200 percent of poverty.

Since individuals in families receiving TANF income at the start of their FSP spell were less likely to exit the FSP following one of the identified triggers than individuals in families not receiving TANF, we examine whether FSP participants receiving TANF left the TANF program prior to leaving the FSP, if they left at the same time, or if they continued receiving TANF benefits after leaving the FSP. In Table II.20, we see that the FSP exiters who had TANF at some point in their spells and had left the FSP within four months of experiencing an earnings increase were equally likely to have left TANF before the FSP as to have left the two programs at the same time (37 and 36 percent of FSP exiters, respectively). Only about one-quarter remained on TANF after leaving the FSP within four months of an earnings increase. Of those who left the FSP following an increase or decrease in family size, about one-fifth remained on TANF longer than the FSP and nearly half left TANF at the same time.

D. RE-ENTRY INTO THE FSP

Re-entry is the final stage of FSP participation dynamics that we examine.³⁰ In our earlier entry analysis, we noted that about half of all adults entering the FSP had prior participation

³⁰ This re-entry 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 stamp benefits. The entry analysis uses information from some individuals who re-entered the FSP. However, it does not use information regarding when individuals had last exited the program and does not analyze the duration of time to re-entry. In the

spells as adults. In this section, we focus solely on those individuals with prior receipt—both those who had a second (or more) spell within the panel and those who experienced their second (or more) spell as an adult. The questions we address are:

- How quickly do individuals return to the FSP after exiting?
- How do an individual’s characteristics affect re-entry into the FSP?

TABLE II.20
OCCURRENCE OF FSP EXIT TRIGGER EVENTS AMONG FSP INDIVIDUALS
IN FAMILIES RECEIVING TANF

At Risk: Individuals receiving FSP benefits for at least 2 months
Reference Months: 3 to 35
Sample: Person-months for those who had TANF at some point in this FSP spell
Subgroups: Characteristics in month before FSP spell began

Trigger Event -- Not Mutually Exclusive	Probability of Exiting FSP in 4 month Window	Exited the FSP in 4-Month Window		
		Percentage of Those Exiting FSP Who Do Not Have TANF at Time of FSP Exit	Percentage of Those Exiting FSP Who Also Exit TANF	Percentage of Those Exiting FSP Who Continue TANF
Experienced no trigger event	10.8	32.5	38.2	29.3
Increase in earnings	16.1	37.0	36.3	26.7
Increase in other income	9.7	29.6	34.4	36.0
Increase in family size	11.4	32.6	45.9	21.5
Decrease in family size	15.3	33.7	46.8	19.4
Leaves the sample	100.0	31.5	68.5	0.0
Any trigger event	13.5	35.9	36.5	27.7

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel.

(continued)

re-entry analysis in this section, by contrast, we analyze the duration of time between when the individuals exited the program and when (and if) they re-entered.

Once again, we use life tables, but in this case we examine the duration of spells off the FSP following a spell of participation. The exit rate from these "off spells" is the re-entry rate back into the FSP.

1. Sample and Methods

The sample consists of individuals who received food stamp benefits during the panel period and exited the FSP before the end of the panel period. Any off spell that began in or after month 4 of the panel is included in the sample, and individuals could contribute more than one observation to the analysis. We assign individuals to subgroups based on their characteristics as of the first month of the off spell. The data consists of 5,611 off-spell observations, contributed by 4,541 unique individuals. About 57 percent of the off-spell observations are right-censored; another 2 percent began before month 4 or after month 35

Due to the three-year SIPP panel period, we have a limited follow-up period for the re-entry analysis. The maximum possible number of months of follow-up information is 31 (among those who exited the FSP following month 4 of the panel period), so the sample for which we have more than 24 months of follow-up data is relatively small. However, our analysis shows that re-entry rates fell off rapidly during the first 25 months of off-spells, suggesting that most FSP participants with prior receipt who re-entered the program did so within two years of exiting.

2. Results

As was the case in previous studies, many respondents in our SIPP sample returned to the FSP after exiting. More than half (55.4 percent) who exited returned within two years, and 28.1 percent (or nearly half of the 55.4 percent who exited within two years) returned within the first six months after their exit (see Table II.21). Of those who ended a participation spell, 45.0

percent re-entered during their first year off the program and another 10.4 percent re-entered during the second year. Similarly, Gleason et al. (1998) found that, in the early 1990s, 42.4 percent re-entered in their first year off the program and 11.3 percent re-entered in their second year.

Individuals who had long participation spells also tend to have had high re-entry rates. In our subgroup analysis for re-entry, we measure the subgroup characteristics in the month individuals exited the FSP (see Table II.21). Among individuals in the poorest families (those with incomes under 50 percent of poverty), almost three-fourths re-entered the FSP within two years of exiting. However, among those who lived in families with incomes at least two times the poverty line, one-third re-entered within two years. Similarly, we find that individuals in families that had no earners were likely to re-enter the FSP sooner than those in families that had earners.

We also see substantial differences in re-entry rates by age and by family composition (see Table II.22). Half of the individuals in families with children re-entered the FSP within 14 months of exiting. In contrast, fewer than half of the individuals living in families without children re-entered within two years of exiting. Consistent with earlier findings, adults living in single-parent families with children had shorter periods off the FSP (median of 12 months) than adults in families with multiple adults (median of more than 24 months for married heads and 18 months for non-married heads).

TABLE II.21

LIFE TABLES OF SPELLS OFF THE FSP (RE-ENTRY RATES)

Reference Months: 4 to 35
 Sample: Nonparticipation spells following a participation spell

Month	Number of Off Spells at Beginning of Month (a)	Number In Sample in Following Month (b)	Number Re- Entering During Following Month (c)	Survivor Rate (d)	Hazard Rate (e)	Cumulative Re-entry (f)	Standard Error of Survivor Rate (g)
1	27,270,129	27,185,056	0	100.0	0.0	0.0	0.0
2	27,185,056	27,122,916	1,242,720	95.4	4.6	4.6	0.3
3	25,880,196	25,759,963	708,368	92.8	2.7	7.2	0.4
4	25,051,595	22,351,053	4,044,572	76.0	18.1	24.0	0.6
5	18,306,481	17,944,191	411,717	74.3	2.3	25.7	0.6
6	17,532,474	17,313,198	544,497	71.9	3.1	28.1	0.6
7	16,768,701	16,513,118	469,605	69.9	2.8	30.1	0.7
8	16,043,513	14,207,013	1,533,840	62.3	10.8	37.7	0.7
9	12,673,173	12,497,965	160,610	61.5	1.3	38.5	0.7
10	12,337,355	12,168,884	290,132	60.1	2.4	39.9	0.7
11	11,878,752	11,733,110	158,521	59.3	1.4	40.7	0.7
12	11,574,590	10,092,218	726,429	55.0	7.2	45.0	0.8
13	9,365,790	9,246,286	194,297	53.8	2.1	46.2	0.8
14	9,051,989	8,958,559	101,526	53.2	1.1	46.8	0.8
15	8,857,033	8,796,334	163,736	52.2	1.9	47.8	0.8
16	8,632,598	7,306,710	358,731	49.7	4.9	50.3	0.8
17	6,947,979	6,770,441	23,512	49.5	0.3	50.5	0.8
18	6,746,929	6,500,694	73,066	48.9	1.1	51.1	0.8
19	6,427,628	6,303,348	92,261	48.2	1.5	51.8	0.8
20	6,211,087	4,932,665	185,131	46.4	3.8	53.6	0.8
21	4,747,534	4,626,837	35,616	46.1	0.8	53.9	0.8
22	4,591,221	4,460,921	50,005	45.5	1.1	54.5	0.8
23	4,410,916	4,341,502	28,002	45.2	0.6	54.8	0.8
24	4,313,500	3,279,938	49,912	44.6	1.5	55.4	0.9
25	3,230,026	3,101,894	26,720	44.2	0.9	55.8	0.9
26	3,075,174	2,992,872	0	44.2	0.0	55.8	0.0
27	2,992,872	2,970,644	43,147	43.5	1.5	56.5	0.9
28	2,927,497	1,665,662	22,528	42.9	1.4	57.1	0.9
29	1,643,134	1,457,291	9,680	42.7	0.7	57.3	1.0
30	1,447,610	1,308,835	0	42.7	0.0	57.3	0.0
31	1,308,835	1,193,217	3,058	42.5	0.3	57.5	1.1

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: Column (a) represents the number of FSP spells that have lasted at least the indicated number of months, regardless of when the spell first started. Column (b) indicates the number of the spells from (a) that we continue to observe in the following month (that is, not right censored). Column (c) is the number of spells from (b) that re-enter the FSP in the following month. The hazard rate (e) is $100 \cdot (c)/(b)$. The cumulative re-entry rate (f) is sum of the previous row's cumulative re-entry rate and the product of the current row's hazard rate and previous row's survivor rate, divided by 100. The survivor rate is $100 - (f)$.

TABLE II.22

REENTRY RATES INTO THE FSP, BY SUBGROUPS

Reference Months: 4 to 35
 Sample: Nonparticipation spells following a participation spell

Subgroup	Sample Size	Median Non-Participation Spell (Months)	Cumulative Re-entry Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
All Individuals	5,490	16	24.0	45.0	55.4	
Individuals in families with children	4,359	14	25.0	47.2	58.2	105.5***
Adults in families with children and one adult	486	12	27.0	47.4	57.8	
Children in families with children and one adult	983	12	29.5	50.1	64.8	
Adults in families with children and multiple adults	465	18	20.1	41.4	56.6	
Children in families with children and multiple adults	432	12	24.9	53.6	66.9	
Adults in families with children and a married head	1,007	> 24	18.5	39.3	45.9	
Children in families with children and a married head	973	12	28.4	52.1	60.1	
Children in child-only families	13	8	49.4	100.0	100.0	
Individuals in families without children	1,131	> 24	20.5	37.4	45.5	
Individuals in families with elderly members	368	> 24	24.4	38.6	45.4	
Individuals in families with disabled members	325	> 24	23.5	43.8	49.4	
Individuals in families without any elderly or disabled members	438	> 24	16.1	32.5	42.9	
Individuals in families with income:						234.6***
Under 50 percent of poverty	845	8	35.3	63.9	73.0	
50 to under 100 percent of poverty	1,572	12	25.5	50.2	59.2	
100 to under 200 percent of poverty	1,700	20	20.9	40.2	53.7	
More than 200 percent of poverty	1,005	> 24	15.5	26.6	33.3	
Individuals in families with earnings	3,799	21	20.8	41.5	51.2	79.4***
Individuals in families without earnings	1,691	12	31.5	53.1	65.5	
Children (under age 18)	2,401	12	28.3	51.6	63.7	73.8***
Nonelderly adults (age 18 - 59)	2,738	24	20.7	40.6	50.0	
Elderly adults (age 60 and over)	351	> 24	22.8	35.9	42.8	
White Non-Hispanic	2,263	20	20.8	41.8	52.0	29.0***
Black Non-Hispanic	1,634	13	26.2	49.7	62.2	
Hispanic	1,260	21	24.8	43.2	52.5	
Asian/Pacific Islander	162	20	31.2	43.4	51.1	
American Indian	171	8	35.3	61.5	62.2	
Individuals in families with HS graduate	4,171	20	21.8	42.3	51.7	71.0***
Individuals in families with no HS graduate	1,319	12	31.1	53.7	67.0	

Table II.22 (continued)

Subgroup	Sample Size	Median Non-Participation Spell (Months)	Cumulative Re-entry Rate (Percent)			Log-Rank Statistic to Test Differences Across Subgroups
			4 Months or Less	12 Months or Less	24 Months or Less	
Citizen	4,802	16	23.6	44.9	55.9	1.0
Noncitizen	436	23	25.4	44.0	50.4	
Unknown citizenship	252	14	29.7	49.9	55.2	
Citizen children living with noncitizen adults in the family	352	15	23.2	46.3	58.1	
Individuals in families with TANF	745	12	35.3	55.9	64.9	30.1***
Individuals in families without TANF	4,745	19	22.3	43.3	53.9	
Male (age 18 and over)	1,197	> 24	18.3	36.4	44.1	15.1***
Female (age 18 and over)	1,892	20	22.6	42.8	52.7	

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: The log-rank test compares the estimated monthly hazard rate to the expected monthly hazard rate, where the expected rate is calculated based on the null hypothesis that the hazard rate is the same for each subgroup category. We do not reject the null hypothesis that the distributions are the same across categories if the aggregate difference between the estimated and expected hazard rate is small relative to the aggregate variance of the difference. We reject the null hypothesis if the difference is large.

* 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 elderly are an exception to the general pattern of longer spells being associated with quick reentry. Although elderly individuals tended to have long participation spells, once they exited the program, they often did not re-enter (43 percent re-entered the program within two years, compared to 50 percent of nonelderly adults). It could be that the elderly individuals moved in with other family members who could support them or made other financial arrangements that did not lend to re-entering the FSP.

Noncitizens are also an exception to the pattern. Although the durations of participation spells were very similar for citizens and noncitizens (median of 8 and 7 months, respectively), half the citizens who left the FSP had re-entered within 16 months, but half of noncitizens re-entered within 24 months.

Individuals living in families without children and with no elderly or disabled members have very short spells (median of 5 months) and also have relatively long off spells (median greater than 24 months). This may reflect the time limits that many nonelderly nondisabled childless adults face.

E. SUMMARY MEASURES OF FSP PARTICIPATION

Up to this point in the analysis, we have examined each step of a participant's contact with the FSP: entry, duration on the program, exit, and, finally, re-entry. Now, we explore the total experience with the program using two final measures:

- ***Total time on.*** What proportion of the 36-month period covered by the SIPP panel period does an individual spend in the FSP?
- ***Spell type.*** Do FSP participants have single long spells or multiple shorter spells?

1. Total Time On

The total time during which a participant receives benefits over the course of the panel period provides an additional measure of an individual's FSP participation behavior. From our earlier analysis, we know that the median duration is eight months. However, we also know that 50 percent return within six months. Thus, the measure of duration alone may provide misleading information about their total reliance on the program. Because a measure of the total time in the program combines information about an individual's spell length and re-entry, it provides a more accurate measure of program dependence. We also improve upon the measure by including the time spent in pre-panel participation spells. However, our total-time-on measure is still limited by right censoring, because we do not know when many of the spells will end. This will lead us to underestimate the dependence on the program by some participants.

We calculate the total time on as the number of months during the SIPP panel period that each individual received food stamp benefits. Table II.23 shows the distribution for the full sample and for those with at least one month of participation.

TABLE II.23

TOTAL TIME ON THE FSP FOR INDIVIDUALS PARTICIPATING IN PANEL PERIOD
(Percent)

Reference Months: 1 to 36
Sample: All individuals and participants

Number of Months	Excluding Pre-panel Data		Including Pre-panel Data	
	All Individuals	Individuals with at Least One Month of Food Stamps During Panel Period	All Individuals	Individuals with at Least One Month of Food Stamps During Panel Period
No Receipt of Food Stamps in Panel Period	84.7	0.0	84.7	0.0
1 to 4	3.4	22.4	3.0	19.9
5 to 8	2.3	14.8	2.1	13.9
9 to 12	1.5	9.9	1.3	8.8
13 to 16	1.1	7.4	1.1	6.9
17 to 20	1.1	7.3	0.9	6.1
21 to 24	1.0	6.4	0.8	4.9
25 to 28	1.1	7.3	0.9	5.6
29 to 32	1.3	8.4	0.7	4.8
33 to 36	2.5	16.1	0.8	4.9
37 to 40	NA	NA	0.5	3.2
41 to 44	NA	NA	0.3	2.0
45 to 48	NA	NA	0.3	1.7
49+	NA	NA	2.6	17.1
Mean months	2.6	17.2	5.1	33.4
Median months	0.0	15.0	0.0	17.0
Sample Size	46,827	7,334	46,827	7,334

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Note: This table includes receipt only for those individuals who participate during the panel period. The last two columns include the duration of receipt of spells that were in progress at the start of the 2001 panel.

About 15 percent of the full population received food stamps at some point during the 36-month 2001 SIPP panel period. Close to one-quarter of those who participated had contact with the program for less than five months, and 37 percent had contact with the program for less than

nine months. In addition, about 16 percent of those with at least one month of FSP participation received food stamp benefits throughout the entire 36 months of the panel period. If we also add the time spent in the FSP before the panel period, we find that 17 percent of the spells of those who participated at least once during the panel lasted longer than four years.³¹

In Table II.23, we also see that the median total time in the FSP was 15 months out of a possible 36. The total time suggests a heavier reliance on the FSP than the duration analysis indicates (median duration was 8 months). Thus, re-entry into the program led the average participant to spend more than 40 percent of the 36-month period in the program.

2. Characterizing FSP Participants by Spell Type

The total-time-on measure indicates that many with short spells were re-entering. The next step we take is to learn more about those who had single spells by identifying individuals as (1) single-spell, short-term participants; (2) single-spell, medium-term participants; (3) single-spell, long-term participants; or (4) multiple-spell participants.

a. Methods

Following the analysis of Gleason et al. (1998), we define the four groups as follows:

- *Short-term participants* are those with a single participation spell that lasted less than 8 months or less.
- *Medium-term participants* are those with a single participation spell that lasted between 9 and 23 months
- *Long-term participants* are those with a single participation spell that lasted 24 months or longer

³¹ The information concerning previous participation tells us the start date of the spell that was in progress in Month 1 of the 2001 SIPP panel, not about start and end dates of spells that ended prior to the sample. Thus, in Table II.22 we do not see an increase in the number receiving food stamp benefits, but rather in the length of time that some participants received food stamp benefits.

- *Multiple-spell participants* are those with more than one participation spell during the panel period

We also perform this characterization using two samples—our cross-sectional sample and an entry cohort. From our cross-sectional sample, we obtain the first two columns of estimates in Table II.24. The first column replicates a method used in multiple previous studies, including Gleason et al., to categorize recipients into single-spell recipients and multiple-spell recipients based on their receipt only in the current panel. For the duration of receipt, though, it adds on the pre-panel duration of any spells that were in progress at the beginning of the panel period. In the second column, we extend this method, as did Gleason et al. to also include spells that both began and ended prior to the panel period. Using this new information leads many single-spell participants to be classified as multiple-spell participants.

As an alternate method, shown in the third column, we extend the analysis of our new entry cohort. Ideally, we would look for re-entry among our new entry cohort, but the SIPP panel is not long enough to reliably observe enough multiple spells. Instead, we create an artificial new entry cohort in two steps. First, we create a life table of spell duration for new entrants who had not received food stamps prior to the beginning of the panel period or prior to the current entry to determine the proportion of new entrants that would fall into the short-, medium-, and long-term categories. Then we revisit our life table of reentry among all exiters (Table II.22), which indicates that 55.4 percent of exiters reenter the FSP within 24 months.³² We assume that 55.4 percent of each of the short-, medium-, and long-term spells should be reclassified from

³² This assumes that all participants who return would do so within 24 months, which leads to an underestimate of the proportion with multiple spells. However, the reentry analysis indicates that most former participants who re-entered did so fairly soon after their exit; beyond 24 months after their exit, few were re-entering.

single-spell participants to multiple-spell participants. The remaining proportions in each group become the final estimates of the entry cohort that were single-spell participants.

TABLE II.24
CHARACTERIZATION OF FSP PARTICIPANTS (PERCENT)

Reference Months: 1 to 36
Sample: All individuals and participants

Number of Months	Include Pre-Panel Data on Duration of Beginning Spell ^a	Include Pre-Panel Data on Previous Spells and Duration of Beginning Spell ^b	Artificial Entry Cohort ^c
Single-Spell Participants			
Short-Term (1 to 8 Months)	31.7	17.5	8.9
Medium-Term (9 to 23 Months)	14.1	6.5	3.5
Long-Term (24+ Months)	26.8	13.4	3.8
Multiple Spell Participants	27.5	62.7	83.7
Sample Size	7,428	7,428	NA

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

^a Pre-panel data are used to determine the duration of the spells that are ongoing at the beginning of the panel; however, pre-panel data about participation in spells that ended before the start of the panel are not included.

^b Pre-panel data on both spells that were ongoing at the beginning of the panel and spells that ended before the beginning of the panel are included.

^c The artificial entry cohort analysis uses results from our earlier analysis and categorizes the sample of individuals that are beginning their first spell into the three lengths.

b. Results

Table II.24 presents the results of characterization of participants by their spells. When we include the information from the pre-panel period, we find that nearly two-thirds of participants had multiple spells. Of those who had single spells, most had either short spells (eight months or less) or long spells (more than two years). In the analysis of the artificial entry cohort sample, we find an even larger percentage of multiple-spell participants (84 percent), with most single spells lasting less than eight months. Compared with Gleason et al. (1998), we find substantially more multiple-term spells and fewer single extended spells.

F. CONCLUSIONS

In this chapter, we have examined participants' entry into the program, duration of participation, re-entry, and triggers that led to entry or exit. We also compared these with earlier studies. In our sample period, caseloads increased substantially, as they did during the time of the Gleason et al. (1998) study of the early 1990s. Cody et al. (2005) examined the mid- and late 1990s.

The entry rate in the early 1990s was 2.6, while in the early 2000s, it was 3.3 (see Table II.25). The duration of receipt by those who enter in the panel period is also not significantly different than in the early 1990s. Those who exited re-entered sooner, on average, than in earlier years, which led to more participants who had multiple spells in the early 2000s, compared to the early 1990s. However, trigger events have not changed. Decreases in income remain the predominant trigger to entry and increases in income remain the predominant trigger to exit.

1. FSP Entry

On average, in 2001 to 2003, 41 out of every 1,000 nonparticipants with income under 300 percent of poverty at some point in the panel period who are not participating at the end of one year will participate at some point in the next year (33 out of 1000 when we do not limit the income). However, the likelihood of entry differs according to the household situation. Individuals who have received benefits in the past are much more likely to enter than those who have not received benefits; individuals in families with children are more likely to enter than individuals in families without children, and individuals in families without earnings are more likely to enter than individuals in families and with earnings.

TABLE II.25

COMPARISON OF PRIMARY MEASURES OF FSP PARTICIPATION DYNAMICS

	1991-1993	1993-1996	1996-1999	2001-2003
Annual Entry Rate Among All Individuals (Percent)	2.6	NA	NA	3.3
Replacement Rate (Percent)	NA	4.2	3.8	5.4
Median Duration for Entry Cohort (Months)	9	8	8	8
Median Cross-sectional Completed Spell Length (Months)	> 96	54	54	48
Median Time-Off (Months)	20	NA	NA	18
Total Time On (Percent with Eight Months or Less)	27	NA	NA	37
Multiple Spells (Percent)	51	NA	NA	63
Turnover Rate	1.3	NA	NA	1.5

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

Among adults (18 and over), about 29 percent will enter at some point in their lives. Among the adults that do enter the FSP at some point, about 15 percent enter between the ages of 18 and 20; half of the adult entrants enter by the time they are age 30.

The most common events that triggered entry into the FSP were related to decreases in family earnings. Among those who entered the FSP in the panel period, 56 percent experienced a decrease in family earnings of at least 10 percent in the four months prior to their entry.

2. Duration of FSP Receipt

Most individuals who enter the FSP during the panel period exit within one year. The median participation spell among new entrants is about 8 months. However, among a cross-section of those who are participating in a given month early in the panel (May 2001), the median spell is about 18 months.

As with entry rates, spell duration varies according to the characteristics of the individuals. Individuals in families without earnings have longer spells than individuals in families with

earnings. Additionally, children have longer spells than non-elderly adults, but elderly generally have the longest spells. This is in contrast to entry rates, where we see that elderly are the least likely to enter.

3. FSP Exit

The most common trigger event associated with an FSP exit was an increase in family income, with almost three quarters of participants experiencing an increase of at least 10 percent. About one-quarter of participants left the FSP within four months of the increase. Other events, though not as common, including the departure of a family member and the addition of a family member led to a similar percentage exiting within four months.

4. FSP Re-entry

More than half of FSP participants who exited the program in the panel period re-entered the FSP within two years. Although we cannot be sure who enters following the panel period, it appears that most people who re-enter the FSP do so within two years of exiting.

5. Subgroups

In Table II.26, we bring together several of our measures for selected subgroups. With the exception of the elderly, the subgroups with the higher entry rates (children, individuals in families with children, individuals in families without earnings, and individuals in families without a high school graduate) also have longer median participation spells, have a shorter period before re-entry, and are less likely to exit after experiencing an identified trigger event. These subgroups also tend to have longer median duration of subsequent spells for the cross section of participants in May 2001, except that individuals in families with children have shorter subsequent spells than individuals in families without children. The elderly enter less

often, but participate longer, are less likely to leave following a trigger event, and are less likely to re-enter once the exit.

TABLE II.26
COMPARISON OF FSP PARTICIPATION DYNAMICS ACROSS SELECTED SUBGROUPS

Subgroup (of Individuals in families with income under 300 percent of poverty at some point in the panel period)	Monthly Entry Rate	Median Duration of FSP Spells, New Entry Sample (Months)	Median Duration of Subsequent Spell Length, Cross Sectional Sample (Months)	Probability of Exit Given Any of Identified Triggers	Re-entry Rate: Median Duration of Nonparticipation-Spell (Months)
All Individuals	0.4	8	19	24.8	16
Children	0.7	9	19	21.7	12
Nonelderly adults	0.4	8	17	28.5	24
Elderly	0.2	12	24	22.0	>24
Individuals in families with children	0.6	8	18	23.5	16
Individuals in families without children	0.2	8	24	34.3	>24
Individuals in families with earnings	0.4	8	16	26.3	21
Individuals in families without earnings	0.8	12	>24	21.0	12
Individuals in families with HS graduate	0.4	8	16	27.1	20
Individuals in families without HS graduate	1.1	12	>24	18.9	12

Source: Mathematica Policy Research, Inc., weighted tabulations of the enhanced 2001 SIPP panel

6. Summary Measures

The total time on the FSP is measured by the percentage of the 36 months in the sample that a person spends receiving FSP benefits. Of the 15 percent of individuals on the panel that received FSP benefits during the panel, 37 percent had 8 months or less of contact with the FSP, and 16 percent received benefits during the entire panel. The median total time on of 15 months indicates the median spell duration of eight months for new entrants discussed earlier does not provide the complete picture of a person's benefit receipt.

We find that nearly two-thirds of participants had multiple spells. Of those who had single spells, most had either short spells (eight months or less) or long spells (more than two years).

III. A MULTIVARIATE ANALYSIS OF THE DETERMINANTS OF FOOD STAMP PROGRAM ENTRY, EXIT, AND RE-ENTRY

The descriptive statistics presented in the previous chapter illustrate the relationship between individual-level characteristics such as age, and the rates of FSP entry, exit, and re-entry. For example, in Chapter II, we showed that older individuals are less likely than younger individuals to enter the FSP. What the descriptive statistics fail to capture is the relationship among these characteristics. For instance, older individuals generally have more income and individuals with more income are less likely to participate in the FSP. The multivariate analysis described in this chapter controls for the effects of income and many other determinants of FSP participation, when estimating the effect of age on the probability of participating in the FSP. It enables us to examine the effects of each variable on the rates of FSP entry, exit, and re-entry while controlling for the effects of all other variables.

The multivariate analysis is divided into three components. First, we analyze the determinants of entry into the FSP. Second, we analyze the determinants of the exits and duration of FSP participation. Third, we analyze the determinants of re-entry into the FSP. We examine the association between FSP entry, exit, and re-entry, respectively, and individual and family characteristics, income and employment status, state and regional characteristics, and state-level policy variables. We discuss how the factors associated with longer periods of food stamp benefit receipt differ from those that influence the decision to enter the program and explore whether the characteristics associated with longer durations of FSP participation also lead to greater likelihoods of re-entry.

All of our models examine how individual-, family- and state-level characteristics affect individuals' FSP entry and exit decisions. We also explore how individuals' decisions are affected when they experience certain "*trigger events*," such as changes in employment, income,

marital status, or family composition. Although previous research has included trigger events in multivariate analyses of FSP entry, duration, and re-entry, we make three contributions to the FSP dynamics literature. First, in the multivariate analyses for FSP duration and re-entry, we estimate several model specifications in which we include both entry and exit triggers. For example, when analyzing the determinants of the length of FSP participation spells, we control for both the events that initially triggered entry into the program and the events that subsequently triggered exit from the program. Including both entry and exit triggers within the same model is an improvement on previous work (Gleason et al. (1998) included entry triggers only) since it enables us to evaluate whether certain exit trigger events are important determinants of FSP spell length conditional on whether an entry trigger event occurred. For example, it could be that an increase in family size triggered the onset of the spell, but among individuals who experienced this trigger, those that subsequently experienced an increase in income may leave the spell more quickly. To compare our results to previous work, we also re-estimate the model using entry triggers only.

Second, we include variables that measure an individual's "*usual circumstances*" over a certain amount of time preceding the window in which a trigger event can occur. Gleason et al. (1998) estimated a model that controlled for an individual's usual circumstances when analyzing the effect of trigger events on entry in the FSP. They found that an event such as a decrease in income increases the probability of entry into the FSP by a greater amount for individuals with higher mean incomes than individuals with lower mean incomes. Thus, the size of the effect of the trigger event on the probability of entry into the FSP depends on whether this event marks a deviation from an individual's usual circumstances. Whereas Gleason et al. (1998) controlled for an individual's usual circumstances only when estimating the effect of trigger events on entry

into the FSP, we control for an individual's usual circumstances in our entry, duration, and re-entry models.³³

Third, we include various sensitivity analyses using subsamples based on time-invariant characteristics of family subgroups and based on whether participants are first-time users or repeaters who cycle on and off the program.

Section A of this chapter presents the methodological approach used in estimating the multivariate models of FSP entry, exit, and re-entry. The subsequent sections present the results from the analysis of FSP entry (Section B), participation duration (Section C), and re-entry (Section D). Section E contains a chapter summary. Key findings include:

- **FSP Entry.** Entry triggers have a more pronounced effect when the trigger represents a deviation from an individual's usual circumstance. Overall, while the loss of a job increases the likelihood of FSP entry for all individuals, the increase is more substantial for individuals who do not experience frequent unemployment. Also, single parents are more likely than other individuals to enter the program after experiencing multiple changes in labor income. State policies also play a role--individuals are more likely to enter the program in states that have simplified FSP reporting requirements.
- **FSP Exit.** Becoming employed and experiencing an increase in income are highly associated with exiting the program. We also find that the likelihood of exit does not appear to be affected by the type of event that triggered entry onto the FSP. However, experiencing a job loss in the four months prior to entering the FSP leads to shorter participation spells for individuals in a repeat spell compared to those in an initial spell. Among participants, a transition from unemployment to employment is positively associated with shorter participation spells for both initial-spell and repeat participants. Individuals in states with simplified reporting and quarterly status reporting have longer participation spells.
- **FSP Re-entry.** Whether a former participant is employed at the start of the nonparticipation spell does not predict re-entry; however, trigger events related to a job loss are strongly associated with re-entering the program. State-specific labor market conditions are also important predictors of re-entry. Additionally,

³³ Although they did not include measures of an individual's usual circumstances, Farrell et al. (2003) found that it is important to include more longer-lasting measures of an individual's income than current income when analyzing FSP entry rates.

individuals in states with simplified reporting and quarterly status reporting are more likely to re-enter.

A. METHODOLOGICAL APPROACH

We estimate a multivariate entry model and discrete-time hazard models of FSP exit and re-entry using maximum likelihood estimation. The monthly hazard rate is defined as the probability that an individual leaves a particular state (nonparticipation, for example) in a particular month given that the individual has remained in that state up to that month. The hazard rate in the duration model is the probability that an individual leaves the state of participation and exits the FSP, given that the individual participated in the program in the previous month. Similarly, the hazard rate in the re-entry model is defined as the probability that an individual leaves the state of nonparticipation in a particular month and enters the FSP, given that the individual did not participate in the program in the previous month.

While it is possible to estimate hazard models using person-level observations, we choose to create a *person-month sample* instead. This more easily allows us to include time-varying covariates in each model. Each individual in the sample can contribute one or more observations to the sample depending on how long they remain in the program (in the duration analysis) or out of the program (in the entry and re-entry analyses). In the duration model, for example, an individual who remains in the FSP for seven months will contribute seven observations to the sample: 6 non-exit months and one exit month.

We use two main types of explanatory variables in the models. *Time-invariant* explanatory variables are those whose values are selected at the start of the participation or nonparticipation spell and remain fixed for the duration of the spell—for example, race and gender. *Time-varying* explanatory variables have values that are allowed to change during participation and nonparticipation spells—for example, state unemployment rates, the characteristics of state wage

distributions (such as means, standard deviations, and percentiles), state-specific FSP policies, region of residence, and, where applicable, entry and exit triggers.

We include *usual circumstance* variables in most model specifications in order to identify whether the size of the effect of a trigger event, such as the loss of a job, on the likelihood of entering the FSP is diminished when we control for more longer-lasting conditions, such as a volatile employment history. We find that without including usual circumstance variables in the entry model, there is a strong association between losing a job and entering the program. The magnitude of this association is reduced when we control for whether members of an individual's family experienced frequent fluctuations in employment status in the past year. This indicates that experiencing a job loss was capturing, in some part, this individual's employment history. We include other usual circumstance variables to ask similar questions. For example, is the strength of the association between a decrease in income and FSP entry changed when we control for whether the individual has experienced frequent income fluctuations?

The hazard models in each of our multivariate analyses are estimated using unweighted data. Apart from following convention in studies on related food assistance and nutrition research (for example, see Basiotis, Kramer-LeBlanc, Kennedy (1998); Fraker (1990); Gleason, Rangarajan, Olson (2000); Gleason, Schochet, Moffitt (1998); Lee and Frongillo (2001); McKernan and Ratcliffe (2003); Puma and Hoaglin (1987)), we do not use sample weights in the logistic regressions because our outcome variables do not vary by the strata defined in the SIPP's sample design (DuMouchel and Duncan 1983). As a set of sensitivity analyses, we re-estimated the main model from each section of the chapter (entry, duration, and re-entry) using SIPP panel weights and compared the estimates from these regressions to those from the estimations using unweighted data. Our basic conclusions remain unchanged, as the parameter

estimates and their associated significance levels in each model are very similar. We attribute this mostly to our inclusion of many of the variables that define the strata in the SIPP sample design within the set of explanatory variables in our models.³⁴

B. THE DETERMINANTS OF FSP ENTRY

1. Sample

The sample for the multivariate entry analysis includes all individuals who are at least 18 years old and who experienced a nonparticipation spell between the 17th SIPP panel month and the end of the panel.^{35 36}

Although by imposing this sample selection criterion we exclude many individuals with transitions onto the FSP before month 17, we gain an important 12-month measure of an individual's usual circumstances for all sample members. Individuals in month 17 have their usual circumstance variables defined over months 1 through 12 and their trigger event variables defined over months 13 through 16. To test the sensitivity of the model we re-estimated all entry models using a sample in which transitions onto the FSP began in or after the 13th SIPP panel month shortening the period of time over which an individual's usual circumstance variables are defined to months 1 through 9. This, however, produces less reliable estimates of whether a trigger event actually constitutes a deviation from one's usual circumstance because

³⁴ We do not create interaction variables using each of the strata-related explanatory variables in our model. Thus, we do not attempt to recreate the strata exactly.

³⁵ Since the FSP participation decisions of children are influenced greatly by the decisions of their parents, we have excluded individuals under age 18 from the samples used in all of our multivariate analyses.

³⁶ Our analysis file is limited to individuals who had data for every month of the 36-month panel for which they are in the SIPP universe. Additionally, individuals could not leave the SIPP universe and then return several months later. For most individuals, this means that there are data for all 36 months. Individuals who leave the SIPP universe because of death or because they move out of the country are included until those events occur. Individuals who "drop out" of the SIPP survey are not included in our analysis.

there is a higher likelihood that these statistics do not adequately describe an individual's usual circumstances.³⁷ Although our main estimations use the month 17 sample, estimates found using the month 13 sample are similar.³⁸

Figure III.1 depicts examples of two FSP participation histories. In example A, the individual enters the program for the first time in month 22. The trigger event window is measured from month 18 through month 21 and the usual circumstance window is measured from month 6 through month 17. In example B, the individual exits a left-censored participation spell at the end of month 9 and re-enters the program in month 22. The trigger event window is measured from month 18 through month 21. In one of our model specifications, the usual circumstance window is measured from month 6 through month 17, even though this overlaps with a previous participation spell. In another model specification, the usual circumstance window is measured from month 10 through 17 to avoid overlapping with the previous participation spell.

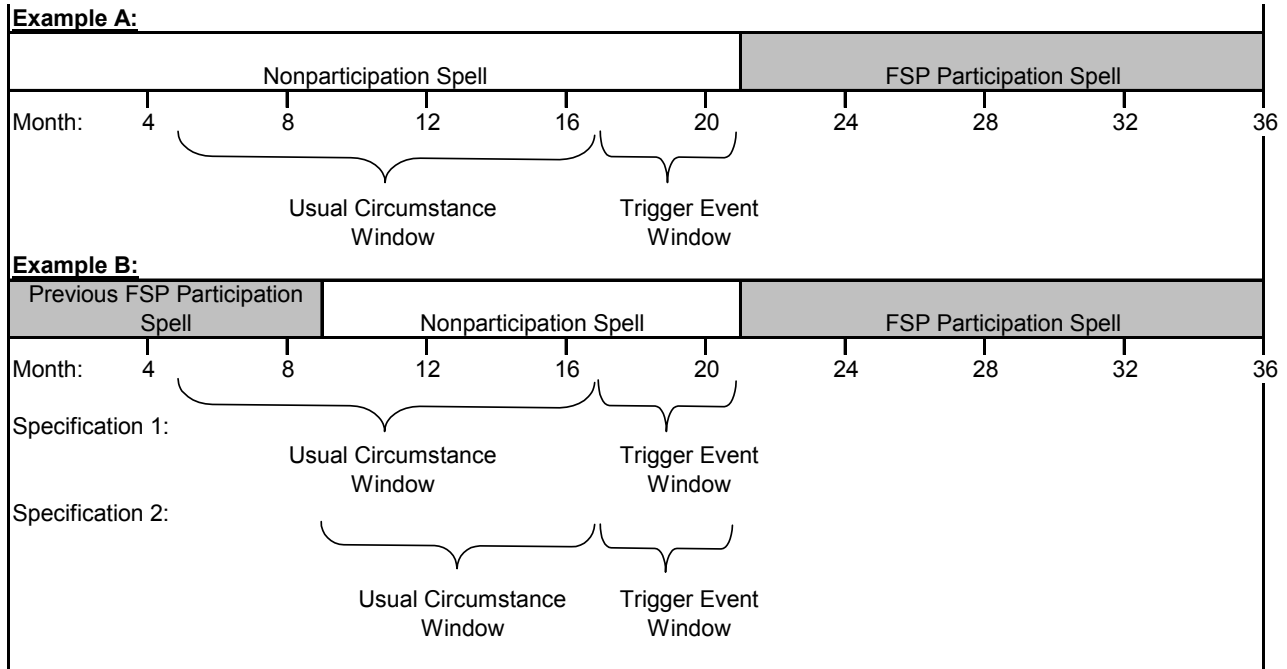
Ideally, our model of FSP entry would examine the relationship between the duration of nonparticipation and entry into the FSP to assess if individuals are less likely to enter the FSP the longer they remain nonparticipants. However, for individuals already in a nonparticipation spell at the start of the 2001 panel, we do not have sufficient information to measure the duration

³⁷ In their entry analysis, Gleason et al. (1998) used a 24-month period over which to define an individual's usual circumstance variable. They examined transitions onto the FSP that occurred over the subsequent 12-month period. In order to compensate for the small number of transitions onto the program in this short horizon, they restricted the sample to a low-educated, young, low-income, and low-asset sample. We choose to shorten the usual circumstance horizon to 12 months in order to have a longer horizon in which to examine entry without restricting our sample using demographics and income and asset levels.

³⁸ Due to the large size of each sample, estimates that are statistically significant in an estimation using one sample are generally also statistically significant in estimations using the other sample.

