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WHEN DO WOMEN USE AFDC & FOOD STAMPS?
THE DYNAMICS OF ELIGIBILITY
VS. PARTICIPATION

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ABSTRACT

This paper investigates dynamic patterns in the relationship between eligibility and participation in the AFDC and food stamp programs, using monthly longitudinal data from the Survey of Income and Program Participation. The results indicate that the majority of eligibility spells are relatively short, do not result in program participation, and end with increases in income. Participation is most likely to occur among women with lower current and future earning opportunities, and is also affected by locational and policy parameters. Those who elect to participate in these programs tend to start receiving benefits almost immediately upon becoming eligible, with little evidence of delayed program entry. A substantial number of women exit these programs before their eligibility ends; among at least some of these women it seems likely that there are unreported changes in income occurring. In 1989, if all eligible single-parents families had participated in AFDC and food stamps, benefit payments would have been \$13.5 billion higher.

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The public assistance system in this country continues to generate ongoing debate about the structure of its programs and the ways in which these programs affect the behavior of the poor. One of the most discussed issues is the question of who uses public assistance and whether people work less in order to become eligible for the cash and in-kind income available through government support programs. Less discussed is the fact that a substantial number of persons eligible for public assistance programs do not participate in them. This paper focuses on the question of non-participation, investigating the dynamic patterns in the relationship between eligibility and participation in the Aid to Families with Dependent Children (AFDC) program and the Food Stamp Program among single mothers with children.

Although a growing literature is studying the time patterns of actual AFDC usage, this is the first paper to investigate AFDC eligibility spells and compare their patterns to those of AFDC participation spells. We also look at food stamp eligibility and participation spells. We start with a dynamic model of how participation decisions are made among eligible persons and use this as the basis for our empirical work. After describing the data, this paper focuses on three major questions: (1) What are the differences in the patterns and the determinants of spells of eligibility versus spells of program participation? (2) Do public assistance participation spells start concurrently with the opening of an eligibility spell or do newly eligible women enter the program after some lag? What explains these opening patterns? and (3) Do public assistance participation spells end concurrently with the end of an eligibility spell? The results in this section are particularly unexpected and indicate that many women leave public assistance while they are still eligible. We explore a variety of explanations for this result. The last section summarizes the results and discusses their implications for policy questions such as "Who are the eligible non-participants and how needy are they?" and

"How much more expensive would public assistance be if all eligible persons participated?"

I Existing Literature

A growing literature has used longitudinal data to study time patterns of AFDC usage. This literature ranges from tabulations of AFDC participation patterns to estimation of complex time-dependent duration models.¹ The results indicate that young women with less education and more children tend to have longer welfare spells. Both the work of Blank (1989) and Fitzgerald (1991) indicates that longer AFDC spells among black women are due to their lower propensity to end welfare through marriage, while there are few racial differences in the propensity to leave welfare through other means. Higher unemployment rates and higher AFDC benefits also lead to longer welfare spells, indicating that the economic and institutional environment affects welfare usage. This work on AFDC has substantially increased our knowledge about the dynamics of AFDC usage, but it has not been repeated in detail for any other public assistance program.²

¹ Bane and Ellwood (1983) and Ellwood (1986) tabulate welfare spells using 12 years of annual data from the PSID. O'Neill, Bassi, and Hannan (1984) perform a similar analysis with the NLS Young Women's panel over an 11 year period. Blank (1989) analyzed welfare spells, using 72 months (6 years) of data from the control groups of the negative income tax experiments in Seattle and Denver. Giannarelli (1992), Fitzgerald (1991, 1992), Long (1991), Ruggles (1989), Doyle and Long (1988) and Lamas and McNeil (1988) look at AFDC use in the first (1984) panel of the SIPP, which contains 32 months of data. Gritz and MaCurdy (1992) look at monthly AFDC use in the NLS-Y panel.

² Long (1991) presents preliminary work examining children's spell exits from AFDC and food stamps and Trippe, et. al. (1990) also briefly comment on food stamp spell durations. Otherwise we know relatively little about spells of food stamp reciprocity and how they compare to AFDC spells.

In contrast, there is much less research that focuses on eligibility rather than participation and none of it focuses on spells of eligibility. Existing work on take-up rates among eligible participants has been entirely based on point-in-time and typically annual estimates of eligibility.³ Annual changes in take-up rates are deduced from calculations on successive cross-sectional Current Population Survey (CPS) data. Ruggles and Michel (1987) and Giannarelli and Clark (1992) estimate annual take-up rates among AFDC participants between 1967 and 1990, while Trippe, et. al. (1992) make similar estimates for the Food Stamp Program between 1976 and 1990. In general, this work indicates that AFDC participation rates were around 75 percent in the mid-1980s, while food stamp participation rates were near 50 percent.

While these estimates provide a consistent measure of the trends in take-up rates over time, the CPS data are inadequate for calculating accurate take-up rates at any point in time. Eligibility must be imputed from annual income information (actual eligibility is determined monthly) and the CPS has no information on asset holdings, one of the major determinants of AFDC and food stamp eligibility.⁴ The CPS also undercounts program participants. With the availability of monthly data through the Survey of Income and Program Participation (SIPP), analysts have calculated monthly take-up rates for both AFDC and food stamps, using SIPP's more accurate income figures

³ We will use the terms "participation rate" and "take-up rate" synonymously in this paper. Both will refer to the share of eligible households who actually participate in the program.

⁴ Although the CPS does not include asset data, eligibility estimates by Ruggles and Michel (1987) and Giannarelli and Clark (1992) use the TRIM microsimulation model to impute some assets based on reported asset income.

as well as its assets information.⁵ These take-up estimates are based on a single month, however, and do not make use of the longitudinal nature of the SIPP data which potentially provides information on spells of AFDC and food stamp eligibility as well as spells of participation.

II

Modelling Dynamic Participation Decisions

At any point in time, an individual's decision about whether to participate or not in AFDC has been described as follows:⁶

$$(1a) \quad P^* = U_p - U_{np} - C(M,S) \quad ,$$

where $P^* > 0$ implies participation and
 $P^* \leq 0$ implies non-participation.

U_p is the utility level of the individual if she participates and U_{np} is her utility if she doesn't participate in public assistance, while C is the cost of participation, in the same units as the utility function. C is a function of two vectors. M represents a vector of variables that describe the direct costs of participation in terms of money and time required to apply for and remain eligible for the program. For instance, both AFDC and food stamps require regular appearances at the county welfare office, where the wait to see a case worker can be unpredictable and long. S stands for what has come to be

⁵ See Ruggles, et. al. (1992) for single-month estimates of AFDC take-up rates from SIPP data and Trippe and Doyle (1992a, 1992b) and Ross (1988) for similar food stamp estimates. Most of these papers estimate number of eligibles from the SIPP and compare this to number of program recipients, based on administrative data. It is not obvious that this provides a consistent estimate of take-up rates.

⁶ For convenience, this section refers to AFDC participation decisions. The analysis can be readily applied to other public assistance programs. Moffitt (1983) is one of the first to lay out a model similar to this, although he does not distinguish between stigma costs and direct costs.

called "stigma" costs, and represents the distaste that an individual might feel about participating in public assistance. For instance, lower food stamp take-up rates are often attributed to higher stigma since participants must use food stamp coupons publicly while buying groceries. Because of these costs, some eligible individuals whose resources would be higher on AFDC may not participate because the costs of participation outweigh the benefits.

The static nature of equation (1) makes it difficult to look at dynamic issues in program participation. For instance, as we will see below, a number of AFDC participation spells start after the eligibility spell starts or close before the eligibility spell closes. To explain these patterns, we clearly need a time-dependent model.

A more complete dynamic model of program participation can be written as:

$$(2a) \quad P_t^* = f(U(Y_{t,p}) - U(Y_{t,np}) - C(M_t, S_t), \Sigma_{j=t+1, T} \delta_j E[Y_{j,np}])$$

where the function $f(\cdot)$ is scaled so that $P_t^* = 0$ at the point where the individual is exactly indifferent between participation and non-participation. As before, $P_t^* > 0$ implies participation and $P_t^* \leq 0$ implies non-participation at time t . Participation is now a function of both a current (time dependent) benefit/cost comparison, as well as a set of expectations about future income.

The first term in (2a) is the individual's benefit/cost comparison at time t , but saving or borrowing may occur across periods, so that Y represents current consumption rather than current income. Thus, we can write

$$(2b) \quad Y_{t,p} = L_{t,p} + B_t + Y_{oth,t,p} + \Delta A_{t,t-1} ,$$

$$(2c) \quad Y_{t,np} = L_{t,np} + Y_{oth,t,np} + \Delta A_{t,t-1}$$

where $L_{t,p}$ and $L_{t,np}$ are the net labor market income of the family when participating or not participating at time t (with the costs of work netted out),

B_t is the level of public assistance benefits available to the family at time t , and $Y_{oth,t}$ is all other family income.⁷ $\Delta A_{t,t-1}$ represents the change in assets between the two periods. This allows women to borrow or to draw down assets for some period of time rather than going on welfare.⁸

Let us describe more fully the time-dependent nature of the two components of the cost of participation, C . First, assume that the one-time direct costs of entering the program may vary from the ongoing costs of participation:

$$(2d) \quad M_1 = g'(CH_1, LOC_1, OFC_1, APP) \text{ if } t = 1$$

$$M_t = g(CH_t, LOC_t, OFC_t) \text{ if } t > 1 .$$

The function g' estimates the direct time and money costs of gathering information and going through the application process for public assistance. In most cases this requires at least one day at the public assistance office and women often have to come back several times. These costs are a function of four variables. CH_t is a vector representing the number, ages, and child care needs of the children in the family. LOC_t is a vector characterizing the geographic isolation of the family, including such factors as how far they are from the public assistance office and the availability and cost of public or private transportation. OFC_t is a vector of variables describing operating procedures at the local public assistance office, including the availability and efficiency of the staff. APP is a vector characterizing the application process used by the office. Ongoing costs are incurred as eligibility must be regularly

⁷ Y_{oth} includes such things as child support, unemployment payments, or intra-family transfers, which may vary with program participation.

⁸ If people borrow, assets can be negative. As we will discuss later, assets limits for public assistance programs will constrain the amount of positive assets a family can hold and still be eligible.

recertified, and are characterized by the function g . Monthly reporting to an assigned caseworker about last month's income and family composition is mandatory among AFDC recipients with earned income or a recent work history. Most others must report every 6 months to their caseworker, although this may vary by state and by office.⁹ In general, one expects that ongoing costs are lower than initial certification costs.

Stigma costs can be characterized by a simple updating model:

$$(2e) \quad S_t = S_{t-1} + h(\text{OFC}_{t-1}, \check{S}_{t-1} - S_{t-1})$$

where $h(\cdot)$ is a function by which a woman's distaste for welfare is "updated" each month. Initial distaste for welfare, S_0 , is assumed to be determined by a woman's family background. OFC_{t-1} is the same vector of office-specific factors as in (2d). The more hassles a woman faces in the public assistance office, the greater is her distaste for welfare. The second term, $\check{S}_{t-1} - S_{t-1}$ is the difference between the average distaste for welfare among one's friends (\check{S}_j) and oneself in the previous period. If this difference is negative, own stigma will fall over time, consistent with recent discussions about both the effect of role models on individual behavior or the possibility of "neighborhood effects".¹⁰

The second term in (2a) represents future expectations about consumption streams exclusive of benefit participation, where the δ s are the

⁹ In some cases, the Food Stamp Program has different reporting requirements than AFDC. While most states have consolidated their food stamp and AFDC application process, a woman may still have to deal separately with each program on a number of issues.

¹⁰ Jencks and Mayer (1990) discuss this literature. Montgomery (1991) develops a model where neighbors' beliefs affect own behavior.

current utility weights associated with future consumption.¹¹ In particular, the higher is expected consumption without public assistance in the next period, the less likely it is that an individual will choose to participate this period. If a woman expects her eligibility spell to end soon because of expected changes in her income stream—perhaps she expects to find a new job or to receive income from an absent father—she is less likely to incur the costs of applying for public assistance.

Equations (2a) through (2e) describe a model of participation choices over time. This model suggests that women with lower benefits, greater future income and earnings expectations, more assets, and higher cost factors are less likely to participate at any point in time. As these factors change, participation decisions may change over time. In addition, the model predicts that women who enter public assistance this period will be more likely to participate next period than those who have not entered, since participants have already expended the higher one-time application cost.

This model describes the full range of information necessary to fully understand participation decisions. In the empirical work below, we will not be able to estimate a structural form for this model because we lack data on many of the variables such as household location relative to the public assistance office, procedures in the relevant local public assistance office, or information on friends' views of welfare receipt. We will be able to estimate a reduced form version of this model, however, and will discuss the potential effects of omitted variables below.

¹¹ Given the need for current consumption to remain at some minimal level (particularly with children) it is possible that δ may become zero quite quickly, so that expectations about income availability more than 3 or 4 months in the future may not affect current AFDC participation behavior.

III

The Data

The data used in this paper come from the Survey of Income and Program Participation (SIPP), a longitudinal data set collected on a random sample of the US population. We use the 1986 and 1987 panels of the SIPP, each of which contain four rotation groups¹² that span the period from October of 1985 through April of 1989. Most of the rotation groups provide information for 28 consecutive months, except the first rotation group in 1986, which provides only 24 months of data. Each wave of the survey was collected every four months, so each participant was interviewed three times a year about his or her monthly experiences over the past four months. Thus, the data provide monthly information on household composition, labor market behavior, and income sources.

The SIPP data is particularly useful for our purposes not only because it has over-time longitudinal information on family income sources, but also because it was explicitly designed to collect better income information, particularly on public assistance income categories. In comparison to the CPS's annual survey of household income, SIPP reports about the same amount of income from earnings, but about 12 percent more income from transfers in general. This should make take-up estimates from the SIPP data more accurate, although compared to administrative AFDC data there is still some underreporting in the SIPP.¹³

The basic data set for this paper consists of all spells of single motherhood among women in the SIPP, where a single mother is defined as

¹² For a complete description of the SIPP data set, see Jabine (1990).

¹³ For instance, reported AFDC benefits in SIPP account for 76 to 86 percent of benefits paid by the program, while reported benefits in the CPS account for about 63 percent of benefits paid. See Jabine (1990), chapter 10.

a currently unmarried woman caring for children age 18 or younger. She may live alone or with other relatives, forming a subfamily. A woman who is a single parent throughout the SIPP panel has all of her observed months included in our data set. A single mother who marries in the middle of the panel is included only for the months during which she was a single parent. Our data includes 3507 spells (56,657 months) of single motherhood, involving 3201 persons. Within these spells of single motherhood, we then calculate spells of continuous AFDC usage and food stamp usage, as well as spells of AFDC and food stamp eligibility.¹⁴

IV Calculating Program Eligibility

By law, program eligibility is determined on the basis of three items for AFDC and two items for food stamps.¹⁵ For AFDC, eligibility depends first upon being the parent of a minor child, often a single parent. Everyone in our sample passes this eligibility screen. Second, AFDC eligibility depends on a cash income calculation. The formulas and maximum grant amounts vary from state to state for different sized families. By federal law, as a woman's earnings increase, she gets to keep \$30 in earnings each month. All earnings above \$30 are offset against benefits. The federal government sets a benefit reduction rate of 67 percent on earnings in the first four months of work and

¹⁴ We excluded only those spells of single motherhood that lasted only 1 month or where state of residence was not identified. All dollar variables were deflated using the monthly national consumer price index (CPI), indexed so that the annual 1989 CPI equaled 1, leaving all variables in constant \$1989. For further information on this data set see Blank and Ruggles (1993).

¹⁵ Details of program eligibility for AFDC and an outline of issues in simulating AFDC eligibility can be found in Giannarelli (1992) and Ruggles, et. al. (1992). Food Stamp Program eligibility rules and the problems of simulating them in SIPP are outlined in Trippe, et. al. (1992).