FIGURE III.1

EXAMPLES OF USUAL CIRCUMSTANCE AND TRIGGER WINDOWS FOR FSP ENTRY ANALYSIS
2001 SIPP PANEL (36 months)



Notes: In Example A, an individual enters the FSP in month 22 following a left-censored nonparticipation spell. The trigger window is measured from month 18 to month 21 and the usual circumstances window is measured from month 6 to month 17. In Example B, an individual receives food stamp benefits from the beginning of the panel until the end of month 9, then re-enters the program in month 22 following a 12-month nonparticipation spell. The trigger window is measured from month 18 to month 21. In specification 1, the usual circumstances window can overlap with the previous FSP spell and it is measured from month 6 to month 17. In specification 2, the usual circumstances window cannot overlap with the previous FSP spell. It is measured from month 10 (the beginning of the nonparticipation spell) to month 17.

of their nonparticipation spell (or characteristics such as employment status and family income to poverty ratio at the start of their nonparticipation spell). In order to use these left-censored observations in our entry model, we do not include a measure of the duration of a nonparticipation spell for any individual.³⁹

³⁹ This approach differs from that of the FSP duration and FSP re-entry models, both of which include measures of spell duration. Including measures of spell duration is desirable because it allows us to test whether the hazard rate depends on how long an individual has been in a certain state conditional on a set of values of all other explanatory variables. By doing so, we relax the restrictive assumption that the hazard rate (conditional on a set of values of explanatory variables) does not increase or decrease with time.

The dependent variable in all models estimated is a binary variable equal to 0 in each month an individual was not participating in the FSP and equal to 1 in the month that an individual entered the program (if that event occurred). We estimate the model using the full sample and five mutually exclusive family subgroups, defined by the composition of individuals' families at the start of their spells; these family subgroups are:

1. Individuals in families with children and a single adult head
2. Individuals in families with children and multiple nonmarried adult heads
3. Individuals in families with children and married adult heads
4. Individuals in families without children and with elderly or disabled adults
5. Individuals in families without children and with no elderly or disabled adults

We select these subgroups because family composition characteristics have been found to be important determinants for FSP entry decisions (Gleason et al. 1998). For example, employment decisions are made very differently in families with a single adult head with children than in families with married adult heads with children. The results of these analyses show that the factors associated with FSP entry for individuals differ across many of these subgroups.⁴⁰

2. Explanatory Variables

In our estimated models, we include variables that have been used extensively in research on determinants of FSP entry. In addition to the typical demographic variables such as age, gender, race, education, and marital status, we include variables specific to an individual's state

⁴⁰ We perform various chi-squared likelihood ratio tests to test the null hypothesis that the parameters in the models are the same for each family subgroup. We reject the null hypothesis at the 0.01 percent significance level when the parameters in all five subgroups are compared.

of residence that measure local labor market conditions. We also include a set of policy variables that have not been used in hazard rate analyses of FSP entry.

Our goal is to include only exogenous explanatory variables. These are variables that are, to the best of our knowledge, independent from unobservable factors influencing FSP entry rates. For example, we do not include “current earnings” in the model because it is likely that individuals make employment and FSP participation decisions jointly.⁴¹ Instead, we hold values of certain explanatory variables, such as earnings, constant over the spell of nonparticipation or participation. By doing so, we avoid obtaining biased estimates of the coefficients of explanatory variables in the model.⁴² The values for the variables related to age, education, and family composition are taken from the start of the nonparticipation spell and are held constant over the spell to ensure that these variables are exogenous to future FSP entry decisions.⁴³ The entry models include the following groups of explanatory variables: continuous variables, such as the state unemployment rate, categorical variables, such as the number of children under 18 years old in the family, and indicator variables, such as gender, which are categorical variables restricted to the values of 0 and 1. The explanatory variables (summarized in Table III.1) are as follows:

⁴¹ Concurrent changes in employment and FSP participation may be attributed to a third, unobserved factor. In this case, we are unable to identify how a change in earnings affects the FSP participation decision.

⁴² In several model specifications there are trigger events and usual circumstance variables defined within the participation (or nonparticipation) spell. These variables are measured at least one month before the month in which the participation decision is evaluated. Thus, the exogenous relationship with the participation (or nonparticipation) variables is maintained.

⁴³ All time-invariant variables are measured at the start of the nonparticipation spell or in month 1 of the SIPP panel if the nonparticipation spell is left-censored. We note that in the latter case variables such as employment status remain exogenous because the earliest month in the panel in which we analyze participation decisions is month 17.

TABLE III.1

DEFINITIONS OF EXPLANATORY VARIABLES

Demographic Characteristics of Individuals (<i>Time-Invariant</i>)	
<hr/>	
Gender ^a	
Male	1 Male; 0 otherwise.
Race/Ethnicity ^a	
White, non-Hispanic	1 white, non-Hispanic; 0 otherwise.
Black, non-Hispanic	1 black, non-Hispanic; 0 otherwise.
Hispanic	1 Hispanic; 0 otherwise.
Other	1 neither white, non-Hispanic or black, non-Hispanic or Hispanic; 0 otherwise.
Age ^a	
18-29 years old	1 if 18 to 29 years old; 0 otherwise.
30-49 years old	1 if 30 to 49 years old; 0 otherwise.
50-64 years old	1 if 50 to 64 years old; 0 otherwise.
65 and older	1 if at least 65 years old; 0 otherwise.
U.S. citizenship ^a	1 if U.S. citizen; 0 otherwise.
Education Level and Employment Status of Individuals (<i>Time-Invariant</i>)	
Highest Grade Completed ^a	
0-8	1 if completed 8 or less years of schooling; 0 otherwise.
9-11	1 if completed 9 to 11 years of schooling; 0 otherwise.
12	1 if completed 12 years of schooling; 0 otherwise.
13 and above	1 if completed at least 13 years of schooling; 0 otherwise.
Employment Status ^a	
Currently Employed	1 if employed and equals 0 otherwise.
Haven't Worked in 1-5 months	1 if not working and has not worked for the last 1 to 5 months; 0 otherwise.
Haven't worked in 6-11 months	1 if not working and has not worked for the last 6 to 11 months; 0 otherwise.
Haven't worked in 12+ months	1 if not working and has not worked for the 12 or more months; 0 otherwise.
Family Income and Welfare Receipt (<i>Time-Invariant</i>)	
Ratio of Family Income to Poverty Level ^a	
Less than 1.0	1 if the ratio of an individual's family income to the Federal poverty threshold is less than 1.0; 0 otherwise.
1.0 to less than 1.5	1 if the ratio of an individual's family income to the Federal poverty threshold is greater than 1.0 and less than 1.5; 0 otherwise.
1.5 to less than 2.0	1 if the ratio of an individual's family income to the Federal poverty threshold is greater than 1.5 and less than 2.0; 0 otherwise.
2.0 and above	1 if the ratio of an individual's family income to the Federal poverty threshold is at least 2.0; 0 otherwise.

Table III.1 (continued)

Demographic Characteristics of Individuals (<i>Time-Invariant</i>)	
Currently Receiving TANF ^a	1 if a member of the individual's family currently receives TANF benefits; 0 otherwise.
Previously Received TANF ^a	1 if a member of the individual's family previously received TANF benefits; 0 otherwise.
Family Composition (<i>Time-Invariant</i>)	
Family Size ^a (<i>Categorical Variable</i>)	
Number of adults	The number of adults in an individual's family.
Number of children less than age 6	The number of children less than 6 years old in an individual's family.
Number of children between ages 6 and 18	The number of children ages 6 to 18 in an individual's family.
Marital status ^a	
Currently Married	1 if currently married; 0 otherwise.
Previously Married	1 if previously married, but not currently married; 0 otherwise.
Trigger Events and Usual Circumstances (<i>Time Varying</i>)	
Entry Trigger Events	
Employment change within family	1 if individual or any family member experienced a transition from employment to unemployment in the last four months; 0 otherwise.
Income change within family	1 if individual or any family member experienced a decrease in income in the last four months; 0 otherwise.
Marital Status change within family	1 if individual or any family member experienced a transition from being married to being either divorced, separated, or widowed in the last four months; 0 otherwise.
Family composition change within family	1 if individual or any family member experienced a change in family composition that is associated with FSP entry (for example, an increase in number of children in family) in the last four months; 0 otherwise.
Usual Circumstances Before Entry (<i>Continuous Variables</i>)	
Mean employment change within family ^b	The average amount of times that any member of the family changed employment status.
Mean income change within family ^b	The average amount of times that any member of the family experienced a change in income.
Mean family income ^b	The average family income.
Variance in family income ^b	The variance in family income.
Average number of marriages in family to date	The average number of times all individuals in a family have been married throughout their lifetime.
Mean family composition change ^b	The average amount of times that there was a change in family composition.

Table III.1 (continued)

Demographic Characteristics of Individuals (<i>Time-Invariant</i>)	
State and Regional Measures (<i>Continuous Variables</i>) (<i>Time Varying</i>)	
State unemployment rate	The unemployment rate in an individual's state of residence.
Hourly wage statistics	
Mean	The mean wage in an individual's state of residence.
Standard Deviation	The standard deviation of wages in an individual's state of residence.
Percentiles	The 20 th , 40 th , 50 th , 60, and 80 th percentile of wages in an individual's state of residence.
Region of residence	
Northeast	1 if individual lives in the Northeast region; 0 otherwise.
MidAtlantic	1 if individual lives in the MidAtlantic region; 0 otherwise.
Midwest	1 if individual lives in the Midwest region; 0 otherwise.
Southeast	1 if individual lives in the Southeast region; 0 otherwise.
Southwest	1 if individual lives in the Southwest region; 0 otherwise.
Mountain Plains	1 if individual lives in the Mountain Plains region; 0 otherwise.
Western	1 if individual lives in the Western region; 0 otherwise.
Policy Variables (<i>Time Varying</i>)	
Vehicle Exclusion	1 if individual's state of residence allows individuals to exclude at least 1 vehicle in the asset test as part of FSP eligibility determination; 0 otherwise.
Certification Period: Earners (average mos.) (<i>Continuous variable</i>)	The average amount of time between FSP re-certifications in an individual's state of residence among households with earnings.
Certification Period: Single Mothers (average mos.) (<i>Continuous variable</i>)	The average amount of time between FSP re-certifications in an individual's state of residence among single-mothers.
Simplified Reporting	1 if individual's state of residence allows for simplified reporting in the FSP; 0 otherwise.
Status Reporting	1 if individual's state of residence allows for status reporting in the FSP; 0 otherwise.
EBT	1 if FSP participants use electronic benefit transfer cards in individual's state of residence; 0 otherwise.

Note: All variables are indicator variables unless otherwise noted in italics.

^aThis variable is measured at the start of the nonparticipation spell (if the spell is not left-censored) or at the start of the panel (if the spell is left-censored).

^bThis variable is measured either over a fixed window length of 12 months or a window of varying length (the length of the nonparticipation spell, for example). See the text for further details.

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel

- **Demographic Characteristics of Individuals.** These binary variables include measures of the individuals' gender, race/ethnicity, age, and U.S. citizenship.
- **Education Level and Employment Status of Individuals.** Four binary variables measure individuals' educational attainment. These variables indicate whether individuals have completed fewer than 8 years of school, 9 to 11 years of school, 12 years of school, or more than 12 years of school. The employment status variable is also a binary variable and indicates whether an individual is employed in a given month⁴⁴. We also include three binary duration variables that indicate how long an individual who is not currently employed has been out of work. The first duration variable indicates whether an individual has not worked for 1 to 5 months, the second duration variable indicates whether an individual has not worked for 6 to 11 months, and third duration variable indicates whether an individual has not worked for at least 12 months.⁴⁵
- **Family Income and Welfare Receipt.** Four binary variables indicate whether individuals' family income is below the poverty line, between 1 and 1.5 times the poverty line, between 1.5 and 2 times the poverty line, or more than 2 times the poverty line. Since earnings are a component of family income and may be jointly determined with FSP participation, the four poverty ratio variables are measured at the same points in time as other time-invariant variables. We also include a variable indicating whether anyone in the individual's family is currently receiving TANF and another variable indicating whether anyone in the individual's family previously received TANF.
- **Family Structure.** We include two variables that count the number of children under the age of 18. One indicates the number of children under the age of 6 in the family and the other indicates the number of children in the family between 6 and 17 years old. The number of adults in the family is also included as an explanatory variable. Two additional binary variables indicate whether the individual is married, and if not, whether the individual was previously married.
- **Entry Trigger Variables.** Four binary variables indicate whether a trigger event occurred in the previous four months. These variables are based on the entry trigger definitions presented in Chapter II, but have been collapsed into broader categories of employment, family income, marital status, and family composition. The four binary trigger event variables indicate: (1) whether a member of the individual's family experienced a transition from employment to unemployment, (2) whether a member of the individual's family experienced a decrease in income, (3) whether a member of the individual's family experienced a divorce or separation from a

⁴⁴ Employment consists of full-time or part-time work.

⁴⁵ SIPP respondents who are not working in a given month state whether they have looked for work in the last several weeks. Individuals who haven't searched for work are coded as "out of the labor force" and those who have searched for work are coded as "unemployed." In the entry model, we do not distinguish between "out of the labor force" and "unemployed" and instead group individuals in either category as simply "not working."

spouse, and (4) whether there was a change in family composition such as an increase in family size or an increase in the number of dependents in the family.

- **Usual Circumstance Variables.** There is at least one usual circumstance variable for each entry trigger described above. The usual circumstance variable associated with the employment entry trigger measures the average amount of changes in employment status among all members of an individual’s family over a fixed 12-month window or a window of varying length. There are three usual circumstance variables associated with the income entry trigger variable. They measure the average amount of changes in family income, the mean family income, and the variance in family income over the usual circumstance window. The usual circumstance variable associated with the marital status entry trigger variable measures the average number of marriages among all family members over their lifetimes.⁴⁶ The usual circumstance variable associated with the family composition entry trigger variable measures the average number of changes in family composition.

It is important to note that the entry trigger variables measure transitions in the direction traditionally associated with entry into the FSP, but the usual circumstance variables may not. For example, the employment entry trigger indicates whether an individual experienced a job loss in the four-month period because this is a common determinant of entry into the FSP. The usual circumstance variable associated with employment, however, measures employment instability (transitions from employment to unemployment and from unemployment to employment).

- **Characteristics of State Labor Markets.** Because employment opportunities play such an important role in FSP participation decisions, we include several variables that measure the labor market conditions in the state in which an individual lives. These include the nonseasonally adjusted unemployment rate as well as characteristics of wage distributions such as the mean, standard deviation, 20th percentile, 40th percentile, 50th percentile, 60th percentile, and 80th percentile. These variables are time-varying by month and change over the nonparticipation spell.⁴⁷
- **Regional Measures.** Six time-varying binary variables indicate which of the seven FNS regions sample members reside in during their spells. These variables should capture additional differences in factors affecting FSP entry rates across regions that are not captured by other state-level variables.
- **State-Specific Policy Variables.** We include six state-specific time-varying policy variables. The first and second variables “certification period: earners (avg mos.)”

⁴⁶ The Wave 2 Topical Module history of the SIPP was used to calculate the number of times an individual was married before Wave 2 of the panel. Monthly data in the core wave files was then used to update this measure throughout the remainder of the panel.

⁴⁷ We use the Current Population Survey to estimate state unemployment rates and all characteristics of the wage distributions.

and “certification period: single mothers (avg mos.)” measure the average certification period for households with earnings and those with single mothers, respectively.⁴⁸ Certification periods reflect how frequently FSP participants must apply for benefits (typically ranging from every three months to every year), and guidelines for establishing certification periods vary by state. The third and fourth variables, “simplified reporting” and “status reporting,” indicate the frequency with which a client reports changes in his or her income and the conditions under which a client must report changes in his or her income. We also include an interaction of these two policies to capture the effect of combining simplified and status reporting policies. Federal Food Stamp Program policy requires recipients to report changes in their financial circumstances to state agencies at each re-certification appointment or when changes in monthly income exceed \$25. Re-certification periods are typically shorter for individuals with earnings and longer for elderly individuals, although the lengths are determined by caseworkers and vary by individual. More recently, states have been given the option to reduce the number of times between certification that households need to report changes (simplified reporting) or reduce the types of incidents that need to be reported (status reporting). We have coded an individual as residing in a state with “simplified reporting” if the state requires households to report changes in their income at quarterly intervals or between certification and scheduled reporting periods only when total countable income rises above 130 percent of the poverty level. We have coded an individual as residing in a state with “status reporting” if the state has waivers that allow households to report changes only in the source, wage rate, or status (from full-time to part-time or from part-time to full-time) of earned income or report changes of \$100 or more in earned income per month. The fifth variable “EBT” indicates whether FSP participants receive their benefits using an Electronic Benefit Transfer (EBT) card or receive the traditional paper coupon. The sixth variable “vehicle exclusion” indicates whether a state has adopted a policy that, at a minimum, excludes one vehicle per adult in the household in the asset test performed when determining an individual’s eligibility for the program. The asset test is more flexible in states that have adopted this policy.

3. Descriptive Statistics for Explanatory Variables

This section describes the characteristics of the individuals and their families in the states in the sample used for the multivariate entry model. Table III.2 presents entry rates and the mean values and relative frequencies of the explanatory variables for the full sample and for each

⁴⁸ We include a measure based on the first subgroup, individuals with earnings, because the presence of earnings usually leads to a shorter certification period. We also include a measure based on the second subgroup, single mothers, because this is one of the largest and most policy relevant groups, it does not vary in size by state as much as other subgroups, and it is affected by varying certification period policies. The elderly subgroup, on the other hand, traditionally receives longer certification periods in all states and is much less sensitive to changes in the length of certification periods). While we expect the certification periods for other (non-elderly) families with children to be highly correlated with those of single mothers, we have not investigated this association empirically.

TABLE III.2

COMPOSITION OF THE MULTIVARIATE ENTRY ANALYSIS SAMPLE, BY FAMILY SUBGROUP

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Individual Demographic Characteristics (Percentage)						
Male	48.2	44.8	22.2	37.6	49.8	53.7
Race						
White, non-Hispanic	75.3	82.0	61.7	39.2	71.7	78.6
Black, non-Hispanic	9.9	9.3	21.7	31.2	7.9	8.6
Hispanic	10.1	5.5	14.3	23.8	14.3	8.2
Other	4.6	3.3	2.3	5.9	6.0	4.6
Age						
18 to 29 years	21.1	5.4	24.7	41.0	21.4	31.3
30 to 49 years	42.1	10.9	66.6	40.1	69.0	41.0
50 to 64 years	21.2	30.7	7.5	12.6	8.1	27.7
65 and older	15.6	53.0	1.1	6.2	1.5	0.0
U.S. Citizen	91.6	95.9	90.5	85.4	88.2	91.8
Education Levels and Employment Status (Percentage)						
Highest Grade Completed						
8 or less	5.4	10.0	3.4	9.6	4.4	2.3
9 to 11	7.5	11.5	9.1	14.2	5.7	4.9
12	32.1	36.5	35.7	37.5	30.1	29.3
13 or greater	55.0	42.1	51.8	38.8	59.9	63.5
Employment Status						
Currently Working	67.9	32.2	83.5	64.9	78.4	86.6
Nonemployed for 5 months or less	3.5	2.8	4.5	5.8	3.5	3.6
Nonemployed for 6 to 11 months	2.3	2.3	2.6	3.8	2.2	2.2
Nonemployed for 12 or more months	26.3	62.6	9.5	25.5	15.9	7.6
Family Income and Welfare Receipt (Percentage)						
Ratio of Family Income to Poverty Level						
Less than 1.0	10.2	11.1	26.7	18.5	7.2	9.4
1.0 to 1.5	8.5	11.4	18.0	16.7	7.6	4.9
1.5 to 2.0	9.3	11.5	15.8	17.5	8.8	6.3
2.0 or more	72.0	66.0	39.4	47.3	76.4	79.5

Table III.2 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
TANF Receipt						
Currently	0.7	0.2	2.9	6.8	0.9	0.1
Previously	0.5	0.2	2.6	4.6	0.6	0.0
Never	99.3	99.8	97.1	93.2	99.1	99.9
Family Size and Marital Status						
Number of Adults	2.1	2.0	1.0	2.7	2.4	1.8
Number of Children						
Number of children less than age 6	0.2	0.0	0.5	0.5	0.6	0.0
Number of children ages 6 to 18	0.5	0.0	1.2	1.2	1.3	0.0
Marital Status (Percentage)						
Currently Married	58.2	56.7	0.4	10.3	89.2	43.4
Previously Married	19.7	29.7	67.9	40.2	1.5	20.1
Never Married	22.1	13.6	31.7	49.5	9.3	36.6
Entry Trigger Events						
Employment	19.9	11.4	17.2	22.7	24.6	20.1
Income	66.2	41.4	64.6	70.6	74.1	73.9
Marital Status	0.4	1.4	0.0	0.0	0.4	0.0
Family Composition	14.0	7.6	9.5	19.5	12.1	21.4
Usual Circumstance Variables						
Frequency of Employment Change	0.1	0.0	0.1	0.1	0.1	0.1
Frequency of Income Change	0.5	0.3	0.5	0.5	0.5	0.5
Mean Income (Dollars)	2407.69	1825.88	1259.79	2682.15	3226.11	2205.87
Variance in Income (\$1000)	1985.9	976.8	737.5	2680.0	2920.2	1785.9
Average Number of Marriages	0.9	1.1	0.6	0.6	1.1	0.8
Frequency of Family Composition Change	0.1	0.1	0.1	0.2	0.2	0.1
State and Regional Measures						
State Labor Market Characteristics						
State Unemployment Rate	5.9	5.9	5.9	6.0	5.9	5.9
Mean Wage	16.22	16.17	16.19	16.37	16.21	16.25
Standard Deviation Wage	10.12	10.09	10.13	10.31	10.13	10.12
20th Percentile Wage	8.34	8.33	8.32	8.32	8.33	8.36
40th Percentile Wage	11.44	11.41	11.40	11.46	11.43	11.47
50th Percentile Wage	13.35	13.31	13.31	13.42	13.35	13.39
60th Percentile Wage	15.61	15.55	15.56	15.74	15.61	15.64
80th Percentile Wage	22.48	22.39	22.43	22.78	22.49	22.52

Table III.2 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Region of Residence						
Northeast	11.5	11.3	11.8	13.2	10.8	12.2
MidAtlantic	13.3	15.1	11.0	12.1	13.0	12.5
Midwest	17.4	17.2	16.5	13.5	17.3	18.3
Southeast	19.5	21.6	20.3	19.7	18.6	18.5
Southwest	10.9	10.4	13.0	11.6	11.7	10.1
Mountain	8.4	7.0	7.2	5.8	9.0	9.3
West	19.0	17.3	20.2	24.2	19.7	19.1
FSP Policy Variables						
Vehicle (Percentage)	44.1	45.1	42.4	38.7	42.7	45.3
Certification Period: Earners (avg. mos.)	7.9	7.8	7.8	8.3	7.9	7.8
Certification Period: Single Mothers (avg. mos.)	8.1	8.1	8.0	8.4	8.1	8.0
Simplified (Percentage)	51.7	50.9	51.9	50.3	51.8	52.4
Status (Percentage)	55.6	55.3	56.8	48.9	55.8	56.3
EBT (Percentage)	85.0	86.1	84.2	79.3	84.0	85.7
Entry Rate						
Entry Rate (Percentage)	0.3	0.2	0.8	0.9	0.3	0.2
Spells that End with Entry (Percentage) ^a	4.7	3.2	13.9	15.2	5.0	3.3
Unweighted Sample Size	740,789	219,539	28,546	25,224	235,520	231,960

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel.

^aStatistics associated with the way in which spells end use person-spell data rather than person-month data. For example, an individual who contributed one 11-month spell to the sample would contribute 11 person-months to the sample or one spell.

family subgroup sample. We calculate these statistics using a data set that contains one observation for each spell month an individual spends in the sample.^{49,50}

a. Full Sample

The sample contains 38,434 individuals and generates 740,789 person-month observations that we use to estimate the discrete-time multivariate hazard models. Approximately 3 in 1000 individuals enter the program in a given month and 4.7 percent of nonparticipation spells end with entry into the FSP.

Our sample differs from the sample used in Chapter II in four ways. First, in order to compare our results with those found in multivariate analyses using the 1990 and 1991 SIPP panels (Gleason et al. (1998)), we do not require individuals who contribute spell-months to have had income less than 300 percent of poverty in at least one month of the panel.⁵¹ Second, we exclude individuals that leave the SIPP universe and return later in the panel. Third, since children's FSP participation decisions are influenced greatly by the decisions of their parents, we excluded individuals younger than 18 years old from the sample in all of our multivariate analyses. Fourth, we do not examine entry decisions between months 3 and 16 of the panel in order to have sufficient time to measure usual circumstances before entry.

Among this sample of adults, 52 percent are female, and 75 percent are non-Hispanic whites, 10 percent are non-Hispanic blacks, and 10 percent are Hispanic. In addition, 92 percent

⁴⁹ All statistics are calculated using data that has been weighted with the longitudinal panel weights. Thus, these are population estimates. Estimates based on person-spell (and not person-month) data are labeled in the table.

⁵⁰ These statistics are used only to compare the results from our estimations to features of the sample and not to describe characteristics of spell lengths that are presented in Chapter II.

⁵¹ If we had restricted our sample to individuals whose incomes fall below 300 percent of poverty in at least one month of the panel, we expect that estimates on variables associated with being poorer and associated with FSP entry would have been greater in magnitude and more strongly statistically significant. Several examples include variability in income, employment volatility, and changes in family composition.

of the sample are U.S. citizens. Approximately 21 percent of the sample members are between 18 and 29 years old, 42 percent are between 30 and 49 years old, 21 percent are between 50 to 64 years old, and 16 percent are 65 years old or older.

Approximately 58 percent of the sample members are married. Among those currently unmarried, 19.7 percent have been married at least once and 22.1 percent have never been married. On average there are about 2.1 adults in a family, 0.2 children under the age of 6, and 0.5 children between 6 and 18 years old.

Since this sample contains many individuals who do not enter the FSP within the panel period, education and income levels for the sample are not as low as we observe in the duration and re-entry samples (which contain individuals who received food stamp benefits at some point in the panel period). For example, 72 percent are in families with incomes above 200 percent of the poverty line and 86 percent have completed at least grade 12.

In terms of employment and labor market characteristics, 68 percent of the sample members are currently employed; most of those who do not work in a given month have not worked for at least 12 months. The mean state unemployment rate is 5.9 percent, the average mean wage across states is \$16.22, and the average 20th percentile across state wage distributions is \$8.30.

The descriptive statistics for the entry trigger variables are calculated only for the four months preceding entry into the FSP. Thus, they describe the experiences only of the families of individuals who actually enter the FSP in the panel period. Within the four-month period prior to FSP entry, 20 percent of families of FSP entrants have a loss of employment, 66 percent have a decrease in income, 0.4 percent transition from being married to being separated or divorced, and 14 percent have a change in family composition.

b. Family Subgroups

The full sample is primarily composed of families with elderly and disabled members without children, married adult heads with children, and other families with children (for example, all adults). Each of these groups makes up about 30 percent of the sample. Additionally, 4 percent of the sample consists of families with single adult heads with children and 3 percent of the sample consists of families with multiple nonmarried adult heads with children.

We observe substantial differences in the mean values and relative frequencies of the variables across the five subgroups, suggesting that the determinants of FSP entry most likely differ across these groups. For example, the main difference between families with elderly or disabled individuals without children and other family subgroups is in the proportion currently employed. Only 32 percent of people in families with elderly or disabled individuals without children currently work, compared to between 65 percent and 87 percent of people in other subgroups. Individuals in families with single adult heads with children have lower incomes compared to individuals in other family subgroups. For example, 45 percent of these families have incomes below 150 percent of the poverty line, compared to 19 percent of the families in the full sample. Finally, individuals in families with married adult heads with children are least likely to be black and non-Hispanic and are least likely to have family incomes below 100 percent of the poverty line. In the four months before FSP entry, families in this subgroup are more likely to have experienced a loss of employment or a decrease in family income than other family subgroups, which is consistent with the results found in Gleason et al. (1998).

4. Entry Model Estimation Results

In this section we present the results of the estimation of the FSP entry model set within a discrete-time hazard framework. We estimate the following main specifications of the model:

- Model A: with entry trigger variables and with a fixed 12-month window for usual circumstance variables
- Model B: with entry trigger variables and with a varying-length window for usual circumstance variables

We also estimated models with entry trigger variables and without usual circumstance variables as well as without entry trigger variables and without usual circumstance variables. We discuss the results from the Models A and B only because the results from the latter two estimations (with no usual circumstance variables or no trigger event variables) reveal minimal changes in the signs and magnitudes of the parameter estimates.⁵²

The main difference between the two estimations is the length of the window in which an individual's usual circumstances are defined. In the first estimation, this window always consists of a fixed 12-month period, regardless of whether this period overlaps with a previous spell of participation in the FSP. The window in the second estimation is defined only over those months in which an individual does not participate in the program, with a maximum of 12 months. We choose these two specifications since an individual's usual circumstances may be different in a spell of nonparticipation than in a FSP participation spell.⁵³

The estimations of several alternative model specifications serve as a set of sensitivity analyses. We will discuss the results of these estimations later.

⁵² We perform chi-squared likelihood ratio tests to test the null hypothesis that the additional parameters in the first estimation (compared to the third and fourth estimations) are not jointly zero. We reject the null hypothesis at the 0.01 significance level in both cases.

⁵³ Using the 1996 SIPP panel, Farrell et al. (2003) found that it is important to include more longer-lasting measures of an individual's income when analyzing FSP entry rates. Although they were not investigating the effect of trigger events on FSP entry, they estimated various model specifications that differed in the length of the window in which the individual's long-term income was defined.

a. Results for the Full Sample

Table III.3a contains the logit parameter estimates from two discrete-time FSP entry models. While both models include the same set of covariates, variables describing an individual's usual circumstances are defined over a fixed 12-month window in Model A and over a window of varying length in Model B.

The coefficient estimates in Table III.3a refer to the effects of the explanatory variable on the entry rate into the FSP (or, equivalently, on the hazard rate for leaving the nonparticipation state). A positive and significant coefficient on a variable implies that this variable is positively and significantly related to FSP entry after controlling for the effects of the other explanatory variables in the model. For discrete or continuous variables, this means that higher values of the variable imply higher entry rates. For indicator variables (discrete variables that only take values of 0 and 1), this means that individuals with a value of "1" for the variable have higher entry rates than individuals in the omitted category. If a discrete or continuous variable has a negative and significant coefficient, then higher values of the variable imply lower entry rates. For indicator variables, this means that individuals with a value of "1" for the variable have lower entry rates than individuals in the omitted category.

In the Model A column of Table III.3a, for example, the coefficient on the continuous variable "state unemployment rate" (0.17 in Table III.3A) is positive and statistically significant. This suggests that individuals in states with high unemployment rates are more likely to participate, all else being equal. For indicator variables such as "male," the negative value of the statistically significant coefficient (-0.19) implies that males are less likely than females to enter the FSP.

TABLE III.3A

FSP ENTRY HAZARD MODEL:
ESTIMATED EFFECTS OF EXPLANATORY VARIABLES
ON PROBABILITY OF ENTERING THE FSP BY CHARACTERISTICS

Explanatory Variables	Model A (12-Month Window)			Model B (Variable Month Window)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics						
Gender (female category is omitted):						
Male	-0.19***	(0.05)	0.83	-0.18***	(0.05)	0.84
Race (Hispanic category is omitted):						
White, non-Hispanic	-0.15*	(0.08)	0.86	-0.14*	(0.08)	0.87
Black, non-Hispanic	0.72***	(0.09)	2.06	0.61***	(0.09)	1.84
Other	0.10	(0.13)	1.11	0.06	(0.13)	1.06
Age (18-to-29-years-old category is omitted):						
30-49	-0.12*	(0.06)	0.88	-0.16**	(0.06)	0.85
50-64	-0.58***	(0.09)	0.56	-0.66***	(0.09)	0.52
65 and older	-1.39***	(0.12)	0.25	-1.60***	(0.12)	0.20
US citizen	0.19**	(0.08)	1.21	0.23***	(0.08)	1.26
Education Levels and Employment Status						
Highest grade completed (0-to-8 category is omitted):						
9-11	0.11	(0.09)	1.12	0.11	(0.09)	1.11
12	-0.22**	(0.09)	0.80	-0.20**	(0.09)	0.82
13 and above	-0.70***	(0.09)	0.50	-0.69***	(0.09)	0.50
Employment status ("haven't worked 12+ months" category is omitted):						
Currently Employed	-0.28***	(0.06)	0.76	-0.12*	(0.06)	0.89
Haven't worked 1-5 months	-0.12	(0.10)	0.89	0.05	(0.10)	1.05
Haven't worked 6-11 months	0.16	(0.11)	1.17	0.23**	(0.11)	1.26
Family Income and Welfare Receipt						
Ratio of family income to poverty level (less than 1.0 category is omitted):						
1.0-1.5	-0.21***	(0.07)	0.81	-0.15**	(0.07)	0.86
1.5-2.0	-0.49***	(0.08)	0.61	-0.39***	(0.08)	0.68
2.0 and above	-0.95	(0.08)	0.39	-0.74***	(0.08)	0.48
Currently receiving TANF	0.28	(0.29)	1.32	0.49*	(0.29)	1.63
Previously received TANF	0.55*	(0.30)	1.73	0.24	(0.30)	1.28
Family Composition						
Family Size:						
Number of adults	0.03	(0.03)	1.03	0.11***	(0.03)	1.12
Number of children less than age 6	0.33***	(0.03)	1.39	0.31***	(0.03)	1.36
Number of children between ages 6 and 18	0.07	(0.02)	1.08	0.10***	(0.02)	1.11
Marital Status (never-married category is omitted):						
Currently married	-0.35***	(0.07)	0.71	-0.29***	(0.07)	0.75
Previously married	0.22***	(0.09)	1.25	0.51***	(0.08)	1.66

Table III.3a (continued)

Explanatory Variables	Model A (12-Month Window)			Model B (Variable Month Window)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Entry Trigger Events:						
Employment change within family	0.82***	(0.10)	2.26	0.93***	(0.08)	2.54
Income change within family	-0.08	(0.12)	0.92	-0.06	(0.09)	0.95
Marital status change within family	-0.81	(0.67)	0.44	-1.11	(0.69)	0.33
Family composition change	0.70***	(0.12)	2.01	0.77***	(0.10)	2.16
Entry Usual Circumstances: (measured over a fixed 12-month window)						
Mean employment change within family	1.25***	(0.32)	3.50			
Mean income change within family	0.14	(0.21)	1.16			
Mean family income	-0.24***	(0.00)	0.79			
Variance in family income	0.01	(0.00)	1.01			
Average number of marriages in family to date	0.12***	(0.05)	1.13			
Mean family composition change	1.70***	(0.24)	5.48			
Entry Usual Circumstances: (measured over a varying-length window)						
Mean employment change within family				0.82**	(0.38)	2.27
Mean income change within family				-1.58***	(0.25)	0.21
Mean family income				-0.32***	(0.00)	0.73
Variance in family income				0.00	(0.00)	1.00
Average number of marriages in family to date				-0.27***	(0.05)	0.77
Mean family composition change				0.52*	(0.29)	1.69
Interaction terms for entry trigger events and usual circumstances						
(Employment change)x(Mean employment change)	-1.73***	(0.55)	0.18	-1.77***	(0.62)	0.17
(Income change within family)x(Mean income change)	0.06	(0.24)	1.06	0.61**	(0.27)	1.84
(Income change within family)x(Mean family income)	0.00	(0.00)	1.00	0.00*	(0.00)	1.00
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00
(Marital status change)x(Average number marriages)	0.97***	(0.34)	2.63	1.25***	(0.36)	3.49
(Family composition change)x(Mean family composition change)	-0.68	(0.47)	0.51	-0.25	(0.51)	0.78
State and Regional Measures						
State unemployment rate (time-varying)	0.17***	(0.03)	1.18	0.16***	(0.03)	1.17
Hourly wage rate statistics (time-varying)						
Mean hourly wage	-0.53***	(0.20)	0.59	-0.54***	(0.20)	0.58
Standard Deviation	0.23***	(0.08)	1.26	0.24***	(0.08)	1.27
20 th Percentile	0.32***	(0.09)	1.38	0.32***	(0.09)	1.38
40 th Percentile	0.02	(0.08)	1.02	0.02	(0.08)	1.02
50 th Percentile	0.05	(0.08)	1.05	0.05	(0.08)	1.05
60 th Percentile	0.01	(0.07)	1.01	0.02	(0.07)	1.02
80 th Percentile	0.03	(0.04)	1.03	0.04	(0.04)	1.04

Table III.3a (continued)

Explanatory Variables	Model A (12-Month Window)			Model B (Variable Month Window)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Region of Residence ("Western" Region is omitted): (time-varying)						
Northeast	0.00	(0.13)	1.00	-0.05	(0.13)	0.95
Mid-Atlantic	0.20*	(0.12)	1.23	0.13	(0.12)	1.14
Midwest	0.11	(0.11)	1.11	0.10	(0.11)	1.11
Southeast	-0.17	(0.11)	0.84	-0.19*	(0.11)	0.82
Southwest	-0.21*	(0.12)	0.81	-0.22*	(0.12)	0.81
Mountain Plains	0.07	(0.13)	1.07	0.03	(0.13)	1.03
Policy Variables						
Vehicle Exclusion	-0.17**	(0.07)	0.84	-0.18**	(0.07)	0.84
Certification Period: Earners (avg mos.)	0.03	(0.04)	1.03	0.04	(0.04)	1.04
Certification Period: Single-mothers (avg mos.)	-0.03	(0.05)	0.97	-0.04	(0.05)	0.96
Simplified Reporting	0.55***	(0.12)	1.73	0.56***	(0.12)	1.75
Status Reporting	0.31**	(0.12)	1.37	0.33***	(0.12)	1.38
(Simplified Reporting)x(Status Reporting)	-0.39***	(0.14)	0.67	-0.42***	(0.14)	0.66
EBT	-0.05	(0.11)	0.95	-0.05	(0.11)	0.95
-2*Log Likelihood		21565.191			21335.9	
Number of Spell-Month Observations		740789			740789	

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel.

Note: Model A is the model with entry trigger event variables and entry-related usual circumstance variables (12-month)

Note: Model B is the model with entry trigger event variables and entry-related usual circumstance variables (varying-length)

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

Table III.3a also contains the odds ratios for most of the parameter estimates in the table. For estimates of coefficients of indicator variables, the odds ratio reflects the likelihood that an event occurs for one group relative to the likelihood that it occurs for another group. For variables in the FSP entry model, the odds ratio reflects the likelihood that individuals in that group enter the FSP relative to the likelihood for individuals in the excluded category. The interpretation of the odds ratio is slightly different for odds ratios based on estimates of coefficients of variables other than indicator variables. For example, if the odds ratio associated

with the estimate on the discrete variable “number of children in the family under the age of 6” is equal to 1.39, then the odds of entering the FSP are increased by 39 percent ($=1.39-1.00$) for each additional child in the family under the age of 6.⁵⁴

Economic Circumstances

The employment status of an individual is a significant determinant of the likelihood of entering the FSP. Consistent with the findings of Gleason et al. (1998), those who are working in the month before the nonparticipation spell begins are less likely to enter the FSP than individuals who are not working.⁵⁵ While we expect the duration of not working to be positively related to the likelihood that the individual enters the FSP, the coefficients of these duration variables are not statistically significant.

Family income is a significant determinant of FSP entry rates, even after controlling for employment status. The statistically significant estimates on the three poverty ratio variables in column (A) of Table III.3a indicate that the greater the individual’s family income, the less likely the individual is to enter the FSP. In terms of odds ratios, the odds of entering the FSP are reduced by 19 percent, 39 percent, and 61 percent for individuals with family incomes between 1 and 1.5 times the poverty line, between 1.5 and 2 times the poverty line, and greater than 2 times the poverty line, respectively.⁵⁶

⁵⁴ The odds ratio is computed as e^b where b is the coefficient from the logit model. For variables that have been interacted with other variables, odds ratios cannot be constructed simply by exponentiating the parameter coefficient. We discuss this in detail when we interpret the estimates of the coefficients of the entry triggers and usual circumstance variables.