100 percent in all months thereafter. For simplicity, we apply a 67 percent tax rate on all earnings over \$30.¹⁶ As appropriate, we also allow for federally mandated work expense and child care deductions among working participants. Third, AFDC eligibility is determined by an assets test. A woman must have less than \$1000 in assets (excluding the value of a home). If she owns a car, the equity value of that car (resale value less any remaining debt) must be less than \$1500.

In contrast to AFDC, the Food Stamp Program has no household composition test, but it does have a cash income test and an assets test. To be eligible for food stamps, one must apply information on a family's earnings and other income against a national formula of benefits and standard deductions. The assets test in the Food Stamp Program requires that food stamp households have less than \$2000 in wealth holdings¹⁷ and that the resale value of the household car must be less than \$4500.

In addition to monthly income information, special topical modules asked questions about a family's wealth and asset holdings in Wave 4 and Wave 7 of both the 1986 and 1987 SIPP panel. While the information from the two topical modules is not identical,¹⁸ both can be used to estimate whether families pass the "assets test" for food stamp and AFDC eligibility. We use information from the Wave 4 module to estimate asset eligibility for

¹⁶ The majority of (reported) work by AFDC women occurs in the first four months of the program, although Jencks and Edin (1990) suggest that many AFDC participants have unreported earnings. Estimates of effective AFDC tax rates are well below 100 percent, even for long-term work spells (Abe, 1993).

¹⁷ In the early part of our sample, the asset limit was \$1500. The level is also higher for elderly recipients, but since almost none of our subsample are elderly, we did not simulate a separate asset-eligibility test for them.

¹⁸ The Wave 4 topical module is designed to provide a more comprehensive measure of wealth and asset holdings; the Wave 7 topical module measures only assets which are used to determine eligibility for major transfer programs.

months that are part of Waves 1 through 5, and information from the Wave 7 module to estimate eligibility for months from Waves 6 and 7. We can also use information on car value and car equity to calculate whether a woman passes the car assets test. We are hesitant about the accuracy of the car information, however, and it is not available in precisely the right form in all waves. Additionally, both programs exempt cars from the test in certain circumstances, such as when they are used to commute to work.

We calculate eligibility under three different definitions for both AFDC and food stamps, as shown in table 1. Definition 1 estimates eligibility based only on current cash income. Definition 2 estimates eligibility based on current cash income and the assets test on total wealth.¹⁹ Definition 3 also includes the car assets test in its eligibility calculations.

Table 1 provides information on the extent to which our three eligibility calculations mesh with reported AFDC and food stamp receipt. Part A looks at AFDC eligibility. Row 1 indicates that in 57 percent of the months we report no eligibility using definition 1 while the woman reports no AFDC receipt. Row 2 shows the share of months where we impute no eligibility, but the woman reports AFDC receipt. These "errors" are relatively rare, and are due both to underreporting of program use and income by survey respondents as well as to errors in our eligibility calculations. Row 3 reports the share of months where we impute eligibility, but the woman reports no AFDC receipt. This is our primary count of those who choose not to participate in the program, although this too may reflect underreporting problems. Row 4 shows the share of months where we report eligibility and the woman reports

¹⁹ We assume that assets held by subfamilies are zero for AFDC eligibility purposes. SIPP collects asset information for the entire household, while AFDC eligibility is based on assets held by the eligible subfamily. (In contrast, food stamp eligibility is based on the entire household.) Work by Lamas, Eargle and Ruggles at the Census Bureau has found that household assets are rarely held within subfamilies. Our data show many subfamilies receiving AFDC whose household assets are well above the limits.

receipt. Rows 5 and 6 calculate two alternative take-up rates, including and excluding the count in row 2. These take-up rates are similar since row 2 is small.²⁰

As our definition of eligibility becomes successively more stringent, the share of eligibles drops and the take-up rate rises. In the absence of other information, it is hard to tell whether the use of the SIPP wealth data provides a better measure of overall eligibility. On the one hand, the share of errors in row 2 rises, but the measure of eligibility and ineligibility in rows 1 and 3 change also and should improve, if the wealth information is accurate.²¹ Our estimated AFDC take-up rates range from 62 percent to 72 percent. These are consistent with those estimated by Ruggles, et. al. (1992), who calculate single-month take-up rates from the SIPP.

Food stamp eligibility calculations are shown in the bottom of table 1. We estimate more families are eligible for food stamps than for AFDC, which should occur since the cash income and the assets tests are both less stringent. Our eligibility estimates also imply that there is a lower take-up rate for food stamps than for AFDC, consistent with other research in this area. We estimate food stamp take-up rates that range from 54 percent of all eligibles to 66 percent. This is consistent with the estimates by Ross (1988), who calculates single-month take-up rates in the SIPP.

²⁰ If you think row 2 mostly reflects underreporting problems, row 6 is the preferred take-up rate. If you think row 2 mostly reflects problems in imputing eligibility, row 5 is the preferred take-up rate.

²¹ Because the wealth information available in the different topical modules is not identical, we were worried that our estimates for some sets of data might be better than for others. To test this, we looked separately at the error rates for the data to which each topical module was applied. There is virtually no difference in the errors or the overall eligibility imputations made with the four different topical modules. Our overall error rate is slightly lower than that found in Ruggles et al. (1992).

As a further test of the accuracy of our eligibility estimates, the last two columns of table 1 compare the simulated dollars of AFDC and food stamps which we estimate persons should receive with the actual amount they report receiving. For both programs, simulated and reported benefits are extremely close among those who are both eligible and receiving. Consistent with our model, eligible non-recipients have lower expected benefits than do eligible recipients.

For the remainder of this paper, we will use definition 2 to estimate AFDC and food stamp eligibility. We avoid using definition 3 because we are unsure about the data used for the car assets test, particular for AFDC, where we have to estimate equity value. We count someone as eligible for every month in which we impute eligibility, using definition 2, and/or for every month in which she reports receiving the program. We count someone as a participant for every month in which she reports receiving benefits.

One question raised by the take-up numbers in table 1 is whether the non-participants in AFDC are also non-participants in food stamps. Among all months where women are eligible for both AFDC and food stamps²², in 54 percent of the cases the family participates in both programs. In 7 percent of the months, the woman is on food stamps and not on AFDC, in 11 percent of the months she is on AFDC and not on food stamps, while in 28 percent of the months she participates in neither program. This means that in all eligible months when women don't participate in AFDC, 80 percent of the time they also don't participate in food stamps, thus non-participation in the two programs is highly linked, as our cost-benefit model would predict. The large number of cases (11 percent of all AFDC eligibility months) where the woman elects to be on AFDC and not on food stamps may be evidence of pure

²² This is essentially all months of AFDC eligibility; all AFDC eligibles are also food stamp eligibles but the opposite is not true.

"stigma" costs. Since the application process for these two programs is typically linked, the direct costs of joint participation should be close to the cost of participating in either program. Thus, electing to receive AFDC without also receiving food stamps would occur only if there were higher stigma costs associated with using food coupons than AFDC cash benefits.

V

Eligibility and Participation Spells for AFDC and Food Stamps

A. Spell Patterns

Part A of table 2 provides information on AFDC spells of eligibility. There are 2375 such spells. Fifty percent of these are left censored. Of the 1175 non-left censored spells, 64 percent are observed to end within the data (are not right censored.) The mean length of these completed eligibility spells is 3.4 months. Fully 78 percent of these completed spells end within 4 months.²³

In contrast, part B of table 2 provides information on spells of AFDC receipt, which are a subset of all eligibility spells. There are substantially fewer spells of receipt than eligibility (1224 versus 2375) and on average they are longer. A higher share of AFDC participation spells are left-censored (62 percent), and more of the non-left-censored spells are right censored. The mean length of completed (non-left-censored, non-right-censored) participation spells is 5.6 months, more than two months longer than the mean length of

²³ There are a substantial number of 1-month spells of eligibility. It is unclear whether we should include these in the data or not. On the one hand, it is almost impossible to receive public assistance within one month. On the other hand, these are the beginnings of spells that *could* have lasted longer. We have duplicated all of the tables in this paper omitting one-month spells and these are available upon request. In no case would our conclusions change, although the absolute size of certain effects is altered.

completed eligibility spells. Only 57 percent of these completed spells end within 4 months.

Table 4 provides information on the characteristics of persons in spells of AFDC eligibility and participation.²⁴ Column 1 presents the characteristics of all persons in AFDC eligibility spells. Column 2 presents the characteristics of all persons in participation spells, and column 3 looks at the characteristics of persons in eligibility spells who never receive AFDC during this spell. AFDC recipients are more likely to be black, never married, disabled, with less education and to have younger children and more children in comparison to eligible non-recipients. They are also far less likely to be working—only 16 percent work compared to 35 percent of AFDC eligibles—and more likely to receive food stamps and housing assistance. A comparison of columns 3 and 2 indicates that persons whose eligibility spell opens and closes without AFDC participation are a much less disadvantaged group who appear much more attached to the labor market. Their mean eligibility spells are also much shorter than overall eligibility spells, only 5 months rather than 10 months.

Table 3 shows food stamp eligibility and participation spell data. There are 2787 spells of food stamp eligibility in our data, compared to 1340 spells of food stamp receipt. As with AFDC, food stamp eligibility spells are generally shorter than food stamp receipt spells. Eligibility spells are left

²⁴ Table 4 shows the average (across spells) of the average characteristics in each spell. This is the calculation

$$\text{Avg } X = \sum_{n=1, N} (\sum_{t_n=1, T_n} X_{t_n} / T_n) / N.$$

where n indexes number of people and t_n indexes the length of the n th person's spell. We could alternatively calculate the average across all months (which weights each month equally rather than each spell equally), as is done in table 1. While the two calculations produce slightly different numbers, the relative comparison between groups is the same whichever calculation is used. The data in table 4 are unweighted; weighted results are similar, but there are no consistent longitudinal weights available for persons in this data.

censored 49 percent of the time while participation spells are left censored 60 percent of the time. Among the 1428 non-left censored eligibility spells, 64 percent are completed within the data and are not right censored. This is a substantially higher share of completed spells than is observed among food stamp participation spells. In particular, there are more short completed spells of food stamp eligibility, so that 76 percent of these spells end within 4 months, compared to only 58 percent of completed food stamp receipt spells.

The characteristics of persons in food stamp eligibility and participation spells are shown in columns 4 through 6 of table 4. Again, the patterns are quite similar to AFDC. Those who are eligible for food stamps but never receive them during their eligibility spell are far less disadvantaged than those who receive food stamps. They are older, more likely to have been married, less likely to be black, with fewer children and more education. Many more of them are working and they are much less likely to receive other forms of public assistance.

B. Estimating the Determinants of Eligibility and Participation Spells

1. *Econometric procedure.* Using the data presented in tables 2 and 3 for AFDC and food stamp eligibility and participation spells we can estimate the determinants of the length of these spells. The empirical techniques used are those commonly employed throughout the research literature in estimating the determinants of duration and will not be described here.²⁵ Like most analysts, we eliminate left-censored spells because we do not know how far into the spell a person is when she is first observed, so total spell length cannot be estimated. Thus, we estimate duration models only on those spells that are observed to start within the data. Most of the control variables will

²⁵ For a good reference, see Lancaster (1990).

vary with each month in the spell (so-called "time-varying covariates"); a few, such as race or age at start of spell, are fixed over the spell.

We ignore the fact that in some cases we have multiple spells for the same person. Specifications which controlled for observed spell number were tried at an earlier stage but this variable was not significant in any of the models. Since we do not have complete histories on these women, it is likely that many of our observed "first spells" are actually second or higher spells, thus we have no real reason to separate spells by observed spell number.

Consistent with our model, we want to control for current and future earnings opportunities, which we do with a set of variables that reflect human capital and family composition characteristics. This includes race, age, whether a woman has ever married, years of education, total number of children, number of children under age 6, income available outside of earnings and public assistance, and whether a woman reports a work disability²⁶. In addition, we control for 7 other locational and program-related variables.

We collected unemployment rates by state and by month, so we have a control for local labor market conditions.²⁷ To control for AFDC program effects, we include state AFDC benefit maximums for a family of equivalent size as the observed family.²⁸ This controls for differences in the generosity of welfare benefits across states. In addition, states that provide more

²⁶ We experimented with more complete family health measures, using information from the SIPP topical module on health. The work disability variable performed better than broader measures of family health problems.

²⁷ Monthly state unemployment rates were collected from various volumes of *Employment and Earnings*, published by the Bureau of Labor Statistics.

²⁸ These change over time as state legislative changes are enacted. As far as possible, we tried to ascertain the month in which changes were implemented, but when this information was not available we assumed the state changed its AFDC benefits when the calendar year changed. Benefit maximums are indexed to inflation in the same way as other income data.

generous AFDC benefits are typically more generous on other dimensions of public assistance as well, so this variable may act as a proxy for the willingness of the state to solicit and certify public assistance recipients. We also collected information on the number of public assistance offices in a state and include a measure of number of offices per person. A higher rate of offices per person in the state should increase the locational convenience of offices and may also proxy the extent to which the state makes public assistance easier to acquire.²⁹ To measure locational issues, we would ideally like to control for a family's residential characteristics. Unfortunately, SIPP provides virtually no information on this, other than state identifiers.³⁰ To proxy locational issues, we include the share of the state population that resides in non-metropolitan areas, as a general proxy for the likelihood that a woman lives a greater distance from her public assistance office. We also expect that the never-married variable will be highly correlated with inner-city location. Finally, we include three dummy variables controlling for three of the four Census regions.

A major question in duration analysis involves the empirical specification of the time parameters. Controlling for all other included variables, the time parameters estimate the remaining time-dependent pattern in the data. While many authors pick explicit functional forms, the preferred method is to allow these parameters to vary freely with each time period, i.e., to include a

²⁹ Unfortunately, no consistent state data is available on either disqualification rates or acceptance rates for AFDC or food stamps. Although the HHS publication *Quarterly Public Assistance Statistics* reports applications rejected per state, there is enormous variation in how states tabulate rejections versus voluntary withdrawals.

³⁰ Because the SIPP sample is relatively small, more detailed information on location might violate confidentiality requirements. Fitzgerald (1992) uses specially provided data from the Census that links county-level data with SIPP data to investigate the effect of these variables on AFDC duration. He finds that the only consistently important variable is urban location.

separate dummy variable for each month in a spell. While we can do this in our data, such monthly time parameters are not very meaningful because of the seam bias problem in the SIPP data, where changes are unduly likely to be reported as occurring between the end of one 4-month interview period and the beginning of the next.³¹ In order to deal with this problem, we estimate a set of time parameters that are constant over each four month period, and also include a variable that equals one in the last month of each interview period. Thus, we have four-month rather than monthly time parameters.³²

2. Competing Risk Estimates of AFDC and Food Stamp Eligibility and Participation Spells. We use a competing risk estimation procedure which assumes that a spell is simultaneously at risk of ending in one of two ways. A spell can end either by changes in family composition (primarily through marriage, although in a few cases children leave the household) or it can end in other ways, most commonly through earnings or other income increases that end eligibility.³³ The competing risk model assumes that these two types of spell endings are differently determined and estimates a separate set of coefficients and time parameters for each type of exit.

Columns 1 and 2 of table 5 present our estimates from a competing risk model of the duration of AFDC eligibility spells, while columns 3 and 4 present similar estimates for the duration of AFDC participation spells. Table 6 presents similar estimates for food stamp eligibility spells and participation

³¹ For more discussion of the seam bias problem in this dataset, see Blank and Ruggles (1993).

³² Because of the decreasing number of longer non-left-censored spells, we group higher order spells together. Thus, when table 5 indicates we included 5 four-month time parameters, this means 4 4-month dummy variables, with a final variable for all spells of 17 months or longer.

³³ We will refer to these endings as "income changes" although, as discussed later, at times no discernable changes in income have occurred.

spells. Our results for AFDC participation spells are very similar to those found elsewhere in the literature, and the food stamp estimates are quite similar to the AFDC estimates. These duration models confirm many of the results that we have already seen in tables 2 through 4, using a more complex multivariate estimation procedure.