⁵⁵ Month 17 is the first month of the panel in which we choose to observe whether an individual enters the FSP. For individuals with non-left-censored nonparticipation spells who are not in the FSP in month 17, the employment status is evaluated at the start of the nonparticipation spell. For those individuals with left-censored nonparticipation spells, the employment status is evaluated in month 1 of the panel.

⁵⁶ When the odds ratio is less than 1, we subtract it from 1 to obtain the percent decrease in the odds of entering the program.

The probability of entering the FSP in a given month is positively related to the state unemployment rate and negatively related to the state's mean wage, even after controlling for individual characteristics. The odds of entering the FSP are increased by 18 percent for each percentage point increase in the state unemployment rate. In terms of nominal wages, the odds of entering the FSP are reduced by 41 percent for each one-dollar increase in a state's mean wage. More favorable state labor market conditions—in terms of lower unemployment and higher mean wages—are associated with increased self-sufficiency among individuals and a lower likelihood of FSP entry.⁵⁷

The positive and significant coefficient on the variable “previously received TANF” and the positive coefficient on the variable “currently receives TANF” in Model A (Table III.3a) show that individuals with family members who have received or currently receive TANF are more likely to enter the FSP. We note that while the estimate on the variable “currently receives TANF” is not statistically significant in Model A, it is statistically significant and similar in magnitude in Model B. Furthermore, our sample consists of individuals who are currently not participating in the FSP. The majority of TANF recipients in the broader SIPP sample also receives Food Stamp benefits and is excluded from our analysis sample. Thus, TANF recipients in our sample are a special subsample of the more general population of TANF recipients.

Gleason et al. (1998) and Fraker and Moffitt (1988) found a similar association between these variables and the probability of FSP entry, even after controlling for family income, and they suggest TANF receipt may be a proxy for (1) unobserved economic factors such as having low asset balances or high expenses, (2) individuals' attitudes toward receiving government

⁵⁷ The probability of entering the FSP in a given month is also positively related to the spread of the wage distribution. The odds of entering the FSP are increased by 26 percent for each one-dollar increase in the standard deviation of the wage distribution. One possible explanation is that states with more dispersed wage distributions can have more lower-wage jobs than those with wage distributions that are compressed about their means. Low-wage workers may use the FSP as a supplement to their labor income.

assistance, or (3) individuals' low costs of participating in multiple government assistance programs. While these remain possible explanations for the observed association, it is important to note that FSP participants in the 2001 panel are much less likely to receive TANF benefits than they were to receive Aid to Families with Dependent Children (AFDC) in the 1990-1991 SIPP panels. We will discuss this further when we present the results from the duration analysis.

We use Table III.3b to interpret the parameter estimates of the coefficients on the trigger event and usual circumstance variables from Table III.3a. Specifically, we measure the effect of experiencing the trigger event (relative to not experiencing the event) on the likelihood of entry into the FSP, conditional on a high, medium, or low value of the usual circumstance variable.⁵⁸ We can also compare these odds ratio estimates across values of usual circumstance variables to determine whether a deviation from an individual's usual circumstances is an important consideration when analyzing the effect of trigger events on entry.

Each row in Table III.3b corresponds to a different usual circumstance variable. The columns correspond to the odds ratio conditional on the high, medium, and low values of the usual circumstance variable (measured at the 75th, 50th, and 25th percentiles each variable's sample distribution). For example, the odds ratio 1.96 in the first row and first column suggests that individuals with high employment volatility over the first year who experience a job loss are 1.96 times more likely to enter the FSP than individuals who remain employed. Individuals with

⁵⁸ The odds ratio is derived by exponentiating the difference between two estimates. The first is the log odds ratio for individuals who experience the trigger event (such as job loss), evaluated at a given value of the usual circumstance variable associated with the trigger event. The second is the log odds ratio for individuals who do not experience the trigger event, evaluated at the same value of the usual circumstance variable associated with the trigger event. For example, letting x represent the variable "employment entry trigger event" and y represent the variable "frequency of change in employment status over past year", the odds ratio is $\exp(g(x=1,y) - g(x=0,y)) = \exp(0.8174 + (-1.733)*y)$, where 0.8174 and -1.733 are the estimates of the entry employment trigger event variable and the associated interaction term from Table III.3a, y is the high, medium, or low value of the usual circumstance variable, and $g(x,y)$ is the logit evaluated at x and y .

TABLE III.3b

FSP ENTRY HAZARD MODEL:
CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS TO DETERMINE
WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES AFFECT ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Fixed Window)			
Employment Chg.	1.96 [†]	2.26 [†]	2.26 [†]
Income (frequency)	0.96	0.95	0.94
Income (mean)	0.98	0.96	0.94
Income (variance)	0.93	0.93	0.93
Marital Status Chg	1.17	1.17	0.85
Family Composition Chg	1.90 [†]	2.01 [†]	2.01 [†]

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, conditional on having low employment volatility, individuals who experience a job loss are 2.26 times more likely to enter the FSP than individuals who keep their jobs. Conditional on high employment volatility, individuals who experience a job loss are 1.96 times more likely to enter the program than individuals who keep their jobs. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, conditional on low mean income, those individuals who experience a decrease in income have their odds of entering the program reduced by 6 percent $(=(1.00-0.94)*100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel.

low employment volatility who experience a job loss are 2.26 times more likely to enter than individuals who remain employed. This suggests that whether the employment trigger event reflects a deviation from one's usual circumstance is important when analyzing its association with entry. The lower bounds of the 95 percent confidence interval (not shown in table) of both estimates are greater than 1.00, indicating that the employment trigger event variable,

conditional on a value of the usual circumstance variable, has a statistically significant positive association with entry.

In their analysis of the association between income volatility and FSP participation using a sample of Food Stamp eligible households with low mean income over the year prior to entry, Farrell et al. (2003) find that households that do not participate in the FSP experience substantially more variability in their monthly income and earnings than participant households. Interestingly, we did not find a significant association between instability of income in the period preceding entry and the likelihood of entering the program. It is possible that this lack of association in our model is attributed to having a more general sample than that used in Farrell et al. (2003). While their sample consists of those individuals who meet FSP eligibility rules in the 12th month or the 36th month of the SIPP panel, we make no restrictions as to whether an individual's household satisfies certain eligibility criteria at a point in time. We do not make too much light of this result, however, as our model specifications differ greatly as well.

Family Structure

The descriptive statistics in Section III.3.a of this chapter showed that married individuals have lower entry rates than single individuals. After controlling for all other covariates in our analysis, we still find that being married decreases the likelihood of entering the FSP (see Table III.3a). Family composition is important as well. In particular, the greater the number of children under the age of six in the family, the greater is the likelihood of FSP entry.⁵⁹ The relationship is similar for the number of children between 6 and 17 years old, but the magnitude of the coefficient is slightly smaller. Translating all of these estimates into odds ratios, we find

⁵⁹ In alternate specifications of the main entry model, the coefficient on the number of adults in the family was statistically significant and positive, even after controlling for whether an individual was currently married.

that the odds of entering the FSP are reduced by 29 percent (1-0.71) if an individual is currently married, are increased by 39 percent for each additional child under the age of six, and are increased by 8 percent for each additional child between 6 and 17 years old.

We find that changes in family composition are also associated with a greater likelihood of FSP entry. Among individuals with a low or medium amount of changes in family composition over the previous year, individuals who experienced a change in family composition in the previous four months are 2.01 times more likely to enter the program in the current month than individuals whose family composition remained the same.

Demographic Characteristics

The estimated effects of the demographic characteristics in the multivariate analysis support the results of the descriptive analysis of Chapter II. The odds of entering the FSP are reduced by 17 percent for males compared to females. Compared to Hispanics, white non-Hispanic individuals are less likely to enter the FSP, while black non-Hispanic individuals are over 2 times likely to enter. Older individuals are much less likely to enter the FSP than younger individuals. Compared with the odds of individuals between the ages of 18 and 29 entering the FSP, the odds of individuals age 30 to 49, age 50 to 64, and age 65 and older entering the FSP are reduced by 12 percent, 44 percent, and 75 percent, respectively. Finally, even after controlling for family income relative to the poverty line, an individual's education level negatively affects the likelihood of entering the FSP.

Policy-Related Variables

The policy variables "simplified reporting" and "status reporting," and the interaction term between these variables have statistically significant coefficients. We find that the odds of entering the FSP increase by 73 percent, 37 percent, and 60 percent in states with simplified

reporting only, status reporting only, and both simplified and status reporting, respectively. Intuitively, these results agree with expectations, since having either simplified or status reporting decreases the costs associated with remaining on the program. Given the high rate of FSP recidivism described in Chapter II, these estimates might be driven by the presence of individuals who have previously participated in the program and have experienced the benefit of these policies first-hand.

State vehicle policies have a statistically significant negative impact on FSP entry. Our estimates suggest individuals living in states that exempt at least one vehicle from the asset limit are less likely to enter the FSP. Intuitively, we expect the opposite to be true. We believe that this policy variable is capturing some other unobserved characteristic generated by differences in asset limits at the state level. A negative estimate may also reflect the lack of knowledge of eligibility rules among a sizable amount of individuals who, while eligible, are unaware of their eligibility and do not inquire about receiving benefits.

b. Family Subgroup Analyses

We re-estimate the model for five mutually exclusive family subgroups (Table III.4a): (1) families with elderly and disabled individuals without children, (2) families with children and one adult, (3) families with children and multiple nonmarried adults, (4) families with children and married adult heads, (5) families without children and no elderly or disabled individuals. We estimate the model for each of these subgroups separately because the relationship between economic conditions, policies, and FSP entry could be different for the five

TABLE III.4A

FSP ENTRY MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES ON PROBABILITY OF ENTERING THE FSP BY CHARACTERISTICS

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics															
Gender (female category is omitted):															
Male	-0.13	(0.11)	0.87	-0.79***	(0.26)	0.46	-1.03***	(0.18)	0.36	0.09	(0.09)	1.10	-0.04	(0.11)	0.96
Race (Hispanic category is omitted):															
White, non-Hispanic	-0.95***	(0.19)	0.39	-0.06	(0.24)	0.95	-0.33	(0.26)	0.72	0.08	(0.14)	1.08	0.15	(0.22)	1.16
Black, non-Hispanic	-0.15	(0.19)	0.86	0.58**	(0.25)	1.78	0.46**	(0.22)	1.58	0.80***	(0.17)	2.22	1.19***	(0.24)	3.27
Other	0.11	(0.28)	1.12	-0.03	(0.45)	0.97	0.56*	(0.33)	1.76	0.16	(0.20)	1.17	-0.43	(0.43)	0.65
Age (18-to-29-years-old category is omitted):															
30-49	0.46**	(0.22)	1.59	-0.30*	(0.18)	0.74	-0.13	(0.19)	0.88	-0.34***	(0.11)	0.71	-0.22	(0.14)	0.81
50-64	-0.23	(0.26)	0.80	-0.20	(0.34)	0.82	-0.66**	(0.30)	0.51	-0.46**	(0.18)	0.63	-0.74***	(0.18)	0.48
65 and older	-1.06***	(0.28)	0.35	-2.37**	(1.06)	0.09	-1.13***	(0.38)	0.32	-1.04***	(0.32)	0.35			
US citizen	-0.03	(0.21)	0.97	-0.13	(0.25)	0.88	0.42	(0.26)	1.52	0.23*	(0.13)	1.25	-0.11	(0.20)	0.9
Education Levels and Employment Status															
Highest grade completed (0-to-8 category is omitted):															
9-11	-0.06	(0.16)	0.94	-0.20	(0.36)	0.82	0.82***	(0.31)	2.28	0.16	(0.16)	1.18	0.51	(0.32)	1.67
12	-0.56***	(0.16)	0.57	-0.36	(0.34)	0.69	0.33	(0.30)	1.39	-0.22	(0.14)	0.80	0.31	(0.30)	1.37
13 and above	-0.62***	(0.17)	0.54	-0.56	(0.35)	0.57	-0.12	(0.32)	0.89	-0.75***	(0.16)	0.47	-0.43	(0.31)	0.65
Employment status ("haven't worked 12+ months" category is omitted):															
Currently Employed	-0.18	(0.15)	0.84	-0.55***	(0.21)	0.57	-0.45**	(0.18)	0.64	-0.29***	(0.11)	0.75	-0.14	(0.17)	0.87
Haven't worked 1-5 months	0.16	(0.23)	1.18	-0.72**	(0.32)	0.49	0.20	(0.29)	1.22	0.01	(0.17)	1.01	-0.38	(0.26)	0.69
Haven't worked 6-11 months	0.26	(0.26)	1.30	-0.03	(0.27)	0.97	0.02	(0.30)	1.02	0.44**	(0.18)	1.56	0.08	(0.27)	1.09

Table III.4a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Family Income and Welfare Receipt															
Ratio of family income to poverty level (less than 1.0 category is omitted):															
1.0-1.5	-0.41***	(0.15)	0.66	0.17	(0.18)	1.19	-0.32	(0.21)	0.73	-0.18	(0.12)	0.84	-0.25	(0.19)	0.78
1.5-2.0	-0.79***	(0.19)	0.46	-0.49	(0.30)	0.62	-0.61**	(0.26)	0.54	-0.20	(0.13)	0.82	-0.65***	(0.21)	0.52
2.0 and above	-1.06***	(0.18)	0.35	-0.42	(0.30)	0.66	-0.07	(0.22)	0.93	-1.09***	(0.14)	0.34	-0.94***	(0.17)	0.39
Currently receiving TANF	0.74	(1.04)	2.09	0.25	(1.05)	1.28	0.10	(0.61)	1.10	0.17	(0.43)	1.18	1.89**	(0.77)	6.6
Previously received TANF	1.29	(1.10)	3.63	0.78	(1.07)	2.17	0.66	(0.63)	1.93	0.25	(0.47)	1.28	0.23	(0.97)	1.26
Family Composition															
Family Size:															
Number of adults	0.01	(0.08)	1.01		(0.00)	1.00	0.23***	(0.09)	1.26	0.10	(0.06)	1.11	-0.14	(0.09)	0.87
Number of children less than age 6		(0.00)	1.00	0.26**	(0.10)	1.30	0.21**	(0.09)	1.24	0.33***	(0.05)	1.39			
Number of children between ages 6 and 18		(0.00)	1.00	0.22***	(0.08)	1.25	0.13**	(0.06)	1.14	0.08**	(0.04)	1.08			
Marital Status (never-married category is omitted):															
Currently married	-0.85***	(0.14)	0.43	-12.15	(533.69)	0.00	-1.00**	(0.44)	0.37	-0.44	(0.26)	0.65	-0.16	(0.17)	0.85
Previously married	0.15	(0.19)	1.17	-0.31	(0.23)	0.74	0.08	(0.22)	1.08	1.04***	(0.31)	2.84	0.41**	(0.18)	1.51
Entry Trigger Events:															
Employment change within family	0.79***	(0.27)	2.21	1.20***	(0.28)	3.31	0.33	(0.29)	1.39	0.78***	(0.16)	2.18	1.04***	(0.20)	2.82
Income change within family	-0.35	(0.23)	0.71	0.23	(0.33)	1.25	-0.32	(0.39)	0.72	0.71***	(0.27)	2.03	-0.58**	(0.28)	0.56
Marital status change within family	0.95	(1.07)	2.60	-11.34	(1231.02)	0.00	-11.54	(1060.98)	0.00	0.50	(1.09)	1.65	-10.55	(592.27)	0
Family composition change	0.61*	(0.35)	1.84	0.00	(0.37)	1.00	0.98***	(0.32)	2.68	0.48**	(0.22)	1.62	1.12***	(0.21)	3.07
Entry Usual Circumstances: (measured over a fixed 12-month window)															
Mean employment change within family	1.05	(0.95)	2.86	1.96**	(0.95)	7.08	-0.63	(0.89)	0.53	0.88*	(0.51)	2.41	2.80***	(0.71)	16.4
Mean income change within family	0.09	(0.46)	1.10	1.15*	(0.60)	3.17	0.16	(0.64)	1.17	0.80**	(0.40)	2.22	-0.53	(0.52)	0.59
Mean family income	-0.32***	(0.10)	0.73	-0.71***	(0.20)	0.49	-0.27***	(0.10)	0.76	-0.11***	(0.00)	0.90	-0.38***	(0.00)	0.68
Variance in family income	-0.02	(0.00)	0.98	-0.24	(0.00)	0.79	0.22**	(0.00)	1.25	-0.02	(0.00)	0.98	2E-09	(0.00)	1.00
Average number of marriages in family to date	0.24***	(0.09)	1.27	-0.06	(0.16)	0.94	0.14	(0.17)	1.15	0.31***	(0.09)	1.36	0.07	(0.10)	1.07
Mean family composition change	2.73***	(0.70)	15.30	1.58**	(0.71)	4.83	1.47**	(0.63)	4.34	1.71***	(0.38)	5.52	1.82***	(0.58)	6.15

Table III.4a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Entry Usual Circumstances: (measured over a varying-length window)															
Mean employment change within family	-2.62	(1.83)	0.07	-5.25***	(2.04)	0.01	0.62	(1.39)	1.87	-1.10	(0.82)	0.33	-2.98**	(1.18)	0.05
Mean income change within family	-0.27	(0.56)	0.76	-0.43	(0.70)	0.65	0.45	(0.75)	1.57	-0.63	(0.46)	0.53	0.81	(0.61)	2.24
Mean family income	0.26***	(0.00)	1.29	0.04	(0.00)	1.04	0.12	(0.00)	1.13	-0.16***	(0.00)	0.85	0.18**	(0.00)	1.19
Variance in family income	-1.37**	(0.00)	0.25	0.41	(0.00)	1.51	-0.22	(0.00)	0.80	0.09	(0.00)	1.09	0.01	(0.00)	1.01
Mean marital status change	1.17***	(0.43)	3.22	-0.50	(807.95)	0.60	0.40	(1063.92)	1.50	0.04	(0.78)	1.04	-0.06	(463.88)	0.94
Average number of marriages in family to date	-0.73	(1.80)	0.48	-0.63	(1.79)	0.54	-1.22	(1.16)	0.30	0.09	(0.79)	1.09	-0.22	(0.96)	0.8
Mean family composition change															
Interaction terms for entry trigger events and usual circumstances															
(Employment change)x(Mean employment change)															
(Income change within family)x(Mean income change)															
(Income change within family)x(Mean family income)															
(Income change within family)x(Variance family income)															
(Marital status change)x(Average number marriages)															
(Family composition change)x(Mean family composition change)															
Hourly wage rate statistics (time-varying)															
Mean hourly wage rate	-0.91**	(0.44)	0.40	-1.20**	(0.55)	0.30	0.50	(0.58)	1.65	-0.35	(0.33)	0.70	-0.56	(0.44)	0.57
Standard Deviation	0.37**	(0.18)	1.44	0.58***	(0.22)	1.79	-0.27	(0.23)	0.77	0.19	(0.13)	1.21	0.23	(0.18)	1.26
20 th Percentile	0.20	(0.20)	1.22	0.77***	(0.26)	2.16	0.07	(0.27)	1.07	0.22	(0.16)	1.24	0.42**	(0.21)	1.52
40 th Percentile	0.22	(0.19)	1.24	0.34	(0.24)	1.41	-0.31	(0.24)	0.73	-0.15	(0.14)	0.86	0.10	(0.19)	1.11
50 th Percentile	0.20	(0.19)	1.22	-0.07	(0.24)	0.94	0.29	(0.24)	1.33	0.08	(0.14)	1.08	-0.21	(0.18)	0.81
60 th Percentile	-0.09	(0.15)	0.91	-0.01	(0.19)	0.99	-0.35*	(0.20)	0.70	0.08	(0.12)	1.09	0.20	(0.15)	1.22
80 th Percentile	0.12	(0.09)	1.13	0.13	(0.12)	1.14	0.00	(0.12)	1.00	-0.03	(0.07)	0.97	0.00	(0.09)	1

Table III.4a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Region of Residence ("Western" Region is omitted): (time-varying)															
Northeast	0.47	(0.30)	1.60	-0.08	(0.38)	0.92	0.80*	(0.42)	2.23	-0.21	(0.23)	0.81	-0.76***	(0.31)	0.47
Mid-Atlantic	0.56**	(0.27)	1.75	-0.02	(0.37)	0.98	0.78*	(0.40)	2.18	0.03	(0.21)	1.03	0.13	(0.26)	1.14
Midwest	0.90***	(0.26)	2.46	-0.15	(0.31)	0.86	0.76*	(0.39)	2.14	-0.12	(0.20)	0.89	-0.37	(0.25)	0.69
Southeast	-0.06	(0.25)	0.94	-0.27	(0.29)	0.76	1.09***	(0.41)	2.96	-0.16	(0.18)	0.85	-0.75***	(0.23)	0.47
Southwest	-0.08	(0.28)	0.92	0.03	(0.34)	1.04	0.64	(0.46)	1.91	-0.24	(0.21)	0.78	-0.64**	(0.27)	0.53
Mountain Plains	0.03	(0.33)	1.03	0.28	(0.37)	1.32	1.05**	(0.50)	2.86	-0.15	(0.22)	0.86	-0.16	(0.26)	0.85
Policy Variables															
Vehicle Exclusion	-0.26	(0.16)	0.77	0.23	(0.21)	1.25	-0.21	(0.24)	0.81	-0.08	(0.13)	0.92	-0.25	(0.16)	0.78
Certification Period: Earners (avg mos.)	0.19**	(0.09)	1.21	0.02	(0.12)	1.02	-0.11	(0.12)	0.90	-0.03	(0.07)	0.97	0.06	(0.09)	1.07
Certification Period: Single-mothers (avg mos.)	-0.23**	(0.10)	0.79	0.01	(0.14)	1.01	0.03	(0.15)	1.03	0.05	(0.08)	1.05	-0.03	(0.10)	0.97
Simplified Reporting	0.51*	(0.27)	1.66	-0.22	(0.36)	0.80	-0.46	(0.39)	0.63	0.78***	(0.22)	2.19	1.20***	(0.28)	3.33
Status Reporting	0.49*	(0.28)	1.63	0.19	(0.33)	1.21	-0.83*	(0.43)	0.44	0.32	(0.22)	1.38	0.69**	(0.28)	1.99
(Simplified Reporting) \times (Status Reporting)	-0.52*	(0.31)	0.60	0.03	(0.39)	1.03	1.05**	(0.46)	2.86	-0.59**	(0.25)	0.55	-0.83***	(0.32)	0.44
EBT	-0.02	(0.24)	0.98	0.17	(0.32)	1.18	0.27	(0.39)	1.31	-0.19	(0.18)	0.83	-0.03	(0.22)	0.97
-2*Log Likelihood		4689.632			2261.6			2262.8			7303.2			4420.363	
Number of Spell-Month Observations		219539			28546			25224			235520			231960	

Universe: Family subgroups of original sample, ages 18 and older, who remain in the SIPP universe throughout the panel.

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

populations. The subgroups are defined by family composition at the beginning of the nonparticipation spell that precede FSP entry.^{60 61}

There are several notable differences between individuals in single-adult families with children and individuals in the full sample. First, while the odds of entering the FSP in the full sample are reduced by 17 percent if an individual is male, single fathers are 54 percent less likely to participate than single mothers. Second, we find that while being employed (relative to not working for 12 or more months) reduces the odds of entering the FSP, being unemployed for the last one to five months also makes entry into the FSP less likely. Thus, close ties to the labor market are an important determinant for entry in the FSP. Third, as shown in Table III.4b, we find that individuals in single-adult families with children who experience a job loss are 3.30 times more likely to enter the FSP than those who remain employed (conditional on the median employment volatility in the past year for this subgroup). Individuals in the full sample who lose their jobs are 2.26 times more likely to enter. The greater likelihood of FSP entry for individuals in single-adult families with children following a job loss may be due to the lack of other income earners in the family who are able to smooth out employment-related income shocks over time.

The married individuals in families with children subgroup differs from the full sample and from other family subgroups most evidently in how they respond to changes in income. For individuals in these families with stable family income over the past year, the odds of entering the FSP are increased by 65 percent for individuals who experience a decrease in income relative

⁶⁰ We also re-estimate each family subgroup model allowing for time-varying family composition variables. There are marginal changes to parameter estimates.

⁶¹ The models include usual circumstance variables defined over a fixed window and are analogous to Model (A) in Table III.3A.

TABLE III.4b

FSP ENTRY HAZARD MODEL (FAMILY SUBGROUPS): CONVERSION OF PARAMETER ESTIMATES INTO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES AFFECT ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Single Adult Heads with Children)			
Employment Chg.	2.14 [†]	3.30 [†]	3.30 [†]
Income (frequency)	0.94	1.03	1.13
Income (mean)	1.43	1.37	1.32
Income (variance)	1.30	1.27	1.26
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	0.90	1.00	1.00
Main Model Specification (Multiple Nonmarried Adult Heads with Children)			
Employment Chg.	1.54 [†]	1.46	1.39
Income (frequency)	0.98	0.91	0.84
Income (mean)	1.35	1.09	0.91
Income (variance)	0.69	0.72	0.72
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	1.96 [†]	2.41 [†]	2.66 [†]
Main Model Specification (Married Adult Heads with Children)			
Employment Chg.	1.99 [†]	2.18 [†]	2.18 [†]
Income (frequency)	1.34	1.48 [†]	1.65 [†]
Income (mean)	0.60	0.89	1.21
Income (variance)	2.09 [†]	2.05 [†]	2.04 [†]
Marital Status Chg	1.72	1.72	1.71
Family Composition Chg	1.64 [†]	1.63 [†]	1.62 [†]
Main Model Specification (Elderly or Disabled without Children)			
Employment Chg.	1.77 [†]	2.20 [†]	2.20 [†]
Income (frequency)	0.59	0.63	0.66
Income (mean)	3.79 [†]	2.12 [†]	1.36
Income (variance)	0.46	0.64	0.69
Marital Status Chg	26.84 [†]	12.30 [†]	8.33 [†]
Family Composition Chg	1.73 [†]	1.84	1.84

Table III.4b (continued)

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Non-Elderly and Non-Disabled without Children)			
Employment Chg.	2.21 [†]	2.82 [†]	2.82 [†]
Income (frequency)	0.96	0.84	0.73
Income (mean)	1.83	1.18	0.86
Income (variance)	0.56	0.56	0.56
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	3.01 [†]	3.06 [†]	3.06 [†]

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table present estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, for married adult heads with children, conditional on having low employment volatility, individuals who experience a job loss are 2.18 times more likely to enter the FSP than individuals who keep their jobs. Conditional on high employment volatility, individuals who experience a job loss are 1.99 times more likely to enter the program than individuals who keep their jobs. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, for married adult heads with children, conditional on high mean income, those individuals who experience a decrease in income have their odds of entering the program reduced by 40 percent $(=(1.00-0.60)*100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Main Model A is the empirical model used in the estimations. This model has entry trigger event variables and entry-related usual circumstance variables (12-month).

Universe: Family subgroups of original sample, ages 18 and older, who remain in the SIPP universe throughout the panel.

Individuals in childless families containing an elderly or disabled individual differ from the full sample because of their low likelihood of working. Unlike the full sample, the probability of entry for this group is not affected by current employment status.

Compared with individuals in all other family subgroups as well as in the full sample, family size is a more important determinant of FSP entry for individuals in families with multiple non-married heads with children. For these individuals, the probability of entering the FSP is increased by 26 percent for each additional adult in the family.

C. DETERMINANTS OF THE DURATION OF FSP PARTICIPATION SPELLS

1. Sample

For the analysis of the duration of participation spells the sample includes all individuals who are at least 18 years old and who entered the FSP on or after month 17 of the 2001 SIPP panel.^{62,63} The dependent variable in all estimations is a binary variable equal to 0 in each month an individual received food stamp benefits and equal to 1 in the month that an individual exited the program (if that event occurred). We estimate the model using the full sample and the five mutually exclusive family subgroups used in the entry analysis. These are defined by the composition of individuals' families at the start of their participation spells. Our motivation is that characteristics that differ across family subgroups are likely not only to affect FSP entry decisions, but exit decisions as well. For example, employment decisions should differ

⁶² Individuals could have participated in the program previously, but they had to have a non-left-censored FSP participation spell at some point in the panel after the 17th month in order to be included in the sample.

⁶³ The main specification of our duration model uses the sample that begins in month 17 of the panel, although we perform sensitivity analyses using samples that begin in month 13 and in month 6. Using the month 17 sample allows us to create variables that measure an individual's usual circumstances over 12 months, whereas the month 13 sample allows for a smaller 8-month window from which to create these variables. The month 6 sample provides the benefit of increasing the sample size dramatically (the longer the observation period, the greater the probability of observing entry into the FSP) at the cost of not being able to control for an individual's usual circumstances when measuring the effect of entry trigger events on FSP exit decisions. In all three samples, events that trigger entry into the FSP are measured over the 4-month period prior to entry.

depending on whether an individual has children or whether there is more than one adult capable of working in the family. The results presented below show that the factors associated with the length of FSP participation spells differ across many of these subgroups.⁶⁴ For example, a more favorable labor market is more likely to shorten the length of FSP participation for individuals in families made up of nonelderly and nondisabled individuals without children than for married individuals in families with children.

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

2. Explanatory Variables

The set of explanatory variables used in the multivariate duration models is similar to the set used in the entry models. We use similar measures of demographic characteristics, education level, employment, etc. However, there are five key differences between the explanatory variables from the duration models and those used in the entry models:

1. The duration model incorporates variables that measure spell length. Specifically, we test for duration dependence by including five binary variables indicating whether an individual has received food stamp benefits for 1 to 4 months, 5 to 8 months, 9 to 12 months, 13 to 16 months, and more than 16 months.⁶⁵ We also include a binary variable that indicates whether an individual is in his or her first participation spell.⁶⁶
2. All variables that are held constant over the nonparticipation spells in the entry analysis—such as education, employment, family income to poverty ratio, and family

⁶⁴ We perform various chi-squared likelihood ratio tests to test the null hypothesis that the parameters in the models are the same for each family subgroup. We reject the null hypothesis at the 0.01 percent significance level when the parameters in all five subgroups are compared.

⁶⁵ We include only one duration dependence term for spells that last more than 16 months to avoid the sample selection problem that exists when the dependent variable rarely takes the value of 1 in a certain subsample. 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.

⁶⁶ This variable was created using the SIPP wave 1 food stamp benefit reciprocity history.

composition—are now held constant over the participation spells; however, these variables are now measured at the beginning of the FSP participation spell.

3. The exit model uses a different definition of “not working.” SIPP respondents who answer that they did not work in a given month report whether they actively searched for a job. If they did, then they are in the labor force and are unemployed. If they did not actively search for a job, then they are considered out of the labor force. Estimates from many empirical models of labor force dynamics show that among nonworking individuals, those who are unemployed are much more likely to return to work than those who are out of the labor force (Flinn and Heckman 1983; Shelly 1985). Because the proportion of nonworking individuals who are unemployed is almost 4 times greater in the duration sample than in the entry sample, we felt it was important to differentiate between these two types of responses in the duration analysis.
4. Exit trigger event variables are included in the duration model. Exit trigger event variables differ from entry trigger event variables in the direction in which changes are measured. For example, an employment trigger event variable for FSP entry indicates whether an individual lost a job whereas, for exit, it indicates whether an individual became employed.
5. Several specifications of the duration model include exit trigger events in addition to entry trigger events. These two types of events are measured differently:
 - a. All **entry** trigger variables are measured over the four-month period prior to entry. The usual circumstance variables associated with entry triggers are measured over a fixed 12-month period prior to the 4-month entry trigger window. For example, consider an individual who has a 10-month participation spell that begins in month 21 of the SIPP panel and ends in month 30 of the SIPP panel. In this case the entry triggers are measured over months 17 to 20 and the entry usual circumstance variables are measured over months 5 to 16.
 - b. To avoid having exit triggers occur prior to the start of the FSP spell, **exit** trigger variables are measured over the previous 4 months or the length of the participation spell, whichever is shorter. Usual circumstances for exit triggers are defined twice using two windows. The first is a fixed 12-month window and the second is a variable window that is the shorter of 12 months or the length of the participation spell. For example, consider an individual who has a 10-month participation spell that begins in month 21 of the SIPP panel and ends in month 30 of the SIPP panel. In this case the exit triggers are measured over months 26 to 29 and the exit usual circumstance variables are measured over months 14 to 25 in the fixed-window case and over months 21 to 25 in the variable window case. We have constructed the following set of examples to aid the reader in understanding how these variables were constructed.

Six Examples of the Lengths of Exit Trigger Event and Usual Circumstance Windows

Individual	Length of Entry window	Length of Participation Spell	Length of Usual-Circumstance Period for Exit Trigger	Length of Exit Trigger Window
A	4	10	5	4
B	4	14	9	4
C	4	16	11	4
D	4	20	12	4
E	4	4	0	3
F	4	2	0	1

3. Descriptive Statistics for Explanatory Variables

This section describes the characteristics of individuals and their families who are receiving food stamp benefits using the FSP duration sample. Table III.5 presents exit rates and the mean values and relative frequencies of the explanatory variables for the full sample and for each family subgroup. Similar to the descriptive statistics in the entry analysis, these statistics are calculated using a data set that contains one observation for each spell month an individual spends in the sample.⁶⁷

⁶⁷ As in the entry analysis, all statistics are calculated using data that is weighted with the longitudinal panel weights. Additionally, estimates based on person-spell (and not person-month) data are labeled in the table. Note that the sample used to compute these statistics differs from the sample used to examine spell duration in Chapter II; this sample is limited to spells that started in or after Month 17 of the 2001 panel.

TABLE III.5

COMPOSITION OF THE MULTIVARIATE DURATION ANALYSIS SAMPLE, BY CHARACTERISTICS

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Individual Demographic Characteristics (Percentage)						
Male	37.6	46.4	12.5	18.7	45.3	47.8
Race						
White, non-Hispanic	48.1	50.2	47.9	20.5	51.6	60.1
Black, non-Hispanic	28.9	29.8	35.5	52.9	17.5	24.4
Hispanic	18.5	14.7	13.9	20.0	26.4	11.4
Other	4.6	5.3	2.7	6.6	4.5	4.1
18 to 29 years	37.2	14.4	48.0	54.8	40.3	40.9
30 to 49 years	41.3	27.2	47.1	35.5	50.0	44.6
50 to 64 years	13.5	29.2	4.9	6.5	8.0	14.5
65 and older	8.0	29.2	0.0	3.2	1.6	0.0
U.S. Citizen	88.1	92.4	92.0	89.1	81.8	89.3
Education Levels and Employment Status (Percentage)						
Highest Grade Completed						
8 or less	10.6	19.6	3.9	6.9	11.8	4.1
9 to 11	21.8	22.1	17.6	27.2	22.3	20.2
12	42.2	37.8	45.1	44.6	40.7	47.2
13 or greater	25.4	20.5	33.4	21.2	25.3	28.5
Employment Status						
Currently Working	44.0	18.7	55.8	42.3	50.3	59.9
Unemployed for 5 months or less	8.3	2.9	10.0	11.8	8.1	12.2
Unemployed for 6 to 11 months	1.9	0.8	1.6	1.9	1.4	4.6
Unemployed for 12 or more months	0.9	0.1	0.2	1.4	1.2	1.7
Out of the labor force for 5 months or less	9.3	9.2	9.4	8.6	10.2	8.2
Out of the labor force for 6 to 11 months	4.8	4.7	6.3	6.8	3.3	5.2
Out of the labor force for 12 or more months	30.8	63.6	16.6	27.2	25.5	8.1
Family Income and Welfare Receipt (Percentage)						
Ratio of Family Income to Poverty Level						
Less than 1.0	49.5	54.1	69.6	42.2	39.8	48.6
1.0 to 1.5	18.9	16.6	19.8	20.6	23.5	11.0
1.5 to 2.0	8.9	8.5	7.1	10.8	11.4	4.8
2.0 or more	22.7	20.9	3.5	26.4	25.3	35.5

Table III.5 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
TANF Receipt						
Currently	5.1	1.6	4.5	12.5	6.5	2.4
Previously	4.9	1.6	4.0	12.4	5.9	2.4
Never	94.9	98.4	95.5	87.5	93.5	97.6
Family Size and Marital Status						
Number of Adults	2.1	1.9	1.0	2.7	2.7	1.6
Number of Children						
Number of children less than age 6	0.5	0.0	0.8	0.6	1.0	0.0
Number of children ages 6 to 18	0.8	0.0	1.2	1.3	1.4	0.0
Marital Status (Percentage)						
Currently Married	37.4	21.8	0.0	2.9	87.7	25.4
Previously Married	29.5	50.3	46.1	34.5	3.2	30.2
Never Married	33.1	28.0	53.9	62.7	9.1	44.4
Entry Trigger Events						
Employment change within family	20.8	13.9	15.8	23.4	28.5	18.6
Income change within family	63.3	44.6	66.2	62.1	72.0	72.2
Marital Status change within family	0.4	1.3	0.1	0.6	0.0	0.3
Family Composition change	16.5	12.8	20.4	22.2	15.7	15.6
Entry Usual Circumstance Variables						
Mean employment change within family	0.1	0.1	0.1	0.1	0.1	0.1
Mean income change within family	0.5	0.3	0.5	0.5	0.5	0.5
Mean family income (dollars)	2180.43	1870.73	1304.28	2333.07	2891.30	1959.32
Variance in family income (\$1000)	2043.6	2059.2	731.7	3308.1	2232.0	1889.4
Average number of marriages in family to date	0.9	1.0	0.6	0.6	1.1	0.8
Mean family composition change	0.1	0.1	0.1	0.2	0.2	0.2
Exit Trigger Events						
Employment change within family	15.1	8.9	12.0	22.3	19.6	10.8
Income change within family	53.4	34.7	60.0	54.9	61.2	52.7
Marital Status change within family	3.6	0.0	11.1	1.0	0.6	8.9
Family Composition change	26.7	14.1	35.5	28.1	31.0	24.8

Table III.5 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Exit Usual Circumstance Variables (Fixed Window)						
Mean employment change within family	0.1	0.1	0.1	0.1	0.1	0.1
Mean income change within family	0.5	0.4	0.5	0.5	0.6	0.5
Mean family income (dollars)	2700.16	2367.75	1323.94	2724.48	3476.57	2572.42
Variance in family income (\$1000)	4110.4	1203.3	844.3	13420.8	3373.0	4638.0
Average number of marriages in family to date	0.9	1.1	0.7	0.5	1.0	0.8
Mean family composition change	0.1	0.1	0.1	0.2	0.2	0.2
Exit Usual Circumstance Variables (Varying Window)						
Mean employment change within family	0.0	0.0	0.1	0.0	0.0	0.0
Mean income change within family	0.1	0.1	0.2	0.1	0.2	0.1
Mean family income (dollars)	575.86	618.11	383.90	494.58	745.83	423.06
Variance in family income (\$1000)	104.3	143.0	114.4	105.8	124.5	27.8
Average number of marriages in family to date	0.3	0.4	0.3	0.1	0.3	0.2
Mean family composition change	0.0	0.0	0.0	0.0	0.0	0.0
State and Regional Measures						
State Labor Market Characteristics						
State Unemployment Rate	6.0	5.9	6.0	6.1	6.0	6.0
Mean Wage	15.81	15.73	15.81	16.09	15.82	15.66
Standard Deviation Wage	9.83	9.79	9.79	10.06	9.89	9.65
20th Percentile Wage	8.21	8.18	8.24	8.26	8.19	8.20
40th Percentile Wage	11.21	11.16	11.23	11.35	11.19	11.17
50th Percentile Wage	13.03	12.97	13.06	13.23	13.01	12.98
60th Percentile Wage	15.17	15.10	15.20	15.45	15.14	15.08
80th Percentile Wage	21.80	21.67	21.82	22.33	21.82	21.51
Region of Residence						
Northeast	8.6	8.6	6.0	13.9	9.0	6.2
MidAtlantic	9.6	9.5	11.4	9.2	8.9	9.9
Midwest	15.2	22.0	17.1	11.1	11.5	13.8
Southeast	25.9	25.3	29.0	26.8	23.0	28.8
Southwest	17.8	20.6	13.0	16.3	20.4	14.3
Mountain	7.1	4.8	7.7	6.9	8.3	7.6
West	15.7	9.1	15.8	15.9	18.8	19.4

Table III.5 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
FSP Policy Variables						
Vehicle (Percentage)	48.0	55.0	49.4	42.4	42.0	52.5
Certification Period: Earners (avg. mos.)	7.8	7.8	7.9	8.2	7.7	7.8
Certification Period: Single Mothers (avg. mos.)	8.0	7.9	8.1	8.3	7.9	8.0
Simplified (Percentage)	63.3	69.2	56.4	59.8	64.6	60.9
Status (Percentage)	53.2	61.3	54.3	43.0	50.9	52.5
EBT (Percentage)	90.3	93.3	89.8	88.4	88.3	91.9
Spell Information						
Spell Duration Within Panel (In Months) ^a						
All	7.5	8.3	8.1	6.8	7.6	6.7
Non-Right-Censored	5.2	5.4	6.1	4.9	5.3	4.7
Right-Censored	9.6	10.2	9.7	8.2	10.2	9.1
Spells (Frequencies in Millions) ^a						
All	10.8	2.4	1.5	1.5	3.4	2.0
Non-Right-Censored	5.1	1.0	0.7	0.6	1.8	1.1
Right-Censored	5.7	1.4	0.9	0.9	1.6	0.9
Right-Censored Spells (Percentage) ^a	52.4	58.8	55.7	58.9	47.4	45.5
First Spells (Percentage) ^a	37.7	35.4	24.6	15.4	39.9	64.5
Unweighted Sample Size	15,822	4,229	2,454	1,881	5,129	2,129

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

^aStatistics associated with the way in which spells end use person-spell data rather than person-month data. For example, an individual who contributed one 11-month spell to the sample would contribute 11 person-months to the sample or one spell

The sample contains 2,069 individuals and generates 15,822 person-month observations that we use to estimate the discrete-time multivariate hazard models. About 48 percent of participation spells end with an exit from the FSP. The average FSP participation duration is 7.5 months for all spells, 5.2 months for completed spells, and 9.6 months for right-censored spells.

a. Full Sample

Approximately 62 percent of the full sample are female and 37 percent are married. 48 percent are white and non-Hispanic, 29 percent are black and non-Hispanic, and 19 percent are Hispanic. Education and income levels for this sample are both fairly low. More than 30 percent of the sample have less than a high school education and the family income of about 50 percent of the sample is less than 100 percent of the poverty line. Almost 80 percent of the sample have family income that is less than twice the poverty line. Employment rates are also low in this sample, with only 44 percent of the sample working at the start of the FSP participation spell. About 11 percent are unemployed and 45 percent are out of the labor force.