The coefficients in table 5 indicate the effect of a given variable on the probability of a spell ending in the specified way. Thus, the significant positive coefficient on age in column 1 indicates that older women are more likely to experience an income change that ends their AFDC eligibility spell, while the negative coefficient on age in column 2 indicates that older women are less likely to end an AFDC eligibility spell through family composition changes. The coefficients in column 2 indicate that older, never-married³⁴, black, disabled mothers with more children are less likely to end an AFDC eligibility spell through family composition changes. This generally reflects the fact that this is the population least likely to marry. Perhaps not surprisingly, the determinants of ending an eligibility spell through family change are very similar to the determinants of ending a participation spell through family change. The same variables affect a woman's likelihood of experiencing a family composition change and thereby leaving either eligibility or participation.

In contrast, however, the variables that are correlated with ending an AFDC eligibility spell through an income change are quite different than the variables that determine the probability of ending an AFDC participation spell through an income change. Older, white, non-disabled mothers with fewer children and more education are more likely to end their eligibility spells

³⁴ The relative unimportance of race in many of these estimates is due to the inclusion of the never-married variable. The two are highly correlated; if one is excluded, the other increases in significance.

through an income increase. These are exactly the characteristics most likely to be associated with greater current and future earnings opportunities. In contrast, relatively few of these variables have a significant effect on the probability of ending an actual AFDC participation spell. Greater education and higher levels of non-earned family income are the only significant characteristics associated with income increases among AFDC participants that lead them to leave the program.

These results are consistent with the simple spell tabulations which indicated there were many more short AFDC eligibility spells than AFDC participation spells. Many of these short eligibility spells end quickly through income increases, and the probability of this is heavily determined by the characteristics of the mother and her family. In contrast, those women who enter AFDC are more disadvantaged and the length of their AFDC spell is less readily affected by their own characteristics.

Among the locational and program-related variables in the model, there are few effects on the length of either AFDC eligibility or participation spells. There is a strong negative effect of state maximum benefit levels on the probability of leaving AFDC participation through an income increase, indicating that women in states with more generous benefits are on AFDC longer. This reflects the fact that greater income changes are necessary to leave AFDC in higher benefit states; whether there are additional effects of benefit levels on behavior cannot be deduced from these estimates. Benefit levels have no effect on family composition changes or on eligibility spells.

Figures 1a and 1b plot the hazard rates estimated in table 5 for AFDC eligibility and participation spells. In each plot, the solid line shows the probability in each month of the spell ending through an income change, while the dotted line shows the probability of ending through a change in family composition. Figures 1a and 1b are plotted for a "typical" woman on AFDC, whose characteristics are listed at the bottom of the figures.

These graphs, which show the timing of spell endings controlling for all other variables, again confirm the difference between eligibility and participation spells. In the first few months of an eligibility spell, the probability that it will end because of an income change is around 15 percent per month; this drops steadily to around 2 percent after 16 months, however, as more and more of the remaining eligibility spells are also participation spells and the probability of these spells ending is much lower. In contrast, the probability of ending an AFDC participation spell is lower and more constant over time, declining from just over 4 percent in the first few months to 1 percent after 16 months. Both graphs show virtually identical patterns for family compositional changes, with a relatively flat constant probability of these events occurring, of between 2 to 4 percent per month.

A similar set of competing risk models can be estimated for food stamp eligibility and participation spells. The competing risk model is less compelling for food stamps than it was for AFDC, since women on AFDC who marry are usually ineligible for AFDC in their new household, but may still be eligible for food stamps. Thus, the termination of a woman's food stamp spell due to marriage may not necessarily signal an end to her receipt of food stamps, if her newly formed household applies for and is accepted into the food stamp program as a married couple family.

The results of the food stamp estimates shown in table 6 are quite similar to those for AFDC. The probability that a food stamp eligibility spell will end in marriage is determined in almost exactly the same way as the probability that a food stamp participation spell will end in marriage. Never-married black women with more children are less likely to marry their way out of food stamp eligibility or food stamp participation.

Income change endings, however, are quite differently determined between eligibility and participation spells. As with AFDC, many short food stamp eligibility spells end because they occur among more educated, older

women with fewer children who experience an income increase. In contrast, among those women who choose to receive food stamps, the effects of personal characteristics on spell length are smaller and less significant. It is worth noting, however, that the length of a food stamp participation spell that ends through an income change is affected by race, education, family size, and disability, and it is not affected by state AFDC benefit levels. In other words, food stamp participation spells are more affected by personal characteristics than are AFDC spells.

Lower unemployment rates and a larger rural population share also seem to increase the probability of a food stamp eligibility spell ending through income changes. The more state public assistance offices per person, the less likely that either a food stamp participation or eligibility spell will end through an income increase. It is unclear whether this reflects the fact that states with more offices have higher need levels or whether the existence of more offices reduces the cost of participation and thus lengthens spells.

Figures 2a and 2b show the hazard rates for food stamp eligibility and participation spells, in a manner similar to figures 1a and 1b. As with AFDC, food stamp eligibility spells have a high initial probability of ending through income changes, which falls rapidly over time, while participation spells have a much lower probability of closing through income changes.

Let us highlight 4 main conclusions from these estimates. First, there are a large number of short food stamp and AFDC eligibility spells among relatively more advantaged women (older, more educated, non-disabled, with fewer children) that end quickly through an income increase. Second, the probability that an actual participation spell (for both food stamps and AFDC) will end through an income increase is lower and less readily determined by personal characteristics. Women who actually enter AFDC or food stamps are more disadvantaged and their spell length is less affected by measurable characteristics. Third, the probability of ending an eligibility or participation

spell through family composition changes is similarly determined by those variables that make marriage more likely. Fourth, food stamp participation spell lengths that end via an income change are more influenced by personal and family characteristics than are AFDC participation spells. Like AFDC spells, however, food stamp eligibility spells are much more affected by these characteristics than are participation spells.

VI

The Start of an Eligibility Spell vs. the Start of a Participation Spell

A. Patterns in Participation After the Opening of an Eligibility Spell

One question of particular interest in comparing eligibility to participation in public assistance programs is the extent to which participation and eligibility begin concurrently. Our model suggests that women who receive public assistance may not do so immediately upon becoming eligible, because there are start-up costs to enrolling in the program, because they may be uncertain about the length of their eligibility spell, and because they may be able to maintain consumption levels without public assistance in the short term. Table 7 investigates the sequential use of AFDC after an AFDC eligibility spell begins. Column 2 shows the number of on-going AFDC eligibility spells at each month from the beginning of the spell, where there has been no previous AFDC receipt. Column 3 shows the share of these spells in which AFDC receipt begins in that month. Column 4 shows the share of spells that are right censored at the end of that month because the data end. Column 5 shows the share of these spells that close at the end of that month. Thus, row 1 indicates that there are 1175 non-left censored eligibility spells, whose beginnings are observed in the data. Among these spells, 20 percent begin AFDC receipt immediately in this first month, 4 percent are right-censored

after 1 month, and 23 percent close without AFDC receipt after 1 month. The total number of on-going eligibility spells without AFDC receipt in month 2 is identically equal to the number of eligibility spells in month 1 minus those that enter AFDC, those that are censored, and those whose eligibility ends after one month.

Table 7 indicates that 20 percent of the eligibility spells start with a concurrent spell of AFDC receipt in their first month. This implies that four-fifths of the women who are eligible for AFDC do not immediately take it up. Most strikingly, as the last row in table 7 indicates, only 28 percent of those women who experience an eligibility spell will ever take up AFDC. This is much lower than the overall take-up rate of 68 percent indicated in table 1. This is because table 1 calculated the share of *months* of eligibility where AFDC was received. Table 7 calculates the share of *spells* of AFDC eligibility where AFDC is ever received. Once women start receiving AFDC, they may receive it for many months, thus the majority of months of eligibility are also take-up months. But the majority of spells of AFDC eligibility close or are censored before take-up occurs.

Most of these eligibility spells without take-up are very short spells. Twenty-three percent of them close within 1 month, another 21 percent of the remaining spells close within 2 months, another 13 percent of the remaining spells close within 3 months. This implies that there are a lot of women "at risk" for AFDC for a short period of time who never make use of it. Even among those eligibility spells that last a full year or more without AFDC usage, around 10 percent will close in the next month without ever using AFDC.