Within the four-month period prior to FSP entry, 21 percent of families of FSP entrants have a loss of employment, 63 percent have a decrease in income, 0.4 percent transition from being married to being separated or divorced, and 17 percent have a change in family composition.

Within the four-month period prior to leaving the FSP, among those individuals who exit the program within the panel period, 15 percent of families contain an individual who transitions from not working to working, 53 percent have an increase in family income, 3.6 percent contain an individual who became married, and 27 percent have a change in family composition.

b. Family Subgroups

The full sample principally comprises families with elderly or disabled members without children and married adult heads with children—these two groups make up about 59 percent of the full sample. Additionally, 16 percent of the full sample consists of families with single adult heads with children, 12 percent consists of families with multiple nonmarried adult heads with children, and 13 percent consists of families without children and no elderly or disabled adults.⁶⁸

The differences in the mean values and relative frequencies of the variables across the five subgroups suggest that the determinants of the decision to exit the FSP vary among subgroups. Similar to the entry analysis, the main difference between families with elderly or disabled individuals without children and other family subgroups is the proportion currently employed. Only 19 percent of individuals in families with elderly or disabled individuals without children currently work, compared to around 42 to 60 percent of those in other family subgroups. As expected, most of those individuals who are not currently working are out of the labor force.

Single adult heads with children have lower incomes compared to individuals in other family subgroups. For example, 70 percent of these individuals are in families with incomes below 100 percent of the poverty line, compared to 50 percent of the families in the full sample. Compared to the full sample and most family subgroups, individuals in this subgroup are also more likely to be employed at the start of the food stamp spell. Despite the typical negative correlation between employment and FSP participation, this subgroup has one of the longest average participation spells. This suggests that single parents work either at low wages or less than full-time and rely on Food Stamp benefits as a supplement to their income.

⁶⁸ Individuals in families with married adult heads with children contribute 32 percent of person-months to the sample (33 percent of person-spells), while individuals in families with single adult heads with children contribute 16 percent of person-months to the sample (14 percent of person-spells). The average spell duration for individuals in each subgroup is 7.6 months and 8.3 months, respectively.

Individuals in families with married adult heads with children are most likely to be white and non-Hispanic and least likely to be black and non-Hispanic compared to other family subgroups. They are also most likely to be Hispanic compared to other family subgroups. Individuals in this subgroup who exit the FSP in the panel period are more likely than individuals in other family subgroups who leave the FSP to have a gain in family income or a change in family composition in the four months prior to exit.

4. Estimation Results

In this section, we present the results of the estimation of the FSP duration model within a discrete-time hazard framework. We estimate many specifications of the model in which we control for entry and exit trigger variables and their associated usual circumstance variables.⁶⁹

We present the results from the following three duration models:⁷⁰

- a. With entry trigger variables and entry-related usual circumstance variables defined over a fixed 12-month window; without exit trigger variables and exit-related usual circumstance variables. This model examines whether exits are influenced by the short and long-term circumstances of individuals when they enter the FSP.
- b. With entry trigger variables and entry-related usual circumstance variables defined over a fixed 12-month window; exit trigger variables, and exit-related usual circumstance variables defined over a fixed 12-month window. This model tests how circumstances

⁶⁹ We also estimate six additional models: (1) with exit trigger variables and usual circumstance variables defined over a fixed 12-month window and without entry trigger variables and entry-related usual circumstance variables, (2) with exit trigger variables and usual circumstance variables defined over a varying-length window, and without entry trigger variables and entry-related usual circumstance variables, (3) with only entry trigger variables, (4) with only exit trigger variables, (5) with only entry and exit trigger variables, and (6) without entry and exit trigger variables and without usual circumstance variables. We find that the results differ among several of these specifications, but mainly in the magnitudes of the estimates. Variables that are statistically significant in one specification generally are significant in other specifications. We feel the three models we present in the text produce the most interesting results.

⁷⁰ We perform chi-squared likelihood ratio tests to test the null hypothesis that the additional parameters in the second estimation (compared to the first estimation) are not jointly zero. We reject the null hypothesis at the 0.01 significance level. We reach the same conclusion when testing the same null hypothesis using the third estimation (compared to the first estimation).

from previous spells—nonparticipation and then participation—influence exits from the FSP.

- c. With entry trigger variables and entry-related usual circumstance variables defined over a fixed 12-month window; exit trigger variables, and exit-related usual circumstance variables defined over a window of varying length. This model tests how circumstances from previous spells—nonparticipation and then participation—influence exits from the FSP. This model differs from the previous model by constraining the usual circumstances variables associated with exit to be measured only during an individual’s participation spell. By doing so we hope to characterize an individual’s usual circumstances within a participation spell more accurately.

a. Full Sample Results

Table III.6a contains the logit parameter estimates from three discrete-time hazard models of FSP exit. The estimates refer to the effects of the explanatory variable on the probability of exit out of the FSP in a given month, given participation until that month (or, equivalently, on the hazard rate out of the FSP participation state). A positive and significant coefficient on a variable implies that this variable is positively and significantly related to FSP exit after controlling for the effects of the other explanatory variables in the model. For discrete or continuous variables, this implies that higher values of the variable imply higher exit rates. For indicator variables (discrete variables that only take values of 0 and 1), this means that individuals with a value of “1” for the variable have higher exit rates than individuals in the omitted category. If a discrete or continuous variable has a negative and significant coefficient, then higher values of the variable imply lower exit rates. For indicator variables, this means that individuals with a value of “1” for the variable have lower exit rates than individuals in the omitted category.

In Model A of Table III.6a, for example, the coefficient on the discrete variable “number of adults in family” (0.129) is statistically significant. This suggests that the greater the amount of adults that live in an individual’s family, the greater the likelihood of exiting the FSP.

TABLE III.6a

FSP DURATION HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES
ON MONTHLY PROBABILITY OF EXITING THE FSP BY CHARACTERISTICS

Explanatory Variables	Model A			Model B			Model C		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics									
Gender (female category is omitted):									
Male	0.168**	(0.07)	1.18	0.209***	(0.08)	1.23	0.2***	(0.07)	1.22
Race (Hispanic category is omitted):									
White, non-Hispanic	0.053	(0.12)	1.05	0.06	(0.12)	1.06	0.053	(0.12)	1.05
Black, non-Hispanic	0.256**	(0.12)	1.29	0.308**	(0.13)	1.36	0.274**	(0.13)	1.31
Other	-0.11	(0.19)	0.90	-0.09	(0.19)	0.91	-0.05	(0.19)	0.95
Age (18-to-29-years-old category is omitted):									
30-49	0.019	(0.09)	1.02	0.054	(0.09)	1.06	0.057	(0.09)	1.06
50-64	-0.13	(0.13)	0.88	-0.08	(0.13)	0.93	-0.09	(0.13)	0.92
65 and older	-0.49***	(0.19)	0.61	-0.36*	(0.19)	0.70	-0.4**	(0.19)	0.67
US citizen	-0.31***	(0.11)	0.73	-0.28**	(0.12)	0.75	-0.31***	(0.12)	0.73
Education Levels and Employment Status									
Highest grade completed (0-to-8 category is omitted):									
9-11	-0.14	(0.15)	0.87	-0.18	(0.15)	0.84	-0.16	(0.15)	0.86
12	-0.03	(0.13)	0.97	-0.05	(0.14)	0.95	-0.06	(0.14)	0.94
13 and above	0.142	(0.14)	1.15	0.099	(0.14)	1.10	0.106	(0.14)	1.11
Employment status ("out of labor force for 12+ months" category is omitted):									
Currently Employed	0.233**	(0.10)	1.26	0.153	(0.11)	1.17	0.144	(0.11)	1.15
Unemployed 1-5 months	0.091	(0.16)	1.10	0.03	(0.17)	1.03	0.018	(0.17)	1.02
Unemployed 6-11 months	0.084	(0.27)	1.09	-0.01	(0.28)	0.99	-0.02	(0.28)	0.98
Unemployed 12+ months	0.17	(0.35)	1.19	0.156	(0.36)	1.17	0.029	(0.35)	1.03
Out of the labor force 1-5 months	-0.05	(0.16)	0.95	-0.08	(0.16)	0.93	-0.1	(0.16)	0.91
Out of the labor force 6-11 months	0.169	(0.18)	1.18	0.226	(0.18)	1.25	0.162	(0.18)	1.18
Family Income and Welfare Receipt									
Ratio of family income to poverty level (less than 1.0 category is omitted):									
1.0-1.5	0.053	(0.10)	1.05	-0.05	(0.10)	0.95	0.023	(0.10)	1.02
1.5-2.0	0.356***	(0.12)	1.43	0.263**	(0.13)	1.30	0.378***	(0.12)	1.46
2.0 and above	0.257**	(0.11)	1.29	0.045	(0.12)	1.05	0.235**	(0.11)	1.26
Currently receiving TANF	-0.02	(0.63)	0.98	-0.51	(0.65)	0.60	-0.26	(0.64)	0.77
Previously received TANF	-0.08	(0.65)	0.92	0.447	(0.67)	1.56	0.207	(0.66)	1.23
Family Composition									
Family Size:									
Number of adults	0.129***	(0.04)	1.14	0.09**	(0.04)	1.09	0.107***	(0.04)	1.11
Number of children less than age 6	0.035	(0.05)	1.04	0.016	(0.05)	1.02	0.022	(0.05)	1.02
Number of children between ages 6 and 18	-0.07**	(0.03)	0.93	-0.1***	(0.04)	0.91	-0.09***	(0.04)	0.91

Table III.6a (continued)

Explanatory Variables	Model A			Model B			Model C		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Marital Status (never-married category is omitted):									
Currently married	-0.2**	(0.10)	0.82	-0.22**	(0.10)	0.80	-0.21**	(0.10)	0.81
Previously married	0.057	(0.12)	1.06	9E-05	(0.12)	1.00	0.045	(0.12)	1.05
Entry Trigger Events:									
Employment change within family	0.163	(0.15)	1.18	0.089	(0.16)	1.09	0.125	(0.15)	1.13
Income change within family	0.021	(0.18)	1.02	-0.19	(0.19)	0.83	-0.12	(0.19)	0.89
Marital status change within family	1.203	(1.11)	3.33	1.498	(1.14)	4.47	1.326	(1.15)	3.76
Family composition change	-0.16	(0.17)	0.85	-0.1	(0.18)	0.91	-0.03	(0.17)	0.97
Entry Usual Circumstances: (measured over a fixed 12-month window)									
Mean employment change within family	0.24	(0.48)	1.27	-0.26	(0.61)	0.77	0.178	(0.49)	1.20
Mean income change within family	0.283	(0.31)	1.33	-0.59	(0.37)	0.56	0.044	(0.32)	1.04
Mean family income	0.067	(0.00)	1.07	-0.03	(0.00)	0.97	0.085**	(0.00)	1.09
Variance in family income	-0.15	(0.00)	0.86	-0.23**	(0.00)	0.79	-0.21*	(0.00)	0.81
Average number of marriages in family to date	0.065	(0.07)	1.07	-1.03***	(0.21)	0.36	0.055	(0.07)	1.06
Mean family composition change	-0.73**	(0.36)	0.48	-1.09**	(0.47)	0.34	-0.78**	(0.37)	0.46
Interaction terms for entry trigger events and usual circumstances									
(Employment change)x(Mean employment change)	-0.57	(0.75)	0.57	-0.38	(0.77)	0.68	-0.27	(0.76)	0.77
(Income change within family)x(Mean income change)	-0.01	(0.36)	0.99	0.118	(0.38)	1.12	0.125	(0.37)	1.13
(Income change within family)x(Mean family income)	-0	(0.00)	1.00	-0	(0.00)	1.00	-0	(0.00)	1.00
(Income change within family)x(Variance family income)	2E-08	(0.00)	1.00	3E-08	(0.00)	1.00	2E-08**	(0.00)	1.00
(Marital status change)x(Average number marriages)	-0.54	(0.63)	0.58	-0.82	(0.65)	0.44	-0.63	(0.67)	0.53
(Family composition change)x(Mean family composition change)	0.749	(0.65)	2.11	0.665	(0.68)	1.95	0.409	(0.66)	1.51
Exit Trigger Events:									
Employment change within family				0.422**	(0.17)	1.52	0.371***	(0.12)	1.45
Income change within family				0.573***	(0.19)	1.77	0.779***	(0.09)	2.18
Marital status change within family				1.062	(0.66)	2.89	0.609	(0.46)	1.84
Family composition change				-0.14	(0.15)	0.87	-0.13	(0.10)	0.88
Exit Usual Circumstances: (measured over a fixed 12-month window)									
Mean employment change within family				0.61	(0.60)	1.84			
Mean income change within family				1.292***	(0.32)	3.64			
Mean family income				2E-04***	(0.00)	1.00			
Variance in family income				-0	(0.00)	1.00			
Mean marital status change				1.195***	(0.21)	3.30			
Average number of marriages in family to date				0.824**	(0.48)	2.28			
Mean family composition change									

Table III.6a (continued)

Explanatory Variables	Model A			Model B			Model C		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Exit Usual Circumstances: (measured over a varying-length window)									
Mean employment change within family							0.365	(0.38)	1.44
Mean income change within family							0.796**	(0.36)	2.22
Mean family income							3E-05	(0.00)	1.00
Variance in family income							8E-08	0.00	1.00
Mean marital status change							0.083	(0.10)	1.09
Average number of marriages in family to date							-0.11	(0.40)	0.89
Mean family composition change									
Interaction Terms for Exit Trigger Events and Usual Circumstances									
(Employment change)x(Mean employment change)				-0.59	(0.88)	0.56	-0.42	(0.60)	0.66
(Income change within family)x(Mean income change)				-0.3	(0.33)	0.74	-0.42	(0.38)	0.66
(Income change within family)x(Mean family income)				2E-06	(0.00)	1.00	-0	(0.00)	1.00
(Income change within family)x(Variance family income)				-0	(0.00)	1.00	-0	(0.00)	1.00
(Marital status change)x(Average number marriages)				-0.6	(0.80)	0.55	0.091	(0.87)	1.10
(Family composition change)x(Mean family composition change)				-0.72	(0.58)	0.49	-0.72	(0.53)	0.49
State and Regional Measures									
State unemployment rate (time-varying)	-0	(0.05)	1.00	0.006	(0.05)	1.01	0.003	(0.05)	1.00
Hourly wage rate statistics (time-varying)									
Mean hourly wage rate	0.362	(0.27)	1.44	0.402	(0.28)	1.49	0.394	(0.27)	1.48
Standard Deviation	-0.08	(0.11)	0.92	-0.1	(0.11)	0.90	-0.1	(0.11)	0.91
20 th Percentile	0.156	(0.13)	1.17	0.165	(0.13)	1.18	0.149	(0.13)	1.16
40 th Percentile	0.029	(0.12)	1.03	-0.06	(0.12)	0.94	0.012	(0.12)	1.01
50 th Percentile	-0.27**	(0.11)	0.76	-0.25**	(0.12)	0.78	-0.29**	(0.11)	0.75
60 th Percentile	-0.11	(0.09)	0.90	-0.08	(0.09)	0.92	-0.09	(0.09)	0.91
80 th Percentile	-0.01	(0.06)	0.99	-0.03	(0.06)	0.97	-0.02	(0.06)	0.98
Region of Residence ("Western" Region is omitted): (time-varying)									
Northeast	-0.45**	(0.20)	0.64	-0.36*	(0.21)	0.70	-0.43**	(0.20)	0.65
Mid-Atlantic	-0.36**	(0.17)	0.70	-0.35**	(0.18)	0.70	-0.36**	(0.17)	0.70
Midwest	-0.13	(0.16)	0.88	-0.15	(0.16)	0.86	-0.15	(0.16)	0.86
Southeast	-0.2	(0.15)	0.82	-0.17	(0.15)	0.84	-0.18	(0.15)	0.83
Southwest	-0.18	(0.18)	0.84	-0.19	(0.18)	0.83	-0.21	(0.18)	0.81
Mountain Plains	0.29	(0.17)	1.34	0.313	(0.18)	1.37	0.284	(0.17)	1.33
Policy Variables									
Vehicle Exclusion	0.014	(0.10)	1.01	0.036	(0.11)	1.04	0.039	(0.11)	1.04
Certification Period: Earners (avg mos.)	-0.14**	(0.06)	0.87	-0.14**	(0.06)	0.87	-0.15***	(0.06)	0.86
Certification Period: Single-mothers (avg mos.)	0.142**	(0.07)	1.15	0.139**	(0.07)	1.15	0.156**	(0.07)	1.17
Simplified Reporting	-0.29*	(0.17)	0.75	-0.27	(0.18)	0.76	-0.32	(0.17)	0.73
Status Reporting	-0.14	(0.17)	0.87	-0.09	(0.17)	0.92	-0.15	(0.17)	0.86
(Simplified Reporting)x(Status Reporting)	0.242	(0.20)	1.27	0.179	(0.21)	1.20	0.221	(0.21)	1.25
EBT	0.066	(0.15)	1.07	-0	(0.16)	1.00	0.025	(0.15)	1.03

Table III.6a (continued)

Explanatory Variables	Model A			Model B			Model C		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Spell Information									
Spell Duration (more-than-16-months category is omitted):									
4 months or less	3.675***	(1.00)	39.44	4.051***	(1.00)	57.45	4.202***	(1.01)	66.79
5 to 8 months	3.322***	(1.00)	27.70	3.299***	(1.01)	27.08	3.35***	(1.01)	28.51
9 to 12 months	2.926***	(1.01)	18.66	2.938***	(1.01)	18.87	2.942***	(1.01)	18.95
13 to 16 months	2.163**	(1.02)	8.69	2.218**	(1.03)	9.19	2.211**	(1.03)	9.13
First Participation Spell Ever	0.178**	(0.08)	1.19	0.234***	(0.08)	1.26	0.196**	(0.08)	1.22
Spell start year (2002 category is omitted)									
2003	-0.57***	(0.08)	0.57	-0.58***	(0.08)	0.56	-0.57	(0.08)	0.57
-2*Log Likelihood	6805.6			6525.2			6442.9		
Number of Spell-Month Observations	15822.0			15822.0			15822.0		

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

Note: Model (A) is the model with entry trigger event variables and entry-related usual circumstance variables (12-month)

Model (B) is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (12-month)

Model (C) is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (varying-length)

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

A higher probability of exit also implies a shorter duration in which an individual receives FSP benefits. For indicator variables such as “at least 65 years old,” the negative value of the statistically significant coefficient (−0.49) implies that individuals who are age 65 or older are less likely than those ages 18 to 29 (the omitted category for the variable “age”) to leave the FSP.

Table III.6a also contains the odds ratios for most of the parameter estimates in the table. For estimates of coefficients of indicator variables, the odds ratio reflects the likelihood that an event occurs for one group relative to the odds that it occurs for another group.

For variables in the FSP duration model, the odds ratio reflects the likelihood that individuals in that group exit the FSP relative to the likelihood for individuals in the excluded category.⁷¹

To further help examine the implications of the estimation results, Table III.7 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.⁷²

Economic Circumstances

The employment status of an individual at the start of his or her participation spell is an important determinant of the duration of that spell (see Table III.6a). In Model A, where we do not control for employment-related exit triggers, the coefficient on the indicator variable “currently employed at the start of the FSP” is positive and statistically significant.⁷³ This implies that the odds of exiting the FSP in any month are 26 percent higher if an individual was employed when entering the program. However, in Models B and C, in which we control for employment-related exit triggers, the estimate of the coefficient of this variable, while still

⁷¹ The odds ratio is computed as e^b where b is the coefficient from the logit model. For covariates that have been interacted with other covariates, odds ratios cannot be constructed simply by exponentiating the parameter coefficient. We discuss this in detail when we interpret the estimates of the coefficients of the entry and exit triggers and usual circumstance variables. Additionally, as in the entry model, the interpretation is slightly different for odds ratios based on estimates of coefficients of variables other than indicator variables. For example, if the estimate on the discrete variable “number of children in the family under the age of 6” is equal to b , then the odds of exiting the FSP are increased by e^b for each additional child in the family under the age of 6.

⁷² The distributions are based on the estimates from the Model B specification, in which usual circumstance variables associated with exit are defined over the participation spell. Caution should be taken when comparing the distribution of regression-adjusted spell lengths with the distribution of unadjusted spell lengths from Chapter II, since the samples are different. The purpose of including these tables is to compare distributional characteristics between two subgroups such as married versus unmarried individuals.

⁷³ In an alternative specification of the model with no entry or exit triggers, the coefficient on the variable “currently employed” was also statistically significant.

TABLE III.6b

FSP DURATION HAZARD MODEL: CONVERSION OF PARAMETER ESTIMATES INTO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR EXIT-RELATED TRIGGER EVENTS) AFFECT EXIT RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Model B: Fixed Window)			
Employment Chg.	1.40 [†]	1.52 [†]	1.52 [†]
Income (frequency)	1.45 [†]	1.60 [†]	1.77 [†]
Income (mean)	1.78 [†]	1.78 [†]	1.77 [†]
Income (variance)	1.77 [†]	1.77 [†]	1.77 [†]
Marital Status Chg	1.46	1.59	2.89
Family Composition Chg	0.73 [†]	0.87	0.87
Main Model Specification (Model C: Variable Window)			
Employment Chg.	1.37 [†]	1.45 [†]	1.45 [†]
Income (frequency)	1.65 [†]	1.89 [†]	2.18 [†]
Income (mean)	1.98 [†]	2.07 [†]	2.18 [†]
Income (variance)	2.00 [†]	2.17 [†]	2.18 [†]
Marital Status Chg	2.04	2.01	1.84
Family Composition Chg	0.74 [†]	0.88	0.88

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table present estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window table (Model B), conditional on having low employment volatility, individuals who experience a transition from unemployment to employment are 1.52 times more likely to exit the FSP than individuals who remain unemployed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of exiting the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window table (Model B), conditional on low frequency of change in family composition, those individuals who experience a change in family composition have their odds of exiting the program reduced by 13 percent $(= (1.00 - 0.87) * 100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Model B is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (12-month). Model C is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (varying-length).

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

TABLE III.7

FSP DURATION HAZARD MODEL: REGRESSION-ADJUSTED CUMULATIVE EXIT RATES FOR KEY CHARACTERISTICS (DURATION MODEL C)

Explanatory Variables	Median Duration of Participation Spell (Months)	Cumulative Percentage Receiving Food Stamp Benefits for									
		4 Months or Less		8 Months or Less		12 Months or Less		16 Months or Less		20 Months or Less	
Individual Demographic Characteristics											
Gender											
Male	10.0 (1.2)	32.5 (1.6)	47.4 (2.1)	56.0 (2.3)	59.5 (2.5)	59.9 (2.7)					
Female	14.0 (1.6)	26.4 (1.3)	40.3 (1.8)	48.2 (2.1)	51.7 (2.3)	52.1 (2.6)					
Race											
White, non-hispanic	12.0 (1.3)	28.9 (1.5)	43.3 (2.0)	51.6 (2.3)	55.0 (2.5)	55.4 (2.8)					
Black, non-hispanic	12.0 (1.5)	28.8 (1.7)	43.2 (2.3)	51.7 (2.6)	55.2 (2.7)	55.6 (3.0)					
Other, non-Hispanic	12.0 (2.6)	30.1 (3.7)	44.0 (4.9)	51.5 (5.3)	54.7 (5.5)	55.1 (5.6)					
Hispanic	13.0 (1.9)	28.1 (2.0)	41.6 (2.7)	49.3 (3.0)	53.2 (3.2)	53.6 (3.4)					
Age											
18-29	11.0 (1.2)	30.1 (1.7)	44.7 (2.3)	52.8 (2.6)	56.5 (2.7)	56.8 (2.9)					
30-49	11.0 (1.2)	30.2 (1.5)	45.1 (2.0)	53.7 (2.2)	57.3 (2.4)	57.8 (2.7)					
50-64	12.0 (1.7)	28.1 (2.2)	42.0 (2.9)	50.4 (3.3)	53.6 (3.5)	53.9 (3.6)					
65 and older	> 20 NA	17.7 (2.4)	27.1 (3.4)	33.2 (4.0)	36.2 (4.3)	36.5 (4.4)					
Citizenship											
US citizen	12.0 (0.9)	28.2 (1.2)	42.3 (1.7)	50.4 (2.0)	53.8 (2.2)	54.2 (2.5)					
non-US citizen	9.0 (1.2)	34.5 (2.6)	50.0 (3.2)	58.8 (3.5)	62.7 (3.6)	63.1 (3.7)					
Education Levels and Employment Status											
Highest grade completed											
0-8	> 20 NA	24.6 (2.4)	36.8 (3.3)	44.2 (3.7)	47.9 (3.9)	48.2 (4.1)					
9-11	> 20 NA	23.4 (1.8)	36.3 (2.6)	44.2 (3.0)	47.8 (3.2)	48.2 (3.4)					
12	12.0 (1.3)	28.8 (1.5)	43.1 (2.0)	51.7 (2.3)	55.3 (2.5)	55.7 (2.8)					
13 and above	8.0 (0.7)	34.3 (1.8)	50.2 (2.3)	58.6 (2.6)	62.0 (2.7)	62.4 (2.9)					
Family Income and Welfare Receipt											
Ratio of family income to poverty level											
1.0 and below	> 20 NA	23.1 (1.4)	35.6 (1.9)	43.3 (2.3)	46.9 (2.5)	47.3 (2.7)					
1.0-1.5	13.0 (1.8)	26.3 (2.0)	40.7 (2.7)	49.2 (3.1)	52.9 (3.3)	53.2 (3.4)					
1.5-2.0	8.0 (1.0)	34.7 (2.7)	51.3 (3.5)	60.9 (3.7)	64.7 (3.8)	65.2 (4.1)					
2.0 and above	7.0 (0.5)	37.8 (1.9)	55.2 (2.4)	64.4 (2.6)	67.7 (2.7)	68.1 (2.9)					
TANF Benefits											
Currently receiving TANF	16.0 (3.1)	23.7 (3.3)	37.3 (4.7)	45.9 (5.4)	50.2 (5.7)	50.7 (5.8)					
Not currently receiving TANF	12.0 (1.1)	29.1 (1.2)	43.3 (1.7)	51.5 (1.9)	54.9 (2.1)	55.3 (2.4)					

Table III.7 (continued)

Explanatory Variables	Median Duration of Participation Spell (Months)	Cumulative Percentage Receiving Food Stamp Benefits for										
		4 Months or Less		8 Months or Less		12 Months or Less		16 Months or Less		20 Months or Less		
Family Composition												
Number of children less than age 6												
Zero	13.0	(1.3)	27.4	(1.3)	41.2	(1.8)	49.3	(2.0)	52.7	(2.2)	53.0	(2.5)
One	10.0	(0.8)	30.8	(1.4)	46.1	(1.9)	54.9	(2.2)	58.6	(2.3)	59.1	(2.7)
Two	11.0	(1.5)	30.8	(1.9)	45.1	(2.6)	52.7	(2.9)	56.4	(3.0)	56.8	(3.2)
Marital Status:												
Currently married	10.0	(0.9)	31.1	(1.6)	46.0	(2.1)	54.2	(2.3)	57.7	(2.5)	58.1	(2.8)
Not currently married	13.0	(1.3)	27.2	(1.3)	41.0	(1.9)	49.2	(2.1)	52.7	(2.3)	53.1	(2.6)
Entry Trigger Events												
Employment change within family	10.0	(1.2)	31.3	(2.0)	46.5	(2.8)	55.3	(3.0)	59.0	(3.2)	59.5	(3.5)
No employment change within family	12.0	(0.9)	28.2	(1.2)	42.2	(1.7)	50.1	(2.0)	53.6	(2.1)	53.9	(2.4)
Income change within family	10.0	(0.8)	31.3	(1.3)	46.4	(1.8)	54.9	(2.1)	58.5	(2.2)	58.9	(2.6)
No Income change within family	> 20	NA	24.4	(1.5)	37.0	(2.1)	44.6	(2.4)	48.0	(2.6)	48.4	(2.8)
Marital status change within family	15.0	(5.8)	27.2	(11.4)	42.4	(14.8)	48.3	(15.9)	50.9	(16.2)	51.0	(16.3)
No marital status change within family	12.0	(1.0)	28.8	(1.2)	43.0	(1.6)	51.2	(1.9)	54.7	(2.1)	55.1	(2.4)
Family composition change	11.0	(1.6)	30.8	(2.3)	44.2	(3.0)	52.0	(3.4)	55.5	(3.6)	55.8	(3.7)
No family composition change	12.0	(1.0)	28.4	(1.2)	42.8	(1.7)	51.1	(1.9)	54.6	(2.1)	55.0	(2.4)
Exit Trigger Events												
Employment change within family	7.0	(0.8)	36.8	(2.9)	54.4	(3.3)	63.8	(3.3)	67.4	(3.4)	67.8	(3.6)
No employment change within family	14.0	(1.6)	27.8	(1.2)	41.0	(1.7)	48.5	(2.0)	51.9	(2.2)	52.3	(2.4)
Income change within family	8.0	(0.5)	34.9	(1.8)	50.8	(2.0)	59.8	(2.1)	63.5	(2.3)	63.9	(2.6)
No Income change within family	> 20	NA	23.1	(1.2)	32.7	(1.8)	39.0	(2.2)	42.0	(2.4)	42.3	(2.6)
Marital status change within family	8.0	(2.4)	33.0	(10.9)	51.7	(12.9)	60.4	(13.3)	63.5	(13.3)	63.5	(13.3)
No marital status change within family	12.0	(1.0)	28.7	(1.2)	42.9	(1.6)	51.1	(1.9)	54.6	(2.1)	55.0	(2.4)
Family composition change	13.0	(1.8)	26.3	(2.0)	41.6	(2.6)	50.0	(2.8)	53.9	(3.1)	54.4	(3.3)
No family composition change	12.0	(0.9)	28.3	(1.2)	42.2	(1.7)	50.5	(2.0)	53.9	(2.2)	54.3	(2.5)
Regional Measures												
Region of Residence:												
Northeast	> 20	NA	21.4	(2.5)	32.9	(3.6)	40.6	(4.2)	43.9	(4.5)	44.3	(4.6)
Midatlantic	15.0	(2.6)	26.5	(2.6)	39.8	(3.5)	47.4	(3.9)	51.2	(4.2)	51.5	(4.3)
Midwest	11.0	(1.6)	30.1	(2.2)	45.0	(2.9)	53.1	(3.2)	56.2	(3.3)	56.5	(3.5)
Southeast	12.0	(1.5)	26.9	(1.7)	41.8	(2.4)	50.1	(2.7)	53.7	(2.9)	54.1	(3.1)
Southwest	> 20	NA	25.3	(1.9)	38.6	(2.7)	46.5	(3.1)	49.6	(3.3)	50.0	(3.4)
Mountain	7.0	(1.0)	38.6	(3.1)	53.9	(3.8)	62.2	(4.0)	65.8	(4.1)	66.2	(4.3)
West	9.0	(1.1)	34.4	(2.3)	49.5	(2.9)	58.7	(3.1)	62.4	(3.3)	63.0	(3.6)

Table III.7 (continued)

Explanatory Variables	Median Duration of Participation Spell (Months)		Cumulative Percentage Receiving Food Stamp Benefits for									
			4 Months or Less		8 Months or Less		12 Months or Less		16 Months or Less		20 Months or Less	
Policy Variables												
Vehicle Exclusion	12.0	(1.1)	27.4	(1.5)	41.9	(2.0)	50.2	(2.3)	53.5	(2.4)	53.9	(2.7)
No Vehicle Exclusion	11.0	(0.9)	29.9	(1.4)	43.9	(1.9)	52.0	(2.2)	55.7	(2.4)	56.2	(2.7)
Simplified Reporting only	14.0	(1.9)	25.7	(1.7)	39.5	(2.3)	48.2	(2.6)	51.8	(2.8)	52.2	(3.0)
Status Reporting only	10.0	(1.1)	31.4	(1.8)	46.9	(2.4)	56.5	(2.7)	60.4	(2.9)	61.0	(3.2)
Simplified and Status Reporting	14.0	(2.1)	27.4	(1.6)	41.6	(2.2)	48.9	(2.5)	52.1	(2.7)	52.4	(2.9)
Neither Simplified nor Status Reporting	10.0	(1.5)	32.7	(2.3)	46.3	(3.0)	53.5	(3.3)	57.3	(3.5)	57.8	(3.7)
EBT	12.0	(0.9)	28.3	(1.2)	42.6	(1.7)	50.8	(1.9)	54.3	(2.1)	54.7	(2.4)
No EBT	10.0	(1.7)	32.7	(2.7)	46.3	(3.5)	53.9	(3.8)	58.7	(4.1)	59.2	(4.3)
Spell Information												
First Participation Spell Ever	9.0	(0.8)	33.7	(1.7)	48.5	(2.2)	56.2	(2.4)	59.5	(2.5)	59.9	(2.8)
Repeat Spell	14.0	(1.7)	26.0	(1.3)	39.9	(1.8)	48.4	(2.1)	52.1	(2.3)	52.5	(2.6)

positive, is statistically insignificant; at the same time, the coefficients on the employment-related exit triggers in these models are positive and significant. This suggests that it is the employment-related exit triggers that drive spell duration, and that these triggers are correlated with employment status at the start of the spell.

We expect to observe significant differences in the association between being unemployed at the start of the participation spell and the duration of participation as well as the association between being out of the labor force at the start of the participation spell and the duration of the participation. In Model A, we find that individuals who are unemployed for any amount of time at the start of the participation spell are more likely to exit the program than individuals who have been out of the labor force for at least 12 months, although these results are statistically insignificant.

Even after controlling for employment status at the start of the participation spell, family income is a significant determinant of FSP exit rates, with individuals in families with income greater than 150 percent of poverty at the start of the participation spell more likely to leave the FSP than individuals in poorer families. The estimates in Model (C) of Table III.6a suggest that individuals in these families are between 1.3 and 1.5 times more likely to exit the FSP than individuals in families with incomes lower than 100 percent of poverty. Our regression-adjusted exit rates in Table III.7 indicate that after controlling for the effects of other independent variables in the model, families with higher income have much higher exit rates than those with lower income. For example, individuals with family income below 100 percent of poverty have a median spell length of more than 20 months, while those with family income between 100 and 150 percent of poverty, 150 and 200 percent of poverty, and more than 200 percent of poverty have median spell lengths of 15 months, 8 months, and 7 months, respectively.⁷⁴

In the entry analysis we find that individuals with family members who have previously received or currently receive TANF are more likely to enter the FSP. We find no statistical evidence to conclude that once in the FSP program, that these individuals are less likely to leave the program. Although the sign of the estimates on the coefficient of “currently receive TANF” are consistently negative in each specification of the model, the estimates are statistically insignificant. Gleason et al. (1998) found a statistically significant negative relationship between the receipt of AFDC benefits and the probability of exiting the FSP. Perhaps the fact that the estimates of the TANF coefficient in our model are statistically indistinguishable from zero results from the vast changes in the TANF program after 1996 relative to the pre-welfare reform era. Receiving AFDC and food stamp benefits concurrently was much more common in the

⁷⁴ Individuals with right-censored participation spells are included in these calculations.

1990-1991 sample used in the analysis by Gleason et al. (1998). In our sample, 5.6 percent of FSP participants also receive TANF, while in the sample used in the Gleason et al. (1998) analysis, 15.3 percent of FSP participants concurrently received AFDC.⁷⁵

We find an association between the likelihood of FSP exit and state-specific variables that describe the general state labor market environment in which individuals work and search for jobs. Using the full sample, we find that the higher the mean wage across states and the higher the 20th percentile across states, the greater the likelihood of exit from the FSP (refer back to Table III.6a). Thus, more favorable labor markets are associated with shorter FSP participation durations. Although the estimates of these coefficients are insignificant, the full sample contains many types of families in it, some of whom do not work or are out in the labor force. As Gleason et al. (1998) found in their report of the early 1990s, when we re-estimate the model on family subgroups for whom the labor market environment is likely to influence the probability of FSP participation—families with married adults with children and those without children or elderly or disabled individuals, for example—these estimates become statistically significant determinants of FSP exit rates (Table III.8a).

The type of trigger event that spurred individuals' entry onto the FSP does not appear to influence the duration of the subsequent FSP spell. Consistent with the duration model estimated by Gleason et al. (1998), the estimates of the coefficients on the entry trigger event variables are not statistically significant.

⁷⁵ Turning to the regression-adjusted exit rates in Table III.7, we observe that after controlling for the effects of other independent variables in the model, the median FSP participation spell length for individuals who receive TANF benefits concurrently with food stamps is over eight months longer than that of individuals who do not receive TANF benefits.

TABLE III.8a

FSP DURATION HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES ON MONTHLY PROBABILITY OF EXITING THE FSP BY FAMILY SUBGROUP (EXIT MODEL C)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics															
Gender (female category is omitted):															
Male	0.24	(0.17)	1.28	-0.05	(0.42)	0.95	0.49	(0.31)	1.63	0.10	(0.12)	1.10	0.07	(0.22)	1.07
Race (Hispanic category is omitted):															
White, non-Hispanic	0.78**	(0.38)	2.17	-0.68*	(0.36)	0.50	0.08	(0.43)	1.09	-0.23	(0.19)	0.80	0.84**	(0.42)	2.314
Black, non-Hispanic	1.21***	(0.37)	3.36	-0.86**	(0.39)	0.42	0.68	(0.41)	1.97	0.01	(0.23)	1.01	1.07**	(0.44)	2.922
Other	0.39	(0.57)	1.47	-0.47	(0.72)	0.63	-0.56	(0.65)	0.57	-0.11	(0.31)	0.90	0.43	(0.67)	1.533
Age (18-to-29-years-old category is omitted):															
30-49	-0.04	(0.29)	0.96	0.56*	(0.32)	1.75	0.03	(0.35)	1.03	0.11	(0.16)	1.11	-0.59**	(0.24)	0.553
50-64	-0.12	(0.32)	0.89	-0.76	(0.64)	0.47	0.59	(0.48)	1.80	-0.17	(0.27)	0.84	-0.60*	(0.33)	0.551
65 and older	-0.30	(0.36)	0.74	1.00	(0.58)	1.16	-0.10	(0.79)	0.91	-0.10	(0.46)	0.91			
US citizen	-0.35	(0.36)	0.71	0.38	(0.43)	1.46	-0.62	(0.41)	0.54	-0.19	(0.19)	0.83	-0.92***	(0.33)	0.4
Education Levels and Employment Status															
Highest grade completed (0-to-8 category is omitted):															
9-11	0.08	(0.31)	1.08	-0.95	(0.63)	0.39	-0.16	(0.56)	0.85	-0.03	(0.25)	0.97	-0.02	(0.57)	0.984
12	0.16	(0.28)	1.17	-0.49	(0.61)	0.61	0.09	(0.55)	1.10	0.01	(0.22)	1.01	0.04	(0.53)	1.043
13 and above	0.25	(0.31)	1.29	0.15	(0.58)	1.16	0.52	(0.57)	1.69	0.03	(0.24)	1.03	-0.21	(0.56)	0.81
Employment status ("out of labor force for 12+ months" category is omitted):															
Currently Employed	-0.01	(0.24)	0.99	-0.19	(0.43)	0.82	-0.04	(0.33)	0.96	0.28	(0.18)	1.33	-0.03	(0.50)	0.969
Unemployed 1-5 months	0.22	(0.48)	1.24	-0.30	(0.64)	0.74	-1.07*	(0.62)	0.34	0.11	(0.28)	1.11	0.10	(0.61)	1.109
Unemployed 6-11 months	-0.17	(1.09)	0.84	-1.56	(1.37)	0.21	0.98	(0.67)	2.66	-0.15	(0.64)	0.86	0.53	(0.70)	1.697
Unemployed 12+ months	1.49	(1.27)	4.42	0.81	(1.30)	2.26	0.37	(1.12)	1.44	-0.50	(0.65)	0.60	0.58	(0.77)	1.779
Out of the labor force 1-5 months	0.37	(0.36)	1.45	-0.71	(0.62)	0.49	0.22	(0.50)	1.24	-0.35	(0.28)	0.70	0.33	(0.60)	1.392
Out of the labor force 6-11 months	-0.23	(0.40)	0.79	0.10	(0.54)	1.11	0.01	(0.51)	1.01	0.22	(0.36)	1.24	0.25	(0.61)	1.281

Table III.8a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Family Income and Welfare Receipt															
Ratio of family income to poverty level (less than 1.0 category is omitted):															
1.0-1.5	-0.17	(0.27)	0.84	0.11	(0.29)	1.11	0.13	(0.42)	1.14	0.09	(0.18)	0.91	0.16	(0.36)	1.175
1.5-2.0	0.32	(0.29)	1.38	0.16	(0.44)	1.17	0.99**	(0.47)	2.69	0.13	(0.23)	1.13	0.75*	(0.39)	2.117
2.0 and above	0.52**	(0.26)	1.69	0.54	(0.51)	1.72	0.36	(0.43)	1.44	0.06	(0.22)	1.06	-0.56*	(0.32)	0.574
Currently receiving TANF	-13.39	(487.51)	0.00	-13.39	(487.51)	0.00	1.11	(1.69)	3.04	-0.28	(0.84)	0.75			
Previously received TANF	13.14	(487.51)	507828.97	13.14	(487.51)	507828.97	-0.84	(1.76)	0.43	0.02	(0.90)	1.02			
Family Composition															
Family Size:															
Number of adults	0.17	(0.11)	1.19	0.07	(0.17)	1.08	-0.15	(0.17)	0.86	0.23***	(0.08)	1.26	-0.07	(0.15)	0.931
Number of children less than age 6				-0.19	(0.12)	0.83	-0.06	(0.20)	0.94	0.02	(0.07)	1.02			
Number of children between ages 6 and 18							-0.15	(0.15)	0.86	-0.20***	(0.06)	0.82			
Marital Status (never-married category is omitted):															
Currently married	-0.23	(0.25)	0.79	0.34	(0.28)	1.40	-0.36	(0.65)	0.70	0.11	(0.39)	1.11	-0.81***	(0.31)	0.443
Previously married	-0.12	(0.27)	0.89				0.29	(0.35)	1.34	-0.12	(0.43)	0.88	0.38	(0.29)	1.467
Entry Trigger Events:															
Employment change within family	-0.33	(0.44)	0.72	-0.21	(0.65)	0.81	0.00	(0.57)	1.00	0.45*	(0.25)	1.57	-0.21	(0.47)	0.811
Income change within family	0.40	(0.38)	1.49	-1.28**	(0.62)	0.28	-1.45*	(0.78)	0.23	0.00	(0.42)	1.00	-0.46	(0.59)	0.634
Marital status change within family	-12.05	(607.82)	0.00	1.49	(1.49)	4.42	-12.97	(1224.41)	0.00			1.00	1.24	(1.52)	3.441
Family composition change	0.12	(0.40)	1.13	-0.22	(0.59)	0.80	0.36	(0.63)	1.43	0.00	(0.28)	1.00	0.18	(0.67)	1.201
Entry Usual Circumstances: (measured over a fixed 12-month window)															
Mean employment change within family	-0.80	(1.37)	0.45	0.69	(1.71)	2.00	1.78	(1.69)	5.93	-0.26	(0.83)	0.77	1.51	(1.57)	4.547
Mean income change within family	0.53	(0.72)	1.69	0.41	(1.15)	1.51	-1.73	(1.53)	0.18	-0.20	(0.65)	0.82	1.26	(1.05)	3.526
Mean family income	0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00*	(0.00)	1.00	0.00	(0.00)	1
Variance in family income	0.00**	(0.00)	1.00	0.00*	(0.00)	1.00	0.00***	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
Average number of marriages in family to date	0.25*	(0.14)	1.29							0.16	(0.16)	1.17			
Mean family composition change	0.09	(1.00)	1.10	-2.65**	(1.28)	0.07	-1.61	(1.24)	0.20	-0.51	(0.68)	0.60	-3.12***	(1.04)	0.044

Table III.8a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Interaction terms for entry trigger events and usual circumstances															
(Employment change)x(Mean employment change)	2.14	(2.25)	8.53	4.26	(3.08)	70.90	0.00	(2.75)	1.00	-1.75	(1.29)	0.17	-3.21	(2.53)	0.04
(Income change within family)x(Mean income change)	-0.81	(0.83)	0.45	0.72	(1.33)	2.06	3.48**	(1.71)	32.60	0.03	(0.74)	1.03	-0.78	(1.23)	0.46
(Income change within family)x(Mean family income)	0.00*	(0.00)	1.00	0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00*	(0.00)	1
(Income change within family)x(Variance family income)	0.00***	(0.00)	1.00	0.00**	(0.00)	1.00	0.00***	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
(Marital status change)x(Average number marriages)	-0.38	(1.20)	0.68												
(Family composition change)x(Mean family composition change)	0.16	(1.49)	1.18	4.07	(2.70)	58.80	-0.36	(2.63)	0.70	0.91	(1.00)	2.49	-5.88	(4.70)	0.003
Exit Trigger Events:															
Employment change within family	0.20	(0.35)	1.23	0.47	(0.36)	1.59	0.51	(0.34)	1.67	0.40**	(0.19)	1.49	0.52	(0.37)	1.682
Income change within family	0.69***	(0.22)	1.99	0.40	(0.29)	1.49	1.08***	(0.28)	2.96	0.95***	(0.15)	2.59	1.22***	(0.23)	3.379
Marital status change within family	-12.43	(1370.13)	0.00	0.89	(0.87)	2.44	-1.07	(1.73)	0.34	3.00***	(0.96)	20.07	1.43	(1.30)	4.195
Family composition change	-0.04	(0.27)	0.96	0.69**	(0.28)	1.99	-0.39	(0.31)	0.68	-0.20	(0.17)	0.82	-0.91***	(0.31)	0.403
Exit Usual Circumstances: (measured over a fixed 12-month window)															
Mean employment change within family															
Mean income change within family															
Mean family income															
Variance in family income															
Mean marital status change															
Average number of marriages in family to date															
Mean family composition change															
Exit Usual Circumstances: (measured over a varying-length window)															
Mean employment change within family	-0.40	(1.20)	0.67	1.12	(0.93)	3.08	0.44	(1.32)	1.55	-0.04	(0.70)	0.96	1.48	(1.05)	4.373
Mean income change within family	0.53	(0.99)	1.70	1.50*	(0.86)	4.46	0.51	(1.59)	1.66	0.95	(0.74)	2.60	1.63*	(0.93)	5.112
Mean family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1

Table III.8a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Variance in family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
Average number of marriages in family to date	0.16	(0.17)	1.17	-0.19	(0.23)	0.82	0.21	(0.45)	1.24	0.21	(0.45)	1.24	-0.46	(0.34)	0.634
Mean family composition change	0.52	(1.13)	1.68	1.90*	(0.99)	6.70	-0.06	(1.40)	0.94	-0.06	(1.40)	0.94	-5.14**	(2.47)	0.006
Interaction terms for exit trigger events and usual circumstances															
(Employment change)x(Mean employment change)	6.08**	(2.54)	435.81	-2.42	(1.77)	0.09	1.91	(1.92)	6.74	-0.37	(0.94)	0.69	-4.43	(3.67)	0.012
(Income change within family)x(Mean income change)	-0.70	(1.15)	0.50	-0.16	(0.93)	0.86	-0.75	(1.70)	0.47	-0.01	(0.76)	0.99	-2.19**	(1.05)	0.112
(Income change within family)x(Mean family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00***	(0.00)	1.00	0.00	(0.00)	1
(Marital status change)x(Average number marriages)	-0.10	(1122.64)	0.91	-11.64	(551.10)	0.00	2.86	(2.75)	17.53	2.86	(2.75)	17.53	2.85	(1.93)	17.28
(Family composition change)x(Mean family composition change)	-5.46**	(2.63)	0.00	-3.95*	(2.04)	0.02	-1.57	(1.50)	0.21	-0.25	(0.79)	0.78	4.04	(2.73)	56.63
State and Regional Measures															
State unemployment rate (time-varying)	0.31***	(0.12)	1.36	0.03	(0.15)	1.03	0.23	(0.17)	1.25	-0.12	(0.08)	0.89	-0.13	(0.13)	0.878
Hourly wage rate statistics (time-varying)															
Mean Hourly Wage Rate	-0.66	(0.61)	0.52	0.32	(0.82)	1.38	-0.12	(0.86)	0.89	0.90*	(0.47)	2.45	1.65**	(0.76)	5.22
Standard Deviation	0.32	(0.25)	1.38	0.03	(0.33)	1.03	-0.10	(0.35)	0.91	-0.28	(0.19)	0.76	-0.61**	(0.31)	0.544
20 th Percentile	0.71**	(0.29)	2.04	0.10	(0.39)	1.10	0.35	(0.39)	1.41	-0.14	(0.22)	0.87	-0.36	(0.35)	0.696
40 th Percentile	0.08	(0.27)	1.09	-0.38	(0.37)	0.68	-0.45	(0.37)	0.64	0.31	(0.20)	1.36	-0.19	(0.32)	0.828
50 th Percentile	-0.01	(0.25)	0.99	-0.06	(0.36)	0.94	-0.07	(0.34)	0.94	-0.77***	(0.20)	0.46	0.01	(0.29)	1.009
60 th Percentile	0.03	(0.21)	1.03	-0.25	(0.29)	0.78	0.05	(0.30)	1.05	0.01	(0.16)	1.01	-0.63**	(0.25)	0.531
80 th Percentile	0.05	(0.13)	1.05	-0.02	(0.17)	0.98	0.17	(0.17)	1.19	-0.09	(0.09)	0.92	-0.14	(0.15)	0.868
Region of Residence ("Western" Region is omitted): (time-varying)															
Northeast	0.31	(0.54)	1.37	0.36	(0.64)	1.43	-0.61	(0.67)	0.55	-1.31***	(0.38)	0.27	0.13	(0.62)	1.137
Mid-Atlantic	0.28	(0.42)	1.32	0.05	(0.58)	1.05	-0.46	(0.79)	0.63	-0.92***	(0.33)	0.40	-0.32	(0.51)	0.729
Midwest	0.31	(0.41)	1.36	0.16	(0.52)	1.17	-0.32	(0.68)	0.73	-0.51*	(0.28)	0.60	0.07	(0.45)	1.069
Southeast	0.01	(0.39)	1.01	-0.32	(0.47)	0.73	-0.86	(0.66)	0.42	-0.18	(0.25)	0.83	0.12	(0.42)	1.129
Southwest	0.04	(0.47)	1.04	-1.11*	(0.60)	0.33	-0.50	(0.76)	0.61	-0.45	(0.30)	0.64	1.05**	(0.48)	2.867

Table III.8a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Mountain Plains	0.34	(0.53)	1.41	0.51	(0.57)	1.67	-0.69	(0.73)	0.50	0.17	(0.28)	1.18	1.01**	(0.46)	2.755
Policy Variables															
Vehicle Exclusion	-0.49*	(0.27)	0.61	-0.16	(0.34)	0.85	0.32	(0.40)	1.37	0.15	(0.18)	1.16	0.13	(0.29)	1.144
Certification Period: Earners (avg mos.)	-0.25*	(0.13)	0.78	0.12	(0.19)	1.13	-0.08	(0.20)	0.92	-0.29***	(0.11)	0.75	-0.04	(0.18)	0.964
Certification Period: Single-mothers (avg mos.)	0.19	(0.15)	1.21	-0.20	(0.22)	0.82	-0.02	(0.24)	0.98	0.39***	(0.12)	1.47	-0.05	(0.21)	0.948
Simplified Reporting	-0.31	(0.45)	0.73	0.13	(0.63)	1.14	0.12	(0.76)	1.13	-0.84***	(0.28)	0.43	-1.74***	(0.53)	0.176
Status Reporting	0.16	(0.43)	1.18	0.16	(0.57)	1.17	-0.44	(0.80)	0.64	-0.49*	(0.29)	0.61	-1.26**	(0.51)	0.283
(Simplified Reporting)x(Status Reporting)	0.00	(0.49)	1.00	-0.10	(0.74)	0.90	0.15	(0.88)	1.16	0.72**	(0.34)	2.05	1.55**	(0.62)	4.73
EBT	-0.42	(0.36)	0.66	-0.48	(0.47)	0.62	0.34	(0.74)	1.40	0.71**	(0.31)	2.03	0.28	(0.41)	1.325
Spell Information															
Spell Duration (more-than-16-months category is omitted):															
4 months or less	13.22	(225.66)	548915.61	1.56	(1.09)	4.75	12.83	(212.01)	372093.33	13.83	(206.52)	1015203.86	11.45	(185.62)	93667
5 to 8 months	12.51	(225.66)	271848.44	0.80	(1.06)	2.21	12.01	(212.01)	163570.60	12.96	(206.52)	425151.14	11.16	(185.62)	70038
9 to 12 months	11.78	(225.66)	130600.72	1.06	(1.06)	2.89	11.79	(212.01)	132098.09	12.68	(206.52)	321483.02	11.15	(185.62)	69231
13 to 16 months	11.44	(225.66)	92901.96	0.80	(1.10)	2.22	10.88	(212.01)	53092.98	11.01	(206.52)	60421.48	10.68	(185.62)	43652
First Participation Spell Ever	-0.06	(0.20)	0.94	0.57**	(0.26)	1.77	0.33	(0.33)	1.39	0.05	(0.14)	1.05	0.61**	(0.24)	1.838
Spell start year (2002 category is omitted)															
2003	-0.35*	(0.19)	0.71	-0.40	(0.29)	0.67	-1.20***	(0.29)	0.30	-0.47***	(0.14)	0.63	-0.99**	(0.23)	0.372
-2*Log Likelihood		1374.3			822.9			743.0			2314.9			972.8	
Number of Spell-Month Observations		4229.0			2454.0			1881.0			5129.0			2129.0	

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: Family subgroups of individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

One of the main ways in which our investigation of the determinants of the length of FSP participation spells differs from previous related research is that we control for the events that trigger exit from the FSP. We find that individuals living in families in which someone has started employment in the four months prior to exit have shorter participation spells if there was employment stability over the past year. The same is true for individuals living in families who experience an increase in family income. In the model in which we control for exit-related usual circumstances, evaluated over the FSP participation spell, we find that the odds of exiting the FSP are increased by 45 percent and 118 percent for individuals in families who experience a favorable change in employment or income, respectively. These results are illustrated in Table III.6b.

By comparing the estimates in the “low” and “high” columns for the employment and income variables, we can determine whether experiencing a particular exit trigger event has a greater effect on the exit rate if it represents a deviation from an individual’s usual circumstances. We find that the odds of exiting the FSP are increased by 37 percent and 100 percent for individuals in families who experience a favorable change in employment or income, respectively, conditional on having *high* employment volatility and a *high* frequency of income changes over the past year (that is, a very unstable year). The magnitudes of these effects are less than those for individuals having low employment volatility and low frequency of income changes over the past year (that is, a more stable year). This suggests that whether these exit trigger event variables reflect a deviation from one’s usual circumstance is important when analyzing their association with exit from the FSP.

Family Structure

Individuals living in families with more adults tend to have shorter spells, while those living in families with a larger number of children between 6 and 18 years old tend to have longer

spells. For example, the odds of exiting the FSP in a given month are increased by 11 percent for each adult in the family and are decreased by 8 percent for each additional child between the ages of 6 and 18. The coefficient on the number of children in the family under age 6 is statistically insignificant.

Without controlling for the effects of other variables besides marital status on the exit rate, married individuals have shorter participation durations than nonmarried individuals. Controlling for these variables, however, we find that the odds of exiting the program are reduced by 20 percent for individuals who are married when they enter the FSP compared to nonmarried individuals. It is possible that the relationship observed in the descriptive statistics was borne from the effects of income on the exit rate: married individuals have more income than those who are not married, causing married individuals to have shorter participation spells.⁷⁶

Demographic Characteristics

Demographic characteristics of FSP participants such as gender, race, and age play an important role in determining how long an individual will remain on the program. We find that relative to being Hispanic, white non-Hispanic and black non-Hispanic individuals are more likely to exit the program. We also find that individuals older than age 65 are significantly less likely to leave the FSP, most likely because their entry decision was not based on fluctuations in employment or income, but on more long-lasting characteristics. Similar to the results of

⁷⁶ Based on the sample used to estimate the duration model, we find that among individuals who exit the program in the panel period, those who are married have an average duration of 5.1 months and those who are single have an average duration of 5.2 months (with the median for each group equal to four months). The standard deviations are 2.9 and 3.0 months, respectively. Turning to our regression-adjusted distribution of spell lengths, we find that the median spell length for married individuals is four months shorter than that for nonmarried individuals (Table III.7). We note that in the report by Gleason et al. (1998), the coefficient on “currently married” was positive and statistically significant. That study found that the odds of leaving the FSP increased by 27 percent if an individual was married.

Gleason et al. (1998) using the 1990-1991 SIPP panels, we find no statistically significant relationship between educational attainment at the start of the food stamp spell and the length of the spell; however, the regression-adjusted median spell lengths of individuals with more education are shorter than those of individuals with less education (Table III.7).

Policy-Related Variables

We include the same set of policy variables in our duration analysis as in our entry analysis. The most relevant policy variables for the duration analysis are the certification period and reporting variables. We find that a one-month increase in the state-specific average certification period for households with earnings results in a 13 percent decrease in the odds of exiting the FSP (Table III.6a). While this agrees with our intuition, we are particularly puzzled by the sign of the estimate on average certification period of single mother households. This estimate suggests that a one-month increase in the state-specific average certification period for single mother households results in a 15 percent increase in the odds of exiting the FSP. We are left without a clear theoretical justification for this result.⁷⁷ Finally, we find that individuals who live in states that offer simplified reporting are less likely to leave the FSP. For these individuals, the odds of leaving the FSP are reduced by 27 percent. Intuitively, this agrees with our expectations since having simplified reporting procedures decreases the costs associated with remaining on the program. Unlike in the entry analysis, the estimate of the policy variable “Vehicle Exclusion” is statistically insignificant in the duration analysis. This too agrees with our intuition, as we expected the more flexible asset rule associated with this policy to affect

⁷⁷ We note that the estimate is not significant in the subgroup duration analysis except for individuals in families with married heads with children. This suggests that the certification variable might be measuring some other unobserved policy effect including related certification procedures for other family types.

eligibility status and entry decisions primarily, and not the length of time an individual spends receiving food stamp benefits.

Spell Characteristics

The final set of variables listed in Table III.6a 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 participation. This suggests that the longer time period an individual spends on the FSP, the less likely the individual is to leave the program. This may be due to a composition effect in which the individuals who are still on the program after 16 months may be less able to leave than individuals who already left the program. As discussed in the program dynamics literature, over time, this group of FSP participants consists of an increasing proportion of individuals who are more likely not to exit the program because of multiple obstacles to self-sufficiency.⁷⁸

Individuals who are in the FSP for the first time remain on the program for a shorter amount of time than those in repeat spells. We also perform sensitivity analyses based on two subsamples of first spell participants and repeat spell participants. We discuss these results in the next section of the report.

b. Family Subgroup Analyses

We re-estimate the model for the following mutually exclusive family subgroups: (1) families with elderly and disabled individuals without children, (2) families with children and one adult, (3) families with children and multiple nonmarried adults, (4) families with children and married adult heads, (5) families without children and without elderly or disabled

⁷⁸ The presence of unobserved heterogeneity among program participants could generate this result.

individuals. The results from these analyses are presented in Table III.8a and Table III.8b. The purpose of estimating separate models for the family subgroups is to observe how parameter estimates differ among these subgroups when compared with the full sample. As in the presentation of results from the entry sensitivity analyses, we discuss only those results that stand out as different from the full sample estimates or from other family subgroups. We include tables containing estimates of model specifications in which family composition variables that define family subgroups do not change over participation spells.⁷⁹

We find substantial differences in the signs and magnitudes of the effects of demographic characteristics that vary among family subgroups. For example, in the full sample, black non-Hispanic and white non-Hispanic participants had shorter spells than Hispanic individuals. That remains true among all family subgroups except for single-adult families with children. In this subgroup, we find that the odds that a Hispanic individual exits the FSP are over 50 percent higher relative to the odds that a white or black non-Hispanic individual will exit. This is an interesting finding, given that we have controlled for family income, employment status, education, and U.S. citizenship.

A change in family composition within the participation spell is strongly associated with an increased likelihood of FSP exit for individuals living in single-adult families with children. This result is not present in the full sample. Among individuals who do not experience many changes in family composition over the participation spell, individuals who experience a change in family composition are twice as likely to exit the program than individuals whose family composition remains the same.

⁷⁹ We also re-estimate each family subgroup model allowing for time-varying family composition variables. This results in marginal changes to parameter estimates.

TABLE III.8b

FSP DURATION HAZARD MODEL (FAMILY SUBGROUPS): CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR EXIT-RELATED TRIGGER EVENTS) AFFECT EXIT RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Single Adult Heads with Children)			
Employment Chg.	1.13	1.59	1.59
Income (frequency)	1.33	1.40	1.49
Income (mean)	2.19	1.88	1.58
Income (variance)	1.27	1.45	1.49
Marital Status Chg (b)	-	-	2.41
Family Composition Chg	0.90	1.98 [†]	1.98 [†]
Main Model Specification (Multiple Nonmarried Adult Heads with Children)			
Employment Chg.	2.29 [†]	1.67	1.67
Income (frequency)	1.79	2.30	2.95 [†]
Income (mean)	0.90	1.52	2.96 [†]
Income (variance)	19.94	3.25 [†]	2.96 [†]
Marital Status Chg	5.21	0.75	0.34
Family Composition Chg	0.42	0.67	0.67
Main Model Specification (Married Adult Heads with Children)			
Employment Chg.	1.37	1.49 [†]	1.49 [†]
Income (frequency)	2.58	2.58 [†]	2.59 [†]
Income (mean)	2.06	2.27 [†]	2.59 [†]
Income (variance)	1.74 [†]	2.45 [†]	2.59 [†]
Marital Status Chg (b)	-	-	-
Family Composition Chg	0.75	0.79	0.82
Main Model Specification (Elderly or Disabled without Children)			
Employment Chg.	2.76 [†]	1.23	1.23
Income (frequency)	1.25	1.90 [†]	1.99 [†]
Income (mean)	1.84	1.96 [†]	1.99 [†]
Income (variance)	2.36 [†]	1.99 [†]	1.99 [†]
Marital Status Chg (b)	-	-	-
Family Composition Chg	0.36 [†]	0.96	0.96

Table III.8b (continued)

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Non-Elderly and Non-Disabled without Children)			
Employment Chg.	0.97	1.67	1.67
Income (frequency)	0.91	1.95 [†]	3.37 [†]
Income (mean)	2.73 [†]	3.20 [†]	3.38 [†]
Income (variance)	5.77 [†]	3.40 [†]	3.38 [†]
Marital Status Chg	72.48	10.84 [†]	4.21
Family Composition Chg	1.02	0.40	0.40 [†]

Source: Model C.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odds ratios (as well as the corresponding lower and upper bounds for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, in the single adult heads with children family subgroup, conditional on having low employment volatility, individuals who experience a transition from unemployment to employment are 1.59 times more likely to exit the FSP than individuals who remain unemployed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of exiting the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the single adult heads with children family subgroup, conditional on high frequency of change in family composition, those individuals who experience a change in family composition have their odds of exiting the program reduced by 10 percent $(=(1.00-0.90)*100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Model B is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (12-month). Model C is the model with entry and exit trigger event variables and entry-related usual circumstance variables (12-month) and exit-related usual circumstance variables (varying-length).

Universe: Family subgroups of individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

[†]The marital status usual circumstance variable and interaction term were dropped from this estimation due to limited variation in the variables.

Simplified and status reporting rules affect spell duration for individuals in families with married adult heads with children and individuals in families without children or elderly or disabled individuals. For the married subgroup, the odds of FSP exit are reduced by 57 percent for individuals living in states with simplified reporting rules only, by 37 percent for individuals living in states with status reporting rules only, and by 46 percent for individuals living in states with both simplified and status reporting rules. For the group without children or elderly or disabled individuals, the odds of FSP exit are reduced by 82 percent for individuals living in states with simplified reporting rules only, by 72 percent for individuals living in states with status reporting rules only, and by 76 percent for individuals living in states with both simplified and status reporting rules only.

c. Other Sensitivity Analyses

We conduct several sensitivity analyses by estimating alternative specifications of Model C over the full sample. The results from these estimations are presented in Table III.9a, Table III.9b, and Table III.9c. In one sensitivity analysis, we re-estimate the baseline model assuming that being unemployed and being out of the labor force are behaviorally equivalent labor market States.⁸⁰ We find that when we group nonworking individuals into a state called “nonworking” instead of “unemployed” or “out of the labor force,” the coefficient on the variable indicating that the individual was employed at the start of the FSP spell becomes statistically significant and positive.⁸¹

⁸⁰ Our baseline model is the Model C with entry trigger variables, entry-related usual circumstance variables defined over a fixed 12-month window, exit trigger variables, and exit-related usual circumstance variables defined over a window of varying length.

⁸¹ We performed a chi-squared likelihood ratio test to test the null hypothesis that “unemployment” and “out of the labor force” are behaviorally equivalent labor market states. We reject the null hypothesis at the 0.01 significance level.

TABLE III.9a

FSP DURATION HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES
ON PROBABILITY OF EXITING THE FSP
(EXIT MODEL C)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First Participation Spell			Repeat Participation Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics									
Gender (female category is omitted):									
Male	0.20***	(0.07)	1.22	0.16	(0.12)	1.17	0.17*	(0.10)	1.18
Race (Hispanic category is omitted):									
White, non-Hispanic	0.05	(0.12)	1.06	-0.03	(0.21)	0.97	0.05	(0.15)	1.05
Black, non-Hispanic	0.28**	(0.13)	1.32	-0.14	(0.23)	0.87	0.49***	(0.15)	1.63
Other	-0.06	(0.19)	0.94	-0.11	(0.31)	0.89	-0.05	(0.25)	0.96
Age (18-to-29-years-old category is omitted):									
30-49	0.06	(0.09)	1.06	0.11	(0.16)	1.12	-0.04	(0.12)	0.96
50-64	-0.08	(0.13)	0.92	-0.24	(0.21)	0.79	-0.05	(0.17)	0.95
65 and older	-0.38**	(0.19)	0.68	-0.55*	(0.32)	0.58	-0.27	(0.25)	0.76
US citizen	-0.32***	(0.12)	0.73	-0.39*	(0.21)	0.68	-0.29**	(0.15)	0.75
Education Levels and Employment Status									
Highest grade completed (0-to-8 category is omitted):									
9-11	-0.16	(0.15)	0.85	-0.41	(0.30)	0.67	-0.06	(0.17)	0.95
12	-0.06	(0.13)	0.94	-0.15	(0.27)	0.86	-0.07	(0.16)	0.94
13 and above	0.11	(0.14)	1.11	0.02	(0.28)	1.02	0.08	(0.17)	1.09
Employment status ("haven't worked 12+ months" category is omitted):									
Currently Employed	0.18*	(0.10)	1.19						
Haven't worked 1-5 months	0.04	(0.16)	1.04						
Haven't worked 6-11 months	0.18	(0.16)	1.20						
Employment status ("out of labor force for 12+ months" category is omitted):									
Currently Employed				0.28	(0.20)	1.33	0.09	(0.13)	1.10
Unemployed 1-5 months				0.38	(0.30)	1.46	-0.21	(0.21)	0.81
Unemployed 6-11 months				0.31	(0.59)	1.36	-0.05	(0.32)	0.95
Unemployed 12+ months				0.01	(0.69)	1.01	0.28	(0.43)	1.32
Out of the labor force 1-5 months				-0.14	(0.28)	0.87	-0.07	(0.20)	0.93
Out of the labor force 6-11 months				0.23	(0.35)	1.26	0.19	(0.22)	1.21
Family Income and Welfare Receipt									
Ratio of family income to poverty level (less than 1.0 category is omitted):									
1.0-1.5	0.02	(0.10)	1.03	-0.09	(0.19)	0.91	0.10	(0.13)	1.10
1.5-2.0	0.38***	(0.12)	1.46	0.27	(0.23)	1.31	0.38**	(0.16)	1.47
2.0 and above	0.24**	(0.11)	1.27	0.30	(0.18)	1.35	0.10	(0.15)	1.11
Currently receiving TANF	-0.25	(0.64)	0.78	-0.26	(0.82)	0.77	2.49*	(1.28)	12.07
Previously received TANF	0.21	(0.66)	1.23	0.19	(1.00)	1.21	-2.53*	(1.30)	0.08
Family Composition									
Family Size:									
Number of adults	0.11***	(0.04)	1.12	0.13	(0.08)	1.14	0.07	(0.05)	1.07
Number of children less than age 6	0.02	(0.05)	1.02	-0.05	(0.09)	0.96	0.05	(0.06)	1.05
Number of children between ages 6 and 18	-0.09**	(0.04)	0.91	0.04	(0.07)	1.04	-0.16***	(0.04)	0.85
Marital Status (never-married category is omitted):									
Currently married	-0.20**	(0.10)	0.82	-0.43**	(0.18)	0.65	-0.05	(0.12)	0.95
Previously married	0.04	(0.12)	1.04	0.30	(0.22)	1.35	-0.04	(0.15)	0.96
Entry Trigger Events:									

Table III.9a (continued)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First Participation Spell			Repeat Participation Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Employment change within family	0.11	(0.16)	1.12	-0.26	(0.26)	0.77	0.40**	(0.20)	1.49
Income change within family	-0.14	(0.19)	0.87	0.18	(0.33)	1.20	-0.38	(0.24)	0.69
Marital status change within family	1.37	(1.15)	3.95	1.67	(1.86)	5.33	1.68	(2.39)	5.34
Family composition change	-0.05	(0.17)	0.95	0.06	(0.32)	1.06	-0.03	(0.21)	0.97
Entry Usual Circumstances:									
(measured over a fixed 12-month window)									
Mean employment change within family	0.13	(0.49)	1.14	-0.66	(0.89)	0.52	0.39	(0.62)	1.48
Mean income change within family	0.00	(0.32)	1.00	-0.04	(0.62)	0.96	0.35	(0.39)	1.41
Mean family income	0.00**	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Variance in family income	0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Average number of marriages in family to date	0.06	(0.07)	1.06	-0.10	(0.12)	0.91	0.12	(0.10)	1.13
Mean family composition change	-0.81**	(0.37)	0.44	0.22	(0.69)	1.25	-1.04**	(0.46)	0.36
Interaction terms for entry trigger events and usual circumstances									
(Employment change)x(Mean employment change)	-0.25	(0.76)	0.78	1.03	(1.33)	2.79	-0.68	(0.98)	0.51
(Income change within family)x(Mean income change)	0.16	(0.37)	1.17	-0.20	(0.70)	0.82	0.10	(0.46)	1.10
(Income change within family)x(Mean family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
(Income change within family)x(Variance family income)	0.00**	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
(Marital status change)x(Average number marriages)	-0.65	(0.66)	0.52	-0.68	(1.02)	0.51	-1.25	(2.14)	0.29
(Family composition change)x(Mean family composition change)	0.46	(0.65)	1.59	-0.36	(1.27)	0.70	0.58	(0.80)	1.79
Exit Trigger Events:									
Employment change within family	0.37***	(0.12)	1.44	0.54**	(0.21)	1.72	0.30**	(0.15)	1.36
Income change within family	0.78***	(0.09)	2.18	0.82***	(0.15)	2.27	0.83***	(0.11)	2.28
Marital status change within family	0.61	(0.46)	1.84	-0.23	(1.02)	0.79	0.67	(0.53)	1.96
Family composition change	-0.13	(0.10)	0.88	-0.34*	(0.18)	0.71	-0.03	(0.12)	0.97
Exit Usual Circumstances:									
(measured over a fixed 12-month window)									
Mean employment change within family									
Mean income change within family									
Mean family income									
Variance in family income									
Average number of marriages in family to date									
Mean family composition change									
Exit Usual Circumstances:									
(measured over a varying-length window)									
Mean employment change within family	0.36	(0.38)	1.43	0.61	(0.59)	1.84	0.22	(0.52)	1.24
Mean income change within family	0.79**	(0.36)	2.21	1.67***	(0.56)	5.30	0.36	(0.50)	1.43
Mean family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Variance in family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Average number of marriages in family to date	0.08	(0.10)	1.08	0.21	(0.16)	1.24	0.02	(0.12)	1.02
Mean family composition change	-0.11	(0.40)	0.89	-0.48	(0.65)	0.62	0.02	(0.52)	1.02
Interaction terms for exit trigger events and usual circumstances									
(Employment change)x(Mean employment change)	-0.41	(0.60)	0.66	-0.87	(1.17)	0.42	-0.05	(0.73)	0.95
(Income change within family)x(Mean income change)	-0.41	(0.38)	0.66	-1.05*	(0.59)	0.35	-0.02	(0.52)	0.98
(Income change within family)x(Mean family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00

Table III.9a (continued)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First Participation Spell			Repeat Participation Spell			
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	
(Marital status change)x(Average number marriages)	0.09	(0.87)	1.09	0.70	(1.21)	2.02	-0.61	(1.66)	0.54	
(Family composition change)x(Mean family composition change)	-0.72	(0.53)	0.49	-1.01	(1.00)	0.36	-0.77	(0.66)	0.46	
State and Regional Measures										
State unemployment rate (time-varying)	0.00	(0.05)	1.00	-0.02	(0.08)	0.98	0.03	(0.06)	1.03	
Hourly wage rate statistics (time-varying)										
Mean hourly wage rate	0.40	(0.27)	1.48	1.55***	(0.47)	4.71	-0.11	(0.35)	0.90	
Standard Deviation	-0.10	(0.11)	0.91	-0.67***	(0.19)	0.51	0.18	(0.14)	1.20	
20 th Percentile	0.15	(0.13)	1.16	0.01	(0.21)	1.01	0.18	(0.17)	1.19	
40 th Percentile	0.01	(0.12)	1.01	-0.15	(0.20)	0.86	0.05	(0.15)	1.05	
50 th Percentile	-0.29**	(0.11)	0.75	-0.60***	(0.19)	0.55	-0.12	(0.15)	0.89	
60 th Percentile	-0.09	(0.09)	0.91	-0.24	(0.16)	0.79	-0.03	(0.12)	0.97	
80 th Percentile	-0.02	(0.06)	0.98	-0.12	(0.09)	0.89	0.00	(0.07)	1.00	
Region of Residence ("Western" category is omitted): (time-varying)										
Northeast	-0.42**	(0.20)	0.66	-0.55	(0.38)	0.58	-0.44*	(0.26)	0.65	
Mid-Atlantic	-0.36**	(0.17)	0.70	-0.12	(0.30)	0.88	-0.58**	(0.23)	0.56	
Midwest	-0.14	(0.16)	0.87	-0.09	(0.27)	0.91	-0.33	(0.22)	0.72	
Southeast	-0.19	(0.15)	0.83	-0.04	(0.23)	0.97	-0.37	(0.20)	0.69	
Southwest	-0.21	(0.18)	0.81	-0.48	(0.31)	0.62	-0.17	(0.23)	0.84	
Mountain Plains	0.28	(0.17)	1.32	0.19	(0.30)	1.21	0.31	(0.23)	1.36	
Policy Variables										
Vehicle Exclusion	0.04	(0.11)	1.04	0.13	(0.18)	1.14	0.02	(0.14)	1.02	
Certification Period: Earners (avg mos.)	-0.15***	(0.06)	0.86	-0.11	(0.10)	0.89	-0.22***	(0.08)	0.80	
Certification Period: Single-mothers (avg mos.)	0.15**	(0.07)	1.17	0.14	(0.12)	1.15	0.22**	(0.09)	1.25	
Simplified Reporting	-0.32*	(0.17)	0.73	-0.42	(0.29)	0.66	-0.18	(0.23)	0.83	
Status Reporting	-0.15	(0.17)	0.86	-0.21	(0.30)	0.81	-0.05	(0.23)	0.95	
(Simplified Reporting)x(Status Reporting)	0.22	(0.20)	1.25	0.22	(0.36)	1.25	0.17	(0.27)	1.19	
EBT	0.03	(0.15)	1.03	0.06	(0.28)	1.07	0.02	(0.20)	1.02	
Spell Information										
Spell Duration (more-than-16-months category is omitted):										
4 months or less	4.20***	(1.01)	66.37	14.00	(175.84)	1203687.12	3.47***	(1.02)	32.24	
5 to 8 months	3.35***	(1.01)	28.39	12.96	(175.84)	426257.97	2.74***	(1.01)	15.54	
9 to 12 months	2.94***	(1.01)	18.91	12.39	(175.84)	241349.17	2.47**	(1.01)	11.86	
13 to 16 months	2.21**	(1.02)	9.11	11.21	(175.84)	74213.40	1.92	(1.03)	6.82	
First Participation Spell Ever	0.19**	(0.08)	1.21							
Spell start year (2002 category is omitted)										
2003 .	-0.57***	(0.08)	0.57	-0.87***	(0.14)	0.42	-0.37***	(0.11)	0.69	
-2*Log Likelihood		6676.4			2384.3			4173.2		
Number of Spell-Month Observations		15822.0			5231.0			10591.0		

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

TABLE III.9b

FSP DURATION HAZARD MODEL: INFLUENCE OF EXIT TRIGGER EVENT VARIABLES
AND USUAL CIRCUMSTANCE VARIABLES ON EXIT RATE
(Standard Errors in Parentheses)

Explanatory Variables	Exit Trigger Event		Exit Trigger Event and Usual Circumstance		Exit Trigger Event, Usual Circumstance, and Interaction Term	
Employment change within family	0.51***	(0.10)	0.51***	(0.10)	0.58***	(0.11)
Mean employment change within family			0.17	(0.29)	0.63*	(0.34)
(Employment change)x(Mean employment change)					-1.14**	(0.57)
Income change within family	0.73***	(0.08)	0.73***	(0.08)	0.81***	(0.08)
Mean income change within family			0.34**	(0.16)	0.77**	(0.35)
Mean family income			0.01	(0.00)	0.04	(0.00)
Variance in family income			-0.20	(0.00)	0.77	(0.00)
(Income change within family)x(Mean income change)					-0.47	(0.37)
(Income change within family)x(Mean family income)					-0.03	(0.00)
(Income change within family)x(Variance family income)					-1.70*	(0.00)
Marital status change within family	0.60	(0.41)	0.61	(0.41)	0.67	(0.46)
Average number of marriages in family to date			0.11	(0.09)	0.12	(0.09)
(Marital status change)x(Average number marriages)					-0.23	(0.88)
Family composition change	0.12	(0.09)	0.14	(0.09)	0.20**	(0.09)
Mean family composition change			0.01	(0.27)	0.60*	(0.35)
(Family composition change)x(Mean family composition change)					-1.11**	(0.51)

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Note: This table contains the estimates from many estimations. The set of explanatory variables common to all estimations includes all variables in the following categories (see Table III.6a, Model (C)): individual demographic characteristics, education levels and employment status, family income and welfare receipt, family composition, entry trigger events, entry usual circumstances, interaction terms for entry trigger events and usual circumstances, state and regional measures, policy variables, and spell information. To this set of common explanatory variables, we add the following sets of variables **individually** in each estimation in Table III.9b: employment exit trigger event variable, employment exit trigger event variable and its associated usual circumstance variable, employment exit trigger event variable and its associated usual circumstance variable and interaction variable. Other estimations are performed similarly for the income-related exit variables, for the marriage-related exit variables, and for the exit variables related to family composition.