Among those spells that do take up AFDC, 71 percent start immediately when eligibility begins (19.7 divided by 27.8).³⁵ Thus, of those women who will use AFDC, most open their AFDC case immediately. The remainder start very soon after the beginning of the eligibility spell. Six months after an eligibility spell begins, virtually all of the women who will ultimately take up AFDC during their spell have begun receipt. A small number of eligibility spells appear to last a long time without any AFDC take-up occurring.

Table 8 reports identical calculations for food stamp eligibility spells among single-mother families. The patterns here are very similar to those in AFDC. Among all food stamp eligibility spells observed to start in the data, only 24 percent ultimately result in food stamp receipt, much less than the take-up rate in table 1 which indicates that food stamp receipt occurs in 63 percent of the eligible months. Of these, 73 percent (17.5 divided by 24.0) begin their food stamp spell in the same month that the eligibility spell begins. Within 6 months after eligibility opens, almost all women who are going to take up the program have already begun to do so.

Over half, 54 percent, of food stamp eligibility spells for these single-mother families are observed to close without food stamp take-up. Many of these are short spells; 20 percent of eligibility spells close within 1 month while another 22 percent of the remaining spells close after two months. As with AFDC, there are a large number of relatively short food stamp eligibility spells that close without food stamp receipt.

³⁵ The number of receipt and eligibility spells starting in exactly the same month is probably overstated, due to the seam bias problem mentioned above. The conclusion that most participation spells start near the onset of eligibility is unaffected by this problem, however.

B. Duration Models of Eligibility Spells that Open Without AFDC Receipt

Tables 7 and 8 have two striking findings. First, most women who receive public assistance begin receipt within a few months of when their eligibility spell starts. There is little evidence of delayed program entry among participants. Second, the vast majority of eligibility spells open and close without program receipt. This section further investigates these findings by investigating those eligibility spells that open without immediate program receipt. These spells of eligibility-without-receipt are at risk of two endings: They can end through delayed entry onto either AFDC or food stamps, or they can end when the eligibility spell is over (without ever resulting in program receipt). The determinants of the length of such non-receipt eligibility spells can be estimated, again using a competing risk model to estimate the determinants of each type of spell ending. The estimates will indicate which characteristics are likely to result in an eligibility spell that closes without program receipt and which lead to delayed program entry.

Table 9 presents the competing risk duration estimates in columns 1 and 2 for AFDC eligibility spells that start without AFDC receipt.³⁶ Column 1 gives the determinants of spell length among AFDC eligibility spells that end without AFDC receipt. Column 2 gives the determinants of spell length among AFDC eligibility spells that end in delayed AFDC receipt. These are clearly two very different sets of coefficient estimates. Women who are older and better educated in low unemployment states are more likely to end a spell of AFDC eligibility without taking up AFDC. Women who are black, disabled and who live in states with more public assistance offices per person

³⁶ Note that the conditioning event -- an eligibility spell starts without immediate AFDC receipt -- is important. Table 7 indicated that 71 percent of AFDC participation spells start in the first month of eligibility. The "spell length" of eligibility in this case is zero; the estimates in table 9 necessarily omit these observations.

are more likely to end a spell of AFDC eligibility by taking up AFDC. Perversely, women in states with higher AFDC benefit maximums are less likely to end an eligibility spell with AFDC participation.³⁷

Columns 3 and 4 of table 9 provide similar estimates for food stamp eligibility spells that open without food stamp receipt. The results are quite similar to those in the AFDC estimates. Non-disabled better-educated women who are older, previously married, with fewer children, and who live in states with low unemployment rates, higher AFDC benefit maximums (again, a perverse effect) and a high rural population share are more likely to end a food stamp eligibility spell without ever taking up the program. Women who have a work disability or who have never married are more likely to move from an eligibility spell into food stamp receipt.

Figures 3a and 3b plot the hazard rates for the AFDC and food stamp estimates in table 9. In both cases, the figures indicate that the probability that an eligibility spell which opens without program receipt will end in delayed program entry is very low and constant over the months. In contrast, the probability that an eligibility spell that opens without program receipt will close without program receipt is between 25 and 30 percent in the early months and remains quite high even after a year of eligibility.

The overall lesson from this section is that the determinants of those eligibility spells which result in delayed program entry are very different from the determinants of eligibility spells that close without program receipt. Women who are less disadvantaged across a range of variables are much more likely to leave an eligibility spell without moving onto the program. These more complex duration estimates confirm the simple tabulation results,

³⁷ We have also included a variable for receipt of medicaid in the estimates in table 9. Families who receive medicaid during their eligibility spell are much more likely to move onto AFDC, which gives them categorical eligibility for medicaid. This variable, however, is somewhat endogenous and we omit it from the reported specification.

indicating that women who become eligible for public assistance and do not immediately start receiving it are much more likely to leave eligibility than they are to enter the program.

VII

The End of Participation Spells vs the End of Eligibility Spells

A. Patterns in Eligibility After the End of an Eligibility Spell

Just as it is interesting to look at the sequential patterns of program use when an eligibility spell starts, so it may be particularly interesting to look at the sequential patterns in on-going eligibility after a participation spell ends. Tables 10 and 11 investigate whether participation and eligibility spells end concurrently. Table 10 tabulates eligibility in consecutive months following the end of an AFDC participation spell for those spells where data are observed in the month after the spell closes (non-right-censored spells). In over 40 percent of these cases, the women are still eligible for AFDC in the immediate months after they stop participating. While this implies that over half of all AFDC spell endings occur simultaneously with an eligibility spell ending, it does mean that a substantial number of spell endings occur in the face of on-going eligibility. As a post-program spell lengthens, the percent of women who are still eligible for AFDC declines, to around 30 percent 12 months after the spell closing. The number remaining eligible continues between 20 and 30 percent even in post-program spells that last longer than a year.³⁸

The results shown in table 10 imply that many women leave AFDC who could technically stay on the program. To provide further information on

³⁸ A post-program spell will end either by a woman returning to AFDC or by the end of the data.

these women who leave before their eligibility ends, we calculate their simulated AFDC benefits, before and after ending AFDC participation. Average earnings and income rise for this group of women at the time they end participation, producing a fall in expected AFDC benefits from \$308 to \$268. But \$268 seems a surprisingly large benefit for low-income families to forego.

Table 11 presents similar evidence for food stamp post-program spells. Of the 451 spell closings where data is observed in the following month, fully 60 percent of these women are still eligible for food stamps in their first month after leaving the program. Less than half of food stamp spell closures occur simultaneously with an eligibility spell closing. This number declines only slightly over time, from 60 percent eligible one month after leaving food stamps, to 55 percent eligible 12 months after leaving food stamps. There is evidence here that a substantial number of women continue to remain eligible for food stamps long after they have left the program.

Surprisingly, our simulated benefits indicate that those women who leave food stamp participation and are still eligible have higher dollar benefits after terminating participation than before—their expected food stamp amounts rise from \$134 to \$144. This turns out to be due to the fact that many of these women simultaneously leave both AFDC and food stamps, and the loss of AFDC income is not made up by their increase in earnings and other income, thus their projected food stamp benefit rises.

Given these surprisingly high rates of ongoing eligibility following AFDC and food stamp spell endings, we investigate this issue further by looking at the reasons for spell endings within our sample. Table 12 tabulates the percent of spell endings which are coterminous with income increases, non-

earned income increases, or family composition changes.³⁹ Among all AFDC spells, table 12 indicates that 25 percent of them end when family composition changes (primarily women who get married.) 42 percent end when own earnings increase and 12 percent end when non-earned income increases. In 21 percent of the cases, however, none of these factors seem to occur.

Among those who leave AFDC participation and eligibility concurrently, close to 90 percent leave through increases in income or through changes in family composition.⁴⁰ In comparison, among those who continue eligibility after a spell ending, 44 percent of the families show none of these three types of changes. This suggests that there may be unreported changes in earnings or other income occurring in these households. We suspect these women are voluntarily leaving AFDC when they find they can "get by" with other income sources. While it is possible in some of these cases that the AFDC office has discovered these unreported funds, the most common method by which women leave the rolls when they might still be eligible is by failing to show up for their recertification interview. This results in automatic benefit termination.