Based on Model (C) in which usual circumstance variables are measured over a variable window.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

TABLE III.9c

FSP DURATION HAZARD MODEL: CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR EXIT-RELATED TRIGGER EVENTS) AFFECT EXIT RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Separately and Individually Added Triggers)			
Employment Chg.	1.52 [†]	1.79 [†]	1.79 [†]
Income (frequency)	1.64 [†]	1.92 [†]	2.25 [†]
Income (mean)	2.09 [†]	2.17 [†]	2.25 [†]
Income (variance)	2.07 [†]	2.24 [†]	2.25 [†]
Marital Status Chg	1.49	1.54	1.95
Family Composition Chg	0.93	1.23 [†]	1.23 [†]
Main Model Specification (First FSP Spell)			
Employment Chg.	1.54 [†]	1.71 [†]	1.71 [†]
Income (frequency)	1.21	1.75 [†]	2.27 [†]
Income (mean)	2.38 [†]	2.30 [†]	2.27 [†]
Income (variance)	2.23 [†]	2.27 [†]	2.27 [†]
Marital Status Chg	1.60	1.00	0.79
Family Composition Chg	0.56 [†]	0.71	0.71
Main Model Specification (Repeat FSP Spell)			
Employment Chg.	1.35 [†]	1.36 [†]	1.36 [†]
Income (frequency)	2.25 [†]	2.27 [†]	2.28 [†]
Income (mean)	1.97 [†]	2.20 [†]	2.28 [†]
Income (variance)	2.24 [†]	2.28 [†]	2.28 [†]
Marital Status Chg	1.07	1.60	1.96
Family Composition Chg	0.81	0.97	0.97

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, conditional on having low employment volatility, individuals who experience a transition from unemployment to employment are 1.71 times more likely to exit the FSP than individuals who remain unemployed (in the First FSP Spell estimation). To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of exiting the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the First FSP Spell estimation, conditional on low frequency of change in family composition, those individuals who experience a change in family composition have their odds of exiting the program reduced by 29 percent $(= (1.00 - 0.71) * 100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables. All estimates correspond to exit model C.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

As another sensitivity analysis, we divide the full sample into individuals who are in their first food stamp spell and those who are in a repeat spell. Overall, our regression-adjusted distributions of spell lengths indicate that individuals in their first spell have a median spell length of 10 months, whereas individuals in a repeat spell have a median spell length of 16 months (Table III.7). One factor that contributes to the significant difference between the results of the two models is experiencing a transition from unemployment to employment in the four months prior to exiting the FSP. This leads to shorter participation spells for individuals in an initial spell compared to those in a repeat spell. This is most likely attributable to individuals in repeat spells being accustomed to relying on the FSP as a safety net following the loss of a job, compared to those in initial spells. Certain characteristics of individuals in an initial spell may be correlated with greater job search intensity and higher hazard rates out of the program. There may be unobserved differences between the two groups, such as the stigma associated with receiving food stamp benefits or the administrative and physical costs associated with being a participant. Those in repeat spells are likely to be affected less by these participation costs and, thus, rely more frequently on the FSP for income support.⁸²

As a final set of sensitivity analyses, we investigate the effects on spell duration and the likelihood of FSP exit of including (1) entry and exit trigger event variables, (2) the usual circumstance variables associated with them, and (3) the interactions between the trigger event variables and the usual circumstance variables. For each type of trigger event, we estimate the model first with only the trigger event variable, then with the trigger event variable and its associated usual circumstance variable, and finally with the trigger event variable, its associated

⁸² We conduct a chi-square likelihood ratio test to determine whether the coefficients of the two models (first and repeat spells) are the same. We reject the null hypothesis at the 0.05 percent significance level.

usual circumstance variable, and its associated interaction term. The results are presented in Table III.9b and Table III.9c.

Table III.9b contains the estimates from several estimations. In order to aid the reader in interpreting these estimates, we will describe the sets of explanatory variables included in each of the estimations. The set of explanatory variables common to all estimations includes all variables in the following categories (see Table III.6a, Model (C)): individual demographic characteristics, education levels and employment status, family income and welfare receipt, family composition, entry trigger events, entry usual circumstances, interaction terms for entry trigger events and usual circumstances, state and regional measures, policy variables, and spell information. To this set of common explanatory variables, we add the following sets of variables **individually** in each estimation in Table III.9b:

- First estimation: employment exit trigger event variable. The estimate of the coefficient of this variable is 0.51.
- Second estimation: employment exit trigger event variable and its associated usual circumstance variable. The estimates of the coefficients of these variables are 0.51 and 0.17.
- Third estimation: employment exit trigger event variable and its associated usual circumstance variable and interaction variable. The estimates of the coefficients of these variables are 0.58, 0.63, -1.14.
- Fourth estimation: income exit trigger event variable. The estimate of the coefficient of this variable is 0.73.
- Fifth estimation: income exit trigger event variable and all three of its usual circumstance variables. The estimates of the coefficients of these variables are 0.73, 0.34, 0.01, and -0.20.
- Sixth estimation: income exit trigger event variable, all three of its usual circumstance variables, and all three of its associated interaction variables. The estimates of the coefficients of these variables are 0.81, 0.77, 0.04, 0.77, -0.47, -0.03, -1.70.
- The Seventh, Eighth, and Ninth estimations are performed similarly for the marriage-related variables.

- The Tenth, Eleventh, and Twelfth estimations are performed similarly for the variables related to family composition.

Interestingly, when we estimate the model only with an employment-related exit trigger event and not its associated usual circumstance and interaction variables, we find that the odds of exiting the FSP are 1.67 times greater for individuals who experience a transition from unemployment to employment than those who remain unemployed (see “trigger event” column of Table III.9b). When we include the associated usual circumstance variable that measures the frequency of changes in employment status over the participation spell, the original estimate remains unchanged and statistically significant (see “trigger event and usual circumstance” column of Table III.9b). However, the estimates from a model that includes the employment trigger event variable and its associated usual circumstances and interaction variables suggest that whether the employment trigger event reflects a deviation from one’s usual circumstance is important when analyzing its association with FSP exit. In the “Main Model Specification (Separately and Individually Added Triggers)” section of Table III.9c, for example, we observe that individuals with low employment volatility over the participation spell who become employed are 1.79 times more likely to exit the FSP than individuals who remain unemployed. Individuals with high employment volatility who become employed are 1.52 times more likely to exit than individuals who remain unemployed. The lower bounds of both estimates are greater than 1.00, indicating that the employment trigger event variable, conditional on a value of the usual circumstance variable, has a statistically significant positive association with exit.

The same conclusion is drawn from including only the set of income trigger event and usual circumstance variables (in addition to the standard set of explanatory variables). In Table III.9b we find that the estimate of the effect of the increase in income on the likelihood of exiting the FSP remains the same (0.73) even after controlling for the usual circumstance variables

associated with income. However, by also including the interaction terms, we find that whether the income trigger event reflects a deviation from one's usual circumstance is also important when analyzing its association with FSP exit (see the "Main Model Specification (Separately and Individually Added Triggers)" section of Table III.9c). Individuals with low mean income over the participation spell who experience an increase in income are 2.25 times more likely to exit the FSP than individuals whose incomes do not change. Individuals with higher mean income who experience an increase in income are 1.64 times more likely to exit than individuals whose incomes do not change.⁸³ It is not surprising that income is a more sensitive indicator of exit behavior since it is the center of so many decisions while individuals are receiving assistance.

D. THE DETERMINANTS OF FSP RE-ENTRY

The Chapter II life table analysis (see Table II.22) indicates that almost 30 percent of FSP participants who exit the program return to the program within six months of leaving. About 45 percent of individuals return within one year and 56 percent of individuals return within two years. In this section we investigate the determinants of FSP re-entry.

1. Sample

The sample for the multivariate re-entry analysis includes all FSP participants who exited the FSP and had at least one month of nonparticipation between the 17th SIPP panel month and the month in which they left the panel. All individuals in the sample are at least 18 years old. Unlike the sample in the multivariate entry analysis, the sample used in the re-entry analysis

⁸³ Similar results were found for those individuals with stable incomes over the participation spell compared to those individuals with volatile incomes over the participation spell. The lower bounds of all odds ratios are greater than 1.00, indicating that the income trigger event variable, conditional on a value of the usual circumstance variable, has a statistically significant positive association with exit.

includes duration data. Although we are interested in the determinants of FSP re-entry, we also wish to investigate the determinants of the time former participants stay off the program before re-entering.⁸⁴

The dependent variable in all estimations is a binary variable equal to 0 in each month an individual did not receive food stamp benefits and equal to 1 in the month that an individual re-entered the program (if that event occurred). We estimate the model using the full sample and the five mutually exclusive family subgroups used in the entry and duration analyses. These are defined by the composition of individuals' families at the start of their nonparticipation spells (that is, at the time they exited the FSP). In our analysis section, we show that the factors associated with FSP re-entry differ across many of these subgroups.⁸⁵

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

2. Explanatory Variables

We include a set of explanatory variables in the multivariate re-entry models similar to those in the duration models. All variables in the re-entry analysis that are held constant over the nonparticipation spell are measured at the start of the spell. Additionally, we include a variable that measures the duration of the previous food stamp spell and a variable that indicates whether this was an individual's first time receiving food stamp benefits.

⁸⁴ Similar to the FSP duration analysis, the main specification of our re-entry model uses the sample that begins in month 17 of the panel, although sensitivity analyses are performed using samples that begin in month 13 and in month 6.

⁸⁵ We perform various chi-squared likelihood ratio tests to test the null hypothesis that the parameters in the models are the same for each family subgroup. We reject the null hypothesis at the 0.01 percent significance level when the parameters in all five subgroups are compared.

In several specifications of the re-entry model, we test whether the probability of re-entry is related to the occurrence of an entry trigger event. In these models, entry trigger event variables and entry-related usual circumstance variables refer to entry into the subsequent spell of participation. We also test whether the probability of re-entry is related to the type of exit trigger that precipitated the end of the *previous* participation spell. That is, exit trigger event variables and exit-related usual circumstance variables refer to exit from the individual's most recent participation spell.

All entry trigger variables are measured over the four-month period prior to entry. The exit trigger variables, however, are measured over a maximum of four months. For FSP participation spells lasting fewer than four months, the exit triggers are measured over the length of the participation spell. For FSP participation spells that last for at least four months, the exit trigger windows are measured over a fixed four-month window. Finally, we measure usual circumstances for exit triggers using two windows: a fixed 12-month window and one of varying length. For example, a nine-month FSP spell would allow us to measure exit triggers in months 6 through 9 and usual circumstances in months 1 through 5 of the spell. We also measure usual circumstances for entry triggers using a fixed 12-month window and one of varying length. In the latter case, a ten-month nonparticipation spell allows us to measure entry triggers in months 7 through 10 and usual circumstances in months 1 through 6 of the spell.

3. Descriptive Statistics for Explanatory Variables

This section describes the characteristics of individuals and their families using the re-entry sample. Table III.10 presents re-entry rates and the mean values and relative frequencies of the explanatory variables for the full sample and for each family subgroup. Similar to the samples

TABLE III.10

SUMMARY INFORMATION ON THE MULTIVARIATE RE-ENTRY ANALYSIS SAMPLE,
BY FAMILY SUBGROUP

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Individual Demographic Characteristics (Percentage)						
Male	40.9	47.0	11.6	28.5	48.8	55.2
Race						
White, non-Hispanic	49.2	54.4	46.8	21.9	53.0	60.9
Black, non-Hispanic	27.4	28.7	36.3	49.3	13.8	24.5
Hispanic	18.9	11.9	15.9	20.8	29.2	9.8
Other	4.5	5.1	1.1	8.0	4.0	4.8
Age						
18 to 29 years	32.2	14.3	36.2	40.6	33.5	41.8
30 to 49 years	47.1	29.7	59.3	42.5	57.1	44.0
50 to 64 years	14.6	33.4	4.5	12.3	7.7	14.3
65 and older	6.1	22.7	0.0	4.6	1.7	0.0
U.S. Citizen	86.1	91.9	89.4	89.4	77.5	88.8
Education Levels and Employment Status (Percentage)						
Highest Grade Completed						
8 or less	10.2	17.6	4.3	11.2	10.9	3.7
9 to 11	18.0	25.0	14.8	19.2	16.5	13.7
12	40.4	35.0	39.1	44.8	41.1	43.2
13 or greater	31.4	22.4	41.8	24.8	31.5	39.3
Employment Status						
Currently Working	52.2	19.8	62.5	54.5	59.3	69.3
Unemployed for 5 months or less	5.4	1.9	8.0	7.9	4.7	6.9
Unemployed for 6 to 11 months	3.0	0.2	5.3	2.0	2.9	5.5
Unemployed for 12 or more months	0.6	0.6	0.7	0.1	0.1	1.6
Out of the labor force for 5 months or less	6.7	6.4	5.9	6.7	6.6	8.1
Out of the labor force for 6 to 11 months	4.2	5.6	4.1	3.5	4.0	3.7
Out of the labor force for 12 or more months	27.9	65.5	13.6	25.4	22.5	4.9
Family Income and Welfare Receipt (Percentage)						
Ratio of Family Income to Poverty Level						
Less than 1.0	37.7	39.2	54.5	34.0	31.7	34.7
1.0 to 1.5	20.5	20.8	27.7	24.3	20.6	10.3
1.5 to 2.0	12.9	9.5	9.9	15.7	14.0	15.4
2.0 or more	29.0	30.6	7.9	26.0	33.7	39.7

Table III.10 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
TANF Receipt						
Currently	8.3	1.9	13.8	16.5	10.4	0.8
Previously	8.3	1.9	13.7	16.1	10.4	0.8
Never	91.7	98.1	86.2	83.5	89.6	99.2
Family Size and Marital Status						
Number of Adults	2.1	2.2	1.0	2.7	2.6	1.7
Number of Children						
Number of children less than age 6	0.5	0.0	0.7	0.7	1.0	0.0
Number of children ages 6 to 18	0.8	0.0	1.2	1.2	1.4	0.0
Marital Status (Percentage)						
Currently Married	40.7	27.9	0.0	6.9	88.5	33.8
Previously Married	28.4	43.5	51.5	38.5	3.1	26.6
Never Married	30.9	28.6	48.5	54.6	8.4	39.6
Entry Trigger Events						
Employment	16.1	11.0	15.0	21.8	19.2	12.2
Income	51.4	19.5	54.5	65.0	62.7	50.3
Marital Status	0.0	0.0	0.0	0.0	0.0	0.0
Family Composition	9.7	4.1	5.8	20.7	8.5	16.4
Entry Usual Circumstance Variables						
Frequency of Employment Change	0.1	0.1	0.1	0.1	0.2	0.1
Frequency of Income Change	0.5	0.2	0.5	0.5	0.6	0.4
Mean Income	1695.17	1296.51	1065.59	2232.62	2393.80	1146.67
Variance in Income	1363.0	562.2	718.6	2796.6	2089.1	489.9
Average Number of Marriages	0.8	1.1	0.5	0.6	1.0	0.8
Frequency of Family Composition Change	0.2	0.1	0.1	0.2	0.2	0.1
Exit Trigger Events						
Employment	14.7	4.0	17.3	24.2	19.4	9.6
Income	56.8	34.2	63.4	69.5	64.8	54.3
Marital Status	1.5	0.0	0.1	1.4	3.7	0.7
Family Composition	26.7	15.3	20.3	39.8	35.1	20.2
Exit Usual Circumstance Variables (Fixed Window)						
Frequency of Employment Change	0.1	0.1	0.1	0.1	0.1	0.1
Frequency of Income Change	0.5	0.3	0.5	0.5	0.5	0.5
Mean Income (Dollars)	2455.16	1943.11	1319.13	2674.79	3081.65	2793.27
Variance in Income (\$1000)	3825.53	837.18	861.62	10757.72	3193.40	5639.79
Average Number of Marriages	0.9	1.0	0.7	0.6	1.0	0.8

Table III.10 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Exit Usual Circumstance Variables (Varying Window)						
Frequency of Employment Change	0.0	0.0	0.0	0.1	0.1	0.0
Frequency of Income Change	0.2	0.1	0.3	0.2	0.2	0.1
Mean Income (Dollars)	945.82	807.47	794.53	1495.33	1126.80	458.51
Variance in Income (\$1000)	530.7	186.6	362.4	276.9	1212.2	75.3
Average Number of Marriages	0.4	0.6	0.5	0.3	0.5	0.2
Frequency of Family Composition Change	0.1	0.0	0.1	0.1	0.1	0.0
State and Regional Measures						
State Labor Market Characteristics						
State Unemployment Rate	5.9	5.9	5.8	6.0	5.9	6.0
Mean Wage	15.92	15.89	15.71	16.19	15.91	15.93
Standard Deviation Wage	9.89	9.85	9.74	10.18	9.87	9.88
20th Percentile Wage	8.25	8.26	8.20	8.29	8.25	8.26
40th Percentile Wage	11.27	11.27	11.14	11.39	11.28	11.27
50th Percentile Wage	13.11	13.11	12.93	13.31	13.11	13.12
60th Percentile Wage	15.29	15.29	15.08	15.54	15.29	15.30
80th Percentile Wage	21.99	21.93	21.64	22.46	21.98	21.98
Region of Residence						
Northeast	7.3	6.1	7.0	15.6	5.9	4.7
MidAtlantic	10.4	12.9	7.5	8.8	11.2	10.0
Midwest	15.0	17.4	17.6	10.0	12.3	18.6
Southeast	24.9	28.2	24.1	28.8	22.9	21.6
Southwest	12.9	13.2	12.5	15.3	13.7	9.6
Mountain	8.4	6.9	11.8	2.4	10.3	8.5
West	21.2	15.3	19.5	19.1	23.7	27.1
FSP Policy Variables						
Vehicle (Percentage)	43.2	43.6	42.5	43.6	40.7	47.8
Certification Period: Earners (avg. mos.)	7.9	7.8	7.8	8.0	8.0	8.0
Certification Period: Single Mothers (avg. mos.)	8.1	8.1	8.0	8.2	8.1	8.1
Simplified (Percentage)	55.4	56.1	56.0	55.8	56.2	52.2
Status (Percentage)	52.1	54.8	56.9	50.6	48.1	53.0
EBT (Percentage)	86.6	85.9	86.9	87.2	87.0	86.0
Spell Information						
Spell Duration Within Panel (Months) ^a						
All	9.2	9.5	8.8	9.5	8.8	10.2
Non-Right-Censored	5.7	5.1	5.9	6.2	5.8	5.7
Right-Censored	10.8	11.1	10.9	10.7	10.0	11.8

Table III.10 (continued)

Variables	Full Sample	Family Subgroup				
		Elderly or Disabled without Children	Single Adult Head with Children	Multiple Non-Married Adult Heads with Children	Married Adult Heads with Children	Other Families without Children
Spells (Frequencies in Millions) ^a						
All	9.1	1.9	1.5	1.3	3.0	1.4
Non-Right-Censored	2.8	0.5	0.6	0.3	0.9	0.4
Right-Censored	6.3	1.4	0.8	0.9	2.1	1.0
Right-Censored Spells (Percentage) ^a	69.7	73.1	57.2	72.5	70.5	73.6
First Spells (Percentage) ^a	44.4	43.9	43.5	33.8	39.4	66.2
Duration of Previous FS Spell ^a	16.7	24.4	20.7	18.1	13.6	7.2
Unweighted Sample Size	16,361	3,678	2,416	2,287	5,409	2,571

Source: Mathematica Policy Research, Inc., tabulations of the enhanced 2001 SIPP panel.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

^aStatistics associated with the way in which spells end use person-spell data rather than person-month data. For example, an individual who contributed one 11-month spell to the sample would contribute 11 person-months to the sample or one spell.

we use in the entry and duration analyses, these statistics are calculated using a data set that contains one observation for each spell month an individual spends in the sample.⁸⁶

a. Full Sample

The sample contains 1,760 individuals and generates 16,361 person-month observations that we use to estimate the discrete-time multivariate hazard models. About 30.3 percent of nonparticipation spells end with re-entry into the FSP. The average nonparticipation duration is 9.2 months for all spells, 5.7 months for completed spells, and 10.8 months for right-censored spells.

⁸⁶ We calculate all statistics using data that is weighted with the longitudinal panel weights. Additionally, estimates based on person-spell (and not person-month) data have a footnote attached to them in the table.

Within the four-month period prior to exiting the FSP, 15 percent of families contain an individual who transitions from not working to working, 57 percent have an increase in family income, 1.5 percent contain an individual who becomes married, and 27 percent have a change in family composition.

Within the four-month period prior to FSP re-entry, among those individuals who actually re-enter the program within the panel period, 16 percent of families have a loss of employment, 51 percent have a decrease in income, and 10 percent have a change in family composition.

b. Family Subgroups

The full sample principally comprises families with elderly or disabled members without children and families with married adult heads with children. These two groups make up about 55 percent of the full sample. The other family subgroups each make up about 15 percent of the full sample. The differences in the mean values and relative frequencies of the variables across the five subgroups suggest that the determinants of the decision to re-enter the FSP vary among subgroups.

Individuals in families with single adult heads with children make up the poorest family subgroup in the full sample, with 82 percent having family incomes less than 1.5 times the poverty line. These individuals have also spent, on average, the longest amount of time on the FSP in their most recent spell relative to individuals in all other family subgroups. In contrast, individuals in families without children, elderly or disabled individuals had the shortest average prior FSP participation duration. The participation spells for individuals in this subgroup last, on average, 7.2 months compared to the averages of 13.6 to 24.4 months for individuals in other family subgroups.

Individuals in families with elderly or disabled members without children are least likely to be working and most likely to be out of the labor force. About 20 percent and 71.5 percent of

individuals in this subgroup are employed and out of the labor force, respectively. Individuals in this family subgroup who re-enter the FSP before the end of panel period spend, on average, the shortest amount of time off of the program relative to individuals in other family subgroups who also re-enter.

4. Estimation Results

In this section we present the results of the estimation of the FSP re-entry model set within a discrete-time hazard framework. We estimate many specifications of the model in which we control for entry and exit trigger variables and their associated usual circumstance variables. We present the results from the following four Models⁸⁷:

- a. With entry trigger variables and entry-related usual circumstance variables defined over a fixed 12-month window; without exit trigger variables and exit-related usual circumstance variables
- b. With entry trigger variables, entry-related usual circumstance variables defined over a fixed 12-month window; exit trigger variables, and exit-related usual circumstance variables defined over a fixed 12-month window
- c. With entry trigger variables, entry-related usual circumstance variables defined over a fixed 12-month window; exit trigger variables, and exit-related usual circumstance variables defined over a window of varying length
- d. With entry trigger variables, entry-related usual circumstance variables defined over a window of varying length; exit trigger variables, and exit-related usual circumstance variables defined over a window of varying length

⁸⁷ We also estimate the following eight models: (1) with exit trigger variables and usual circumstance variables defined over a fixed 12-month window, and without entry trigger variables and entry-related usual circumstance variables, (2) with exit trigger variables and usual circumstance variables defined over a varying-length window, and without entry trigger variables and entry-related usual circumstance variables (3) with only entry trigger variables, (4) with only exit trigger variables, (5) with only entry and exit trigger variables, (6) without entry and exit trigger variables and without usual circumstance variables, (7) with entry trigger variables and usual circumstance variables defined over a varying-length window, and without exit trigger variables and exit-related usual circumstance variables, and (8) with entry trigger variables, entry-related usual circumstance variables defined over a window of varying-length, exit trigger variables, and exit-related usual circumstance variables defined over a 12-month window. We find that the results differ among several of these specifications, but mainly in the magnitudes of the estimates. Variables that are statistically significant in one specification remain significant in other specifications. We present the four models that we feel produce the most interesting results.

As in the FSP duration model, the main difference between Models B, C and D is the length of the window in which an individual's usual circumstances are defined for both entry into and exit from the FSP. In Model B, the entry usual circumstance window always consists of a fixed 12-month period, regardless of whether this period overlaps with a previous spell of participation, and the exit usual circumstance window always consists of a fixed 12-month period, regardless of whether it overlaps with a previous spell of nonparticipation. In Model C, the entry usual circumstance window always consists of a fixed 12-month period, regardless of whether this period overlaps with a previous spell of FSP participation. The exit usual circumstance window, however, is defined only over those months in which an individual participates in the FSP, with a maximum of 12 months. In Model D, the entry usual circumstance window is defined only over those months in which an individual does not participate in the FSP, with a maximum of 12 months. The exit usual circumstance window is defined only over those months in which an individual participates in the FSP, with a maximum of 12 months.

a. Full Sample Results

Table III.11a contains the logit parameter estimates from four discrete-time hazard models of FSP re-entry. The estimates refer to the effects of the explanatory variable on the probability of re-entry into the FSP (or, equivalently, on the hazard rate out of the FSP nonparticipation state). A positive and significant coefficient on a variable implies that this variable is positively and significantly related to the FSP re-entry rate after controlling for the effects of the other explanatory variables in the model. For discrete or continuous variables, this implies that higher values of the variable imply higher re-entry rates. For indicator variables (discrete variables that only take values of 0 and 1), this means that individuals with a value of "1" for the variable have higher re-entry rates than individuals in the omitted category. If a discrete or continuous

variable has a negative and significant coefficient, then higher values of the variable imply lower re-entry rates. For indicator variables, this means that individuals with a value of “1” for the variable have lower re-entry rates than individuals in the omitted category.

In Model (A) of Table III.11a, for example, the coefficient on the discrete variable “number of children in the family less than 6 years old” (0.13) is statistically significant. This suggests that the greater the amount of children under six years old that live in an individual’s family, the greater the likelihood of re-entering the FSP. A higher probability of re-entry also implies a shorter duration in which an individual does not participate in the program. For indicator variables such as “nonparticipation spell started in the year 2003,” the negative value of the statistically significant coefficient (–0.39) implies that individuals who start their nonparticipation spells in the year 2003 are less likely than individuals who start in the year 2002—the omitted category for the variable “spell start year”—to leave the nonparticipation state and re-enter the FSP.⁸⁸ Table III.11a also contains the odds ratios for most of the parameter estimates in the table.

⁸⁸ We note that this is undoubtedly due to the fact that there is less time to re-enter the program in the SIPP panel especially among those individuals who left the program late in the panel. We highlight this estimate here solely for the purpose of explaining how to interpret the estimates of the logit models.

TABLE III.11a

FSP DURATION HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES
ON PROBABILITY OF RE-ENTERING THE FSP

Explanatory Variables	Model A			Model B			Model C			Model D		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics												
Gender (female category is omitted):												
Male	-0.07	(0.10)	0.93	-0.05	(0.10)	0.95	-0.05	(0.10)	0.95	-0.02	(0.10)	0.9774
Race (Hispanic category is omitted):												
White, non-Hispanic	-0.13	(0.15)	0.88	-0.13	(0.15)	0.88	-0.12	(0.15)	0.89	-0.13	(0.15)	0.8752
Black, non-Hispanic	0.12	(0.16)	1.13	0.13	(0.16)	1.13	0.11	(0.16)	1.12	0.17	(0.16)	1.1794
Other	-0.11	(0.25)	0.90	-0.15	(0.25)	0.86	-0.16	(0.25)	0.86	-0.14	(0.25)	0.8734
Age (18-to-29-years-old category is omitted):												
30-49	-0.11	(0.12)	0.90	-0.06	(0.12)	0.94	-0.07	(0.12)	0.94	-0.03	(0.12)	0.9699
50-64	-0.15	(0.18)	0.86	-0.10	(0.18)	0.90	-0.10	(0.18)	0.90	-0.06	(0.18)	0.946
65 and older	-0.42	(0.24)	0.65	-0.29	(0.24)	0.75	-0.35	(0.24)	0.70	-0.27	(0.24)	0.7667
US citizen	0.05	(0.15)	1.05	0.07	(0.15)	1.07	0.04	(0.15)	1.04	0.04	(0.15)	1.0424
Education Levels and Employment Status												
Highest grade completed (0-to-8 category is omitted):												
9-11	0.06	(0.17)	1.06	0.02	(0.17)	1.02	0.08	(0.17)	1.08	0.04	(0.17)	1.0391
12	-0.12	(0.16)	0.89	-0.14	(0.16)	0.87	-0.13	(0.16)	0.88	-0.15	(0.16)	0.8603
13 and above	-0.20	(0.17)	0.82	-0.22	(0.18)	0.81	-0.20	(0.18)	0.82	-0.27	(0.18)	0.7597
Employment status ("out of labor force for 12+ months" category is omitted):												
Currently Employed	-0.07	(0.14)	0.93	-0.13	(0.14)	0.88	-0.14	(0.14)	0.87	-0.35***	(0.13)	0.7019
Unemployed 1-5 months	0.11	(0.20)	1.12	0.08	(0.21)	1.09	0.09	(0.21)	1.09	-0.06	(0.20)	0.938
Unemployed 6-11 months	0.31	(0.24)	1.37	0.25	(0.24)	1.28	0.34	(0.24)	1.40	0.21	(0.23)	1.2317
Unemployed 12+ months	0.35	(0.42)	1.42	0.34	(0.43)	1.40	0.38	(0.43)	1.46	0.25	(0.42)	1.2804
Out of the labor force 1-5 months	0.11	(0.20)	1.11	0.04	(0.20)	1.04	0.07	(0.20)	1.07	-0.05	(0.19)	0.9519
Out of the labor force 6-11 months	-0.26	(0.24)	0.77	-0.32	(0.24)	0.73	-0.30	(0.24)	0.74	-0.29	(0.24)	0.7512
Family Income and Welfare Receipt												
Ratio of family income to poverty level (less than 1.0 category is omitted):												
1.0-1.5	-0.12	(0.13)	0.88	-0.12	(0.13)	0.88	-0.13	(0.13)	0.88	-0.19	(0.13)	0.8273
1.5-2.0	-0.18	(0.17)	0.83	-0.19	(0.18)	0.82	-0.26	(0.18)	0.77	-0.35**	(0.17)	0.7078
2.0 and above	-0.20	(0.17)	0.81	-0.23	(0.17)	0.79	-0.24	(0.18)	0.79	-0.50***	(0.16)	0.6063
Currently receiving TANF	0.94	(1.14)	2.56	0.83	(1.16)	2.30	0.82	(1.15)	2.27	0.83	(1.14)	2.2864
Previously received TANF	-0.75	(1.15)	0.47	-0.65	(1.17)	0.52	-0.62	(1.16)	0.54	-0.65	(1.15)	0.522

Table III.11a (continued)

Explanatory Variables	Model A			Model B			Model C			Model D		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Family Composition												
Family Size:												
Number of adults	-0.02	(0.06)	0.98	-0.02	(0.06)	0.98	-0.02	(0.06)	0.98	-0.13**	(0.05)	0.8753
Number of children less than age 6	0.13**	(0.06)	1.14	0.12**	(0.06)	1.13	0.12**	(0.06)	1.13	0.11*	(0.06)	1.1108
Number of children between ages 6 and 18	0.08*	(0.04)	1.09	0.07	(0.04)	1.07	0.06	(0.04)	1.06	0.03	(0.04)	1.026
Marital Status (never-married category is omitted):												
Currently married	-0.15	(0.13)	0.86	-0.15	(0.13)	0.86	-0.15	(0.13)	0.86	-0.20	(0.13)	0.8168
Previously married	0.16	(0.14)	1.18	0.19	(0.16)	1.21	0.24*	(0.14)	1.27	0.21	(0.14)	1.2281
Entry Trigger Events:												
Employment change within family	0.95***	(0.22)	2.58	0.91***	(0.22)	2.48	0.95***	(0.22)	2.59	0.71***	(0.15)	2.0338
Income change within family	-0.35	(0.25)	0.70	-0.40	(0.25)	0.67	-0.34	(0.25)	0.71	0.43***	(0.12)	1.5317
Marital status change within family	-11.64	(539.64)	0.00	-12.06	(493.52)	0.00	-11.68	(522.49)	0.00	-11.46	(402.94)	1E-05
Family composition change	0.57**	(0.26)	1.77	0.48*	(0.27)	1.62	0.55**	(0.27)	1.74	0.58***	(0.17)	1.7859
Entry Usual Circumstances: (measured over a fixed 12-month window)												
Mean employment change within family	1.28**	(0.58)	3.60	0.58	(0.77)	1.78	1.36**	(0.65)	3.88			
Mean income change within family	-1.73***	(0.35)	0.18	-1.97***	(0.48)	0.14	-2.16***	(0.39)	0.11			
Mean family income	0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00			
Variance in family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00			
Average number of marriages in family to date	0.13	(0.11)	1.13	0.15	(0.12)	1.16	0.17	(0.11)	1.19			
Mean family composition change	0.14	(0.44)	1.15	-1.03	(0.65)	0.36	-0.18	(0.52)	0.84			
Entry Usual Circumstances: (measured over a varying-length window)												
Mean employment change within family										0.23	(0.51)	1.2616
Mean income change within family										-0.59	(0.53)	0.5545
Mean family income										0.00	(0.00)	1
Variance in family income										0.00	(0.00)	1
Average number of marriages in family to date										0.14	(0.11)	1.1534
Mean family composition change										0.27	(0.40)	1.3121

Table III.11a (continued)

Explanatory Variables	Model A			Model B			Model C			Model D		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Interaction terms for entry trigger events and usual circumstances												
(Employment change)x(Mean employment change)	-2.03*	(1.16)	0.13	-1.82	(1.18)	0.16	-2.01*	(1.18)	0.13	-0.93	(0.88)	0.394
(Income change within family)x(Mean income change)	2.34***	(0.45)	10.35	2.54***	(0.48)	12.69	2.33***	(0.46)	10.23	0.75	(0.54)	2.1136
(Income change within family)x(Mean family income)	0.00**	(0.00)	1.00	0.00**	(0.00)	1.00	0.00*	(0.00)	1.00	0.00	(0.00)	0.9999
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
(Marital status change)x(Average number marriages)	0.20	(352.61)	1.22	0.34	(322.96)	1.40	0.24	(347.00)	1.27	-0.03	(249.92)	0.9706
(Family composition change)x(Mean family composition change)	-0.23	(1.04)	0.80	0.33	(1.07)	1.39	-0.01	(1.04)	0.99	-0.34	(1.01)	0.7131
Exit Trigger Events:												
Employment change within family				0.05	(0.22)	1.06	0.05	(0.16)	1.05	0.18	(0.15)	1.1996
Income change within family				0.15	(0.23)	1.16	0.11	(0.14)	1.12	-0.02	(0.13)	0.9809
Marital status change within family				1.56*	(0.87)	4.77	1.93***	(0.62)	6.91	1.90***	(0.61)	6.6659
Family composition change				0.54***	(0.17)	1.72	0.25*	(0.13)	1.28	0.27**	(0.12)	1.3066
Exit Usual Circumstances: (measured over a fixed 12-month window)												
Mean employment change within family				0.82	(0.71)	2.28						
Mean income change within family				0.77*	(0.46)	2.16						
Mean family income				0.00**	(0.00)	1.00						
Variance in family income				0.00	(0.00)	1.00						
Average number of marriages in family to date				-0.05	(0.10)	0.95						
Mean family composition change				1.25*	(0.65)	3.47						
Exit Usual Circumstances: (measured over a varying-length window)												
Mean employment change within family							-0.37	(0.55)	0.69	-0.17	(0.50)	0.8409
Mean income change within family							0.92**	(0.39)	2.51	0.64*	(0.37)	1.9031
Mean family income							0.00	(0.00)	1.00	0.00	(0.00)	1
Variance in family income							0.00	(0.00)	1.00	0.00	(0.00)	1

Table III.11a (continued)

Explanatory Variables	Model A			Model B			Model C			Model D		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Average number of marriages in family to date							-0.17*	(0.09)	0.84	-0.07	(0.09)	0.934
Mean family composition change							-0.17	(0.46)	0.85	0.00	(0.45)	1.0013
Interaction terms for exit trigger events and usual circumstances												
(Employment change)x(Mean employment change)				0.03	(1.12)	1.03	-0.19	(0.81)	0.83	-0.28	(0.78)	0.7537
(Income change within family)x(Mean income change)				-0.85*	(0.46)	0.43	-0.33	(0.41)	0.72	-0.23	(0.40)	0.7976
(Income change within family)x(Mean family income)				0.00*	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
(Income change within family)x(Variance family income)				0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
(Marital status change)x(Average number marriages)				-1.63	(1.12)	0.20	-2.78**	(1.10)	0.06	-2.62**	(1.13)	0.0726
(Family composition change)x(Mean family composition change)				-1.44**	(0.69)	0.24	-0.07	(0.60)	0.93	-0.19	(0.59)	0.8299
State and Regional Measures												
State unemployment rate (time-varying)	0.22***	(0.06)	1.24	0.21***	(0.06)	1.23	0.21***	(0.06)	1.23	0.21***	(0.06)	1.2296
Hourly wage rate statistics (time-varying)												
Mean Hourly Wage	-0.81**	(0.36)	0.44	-0.85**	(0.36)	0.43	-0.82**	(0.36)	0.44	-0.81**	(0.36)	0.4431
Standard Deviation	0.51***	(0.15)	1.67	0.52***	(0.15)	1.69	0.51***	(0.15)	1.67	0.51***	(0.15)	1.6655
20 th Percentile	0.30*	(0.17)	1.36	0.31*	(0.17)	1.36	0.30*	(0.17)	1.35	0.29*	(0.17)	1.3383
40 th Percentile	0.30*	(0.16)	1.34	0.32**	(0.16)	1.37	0.30*	(0.16)	1.35	0.30*	(0.16)	1.3503
50 th Percentile	-0.08	(0.15)	0.93	-0.08	(0.15)	0.93	-0.07	(0.15)	0.93	-0.09	(0.15)	0.9144
60 th Percentile	0.20	(0.13)	1.22	0.21	(0.13)	1.24	0.21*	(0.13)	1.23	0.21*	(0.13)	1.2392
80 th Percentile	0.00	(0.08)	1.00	0.00	(0.08)	1.00	-0.01	(0.08)	0.99	0.00	(0.08)	0.9963
Region of Residence ("Western" category is omitted): (time-varying)												
Northeast	0.38*	(0.23)	1.47	0.40*	(0.24)	1.50	0.39*	(0.23)	1.48	0.48**	(0.23)	1.6085
Mid-Atlantic	0.24	(0.22)	1.27	0.20	(0.23)	1.22	0.21	(0.23)	1.24	0.33	(0.22)	1.3847
Midwest	0.10	(0.20)	1.10	0.12	(0.21)	1.13	0.12	(0.20)	1.13	0.17	(0.20)	1.1866
Southeast	-0.04	(0.20)	0.96	-0.05	(0.20)	0.95	-0.05	(0.20)	0.95	0.01	(0.19)	1.0119
Southwest	0.00	(0.23)	1.00	0.02	(0.23)	1.02	0.03	(0.23)	1.03	0.09	(0.23)	1.0949
Mountain Plains	0.44*	(0.24)	1.56	0.44*	(0.24)	1.56	0.48**	(0.24)	1.61	0.49**	(0.24)	1.6341
Policy Variables												
Vehicle Exclusion	0.04	(0.14)	1.05	0.02	(0.14)	1.02	0.03	(0.14)	1.03	0.06	(0.14)	1.0566
Certification Period: Earners (avg mos.)	-0.01	(0.07)	0.99	-0.02	(0.08)	0.98	-0.03	(0.08)	0.97	-0.01	(0.08)	0.9875
Certification Period: Single-mothers (avg mos.)	0.04	(0.09)	1.04	0.05	(0.09)	1.05	0.06	(0.09)	1.06	0.03	(0.09)	1.0317
Simplified Reporting	0.40*	(0.23)	1.49	0.41*	(0.23)	1.51	0.40*	(0.23)	1.50	0.43*	(0.23)	1.5319
Status Reporting	0.46**	(0.23)	1.58	0.50**	(0.23)	1.64	0.47**	(0.23)	1.59	0.45**	(0.23)	1.5751

Table III.11a (continued)

Explanatory Variables	Model A			Model B			Model C			Model D		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
(Simplified Reporting)x(Status Reporting)	-0.40	(0.27)	0.67	-0.44*	(0.27)	0.64	-0.44	(0.27)	0.64	-0.46*	(0.27)	0.6317
EBT	-0.30	(0.20)	0.74	-0.32	(0.20)	0.73	-0.32	(0.20)	0.73	-0.39**	(0.20)	0.676
Spell Information												
Spell Duration (more-than-16-months category is omitted):												
4 months or less	2.49***	(0.52)	12.07	2.59***	(0.52)	13.38	2.54***	(0.52)	12.65	2.44***	(0.53)	11.419
5 to 8 months	1.80***	(0.51)	6.06	1.89***	(0.51)	6.62	1.82***	(0.51)	6.20	1.77***	(0.51)	5.8585
9 to 12 months	1.14**	(0.52)	3.14	1.21**	(0.52)	3.34	1.17**	(0.52)	3.21	1.13**	(0.52)	3.1102
13 to 16 months	0.65	(0.56)	1.91	0.70	(0.56)	2.00	0.66	(0.56)	1.93	0.65	(0.56)	1.91
First Nonparticipation Spell Ever	-0.13	(0.10)	0.88	-0.12	(0.10)	0.89	-0.14	(0.10)	0.87	-0.18*	(0.10)	0.8385
Previous Food Stamp Spell Duration	0.00***	(0.00)	1.00	0.00**	(0.00)	1.00	0.00**	(0.00)	1.00	0.00***	(0.00)	1.0026
Spell start year (2002 category is omitted)												
2003 .	-0.37***	(0.11)	0.69	-0.38***	(0.11)	0.68	-0.39***	(0.11)	0.68	-0.40***	(0.11)	0.6705
-2*Log Likelihood		4323.8			4290.9			4297.3			4344.7	
Number of Spell-Month Observations		16361.0			16361.0			16361.0			16361.0	

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: Model (A) is the model with entry trigger variables and entry-related usual circumstance variables defined over a fixed 12-month window; without exit trigger variables and exit-related usual circumstance variables. Model (B) is the model with entry trigger variables, entry-related usual circumstance variables defined over a fixed 12-month window; exit trigger variables, and exit-related usual circumstance variables defined over a fixed 12-month window. Model (C) is the model with entry trigger variables, entry-related usual circumstance variables defined over a window of varying length. Model (D) is the model with entry trigger variables, entry-related usual circumstance variables defined over a window of varying length; exit trigger variables, and exit-related usual circumstance variables defined over a window of varying length.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

- * Significantly different than zero at the 0.10 level, two-tailed test
- ** Significantly different than zero at the 0.05 level, two-tailed test
- *** Significantly different than zero at the 0.01 level, two-tailed test

As in the FSP duration analysis, we present the regression-adjusted, cumulative re-entry rates for key subgroups. Due to the large number of right-censored nonparticipation spells in the sample used to estimate the re-entry models, most of the regression-adjusted median spell lengths are cut off at 20 months. In order to compare the distributions, we focus instead on the proportion of spells that last for 20 months or less. For example, compared to males, a greater

proportion of females have nonparticipation spells that last 20 months or less. This is an indication that females have shorter nonparticipation spells (and higher re-entry rates) than males.

b. Economic Circumstances

Whether an individual is employed at the start of the nonparticipation spell is not a significant determinant of the likelihood of re-entering the program in most of our model specifications. When the estimate is significant, this variable is negatively associated with re-entering the FSP. These results agree with those found in Gleason et al. (1998) using the 1990-1991 SIPP panels.

In general, individuals in states with more favorable labor market conditions are less likely to re-enter the FSP, all else being equal. We find that the higher the mean wage across states, the lower the likelihood of re-entry into the FSP and the longer the nonparticipation duration. The likelihood of finding a job is positively associated with the amount of time spent off the program as well. A decrease in the state unemployment rate by 1 percent reduces the odds of re-entering the FSP by 22 percent.

In our FSP entry and duration analyses we find that the events that trigger entry into or exit out of the program are important determinants of overall entry and exit rates, respectively. In the re-entry estimation, we find that certain entry trigger events are associated with higher re-entry rates. (These results are displayed in Table III.11b) For example, conditional on having low employment volatility over the past year, individuals who experience a job loss in the prior four months are 2.48 times more likely to re-enter than individuals who remain employed. For those with high employment volatility over the past year, the odds ratio is 1.83. Thus, whether the employment entry trigger event reflects a deviation from one's usual circumstances is important when analyzing the association between the trigger event and the likelihood of re-entry.

TABLE III.11b

FSP RE-ENTRY HAZARD MODEL: CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS
TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR ENTRY-RELATED TRIGGER
EVENTS) AFFECT RE-ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Fixed Window)			
Employment Chg.	1.83 [†]	2.13 [†]	2.48 [†]
Income (frequency)	3.65 [†]	2.15 [†]	1.27
Income (mean)	0.41 [†]	0.51 [†]	0.58 [†]
Income (variance)	0.69	0.67	0.67
Marital Status Chg (b)	-	-	-
Family Composition Chg	1.71 [†]	1.66 [†]	1.62
Main Model Specification (Variable Window)			
Employment Chg.	1.74 [†]	1.88 [†]	2.03 [†]
Income (frequency)	2.52 [†]	2.16 [†]	1.85 [†]
Income (mean)	1.24	1.36 [†]	1.44 [†]
Income (variance)	1.36	1.48 [†]	1.52 [†]
Marital Status Chg (b)	-	-	-
Family Composition Chg	1.69 [†]	1.74 [†]	1.79 [†]

Source Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window table, conditional on having low employment volatility, individuals who experience a job loss are 2.48 times more likely to exit the FSP than individuals who remain unemployed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of re-entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window estimation, conditional on low mean income, those individuals who experience a decrease in income have their odds of re-entering the program reduced by 42 percent $(=(1.00-0.58)*100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

†The marital status usual circumstance variable and interaction term were dropped from this estimation due to limited variation in the variables.

TABLE III.11c

FSP RE-ENTRY HAZARD MODEL: CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR ENTRY-RELATED TRIGGER EVENTS) AFFECT RE-ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Fixed Window)			
Employment Chg.	1.83 [†]	2.13 [†]	2.48 [†]
Income (frequency)	3.65 [†]	2.15 [†]	1.27
Income (mean)	0.41 [†]	0.51 [†]	0.58 [†]
Income (variance)	0.69	0.67	0.67
Marital Status Chg (b)	-	-	-
Family Composition Chg	1.71 [†]	1.66 [†]	1.62
Main Model Specification (Variable Window)			
Employment Chg.	1.74 [†]	1.88 [†]	2.03 [†]
Income (frequency)	2.52 [†]	2.16 [†]	1.85 [†]
Income (mean)	1.24	1.36 [†]	1.44 [†]
Income (variance)	1.36	1.48 [†]	1.52 [†]
Marital Status Chg (b)	-	-	-
Family Composition Chg	1.69 [†]	1.74 [†]	1.79 [†]

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window table, conditional on having low employment volatility, individuals who experience a job loss are 2.48 times more likely to exit the FSP than individuals who remain unemployed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of re-entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the fixed window estimation, conditional on low mean income, those individuals who experience a decrease in income have their odds of re-entering the program reduced by 42 percent $(=(1.00-0.58)*100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

[†]The marital status usual circumstance variable and interaction term were dropped from this estimation due to limited variation in the variables.

In Model D, in which entry and exit usual circumstance variables are defined over the current nonparticipation and previous participation spells, respectively, individuals with typical employment histories over the past year who experience a decrease in income are 2.16 times more likely to re-enter the program than individuals whose incomes do not decrease.⁸⁹ We also find that individuals with the typical number of family composition changes over the past year, who experience a change in family composition are 1.74 times more likely to re-enter than those whose family composition remains the same. Overall, our results suggest the decision to re-enter the FSP is strongly associated with re-entry trigger events.

Family Structure

Earlier we saw that both marital status and the number of children in a family who are between the ages of 6 and 18 are significant determinants of FSP entry and the duration of participation spells. For FSP re-entries the relationship is statistically indistinguishable from zero, suggesting they play a less important role in the re-entry decisions of former FSP participants. The likelihood of re-entry, however, increases for previously married individuals and for those with children under 6 years old. Previously married individuals are 1.3 times as likely to re-enter the FSP as individuals who have never married, while each additional child under age 6 increases the odds of re-entering the FSP by 13 percent. We note that the regression-adjusted cumulative re-entry rates are based on estimates of all explanatory variables in the model, not just the estimates of the coefficients on the variables “currently married” and

⁸⁹ We use the term “typical” to represent the median value of the usual circumstance variable defined in Table III.11b.

“number of children less than 6 years old”.⁹⁰ The characteristics of these distributions indicate that 33 percent of *individuals who are married* at the start of their nonparticipation spell are off the FSP for 20 months or less, compared with 41 percent of individuals who are not married. Additionally, 36 percent, 38 percent, and 48 percent of individuals with zero, one, or two children less than six years old at the start of the nonparticipation spell stay of the FSP for 20 months or less. These estimates indicate that married individuals remain off the program for a longer amount of time, as do families with fewer children under six years old.

c. Demographic Characteristics, Policy-Related Variables, and Spell Characteristics

Demographic characteristics such as gender, race, age, U.S. citizenship, and education have no discernable effects on re-entry rates. This is most likely attributable to the homogenous nature of the sample used to estimate the re-entry model. This sample only includes individuals who left the FSP, differentiating it from the larger group of program participants. While the parameter estimates associated with these variables are mainly statistically insignificant, our regression-adjusted spell length distributions—which are based on the model’s full set of parameter estimates—indicate that younger individuals have shorter nonparticipation spells, as do individuals with fewer years of schooling.

We find that the estimates of the coefficients of the state-level policy variables related to the frequency of reporting income changes are statistically significant and positive. Thus, individuals living in states with more simplified income reporting rules are more likely to re-enter the program and have shorter nonparticipation spells. This is expected as all individuals in

⁹⁰ The regression-adjusted cumulative re-entry rates are constructed using averages of the predicted probabilities of re-entry for each individual in the sample. Thus, the predicted probabilities use the estimates of the coefficients of all explanatory variables in the model as well as the values of the explanatory variables for each individual in the sample.

the sample have previously participated in the program and have experienced first-hand the benefit of these rules. We find that between 36 and 40 percent of individuals living in states with more simplified income reporting rules re-enter the program in under 20 months, compared with 32 percent of individuals living in states with less simplified income reporting rules (Table III.12).

As we find in the duration analysis, negative duration dependence is present in the re-entry sample. The longer individuals spend off the program, the less likely they are to re-enter. Additionally, the length of time spent on the FSP before exiting increases the likelihood of re-entering the program by a marginal but statistically significant amount.

TABLE III.12

FSP RE-ENTRY HAZARD MODEL: REGRESSION-ADJUSTED CUMULATIVE RE-ENTRY RATES FOR KEY DEMOGRAPHIC CHARACTERISTICS (RE-ENTRY MODEL C)

Explanatory Variables	Median Duration of Non-participation Spell (Months)		Cumulative Percentage Not Receiving Food Stamp Benefits for									
			4 Months or Less		8 Months or Less		12 Months or Less		16 Months or Less		20 Months or Less	
Individual Demographic Characteristics												
Gender												
Male	> 20	NA	14.9	(1.6)	24.7	(2.4)	29.8	(3.5)	32.4	(5.3)	33.5	(5.9)
Female	> 20	NA	18.8	(1.7)	30.2	(3.4)	36.0	(4.4)	38.9	(4.8)	40.3	(5.1)
Race												
White, non-hispanic	> 20	NA	14.9	(1.6)	24.8	(2.7)	30.1	(3.9)	32.7	(5.2)	34.0	(5.4)
Black, non-hispanic	> 20	NA	19.8	(1.8)	31.3	(4.1)	37.1	(6.0)	40.5	(6.0)	41.9	(6.2)
Other, non-Hispanic	> 20	NA	15.6	(3.2)	26.9	(5.0)	32.7	(5.8)	35.7	(6.2)	37.1	(6.5)
Hispanic	> 20	NA	19.4	(2.3)	31.6	(3.3)	37.0	(3.6)	39.6	(4.7)	40.8	(5.6)
Age												
18-29	> 20	NA	19.1	(1.9)	31.3	(3.6)	37.4	(5.9)	40.5	(5.9)	42.1	(6.1)
30-49	> 20	NA	16.8	(1.7)	27.8	(2.7)	33.6	(3.0)	36.3	(4.3)	37.6	(4.8)
50-64	> 20	NA	16.4	(2.1)	25.1	(3.4)	29.7	(4.1)	32.2	(6.0)	33.3	(6.3)
65 and older	> 20	NA	15.1	(2.8)	23.4	(5.3)	27.2	(7.9)	29.4	(8.0)	30.4	(8.2)
Citizenship												
US citizen	> 20	NA	17.1	(1.5)	27.6	(3.0)	33.1	(4.3)	35.9	(5.1)	37.2	(5.3)
non-US citizen	> 20	NA	17.9	(2.2)	31.0	(3.3)	36.8	(3.8)	39.8	(5.4)	41.3	(6.9)

Table III.12 (continued)

Explanatory Variables	Cumulative Percentage Not Receiving Food Stamp Benefits for											
	Median Duration of Non-participation Spell (Months)		4 Months or Less	8 Months or Less	12 Months or Less	16 Months or Less	20 Months or Less					
Education Levels and Employment Status												
Highest grade completed												
0-8	> 20	NA	20.4	(2.6)	31.4	(3.7)	36.6	(4.1)	39.4	(4.6)	40.8	(5.0)
9-11	> 20	NA	21.3	(2.1)	34.3	(3.5)	41.0	(3.8)	44.2	(6.4)	45.4	(7.2)
12	> 20	NA	16.5	(1.7)	27.5	(3.2)	33.0	(5.5)	35.8	(6.0)	37.2	(6.1)
13 and above	> 20	NA	14.4	(1.8)	23.7	(3.4)	28.5	(3.8)	31.0	(4.5)	32.2	(4.7)
Family Income and Welfare Receipt												
Ratio of family income to poverty level												
1.0 and below	> 20	NA	22.2	(1.7)	36.0	(2.7)	42.8	(3.3)	46.1	(3.5)	47.5	(3.8)
1.0-1.5	> 20	NA	17.4	(1.9)	28.2	(3.3)	34.2	(5.3)	37.1	(7.9)	38.3	(8.7)
1.5-2.0	> 20	NA	13.4	(2.1)	23.1	(5.2)	27.9	(7.7)	30.9	(7.7)	32.3	(7.9)
2.0 and above	> 20	NA	10.6	(2.1)	17.1	(3.7)	20.4	(4.3)	22.5	(5.7)	23.6	(6.0)
TANF Benefits												
Currently receiving TANF	> 20	NA	23.9	(3.0)	36.7	(4.2)	43.5	(4.7)	46.1	(5.1)	47.1	(5.6)
Not currently receiving TANF	> 20	NA	16.6	(1.5)	27.2	(2.9)	32.6	(4.1)	35.4	(5.1)	36.7	(5.4)
Family Composition												
Number of children less than age 6												
Zero	> 20	NA	16.4	(1.4)	26.7	(2.5)	31.9	(3.5)	34.5	(4.9)	35.8	(5.3)
One	> 20	NA	17.1	(1.4)	27.9	(2.2)	33.5	(3.2)	36.3	(3.5)	37.6	(3.9)
Two	> 20	NA	21.5	(2.9)	35.2	(5.6)	42.0	(5.6)	45.5	(5.6)	47.3	(5.9)
Marital Status:												
Currently married	> 20	NA	14.8	(1.7)	24.9	(2.9)	29.7	(4.2)	32.1	(5.7)	33.1	(5.9)
Not currently married	> 20	NA	18.9	(1.6)	30.3	(3.0)	36.3	(4.0)	39.4	(4.6)	40.9	(5.0)
Entry Trigger Events												
Employment change within family	12.0	(2.4)	24.9	(3.0)	42.1	(4.5)	50.1	(4.8)	53.4	(5.0)	54.9	(5.2)
No employment change within family	> 20	NA	16.7	(1.5)	26.3	(2.7)	31.1	(4.0)	33.7	(5.2)	34.9	(5.5)
Income change within family	> 20	NA	18.0	(2.1)	29.8	(3.8)	35.8	(5.1)	38.7	(6.0)	40.1	(6.4)
No Income change within family	> 20	NA	15.6	(1.3)	24.6	(2.1)	29.0	(2.6)	31.6	(3.7)	32.8	(4.0)
Marital status change within family	> 20	NA	0.0	(69.2)	0.0	(73.8)	0.0	(83.3)	0.0	(90.3)	0.0	(90.3)
No marital status change within family	> 20	NA	17.3	(1.3)	28.2	(1.9)	33.7	(2.3)	36.5	(2.5)	37.8	(2.8)
Family composition change	14.0	(3.2)	24.2	(3.4)	40.0	(4.9)	48.8	(5.9)	52.2	(6.1)	54.1	(6.3)
No family composition change	> 20	NA	16.8	(1.5)	27.0	(2.8)	32.2	(3.9)	34.9	(4.9)	36.2	(5.3)
Exit Trigger Events												
Employment change within family	> 20	NA	20.9	(2.3)	33.8	(5.0)	40.4	(6.8)	43.5	(6.9)	45.4	(7.0)
No employment change within family	> 20	NA	16.7	(1.5)	27.1	(2.6)	32.4	(3.5)	35.1	(4.7)	36.4	(5.0)
Income change within family	> 20	NA	17.3	(1.6)	28.6	(3.0)	34.5	(4.1)	37.4	(4.6)	38.9	(4.9)
No Income change within family	> 20	NA	17.3	(1.6)	27.6	(3.0)	32.5	(4.2)	35.1	(5.7)	36.2	(6.2)
Marital status change within family	11.0	(4.0)	30.2	(10.7)	47.9	(13.6)	51.6	(14.1)	53.6	(14.2)	55.5	(14.4)
No marital status change within family	> 20	NA	17.2	(1.5)	28.0	(2.8)	33.5	(3.9)	36.3	(4.9)	37.6	(5.2)
Family composition change	> 20	NA	21.2	(2.0)	35.5	(3.4)	42.1	(4.9)	45.7	(5.9)	47.3	(6.1)
No family composition change	> 20	NA	15.8	(1.5)	25.4	(2.9)	30.5	(3.8)	33.1	(4.7)	34.3	(5.1)

Table III.12 (continued)

Explanatory Variables	Median Duration of Non- participation Spell (Months)	Cumulative Percentage Not Receiving Food Stamp Benefits for									
		4 Months or Less	8 Months or Less	12 Months or Less	16 Months or Less	20 Months or Less					
Regional Measures											
Region of Residence:											
Northeast	> 20 NA	24.1	(3.1)	36.5	(4.3)	42.0	(4.8)	45.6	(5.2)	47.4	(5.8)
Midatlantic	> 20 NA	16.3	(2.5)	25.4	(3.6)	30.2	(4.1)	32.6	(6.8)	33.7	(6.9)
Midwest	> 20 NA	18.2	(2.1)	29.6	(3.1)	35.5	(4.3)	38.6	(4.6)	40.1	(4.9)
Southeast	> 20 NA	15.7	(1.9)	25.7	(3.6)	30.4	(6.3)	33.1	(6.3)	34.1	(6.4)
Southwest	> 20 NA	18.4	(2.2)	30.5	(4.0)	36.9	(5.3)	40.0	(5.4)	41.3	(5.6)
Mountain	> 20 NA	16.5	(3.6)	26.6	(6.8)	32.5	(7.1)	35.5	(10.6)	37.2	(10.6)
West	> 20 NA	15.7	(1.9)	26.8	(3.3)	32.5	(3.7)	35.0	(4.7)	36.2	(5.4)
Policy Variables											
Vehicle Exclusion	> 20 NA	18.8	(1.6)	30.5	(2.6)	36.4	(3.5)	39.4	(3.7)	40.9	(4.1)
No Vehicle Exclusion	> 20 NA	16.1	(1.6)	26.4	(3.4)	31.5	(4.7)	34.1	(6.2)	35.3	(6.6)
Simplified Reporting only	> 20 NA	17.8	(1.8)	29.8	(3.1)	35.8	(3.8)	39.1	(4.1)	40.6	(4.5)
Status Reporting only	> 20 NA	16.9	(2.2)	27.1	(4.2)	31.9	(5.1)	34.4	(6.3)	35.7	(6.4)
Simplified and Status Reporting	> 20 NA	18.5	(1.8)	29.8	(3.3)	35.9	(5.6)	38.9	(5.7)	40.3	(5.9)
Neither Simplified nor Status Reporting	> 20 NA	15.0	(1.9)	24.6	(2.8)	29.1	(3.2)	31.3	(5.3)	32.4	(5.9)
EBT	> 20 NA	17.1	(1.5)	27.9	(3.0)	33.4	(4.2)	36.3	(5.0)	37.6	(5.2)
No EBT	> 20 NA	18.7	(2.4)	29.9	(3.5)	35.2	(3.9)	37.6	(5.3)	38.7	(6.2)
Spell Information											
First Nonparticipation Spell Ever	> 20 NA	15.5	(1.8)	24.6	(3.8)	29.1	(5.6)	31.5	(6.2)	32.7	(6.7)
Repeat Spell	> 20 NA	18.7	(1.5)	31.0	(2.5)	37.3	(3.0)	40.5	(4.2)	41.8	(4.5)

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who participate in the Food Stamp Program between month 17 and their last month in the panel.

Note: Standard errors are in parentheses. The standard error for estimates exceeding 20 months cannot be estimated. These cases are indicated by N.A.

b. Family Subgroup Analyses

We re-estimate Model C for the following mutually exclusive family subgroups: (1) families with elderly and disabled individuals without children, (2) families with children and one adult, (3) families with children and multiple nonmarried adults, (4) families with children and married adult heads, (5) families without children and without elderly or disabled individuals. The results from these estimations are presented in Table III.13a and Table III.13b.

TABLE III.13a

FSP RE-ENTRY HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES ON PROBABILITY OF RE-ENTERING THE FSP BY FAMILY SUBGROUPS RE-ENTRY MODEL C

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics															
Gender (female category is omitted): Male	-0.04	(0.24)	0.97	0.05	(0.41)	1.05	-0.12	(0.54)	0.89	-0.01	(0.17)	0.99	-0.84*	(0.43)	0.43
Race (Hispanic category is omitted): White, non-Hispanic	-0.14	(0.41)	0.87	-0.26	(0.39)	0.77	-1.73***	(0.67)	0.18	-0.06	(0.26)	0.94	2.94**	(1.37)	18.96
Black, non-Hispanic	-0.18	(0.42)	0.83	-0.10	(0.42)	0.90	-0.59	(0.59)	0.56	0.36	(0.35)	1.43	3.29**	(1.40)	26.75
Other	-0.97	(0.74)	0.38	0.61	(0.98)	1.84	-1.28	(0.86)	0.28	0.15	(0.45)	1.17	1.99	(1.68)	7.30
Age (18-to-29-years-old category is omitted): 30-49	0.22	(0.46)	1.25	-0.62**	(0.31)	0.54	-0.05	(0.53)	0.95	0.01	(0.22)	1.01	0.43	(0.52)	1.54
50-64	0.09	(0.51)	1.10	-0.74	(0.67)	0.48	-0.57	(0.68)	0.57	0.23	(0.40)	1.26	-0.44	(0.73)	0.64
65 and older	0.14	(0.54)	1.15	1.00	(0.97)	0.63	-0.47	(0.97)	0.63	-0.84	(0.63)	0.43			1
US citizen	-0.09	(0.46)	0.91	-0.38	(0.38)	0.69	1.47*	(0.89)	4.36	0.10	(0.24)	1.10	0.07	(0.68)	1.07
Education Levels and Employment Status															
Highest grade completed (0-to-8 category is omitted): 9-11	0.09	(0.35)	1.09	-0.13	(0.59)	0.88	-1.25*	(0.75)	0.29	0.09	(0.29)	1.10	-0.31	(1.59)	0.73
12	0.01	(0.34)	1.01	-0.52	(0.56)	0.59	-1.65**	(0.75)	0.19	-0.15	(0.28)	0.86	-0.17	(1.50)	0.84
13 and above	-0.03	(0.39)	0.97	-0.59	(0.58)	0.56	-0.62	(0.81)	0.54	-0.48	(0.32)	0.62	-0.47	(1.55)	0.63
Employment status ("out of labor force for 12+ months" category is omitted): Currently Employed	-0.16	(0.40)	0.85	-0.79**	(0.39)	0.45	-0.32	(0.51)	0.73	-0.23	(0.24)	0.80	2.51**	(1.02)	12.31
Unemployed 1-5 months	0.24	(1.03)	1.28	-0.10	(0.50)	0.90	-1.43	(0.98)	0.24	0.31	(0.36)	1.37	2.81**	(1.11)	16.59
Unemployed 6-11 months	0.00	(1.40)	1.00	-0.32	(0.61)	0.72	2.97***	(0.81)	19.52	-0.02	(0.47)	0.98	3.00**	(1.18)	20.15
Unemployed 12+ months	-10.93	(221.11)	0.00	-0.21	(0.88)	0.81	4.08**	(1.76)	59.39	-0.15	(1.20)	0.86	2.10	(1.45)	8.15
Out of the labor force 1-5 months	0.32	(0.54)	1.38	-0.66	(0.59)	0.52	0.36	(0.73)	1.43	-0.13	(0.36)	0.88	2.50**	(1.11)	12.18
Out of the labor force 6-11 months	0.56	(0.57)	1.76	-0.44	(0.67)	0.65	-0.81	(0.90)	0.44	-0.29	(0.46)	0.75	2.22*	(1.25)	9.18

Table III.13a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children		Single Adult Head with Children		Multiple Non-Married Adult Heads with Children		Married Adult Heads with Children		Non-Elderly and Non-Disabled without children						
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio			
Family Income and Welfare Receipt															
Ratio of family income to poverty level (less than 1.0 category is omitted):															
1.0-1.5	-0.86**	(0.38)	0.42	0.03	(0.32)	1.03	1.14**	(0.51)	3.13	-0.01	(0.25)	0.99	1.37**	(0.60)	3.93
1.5-2.0	-0.27	(0.48)	0.76	-0.89	(0.62)	0.41	0.66	(0.65)	1.94	0.41	(0.32)	1.50	-2.49**	(0.97)	0.08
2.0 and above	-0.62	(0.48)	0.54	0.31	(0.62)	1.37	0.52	(0.68)	1.68	-0.20	(0.34)	0.82	-1.60**	(0.77)	0.20
Currently receiving TANF				0.36	(0.32)		1.68***	(0.49)		-0.27	(0.32)				
Previously received TANF															
Family Composition															
Family Size:															
Number of adults	0.11	(0.19)	1.12	-0.12	(0.18)	1.00	-0.36	(0.30)	0.69	0.17	(0.12)	1.19	0.32	(0.34)	1.38
Number of children less than age 6				0.04	(0.15)		0.20	(0.26)		0.01	(0.10)				
Number of children between ages 6 and 18							0.10	(0.21)		0.00	(0.08)				
Marital Status (never-married category is omitted):															
Currently married	-0.44	(0.39)	0.64	-0.10	(0.28)	1.00	-1.86	(1.35)	0.16	-0.44	(0.44)	0.65	-0.86	(0.68)	0.42
Previously married	-0.24	(0.36)	0.79			0.90	0.76	(0.43)	2.13	0.82	(0.55)	2.28	1.21	(0.50)	3.34
Entry Trigger Events:															
Employment change within family	2.43***	(0.63)	11.35	1.40**	(0.57)	4.07	1.75***	(0.63)	5.75	0.53	(0.40)	1.69	1.15	(0.72)	3.17
Income change within family	-1.47*	(0.80)	0.23	0.85	(0.56)	2.33	-0.01	(0.89)	0.99	-0.90*	(0.54)	0.41	-0.52	(0.86)	0.59
Marital status change within family	-10.88	(948.14)	0.00	-13.00	(710.14)	0.00	-13.82	(733.70)	0.00			1.00	-7.78	(1092.33)	0.00
Family composition change	-0.79	(1.34)	0.45	0.72	(0.68)	2.06	1.82**	(0.76)	6.15	1.60***	(0.58)	4.97	1.20	(0.69)	3.33
Entry Usual Circumstances: (measured over a fixed 12-month window)															
Mean employment change within family	6.93***	(2.31)	1025.98	0.26	(1.72)	1.29	0.59	(2.20)	1.81	0.95	(1.07)	2.58	-1.49	(2.43)	0.22
Mean income change within family	-5.05***	(1.18)	0.01	-1.72*	(0.93)	0.18	-0.86	(1.61)	0.42	-1.64**	(0.81)	0.19	-3.28**	(1.45)	0.04
Mean family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Variance in family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
Average number of marriages in family to date	0.15	(0.16)	1.16			1.00			1.00	0.01	(0.23)	1.01			1
Mean family composition change	-1.75	(1.79)	0.17	1.83	(1.25)	6.26	0.69	(1.81)	1.99	-0.62	(0.91)	0.54	-0.42	(2.20)	0.66

Table III.13a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Interaction terms for entry trigger events and usual circumstances															
(Employment change)x(Mean employment change)	-8.62**	(3.73)	0.00	-4.73	(3.56)	0.01	-6.12	(3.98)	0.00	0.43	(1.76)	1.54	-8.91	(4.78)	0.00
(Income change within family)x(Mean income change)	5.26***	(1.62)	192.46	-0.25	(1.07)	0.78	2.01	(1.68)	7.45	3.65***	(0.92)	38.66	2.48	(1.69)	11.99
(Income change within family)x(Mean family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00*	(0.00)	1.00	0.00	(0.00)	1.00
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00
(Marital status change)x(Average number marriages)	-1.12	(798.77)	0.33			1.00			1.00			1.00			1
(Family composition change)x(Mean family composition change)	6.20	(4.78)	491.62	-8.45	(4.95)	0.00	0.09	(3.25)	1.10	-4.02*	(2.19)	0.02	0.44	(2.62)	1.56
Exit Trigger Events:															
Employment change within family	-1.26	(0.79)	0.28	0.48	(0.43)	1.61	1.23**	(0.59)	3.42	-0.04	(0.29)	0.96	1.81***	(0.67)	6.12
Income change within family	1.54***	(0.41)	4.68	0.56	(0.45)	1.76	0.48	(0.61)	1.61	-0.54**	(0.27)	0.58	-0.12	(0.52)	0.89
Marital status change within family															
Family composition change	0.10	(0.45)	1.10	0.47	(0.39)	1.61	0.01	(0.47)	1.01	0.49**	(0.24)	1.64	0.01	(0.58)	1.01
Exit Usual Circumstances: (measured over a varying-length window)															
Mean employment change within family	-1.43	(2.56)	0.24	1.34	(1.00)	3.82	-0.70	(2.43)	0.50	-0.24	(1.04)	0.78	10.09***	(2.86)	24047.83
Mean income change within family	3.67***	(0.97)	39.41	0.36	(1.00)	1.43	1.78	(1.83)	5.94	0.60	(0.83)	1.82	-1.09	(2.84)	0.34
Mean family income	0.00**	(0.00)	1.00	0.00**	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	0.99
Variance in family income	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1
Average number of marriages in family to date															
Mean family composition change	-0.63	(1.64)	0.53	0.44	(0.95)	1.56	3.26	(2.09)	26.01	-0.03	(0.90)	0.97	-3.92	(4.09)	0.02

Table III. 13a (continued)

Explanatory Variables	Family Subgroup														
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Interaction terms for exit trigger events and usual circumstances															
(Employment change)x(Mean employment change)	12.63***	(4.35)	305712.38	-2.20	(3.09)	0.11	-3.77	(2.73)	0.02	-0.09	(1.43)	0.91	-13.30**	(5.98)	1.68E-06
(Income change within family)x(Mean income change)	-1.19	(1.13)	0.30	0.56	(1.10)	1.74	-0.89	(1.89)	0.41	-1.07	(0.84)	0.34	4.31	(3.16)	74.13
(Income change within family)x(Mean family income)	0.00**	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00**	(0.00)	1.00	0.00**	(0.00)	0.99
(Income change within family)x(Variance family income)	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	1.00	0.00	(0.00)	0.99
(Marital status change)x(Average number marriages)	-3.60	(3.30)	0.03	-3.79*	(2.26)	0.02	-1.94	(2.11)	0.14	0.83	(1.02)	2.29	2.94	(5.07)	18.98
(Family composition change)x(Mean family composition change)	-0.08	(0.17)	0.92	0.18	(0.14)	1.19	0.89***	(0.26)	2.43	0.24*	(0.12)	1.27	0.64***	(0.22)	1.90
State and Regional Measures															
State unemployment rate (time-varying)															
Hourly wage rate statistics (time-varying)															
Mean	-0.56	(0.85)	0.57	-1.53*	(0.83)	0.22	3.38***	(1.28)	29.51	-1.42**	(0.64)	0.24	-2.10*	(1.27)	0.12
Standard Deviation	0.57	(0.35)	1.78	1.01***	(0.34)	2.75	-1.66***	(0.51)	0.19	0.81***	(0.26)	2.25	0.86*	(0.52)	2.37
20th Percentile	-0.17	(0.40)	0.85	0.86**	(0.39)	2.37	-0.20	(0.57)	0.82	0.25	(0.29)	1.28	0.54	(0.57)	1.72
40th Percentile	0.15	(0.38)	1.16	0.21	(0.37)	1.23	-1.09**	(0.52)	0.34	0.81***	(0.28)	2.24	0.91	(0.56)	2.49
50th Percentile	-0.07	(0.37)	0.93	0.13	(0.35)	1.14	0.06	(0.48)	1.06	-0.34	(0.27)	0.71	-0.06	(0.54)	0.94
60th Percentile	0.16	(0.29)	1.17	0.18	(0.29)	1.20	-0.44	(0.42)	0.64	0.39*	(0.22)	1.48	0.57	(0.43)	1.77
80th Percentile	-0.16	(0.17)	0.85	0.09	(0.17)	1.09	-0.56**	(0.26)	0.57	0.15	(0.14)	1.16	-0.06	(0.26)	0.95
Region of Residence ("Western" category is omitted): (time-varying)															
Northeast	0.58	(0.55)	1.78	0.27	(0.61)	1.31	0.31	(1.09)	1.36	0.82*	(0.45)	2.28	0.88	(1.10)	2.42
Mid-Atlantic	-0.76	(0.59)	0.47	0.27	(0.62)	1.31	1.70	(1.27)	5.50	0.40	(0.42)	1.50	0.63	(0.99)	1.87
Midwest	-0.27	(0.54)	0.76	-0.18	(0.51)	0.84	0.91	(1.02)	2.48	0.21	(0.45)	1.23	1.30	(0.83)	3.68
Southeast	-0.79	(0.51)	0.45	-0.05	(0.50)	0.95	1.20	(1.05)	3.33	0.52	(0.38)	1.68	-2.04**	(0.97)	0.13
Southwest	-1.66**	(0.66)	0.19	0.14	(0.58)	1.15	-0.37	(1.25)	0.69	0.80*	(0.42)	2.22	0.80	(0.97)	2.22
Mountain Plains	-1.59*	(0.84)	0.20	0.34	(0.60)	1.41	-1.05	(1.91)	0.35	1.55***	(0.45)	4.71	0.76	(0.87)	2.14

Table III. 13a (continued)

Explanatory Variables	Family Subgroup																
	Elderly or Disabled without Children			Single Adult Head with Children			Multiple Non-Married Adult Heads with Children			Married Adult Heads with Children			Non-Elderly and Non-Disabled without children				
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio		
Policy Variables																	
Vehicle Exclusion	0.35	(0.36)	1.42	0.26	(0.34)	1.29	-1.78***	(0.68)	0.17			0.29	(0.27)	1.34	-0.76	(0.57)	0.47
Certification Period: Earners (avg mos.)	0.23	(0.20)	1.25	0.26	(0.20)	1.30	-0.08	(0.35)	0.92			-0.20	(0.14)	0.82	-0.04	(0.37)	0.96
Certification Period: Single-mothers (avg mos.)	-0.22	(0.23)	0.80	-0.15	(0.23)	0.86	0.14	(0.43)	1.15			0.24	(0.16)	1.27	-0.11	(0.43)	0.90
Simplified Reporting	0.90	(0.65)	2.45	0.28	(0.59)	1.32	2.87**	(1.38)	17.65			-0.24	(0.44)	0.78	0.36	(0.89)	1.43
Status Reporting	0.94	(0.64)	2.56	0.65	(0.57)	1.92	0.99	(1.50)	2.70			0.02	(0.43)	1.02	0.51	(0.84)	1.66
(Simplified Reporting)x(Status Reporting)	-0.57	(0.71)	0.56	-0.64	(0.68)	0.53	-1.92	(1.57)	0.15			0.26	(0.51)	1.30	-1.48	(1.04)	0.23
EBT	-0.21	(0.46)	0.81	-0.12	(0.48)	0.89	-0.64	(1.35)	0.53			-0.50	(0.37)	0.61	0.06	(0.82)	1.06
Spell Information																	
Spell Duration (more-than-16-months category is omitted):																	
4 months or less	10.06	(56.37)	23278.84	2.33**	(1.06)	10.26	1.42	(1.22)	4.14			2.22**	(1.03)	9.25	1.05	(1.12)	2.85
5 to 8 months	9.41	(56.37)	12152.62	1.66	(1.07)	5.25	1.37	(1.19)	3.92			1.89*	(1.03)	6.59	0.22	(1.13)	1.25
9 to 12 months	8.96	(56.37)	7779.13	0.37	(1.12)	1.45	0.93	(1.21)	2.54			1.38	(1.04)	3.99	-0.01	(1.14)	0.99
13 to 16 months	8.45	(56.38)	4676.01	1.64	(1.09)	5.13	0.53	(1.34)	1.70			-0.97	(1.43)	0.38	-0.26	(1.27)	0.77
First Nonparticipation Spell Ever	-0.56**	(0.25)	0.57	0.09	(0.25)	1.09	-0.18	(0.43)	0.84			-0.09	(0.21)	0.91	0.20	(0.44)	1.22
Previous Food Stamp Spell Duration	0.00	(0.00)	1.00	0.00	(0.00)	1.00	-0.01	(0.01)	0.99			0.00	(0.00)	1.00	0.02	(0.01)	1.02
Spell start year (2002 category is omitted)																	
2003	-0.15	(0.26)	0.86	-0.50*	(0.29)	0.60	-0.33	(0.39)	0.72			-0.66***	(0.21)	0.52	-0.55	(0.46)	0.58
-2*Log Likelihood		796.5		802.7					441.0					1352.3			422.0
Number of Spell-Month Observations		3678.0		2416.0					2287.0					5409.0			2571.0

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: Family subgroups of individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

TABLE III.13b

FSP RE-ENTRY HAZARD MODEL (FAMILY SUBGROUPS): CONVERSION OF PARAMETER ESTIMATES TO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES (FOR ENTRY-RELATED TRIGGER EVENTS) AFFECT RE-ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Single Adult Heads with Children)			
Employment Chg.	2.74 [†]	2.74 [†]	4.05 [†]
Income (frequency)	2.01	2.10	2.19
Income (mean)	2.96	2.72	2.55
Income (variance)	2.64	2.43	2.36
Marital Status Chg (b)	--	--	--
Family Composition Chg	0.50	1.02	2.04
Main Model Specification (Multiple Nonmarried Adult Heads with Children)			
Employment Chg.	2.07	3.45 [†]	5.72 [†]
Income (frequency)	3.77	2.70	1.93
Income (mean)	0.39	0.59	0.69
Income (variance)	0.93	0.97	0.98
Marital Status Chg (b)	--	--	--
Family Composition Chg	6.29 [†]	6.24 [†]	6.19 [†]
Main Model Specification (Married Adult Heads with Children)			
Employment Chg.	1.82 [†]	1.75	1.69
Income (frequency)	4.63 [†]	3.41 [†]	1.86
Income (mean)	0.20 [†]	0.26 [†]	0.31 [†]
Income (variance)	0.42	0.41	0.41
Marital Status Chg (b)	--	--	--
Family Composition Chg	1.82	2.54 [†]	3.56 [†]
Main Model Specification (Elderly or Disabled without Children)			
Employment Chg.	5.53 [†]	11.25 [†]	11.25 [†]
Income (frequency)	2.06	0.86	0.36
Income (mean)	0.16 [†]	0.19 [†]	0.21 [†]
Income (variance)	0.18 [†]	0.22	0.23
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	1.27	0.46	0.46

Table III.13b (continued)

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Non-Elderly and Non-Disabled without Children)			
Employment Chg.	0.72	1.51	3.14
Income (frequency)	3.11	2.06	1.36
Income (mean)	0.73	0.65	0.62
Income (variance)	1.02	0.74	0.63
Marital Status Chg (b)	--	--	--
Family Composition Chg	3.59 [†]	3.46 [†]	3.33

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odd ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, in the single adult heads with children family subgroup, conditional on having low employment volatility, individuals who experience a job loss are 4.05 times more likely to re-enter the FSP than individuals who remain employed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of re-entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the single adult heads with children family subgroup, conditional on high frequency of change in family composition, those individuals who experience a change in family composition have their odds of re-entering the program reduced by 50 percent ($= (1.00 - 0.50) * 100$). Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables.