One way to further explore the nature of these "unexplained" spell endings is to look at recidivism rates. The final column of table 12 indicates the percent of cases where a woman is observed to return to program participation. AFDC recidivism rates among women with continuing eligibility

³⁹ We created these variables by first counting the number of spells where eligibility ended due to family composition changes; second, among remaining spells, we count all women with an earnings increase; third, among remaining spells, we count all women with an increase in non-earned income; and fourth, among remaining spells, we count all women with changes in family composition (but no eligibility change) and add them into the first group.

⁴⁰ The 10.6 percent in the "none of these" category are largely women whose eligibility calculation changes. For instance, a woman's assets might change or the state formula might change over time.

are almost twice as high (29 percent) as among those whose eligibility ends (15 percent.) Among women whose eligibility continues, however, recidivism is actually higher among those with earnings or other income changes than it is among those who show no reason for leaving the program. Thus, there is not much evidence that the "none of these" category reflects administrative churning, whereby women are thrown off AFDC for failure to comply with the rules but then re-enter the program at a later date. This is consistent with the fact that many women remain eligible for many months following the end of their AFDC spell (table 10.)

Among food stamp spell endings, the same share (24 percent) end through family composition changes, while fewer (35 percent) leave via earnings increase and more (24 percent) leave via increases in non-earned income. The number of endings that show neither earnings, non-earned income, or family composition changes is smaller; only 30 percent of food stamp spells with continuing eligibility are in the "none of these" category. As with AFDC, women with continuing eligibility are more likely to return to food stamps.

The tabulations in table 12 indicate that there is some substantial amount of unexplained movement off AFDC and food stamps, with women leaving these programs even when they seem to experience small or no change in their economic situation and have substantial benefit dollars still available to them. In part, this almost surely reflects the underreporting of income and earnings among low-income households. But there is little reason to believe that this income is being more accurately reported to public assistance offices. Some substantial number of participants appear to find opportunities to leave the public assistance, even though they may still be able to qualify for some level of benefits. This indicates that program recipients experience costs to participation that they wish to avoid and is not consistent with stories of extensive welfare "dependence" by AFDC and food stamp recipients.

B. Duration Models of Participation Spells Where Eligibility Ends vs. Where it Continues

The competing risk models estimated in section V differentiated between two ways to leave program participation—through family composition changes and through other (primarily income) changes. The tabulations in tables 10 through 12 indicate that it might be useful to split the “income and other changes” exit category into two separate categories, distinguishing between those who leave participation and eligibility concurrently (most of whom report income changes), and those who leave participation but continue eligibility (many of whom report no income changes). This section implements a three-way competing risk model, allowing spells of AFDC and food stamp participation to end through family composition changes, through income and other changes without continuing eligibility, and through income and other changes with continuing eligibility.

Table 13 presents the estimates from these three-way competing risk models. Columns 1 through 3 provide estimates for each of these competing risks for AFDC participants, while columns 4 through 6 provide similar estimates for food stamp participants. The determinants of spells ending via family composition changes are identical in table 13 to those shown in tables 5 and 6 and will not be discussed further. Instead we will focus on the differences in the determinants of participation spells that end concurrently with eligibility spells versus those where eligibility continues.

Among AFDC participants, older and more educated women who have once been married and whose non-earned family income is higher are more likely to leave AFDC at the same time that they leave eligibility. Thus, more advantaged AFDC participants are more likely to leave any connection with the program. In addition to personal characteristics, lower AFDC benefits in a state also increase the likelihood of these types of exits. In contrast, none

of these variables shows any significant effect on the probability that women will leave AFDC participation but continue eligibility. This is consistent with our discussion above, where we suggested that women may be exiting AFDC due to non-reported changes. Although a significant number of AFDC spells end without the end of eligibility, none of the variables we control for seem to influence the length of these AFDC spells.

The three-way competing risk model of the length of food stamp participation spells in table 13 shows somewhat different results than those for AFDC. In contrast to AFDC, there are several variables that seem to affect the length of food stamp spells that terminate while eligibility is ongoing. In particular, non-disabled women with fewer children in states with fewer state public assistance offices per person are more likely to terminate their food stamp spell while eligibility continues. This latter variable is consistent with the cost specification in our participation model, that predicts that women for whom the costs of participation are higher will be less likely to participate when eligible.

Figures 4a and 4b present the hazard models from the two three-way competing risk estimates in table 13. For both AFDC participation and food stamp participation spells, the likelihood of ending the spell through an income exit that occurs simultaneously with the end of eligibility is between 2 and 3 percent per month in the early months and falls to around 1 percent per month. The probability of ending a participation spell while eligibility continues is somewhat lower throughout the spell and also falls slightly. While spell endings with continued eligibility are somewhat less likely, there is little evidence they show significantly different patterns over time than do spell endings that are concurrent with the end of eligibility.

Thus, the three-way competing risk model indicates that AFDC participation spells that end concurrently with eligibility are affected by personal characteristics, but those that end with ongoing eligibility are not

influenced by any of the standard variables we can include in this model. These closings may be due to some sort of administrative disqualification, although they remain eligible by our calculations, or may be affected by unmeasured changes in income or family composition of which neither SIPP nor the benefits office are aware. In contrast, fewer food stamp spells end without the end of eligibility and those that do are affected by variables that relate to the level of food stamp benefits and to the costs of accessing food stamps. In this sense, food stamp spells that end before the end of eligibility are more explainable in the data.

VIII Conclusions

This paper has studied spells of eligibility for the AFDC and food stamp programs and compared them with spells of reciprocity. Overall, we estimate that single mothers use AFDC in 62 to 70 percent of the months in which they are eligible, depending on the eligibility estimate used. Food stamp participation rates are somewhat lower, ranging from 54 to 66 percent of all eligible months. Although these figures indicate that the majority of those eligible for either of the two programs at any point in time do participate in them, most women who ever become eligible do not participate. Only 28 percent of AFDC eligibility spells that we observe to start in our data ever show AFDC receipt, and only 24 percent of food stamp eligibility spells result in food stamp utilization.

The reason for this difference between spell take-up rates and monthly take-up rates is that there are a large number of relatively short eligibility spells for both AFDC and food stamps that open and close without program participation. Most of these eligibility spells close because the family's income increases, ending eligibility. Women who are eligible for but do not

participate in these programs tend to be older, white, non-disabled, and have fewer children and more education. Similarly, duration estimates of eligibility spells indicate that eligibility spells that end through income increases are much more likely to occur among more advantaged women. Personal and family characteristics have much less effect on the probability of an AFDC participation spell ending through an income change, although they do affect food stamp participation spells.

Among those women who do take up AFDC, 71 percent start participating in the program immediately when eligibility begins, while 73 percent of food stamp users begin participating in the first month of eligibility. Six months after eligibility begins, virtually all of those who will ever participate in either program are doing so. There are at least a few very long spells of eligibility that never appear to result in participation. Among women who do not take up participation at eligibility, those who are younger, disabled, never-married and in states with more public assistance offices are more likely to become program participants at a later date.

A substantial proportion of those leaving assistance programs appear to remain eligible to participate, but apparently choose not to do so. For AFDC, 50 percent of those leaving the program are still eligible at the time of exit, and 30 percent are still eligible after 12 months. The Food Stamp Program results are even more striking--60 percent of exiters are still eligible at the time of exit, and 55 percent are still eligible 12 months later. While none of the measured variables in our model appeared to affect the length of AFDC spells that close before the end of eligibility, suggesting unreported income or family changes, food stamp spells that closed with ongoing eligibility were more likely to occur in states with fewer public assistance offices and among less disadvantaged women.

Despite the on-going preoccupation of many public officials with high AFDC and food stamp caseloads, these results indicate that only a minority of

those who become eligible for these programs actually use them. Many women experience short periods of low income which would qualify them for these programs, but clearly opt not to participate. In addition, despite concerns about the need to push women off "dependency" on public assistance, this data also indicates that a surprising number of women leave the program before their measured eligibility terminates. The program usage among eligibles appears to be much more fluid than many stereotypes would indicate.