Universe: Family subgroups of individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

[†]The marital status usual circumstance variable and interaction term were dropped from this estimation due to limited variation in the variables.

There are few interesting differences between the results of the re-entry estimation using the family subgroup samples compared to using the full sample. A possible explanation for the similarities is that those who exit the FSP are a more homogeneous group than a sample of FSP participants. This is because the sample of participants includes those who will never leave the program as well as those who do leave, while potential re-entrants include only those who leave the program.

We find that employment status is correlated with the decision to re-enter. For individuals in single-adult families with children, those who are employed when they exit the FSP are less likely to re-enter than those who have been out of the labor force for over a year. This result is not present in the full sample analysis. For individuals in families with multiple non-married adult heads with children and in families without children and no elderly or disabled individuals, the longer the amount of time spent in unemployment prior to the nonparticipation spell, the greater the likelihood of re-entry into the FSP.

The results from the full sample indicate that among those individuals who re-enter the FSP, the loss of a job in the four months prior to exiting the nonparticipation spell is an important determinant of re-entry. In the full sample, we find that individuals with low employment volatility in the past year are 2.48 times more likely to re-enter the FSP than those who do not experience a job loss in this period. Individuals in single-adult families with children who experience a job loss are 4.05 times more likely to re-enter the FSP. However, we cannot interpret this result as a consequence of the inability of single individuals to insure against employment-related shocks to income, as we also find a very strong relationship between job loss and re-entry for individuals in families with multiple nonmarried adult heads with children. We note that although families with multiple income earners have greater family income, on average, they also have higher expenditures. Given a certain expenditure level, a shock to employment income may impact families with married adults more than single-adult families. While our results offer some empirical support for this, they are meant to be suggestive only; a more detailed model and richer data set containing family expenditure variables is required to provide a more in-depth analysis.

c. Other Sensitivity Analyses

As in the duration analysis, we conduct several additional sensitivity analyses by estimating alternative specifications of the model. The results from these estimations can be found in Table III.14a, Table III.14b, and Table III.14c.

In one sensitivity analysis presented in Table II.14a, we re-estimate the baseline model—Model (C) in Table III.11a—using subsamples of individuals exiting a first-time participation spell and those exiting a repeat participation spell. The higher the state unemployment rate, the greater the likelihood of FSP re-entry for individuals who exit their first food stamp spell compared to those who have been on the program more than once. Additionally, the full sample result—that individuals living in states with simplified income reporting rules have shorter nonparticipation spells—appears to be driven mainly by individuals who have exited first-time spells in the FSP and not by those who repeatedly enter and exit the program. Nonparticipants who exited first-time participation spells are 2.3 times more likely to re-enter the FSP if they live in states with simplified income reporting rules than if they live in other states. For repeaters, this effect is statistically indistinguishable from zero. This may suggest that the physical and mental costs associated with program re-certification affect first-time participants who have exited the program and are deciding whether to re-enter. Although simplified reporting does not change the actual re-certification costs, the costs are incurred less often. Additionally, these two groups might have differences in work behavior that make the FSP a safety net more for first-time users than for repeaters.⁹¹

⁹¹ We conduct a chi-square likelihood ratio test to determine whether the coefficients of the two models are the same. We reject the null hypothesis at the 0.01 percent significance level.

TABLE III.14a

FSP RE-ENTRY HAZARD MODEL: ESTIMATED EFFECTS OF EXPLANATORY VARIABLES
ON PROBABILITY OF RE-ENTERING THE FSP
RE-ENTRY MODEL C

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First FSP Spell			Repeat FSP Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Individual Demographic Characteristics									
Gender (female category is omitted):									
Male	-0.011	(0.10)	0.99	0.0146	(0.17)	1.01	-0.072	(0.14)	0.93
Race (Hispanic category is omitted):									
White, non-Hispanic	-0.115	(0.15)	0.89	0.3236	(0.27)	1.38	-0.368*	(0.20)	0.69
Black, non-Hispanic	0.1414	(0.16)	1.15	0.6032**	(0.28)	1.83	-0.079	(0.22)	0.92
Other	-0.12	(0.25)	0.89	0.1436	(0.45)	1.15	-0.102	(0.33)	0.90
Age (18-to-29-years-old category is omitted):									
30-49	-0.065	(0.12)	0.94	-0.212	(0.21)	0.81	-0.062	(0.16)	0.94
50-64	-0.129	(0.18)	0.88	-0.181	(0.31)	0.83	-0.045	(0.24)	0.96
65 and older	-0.382	(0.24)	0.68	-0.329	(0.38)	0.72	-0.417	(0.33)	0.66
US citizen	0.0303	(0.15)	1.03	-0.161	(0.26)	0.85	0.1296	(0.19)	1.14
Education Levels and Employment Status									
Highest grade completed (0-to-8 category is omitted):									
9-11	0.0815	(0.17)	1.08	0.1604	(0.31)	1.17	0.1019	(0.22)	1.11
12	-0.115	(0.16)	0.89	-0.317	(0.29)	0.73	-0.018	(0.21)	0.98
13 and above	-0.198	(0.18)	0.82	-0.365	(0.31)	0.69	0.0751	(0.23)	1.08
Employment status ("haven't worked 12+ months" category is omitted):									
Currently Employed	-0.195	(0.13)	0.82						
Haven't worked 1-5 months	-0.13	(0.20)	0.88						
Haven't worked 6-11 months	0.1066	(0.18)	1.11						
Employment status ("out of labor force for 12+ months" category is omitted):									
Currently Employed				0.1064	(0.26)	1.11	-0.258	(0.18)	0.77
Unemployed 1-5 months				0.4247	(0.37)	1.53	0.0833	(0.27)	1.09
Unemployed 6-11 months				0.4017	(0.46)	1.49	0.5096*	(0.30)	1.66
Unemployed 12+ months				0.5856	(0.66)	1.80	0.0728	(0.65)	1.08
Out of the labor force 1-5 months				0.5325*	(0.32)	1.70	-0.203	(0.28)	0.82
Out of the labor force 6-11 months				-0.412	(0.50)	0.66	-0.234	(0.29)	0.79
Family Income and Welfare Receipt									
Ratio of family income to poverty level (less than 1.0 category is omitted):									
1.0-1.5	-0.142	(0.13)	0.87	0.1274	(0.23)	1.14	-0.314*	(0.17)	0.73
1.5-2.0	-0.274	(0.18)	0.76	-0.558*	(0.33)	0.57	-0.024	(0.22)	0.98
2.0 and above	-0.258	(0.18)	0.77	-0.058	(0.32)	0.94	-0.313	(0.23)	0.73

Table III.14a (continued)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First FSP Spell			Repeat FSP Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Currently receiving TANF	0.8525	(1.15)	2.35	-9.03	(440.53)	0.00	2.1467	(1.48)	8.56
Previously received TANF	-0.654	(1.16)	0.52	9.2504	(440.53)	10408.73	-2.074	(1.49)	0.13
Family Composition									
Family Size:									
Number of adults	-0.039	(0.06)	0.96	0.1652	(0.13)	1.18	-0.018	(0.08)	0.98
Number of children less than age 6	0.1159**	(0.06)	1.12	0.2663**	(0.11)	1.31	0.0661	(0.07)	1.07
Number of children between ages 6 and 18	0.065	(0.04)	1.07	0.1423	(0.09)	1.15	0.0505	(0.06)	1.05
Marital Status (never-married category is omitted):									
Currently married	-0.156	(0.13)	0.86	-0.102	(0.24)	0.90	-0.094	(0.17)	0.91
Previously married	0.2007	(0.16)	1.22	-0.057	(0.26)	0.94	0.3073	(0.21)	1.36
Entry Trigger Events:									
Employment change within family	0.9497***	(0.22)	2.58	0.6678	(0.41)	1.95	1.1718***	(0.27)	3.23
Income change within family	-0.294	(0.25)	0.75	-0.588	(0.41)	0.56	-0.177	(0.33)	0.84
Marital status change within family	-11.75	(527.53)	0.00	-12.24	(952.00)	0.00	-11.28	(1147.14)	0.00
Family composition change	0.5538**	(0.27)	1.74	1.0507**	(0.42)	2.86	0.2555	(0.37)	1.29
Entry Usual Circumstances: (measured over a fixed 12-month window)									
Mean employment change within family	1.4851**	(0.66)	4.42	0.4181	(1.28)	1.52	1.3872*	(0.80)	4.00
Mean income change within family	-2.086***	(0.39)	0.12	-3.438***	(0.75)	0.03	-1.68***	(0.50)	0.19
Mean family income	-7E-05	(0.00)	1.00	-2E-04	(0.00)	1.00	-3E-05	(0.00)	1.00
Variance in family income	-1E-09	0.00	1.00	-5E-08	0.00	1.00	1E-08	0.00	1.00
Average number of marriages in family to date	0.1413	(0.11)	1.15	0.1959	(0.20)	1.22	0.2171	(0.15)	1.24
Mean family composition change	-0.217	(0.52)	0.81	-0.188	(0.94)	0.83	-0.525	(0.66)	0.59
Interaction terms for entry trigger events and usual circumstances									
(Employment change)x(Mean employment change)	-1.93	(1.18)	0.15	1.3681	(2.00)	3.93	-3.899**	(1.52)	0.02
(Income change within family)x(Mean income change)	2.2568***	(0.46)	9.55	3.2658***	(0.87)	26.20	1.9609***	(0.58)	7.11
(Income change within family)x(Mean family income)	-1E-04*	(0.00)	1.00	-2E-04	(0.00)	1.00	-1E-04	(0.00)	1.00
(Income change within family)x(Variance family income)	1E-09	0.00	1.00	5E-08	0.00	1.00	4E-09	0.00	1.00
(Marital status change)x(Average number marriages)	0.3083	(354.39)	1.36	0.4636	(868.17)	1.59	0.1869	(531.43)	1.21
(Family composition change)x(Mean family composition change)	-0.027	(1.05)	0.97	-0.005	(1.61)	0.99	0.6399	(1.54)	1.90
Exit Trigger Events:									
Employment change within family	0.0388	(0.16)	1.04	0.4139	(0.30)	1.51	-0.061	(0.21)	0.94
Income change within family	0.1128	(0.15)	1.12	0.1744	(0.26)	1.19	0.1692	(0.19)	1.18
Marital status change within family	1.9318***	(0.62)	6.90	0.3992	(1.30)	1.49	2.7909***	(0.77)	16.30
Family composition change	0.2734**	(0.13)	1.31	-0.035	(0.26)	0.97	0.3593**	(0.17)	1.43

Table III.14a (continued)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First FSP Spell			Repeat FSP Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Exit Usual Circumstances: (measured over a varying-length window)									
Mean employment change within family	-0.408	(0.56)	0.67	0.5531	(0.83)	1.74	-0.936	(0.81)	0.39
Mean income change within family	0.9273**	(0.39)	2.53	0.9266	(0.69)	2.53	1.1027**	(0.55)	3.01
Mean family income	-3E-06	(0.00)	1.00	-6E-05	(0.00)	1.00	0.0002**	(0.00)	1.00
Variance in family income	-1E-08	0.00	1.00	4E-07***	0.00	1.00	-5E-07*	0.00	1.00
Average number of marriages in family to date	-0.216*	(0.11)	0.81	-0.24	(0.20)	0.79	-0.263*	(0.14)	0.77
Mean family composition change	-0.218	(0.46)	0.80	-1.325	(0.78)	0.27	0.6541	(0.68)	1.92
Interaction terms for exit trigger events and usual circumstances									
(Employment change)x(Mean employment change)	-0.133	(0.82)	0.88	-2.784	(2.00)	0.06	0.6627	(1.00)	1.94
(Income change within family)x(Mean income change)	-0.327	(0.40)	0.72	0.6097	(0.73)	1.84	-0.592	(0.56)	0.55
(Income change within family)x(Mean family income)	7E-06	(0.00)	1.00	-2E-04	(0.00)	1.00	-2E-04	(0.00)	1.00
(Income change within family)x(Variance family income)	2E-08	0.00	1.00	-5E-07***	0.00	1.00	5E-07*	0.00	1.00
(Marital status change)x(Average number marriages)	-2.781**	(1.11)	0.06	-1.931	(1.89)	0.14	-2.648*	(1.45)	0.07
(Family composition change)x(Mean family composition change)	-0.067	(0.60)	0.93	2.3888**	(1.08)	10.90	-1.304	(0.80)	0.27
State and Regional Measures									
State unemployment rate (time-varying)	0.2157***	(0.06)	1.24	0.3356***	(0.11)	1.40	0.1107	(0.08)	1.12
Hourly wage rate statistics (time-varying)									
Mean hourly wage rate	-0.839**	(0.36)	0.43	-0.91	(0.58)	0.40	-0.688	(0.47)	0.50
Standard Deviation	0.5237***	(0.15)	1.69	0.594**	(0.24)	1.81	0.4603**	(0.20)	1.58
20 th Percentile	0.3002*	(0.17)	1.35	0.5287*	(0.28)	1.70	0.2178	(0.22)	1.24
40 th Percentile	0.2977*	(0.16)	1.35	0.1036	(0.26)	1.11	0.3823*	(0.21)	1.47
50 th Percentile	-0.074	(0.15)	0.93	0.2719	(0.25)	1.31	-0.312	(0.20)	0.73
60 th Percentile	0.2201*	(0.13)	1.25	-0.083	(0.21)	0.92	0.3705**	(0.16)	1.45
80 th Percentile	-0.006	(0.08)	0.99	0.0152	(0.12)	1.02	-0.031	(0.10)	0.97
Region of Residence ("Western" category is omitted): (time-varying)									
Northeast	0.4088*	(0.23)	1.51	0.9584**	(0.41)	2.61	0.2119	(0.31)	1.24
Mid-Atlantic	0.2319	(0.23)	1.26	0.5835	(0.41)	1.79	-0.01	(0.29)	0.99
Midwest	0.1116	(0.21)	1.12	0.4475	(0.37)	1.56	0.1094	(0.27)	1.12
Southeast	-0.048	(0.20)	0.95	-0.023	(0.36)	0.98	-0.034	(0.25)	0.97
Southwest	0.012	(0.23)	1.01	0.1244	(0.43)	1.13	0.0684	(0.30)	1.07
Mountain Plains	0.5059**	(0.24)	1.66	0.8366*	(0.43)	2.31	0.3363	(0.31)	1.40

Table III.14a (continued)

Explanatory Variables	Unemployed and Out-of-labor-force grouped into "nonworking"			First FSP Spell			Repeat FSP Spell		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Policy Variables									
Vehicle Exclusion	0.0267	(0.14)	1.03	-0.397*	(0.24)	0.67	0.2599	(0.18)	1.30
Certification Period: Earners (avg mos.)	-0.028	(0.08)	0.97	0.0722	(0.13)	1.07	-0.124	(0.10)	0.88
Certification Period: Single-mothers (avg mos.)	0.0603	(0.09)	1.06	0.0057	(0.15)	1.01	0.1296	(0.12)	1.14
Simplified Reporting	0.4222*	(0.23)	1.53	0.8371**	(0.40)	2.31	0.0497	(0.31)	1.05
Status Reporting	0.4929**	(0.23)	1.64	0.826**	(0.40)	2.28	0.3231	(0.31)	1.38
(Simplified Reporting)x(Status Reporting)	-0.467*	(0.27)	0.63	-0.901**	(0.46)	0.41	-0.185	(0.36)	0.83
EBT	-0.327*	(0.20)	0.72	-0.517	(0.32)	0.60	-0.195	(0.27)	0.82
Spell Information									
Spell Duration (more-than-16-months category is omitted):									
4 months or less	2.4018***	(0.51)	11.04	2.1953***	(0.74)	8.98	2.4105***	(0.72)	11.14
5 to 8 months	1.7916***	(0.51)	6.00	1.3284*	(0.74)	3.77	2.0072***	(0.72)	7.44
9 to 12 months	1.1714**	(0.52)	3.23	1.0049	(0.75)	2.73	1.3003*	(0.74)	3.67
13 to 16 months	0.6646	(0.56)	1.94	0.3502	(0.83)	1.42	0.8826	(0.77)	2.42
First Nonparticipation Spell Ever	-0.128	(0.10)	0.88						
Previous Food Stamp Spell Duration	0.0022**	(0.00)	1.00	0.0025	(0.00)	1.00	0.0021	(0.00)	1.00
Spell start year (2002 category is omitted)									
2003 .	-0.396***	(0.11)	0.67	-0.588***	(0.19)	0.56	-0.301**	(0.14)	0.74
-2*Log Likelihood		1580.2		1580.2		2594.3			
Number of Spell-Month Observations		7500.0		7500.0		8861.0			

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

* Significantly different than zero at the 0.10 level, two-tailed test

** Significantly different than zero at the 0.05 level, two-tailed test

*** Significantly different than zero at the 0.01 level, two-tailed test

TABLE III.14b

FSP RE-ENTRY HAZARD MODEL: INFLUENCE OF ENTRY TRIGGER EVENT VARIABLES AND
USUAL CIRCUMSTANCE VARIABLES ON RE-ENTRY RATE
(Standard Errors in Parentheses)

Explanatory Variables	Trigger Event		Trigger Event and Usual Circumstance		Trigger Event, Usual Circumstance, and Interaction Term	
Employment change within family	0.80***	(0.1354)	0.79***	(0.14)	0.99***	(0.21)
Mean employment change within family			0.42	(0.55)	0.67	(0.58)
(Employment change)x(Mean employment change)					-1.38	(1.13)
Income change within family	0.55***	(0.11)	0.60***	(0.11)	-0.25	(0.24)
Mean income change within family			-0.61**	(0.28)	-1.74***	(0.37)
Mean family income			0.00***	(0.00)	0.00	(0.00)
Variance in family income			0.00	(0.00)	0.00	(0.00)
(Income change within family)x(Mean income change)					2.35***	(0.45)
(Income change within family)x(Mean family income)					0.00**	(0.00)
(Income change within family)x(Variance family income)					0.00	(0.00)
Marital status change within family	-11.46	(255.51)	-11.45	(255.10)	-11.69	(576.69)
Average number of marriages in family to date			-0.02	(0.11)	-0.01	(0.11)
(Marital status change)x(Average number marriages)					0.17	(374.79)
Family composition change	0.64***	(0.16)	0.65***	(0.16)	0.64**	(0.26)
Mean family composition change			-0.21	(0.44)	-0.21	(0.46)
(Family composition change)x(Mean family composition change)					0.03	(1.05)

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel

Note: This table contains the estimates from many estimations. The set of explanatory variables common to **all** estimations includes all variables in the following categories (see Table III.11a, Model (C)): individual demographic characteristics, education levels and employment status, family income and welfare receipt, family composition, exit trigger events, exit usual circumstances, interaction terms for exit trigger events and usual circumstances, state and regional measures, policy variables, and spell information. To this set of common explanatory variables, we add the following sets of variables **individually** in each estimation in Table III.14b: employment entry trigger event variable, employment entry trigger event variable and its associated usual circumstance variable, employment entry trigger event variable and its associated usual circumstance variable and interaction variable. Other estimations are performed similarly for the income-related variables, for the marriage-related variables, and for the variables related to family composition.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

TABLE III.14c

FSP RE-ENTRY HAZARD MODEL: CONVERSION OF PARAMETER
ESTIMATES TO ODDS RATIOS TO DETERMINE WHETHER DEVIATIONS FROM USUAL CIRCUMSTANCES
(FOR ENTRY-RELATED TRIGGER EVENTS) AFFECT RE-ENTRY RATES

Usual Circumstance	Values of Usual Circumstance Variables:		
	High	Medium	Low
Main Model Specification (Separately and Individually Added Triggers)			
Employment Chg.	2.14 [†]	2.40 [†]	2.69 [†]
Income (frequency)	3.74 [†]	2.29 [†]	1.41 [†]
Income (mean)	0.58 [†]	0.66	0.71
Income (variance)	0.78	0.78	0.78
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	1.90 [†]	1.89 [†]	1.89 [†]
Main Model Specification (Previous FSP Spell Was First FSP Spell)			
Employment Chg.	1.87 [†]	2.20 [†]	2.58 [†]
Income (frequency)	3.36 [†]	2.30 [†]	1.58 [†]
Income (mean)	0.50	0.63	0.68
Income (variance)	0.75	0.75	0.75
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	1.73 [†]	1.74 [†]	1.74 [†]
Main Model Specification (Previous FSP Spell Was Repeat FSP Spell)			
Employment Chg.	2.45 [†]	2.19 [†]	1.95
Income (frequency)	4.90 [†]	2.84 [†]	1.65
Income (mean)	0.33 [†]	0.45	0.50
Income (variance)	0.58	0.57	0.56
Marital Status Chg	0.00	0.00	0.00
Family Composition Chg	2.86 [†]	2.86 [†]	2.86 [†]

Source: Mathematica Policy Research, Inc. tabulations of the enhanced 2001 SIPP panel.

Note: The rows of the table correspond to different usual circumstance variables. The columns of the table correspond to estimates of odds ratios for the difference between experiencing a trigger event and not experiencing a trigger event conditional on a high, medium, or low value for a usual circumstance variable. For example, conditional on having low employment volatility, individuals who experience a transition from unemployment to employment are 2.69 times more likely to exit the FSP than individuals who remain unemployed. To interpret the estimates less than 1.00, subtract the odds ratio from 1.00 and multiply by 100. This is the percent reduction in the odds of re-entering the program for those individuals who experience the trigger event relative to those who do not, conditional on a high, medium, or low value for a usual circumstance variable. For example, in the "Previous FSP spell was first FSP spell" estimation, conditional on low mean income, those individuals who experience a decrease in income have their odds of re-entering the program reduced by 32 percent $(= (1.00 - 0.68) * 100)$. Caution should be taken in interpreting these estimates however, since all odds ratios less than 1.00 turn out to be statistically indistinguishable from 1.00. Crosses (†) denote that the confidence interval of the odds ratio does not include the value 1.00. All lower and upper bounds on confidence intervals are defined at the 95 percent confidence level. High, medium, and low values of usual circumstance variables correspond to the 75th, 50th, and 25th percentiles of the distributions for these variables. All estimates based on Re-entry Model C.

Universe: All individuals ages 18 and older who remain in the SIPP universe throughout the panel and who exit the Food Stamp Program between month 17 and their last month in the panel.

Another significant difference between the results of these two models is that, conditional on a medium or high frequency of income change over the past year, individuals whose previous spell is a repeat spell re-enter the program more quickly than those whose previous food stamp spell is their first (see Table III.14c). We can attribute this to the differences in characteristics between these two subgroups related to the ability to insure against income shocks. Individuals whose previous food stamp spell is their first spell might make different savings decisions than those who cycle on and off the program, enabling them to be less affected by income shocks over time.⁹²

Similar to the duration analysis, we also investigate the effects on the likelihood of FSP re-entry and the length of nonparticipation spells of separately including each group of entry and exit trigger event variables, the usual circumstance variables associated with them, and the interactions between the trigger event variables and the usual circumstance variables. For each type of trigger event, we estimate the model first with only the trigger event variable, then with the trigger event variable and its associated usual circumstance variable, and finally with the trigger event variable, its associated usual circumstance variable, and its associated interaction term.

The results are similar to the estimation of the baseline model, with employment, income, and family composition entry trigger event variables being positively associated with likelihoods of re-entry. The magnitudes of the estimates are larger in the sensitivity analyses compared to the baseline estimation, although the basic conclusions from the analysis do not change. For example, whereas the odds of re-entering the program are increased by 65 percent for individuals who experience a change in family composition in the baseline model (conditional

⁹² We conduct a chi-square likelihood ratio test to determine whether the coefficients of the two models are the same. We reject the null hypothesis at the 0.05 percent significance level.

on having a low frequency of change in family composition over the previous year), the odds of re-entering are increased by about 90 percent for the same group in the sensitivity analysis.

E. CHAPTER SUMMARY

In this chapter we performed multivariate analyses to determine the factors associated with entry into the FSP, duration of FSP participation, exit from the FSP, and re-entry into the FSP using the 2001 SIPP panel. In this section, we highlight several important findings from each of these subsections. We conclude this section with Table III.15 in which we compare the results from the descriptive statistics in Chapter II and the multivariate analyses in Chapter III.

1. Entry

The employment status of an individual is a significant determinant of the likelihood of entering the FSP. Consistent with the findings of Gleason et al. (1998), those who are working in the month before the nonparticipation spell begins are less likely to enter the FSP than individuals who are not working. Family income is also a significant determinant of FSP entry rates, even after controlling for employment status. In terms of odds ratios, the odds of entering the FSP are reduced by 19 percent, 39 percent, and 61 percent for individuals with family incomes between 1 and 1.5 times the poverty line, between 1.5 and 2 times the poverty line, and greater than 2 times the poverty line, respectively, relative to those individuals with family incomes lower than the poverty line.

Local labor market conditions are also associated with the decision to enter the FSP. The probability of entering the program in a given month is positively related to the state unemployment rate and negatively related to the state's mean wage, even after controlling for individual characteristics. The odds of entering the FSP are increased by 18 percent for each percentage point increase in the state unemployment rate. The probability of entering the

program is also positively related to the spread of the wage distribution. The odds of entering the FSP are increased by 26 percent for each one-dollar increase in the standard deviation of the wage distribution. One possible explanation is that states with more dispersed wage distributions can have more lower-wage jobs than those with wage distributions that are compressed about their means. Low-wage workers may use the FSP as a supplement to their labor income.

We investigated whether an individual's longer-lasting conditions related to employment, income, or family composition affect the magnitude of the association between entering the program and experiencing a change in employment, income, or family composition in the several months preceding entry. We found that individuals with high employment volatility over the first year who experience a job loss are 1.96 times more likely to enter the FSP than individuals who remain employed. Individuals with low employment volatility who experience a job loss are 2.26 times more likely to enter than individuals who remain employed. This suggests that whether the employment trigger event reflects a deviation from one's usual circumstance is important when analyzing its association with entry. Similarly, among in individuals with low or medium amount of changes in family composition over the previous year, individuals who experienced a change in family composition in the previous four months are 2.01 times more likely to enter the program in the current month than individuals whose family composition remained the same. For those individuals with frequent changes in family composition over the previous year, the magnitude of this association is less.

Demographic variables such as marital status, race, age, and education are also associated with FSP entry. The odds of entering the FSP are reduced by 29 percent if an individual is currently married, are increased by 39 percent for each additional child under the age of six, and are increased by 8 percent for each additional child between 6 and 17 years old. Race and age

were also important factors. Compared to Hispanics, white non-Hispanic individuals are less likely to enter the FSP, while black non-Hispanic individuals are over 2 times likely to enter. Compared with the odds of individuals between the ages of 18 and 29 entering the FSP, the odds of individuals age 30 to 49, age 50 to 64, and age 65 and older entering the FSP are reduced by 12 percent, 44 percent, and 75 percent, respectively. Finally, even after controlling for family income relative to the poverty line, an individual's education level negatively affects the likelihood of entering the FSP.

Federal Food Stamp Program policy requires recipients to report changes in their financial circumstances to state agencies at each re-certification appointment or when changes in monthly income exceed \$25. More recently, states have been given the option to reduce the number of times between certification that households need to report changes (simplified reporting) or reduce the types of incidents that need to be reported (status reporting). The odds of entering the FSP increase by 73 percent, 37 percent, and 60 percent in states with simplified reporting only, status reporting only, and both simplified and status reporting, respectively. Given the high rate of FSP recidivism described in Chapter II, these estimates might be driven by the presence of individuals who have previously participated in the program and have experienced the benefit of these policies first-hand.

2. Duration

The employment status and family income of an individual at the start of his or her participation spell are important determinants of the duration of that spell. Those individuals who are employed when they enter the FSP have a higher likelihood of exiting the program. Even after controlling for employment status at the start of the participation spell, family income is a significant determinant of FSP exit rates, with individuals in families with income greater than 150 percent of poverty at the start of the participation spell more likely to leave the FSP

than individuals in poorer families. Individuals with family income below 100 percent of poverty have a median spell length of more than 20 months, while those with family income between 100 and 150 percent of poverty, 150 and 200 percent of poverty, and more than 200 percent of poverty have median spell lengths of 15 months, 8 months, and 7 months, respectively. While employment status and family income are important determinations of FSP spell durations, changes in these variables are also strongly associated with greater FSP exit rates. We find that the odds of exiting the FSP are increased by 45 percent and 118 percent for individuals in families who experience a favorable change in employment or income, respectively.

We find little association, using our full sample of individuals, between the likelihood of FSP exit and state-specific variables that describe the general state labor market environment in which individuals work and search for jobs; however, the full sample contains many types of families in it, some of whom do not work or are out in the labor force. As Gleason et al. (1998) found in their report of the early 1990s, when we re-estimate the model on family subgroups for whom the labor market environment is likely to influence the probability of FSP participation—families with married adults with children and those without children or elderly or disabled individuals, for example—the variables describing local labor market conditions become statistically significant determinants of FSP exit rates. The higher the mean wage across states and the higher the 20th percentile across states, the greater is the likelihood of exit from the FSP. Thus, more favorable labor markets are associated with shorter FSP participation durations.

We investigate whether an individual's longer-lasting conditions related to employment, income, or family composition affect the magnitude of the association between exiting the program and experiencing a change in employment, income, or family composition in the several months preceding exit. We find that the odds of exiting the FSP are increased by

37 percent and 100 percent for individuals in families who experience a favorable change in employment or income, respectively, conditional on having high employment volatility and a high frequency of income changes over the past year (that is, a very unstable year). The magnitudes of these effects are less than those for individuals having low employment volatility and low frequency of income changes over the past year (that is, a more stable year). This suggests that whether these exit trigger event variables reflect a deviation from one's usual circumstance is important when analyzing their association with exit from the FSP.

An individual's family structure and demographic characteristics, such as marital status, education, and race, can also influence the length of FSP participation. Individuals living in families with more adults tend to have shorter spells, while those living in families with a larger number of children between 6 and 18 years old tend to have longer spells. We also find that the median spell length for married individuals is four months shorter than that for nonmarried individuals. Similar to the results of Gleason et al. (1998) using the 1990-1991 SIPP panels, we find no statistically significant relationship between educational attainment at the start of the food stamp spell and the length of the spell; however, the regression-adjusted median spell lengths of individuals with more education are shorter than those of individuals with less education. Interestingly, there are substantial differences in the signs and magnitudes of the effects of demographic characteristics that vary among family subgroups. For example, in the full sample, black non-Hispanic and white non-Hispanic participants had shorter spells than Hispanic individuals. That remains true among all family subgroups except for single-adult families with children. In this subgroup, we find that the odds that a Hispanic individual exits the FSP are over 50 percent higher relative to the odds that a white or black non-Hispanic individual will exit. This is an interesting finding, given that we have controlled for family income, employment status, education, and U.S. citizenship.

We include state-level policy variables related to the number of times between certification that households need to report changes (simplified reporting) and the types of incidents that need to be reported (status reporting). Using our full sample, we find that individuals who live in states that offer simplified reporting are less likely to leave the FSP. For these individuals, the odds of leaving the FSP are reduced by 27 percent. Using our family subgroup samples, we find that simplified and status reporting rules affect spell duration for individuals in families with married adult heads with children and individuals in families without children or elderly or disabled individuals. For the married subgroup, the odds of FSP exit are reduced by 57 percent for individuals living in states with simplified reporting rules only, by 37 percent for individuals living in states with status reporting rules only, and by 46 percent for individuals living in states with both simplified and status reporting rules. For the group without children or elderly or disabled individuals, the odds of FSP exit are reduced by 82 percent for individuals living in states with simplified reporting rules only, by 72 percent for individuals living in states with status reporting rules only, and by 76 percent for individuals living in states with both simplified and status reporting rules only.

Using our full sample, we find that individuals who are in the FSP for the first time remain on the program for a shorter amount of time than those in repeat spells. As a sensitivity analysis, we divide the full sample into individuals who are in their first food stamp spell and those who are in a repeat spell. Overall, our regression-adjusted distributions of spell lengths indicate that individuals in their first spell have a median spell length of 10 months, whereas individuals in a repeat spell have a median spell length of 16 months. One factor that contributes to the significant difference between the results of the two models is experiencing a transition from unemployment to employment in the four months prior to exiting the FSP. This leads to shorter participation spells for individuals in an initial spell compared to those in a repeat spell. This is

most likely attributable to individuals in repeat spells being accustomed to relying on the FSP as a safety net following the loss of a job, compared to those in initial spells. Certain characteristics of individuals in an initial spell may be correlated with greater job search intensity and higher hazard rates out of the program. There may be unobserved differences between the two groups, such as the stigma associated with receiving food stamp benefits or the administrative and physical costs associated with being a participant. Those in repeat spells are likely to be affected less by these participation costs and, thus, rely more frequently on the FSP for income support.

3. Re-entry

Similar to the results of our entry analysis, we find that local labor market conditions are associated with the decision to re-enter the FSP. Individuals in states with more favorable labor market conditions are less likely to re-enter the FSP, all else being equal. We find that the higher the mean wage across states, the lower the likelihood of re-entry into the FSP and the longer the nonparticipation duration. Similarly, a decrease in the state unemployment rate by 1 percent reduces the odds of re-entering the FSP by 22 percent.

As in the entry and exit analyses, we investigated whether an individual's longer-lasting conditions related to employment, income, or family composition affect the magnitude of the association between re-entering the program and experiencing a change in employment, income, or family composition in the several months preceding re-entry. We find that conditional on having low employment volatility over the past year, individuals who experience a job loss in the prior four months are 2.48 times more likely to re-enter than individuals who remain employed. For those with high employment volatility over the past year, the odds ratio is 1.83. Thus, whether the employment entry trigger event reflects a deviation from one's usual

circumstances is important when analyzing the association between the trigger event and the likelihood of re-entry.

An individual's demographic characteristics, such as marital status, age, and education, can also influence the length of FSP participation. Previously married individuals are 1.3 times as likely to re-enter the FSP as individuals who have never married, while each additional child under age 6 increases the odds of re-entering the FSP by 13 percent. Based on regression-adjusted re-entry rates, younger individuals have shorter nonparticipation spells, as do individuals with fewer years of schooling. Demographic characteristics such as gender, race, age, U.S. citizenship, and education have no discernable effects on re-entry rates. This is most likely attributable to the homogenous nature of the sample used to estimate the re-entry model. This sample only includes individuals who left the FSP, differentiating it from the larger group of program participants.

We find that state-level policy variables related to the frequency of reporting income changes positively associated with FSP re-entry. Individuals living in states with more simplified income reporting rules are more likely to re-enter the program and have shorter nonparticipation spells. This is expected as all individuals in the sample have previously participated in the program and have experienced first-hand the benefit of these rules. We find that between 36 and 40 percent of individuals living in states with more simplified income reporting rules re-enter the program in under 20 months, compared with 32 percent of individuals living in states with less simplified income reporting rules.

As we find in the duration analysis, negative duration dependence is present in the re-entry sample. The longer individuals spend off the program, the less likely they are to re-enter. Additionally, the length of time spent on the FSP before exiting increases the likelihood of re-entering the program by a marginal but statistically significant amount.

TABLE III.15

FSP DYNAMICS: A COMPARISON OF MAIN RESULTS FROM CHAPTERS II AND III

Descriptive Statistics Analysis (Chapter II)	Multivariate Analysis (Chapter III)
<ul style="list-style-type: none"> • Families with children are three times more likely to enter the FSP than families without children. • Children living with one adult or multiple unmarried adults have four times the entry rate of children living with married adults. • Families with children have longer participation spells (lower FSP exit rates) than families without children. 	<ul style="list-style-type: none"> • For each additional child younger than 6 years old the odds of entering the FSP increase by 39 percent. There is also a marginal increase in the odds of FSP entry for each additional child between the ages of 6 and 18. • The greatest increase in the odds of entering the FSP for each additional child between 6 and 18 years old are for families with one adult or multiple unmarried adults. The greatest increase in the odds of entering the FSP for each additional child younger than 6 years old are for families with married adults. • For each additional child younger than 6 years old the odds of exiting the FSP decrease by 9 percent. There is a discernable effect for children between 6 and 18 years old on the length of FSP participation only for families containing married adults. In this case, the odds of exit are reduced by 18 percent for each child in this age range.
<ul style="list-style-type: none"> • Elderly people are much less likely to enter the FSP than other adults, although they have longer participation spells than younger adults. They are also much less likely to re-enter the program once they have left. 	<ul style="list-style-type: none"> • Elderly people are less likely to enter the FSP than other adults. • Elderly people have longer participation spells than younger adults. The regression-adjusted median spell duration is greater than 20 months for an elderly individual and ranges from 11 months to 14 months for younger adults. • Elderly people are much less likely to re-enter the program once they have left. For example, within at most 12 months of exiting the FSP, 27 percent of elderly individuals re-enter, whereas 30 percent to 34 percent of younger adults re-enter. These are based on regression-adjusted hazard rates.
<ul style="list-style-type: none"> • Of those individuals who exit the program, the rate of re-entry is the highest for the poorest families. 	<ul style="list-style-type: none"> • Between 34 percent and 43 percent of individuals in families with income less than 150 percent of poverty re-enter the program in at most 12 months after exiting. This compares with between 11 percent and 13 percent of individuals in families with income greater than 150 percent of poverty.
<ul style="list-style-type: none"> • A decrease in family earnings is the most common trigger event that precedes entry, while an increase in family earnings is the most common trigger event that precedes exit. 	<ul style="list-style-type: none"> • Employment-related entry triggers have a more pronounced effect when the trigger represents a deviation from an individual's usual circumstance. Overall, while the loss of a job increases the likelihood of FSP entry for all individuals, the increase is more substantial for individuals who do not experience frequent unemployment. Also, single parents are more likely than other individuals to enter the program after experiencing multiple changes in labor income. • Becoming employed and experiencing an increase in income are highly associated with exiting the program. Furthermore, an individual's longer-lasting conditions related to employment and income affect the magnitude of the association between exiting the program and experiencing a change in employment and income in the several months preceding exit.

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