Policy discussions of low take-up rates on public assistance programs often focus on the question of need levels among non-participating families.

While our choice-based model implies that women may rationally choose not to participate in welfare, an alternative model would suggest that needy women simply do not know about these programs. If most non-participants are persons with either higher costs or lower benefits, this supports the "choice" model of non-participation and suggests we should be less concerned about low take-up rates. The evidence in this paper is generally supportive of that claim. The non-participating eligibles in both programs have lower average expected benefits. Women whose eligibility spells do not result in participation spells are much less disadvantaged across a range of parameters, supporting the idea that current and expected future income plays a key role. There is also evidence throughout the duration estimates that locational and policy parameters, such as benefit levels, availability of offices, and rural location affect the length of eligibility and participation spells. In addition, the women who end benefit receipt after a period of program participation, even though their eligibility continues, are clearly a group for whom it is not lack of knowledge that explains their nonparticipation. All of this supports a choice-based model of participation decisions.

Yet, it is worth noting that many of the eligible non-participants appear to be eligible for a substantial amount of program benefits. These women are on average eligible for around \$250 in AFDC and \$140 in food stamps. This

suggests that the costs of participation to these women are almost unbelievably large and it underscores the need to better understand the scope of income under-reporting among low-income families.

If all eligible women elected to use AFDC or food stamps, the costs of these programs would clearly increase. To get some idea of the savings due to non-participation, we calculate the ratio of all simulated benefits among program eligibles to all simulated benefits among program recipients in our sample. For AFDC this ratio is 1.33; for food stamps it is 1.60. In 1989, a year at the end of our sample, \$15.9 billion was paid in total AFDC benefits while \$13.8 billion was paid in food stamp benefits. If there had been 100 percent participation among single eligible parents in these programs, AFDC benefits would instead have been \$21.1 billion and food stamp benefits would have been \$22.1 billion. Clearly, the non-participation of many eligible women in these programs keeps their cost substantially below what it would be if take-up rates were closer to 100 percent.

The fact that many persons choose not to use these programs when they are eligible may be read in two ways. For those who want to discourage program use, it indicates that increasing the costs (psychological as well as direct) of qualifying for these programs would reduce program expense and participation. For those who want these programs to serve as a short-term safety net, however, these results may indicate that policy-makers should work harder at reducing participation costs. Better and more detailed data could allow us to actually sort out how much of the non-participation that occurs among eligibles is due to the direct time and money costs of participation, how much is due to women's psychological "distaste" for public assistance, and how much these are affected by operating procedures in public assistance offices.

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Table 1
Eligibility Calculations

Percentage of Sample Months Where the Following Occurs	Definition			(Using Definition 2) \$ Received	
	1	2	3	Simulated	Actual
A. AFDC Eligibility					
1. Ineligible, no reported receipt	57.0	59.4	60.2	0	0
2. Ineligible, reported receipt	2.9	3.8	5.0	0	264
3. Eligible, no reported receipt	15.2	12.9	12.0	245	0
4. Eligible, reported receipt	24.8	23.9	22.8	398	377
5. Take-up rate 1 (2 + 4)/(2 + 3 + 4)	64.6	68.4	69.8		
6. Take-up rate 2 4/(3 + 4)	62.0	65.1	65.5		
B. Food Stamp Eligibility					
1. Ineligible, no reported receipt	48.4	53.0	55.1	0	0
2. Ineligible, reported receipt	3.2	4.1	4.7	0	136
3. Eligible, no reported receipt	22.1	17.5	15.4	143	0
4. Eligible, reported receipt	26.4	25.5	24.8	163	174
5. Take-up rate 1 (2 + 4)/(2 + 3 + 4)	57.3	62.9	65.7		
6. Take-up rate 2 4/(3 + 4)	54.5	59.3	61.7		

Definition 1: Eligibility calculated only on the basis of current cash income.

Definition 2: Eligibility calculated on both current cash income and aggregate wealth holdings, excluding wealth test on car value.

Definition 3: Eligibility calculated on both current cash income and aggregate wealth holdings, including wealth test on car value.

Table 2
AFDC Eligibility and Participation Spells in the 1986 and 1987 SIPP

	Left Censored Spells	Non-Left Censored Spells		
		Total	Right Censored	Non-Right Censored
A. AFDC Eligibility Spells				
<i>Total Spells = 2375</i>				
Number	1200	1175	425	750
Percentage of total	50.5	49.5	17.9	31.6
Mean length (months)	14.3	5.0	7.7	3.4
	(0.3)	(0.2)	(0.3)	(0.1)
Percentage lasting entire SIPP panel ^a	29.4	—	—	—
<i>Spell Distribution</i>				
1-4 months	26.7	67.0	48.2	77.6
5-8 months	18.1	15.8	18.4	14.4
9-12 months	9.0	7.1	11.3	4.8
13-16 months	7.8	4.6	9.2	2.0
17-20 months	5.1	3.7	8.0	1.2
21-24 months	7.1	1.4	4.0	0.0
24-28 months	26.2	0.3	0.9	0.0
B. AFDC Participation Spells				
<i>Total Spells = 1224</i>				
Number	758	466	275	191
Percentage of total	61.9	38.1	22.5	15.6
Mean length (months)	15.7	8.1	9.9	5.6
	(0.4)	(0.3)	(0.4)	(0.3)
Percentage lasting entire SIPP panel ^a	34.2	—	—	—
<i>Spell Distribution</i>				
1-4 months	21.2	45.5	37.5	57.1
5-8 months	17.4	20.0	17.5	23.6
9-12 months	9.2	12.0	12.0	12.0
13-16 months	7.4	7.5	12.0	1.0
17-20 months	6.5	8.6	11.3	4.7
21-24 months	7.9	4.5	6.5	1.6
24-28 months	30.3	1.9	3.3	0.0

Includes all AFDC eligibility and participation spells among single women with children age 18 or younger. Standard errors in parentheses.

^aIncludes all spells that are both right and left censored that last the entire SIPP panel (24 months or 28 months, depending on rotation group).

Table 3
Food Stamp Eligibility and Participation Spells
in the 1986 and 1987 SIPP

	Left Censored Spells	Non-Left Censored Spells		
		Total	Right Censored	Non-Right Censored
A. Food Stamp Eligibility Spells				
<i>Total Spells = 2787</i>				
Number	1359	1428	521	907
Percentage of total	48.8	51.2	18.7	32.5
Mean length (months)	14.3	5.0	7.6	3.5
	(0.3)	(0.1)	(0.3)	(0.1)
Percentage lasting entire SIPP panel ^a	30.5	—	—	—
<i>Spell Distribution</i>				
1-4 months	28.0	64.9	45.3	76.2
5-8 months	16.6	17.6	21.7	15.3
9-12 months	8.7	7.8	11.7	5.5
13-16 months	7.1	4.8	10.0	1.8
17-20 months	6.1	3.2	6.9	1.0
21-24 months	6.7	1.7	4.2	0.2
24-28 months	26.9	0.1	0.2	0.0
B. Food Stamp Participation Spells				
<i>Total Spells = 1340</i>				
Number	797	543	294	249
Percentage of total	59.5	40.5	21.9	18.6
Mean length (months)	15.7	7.8	9.8	5.5
	(0.4)	(0.3)	(0.4)	(0.3)
Percentage lasting entire SIPP panel ^a	35.5	—	—	—
<i>Spell Distribution</i>				
1-4 months	23.3	47.9	39.1	58.2
5-8 months	16.7	18.0	14.3	22.5
9-12 months	7.3	12.3	14.3	10.0
13-16 months	7.4	9.2	13.6	4.0
17-20 months	6.3	6.8	9.5	3.6
21-24 months	8.3	4.2	6.5	1.6
24-28 months	30.7	1.5	2.7	0.0

Includes all Food Stamp eligibility and participation spells among single women with children age 18 or younger. Standard errors in parentheses.

^aIncludes all spells that are both right and left censored that last the entire SIPP panel (24 months or 28 months, depending on rotation group).

Table 4
Mean Characteristics for AFDC and Food Stamp
Eligibles and Participants

	AFDC			Food Stamps		
	All Eligibility Spells	All Participation Spells	All Eligibility Spells With No Participation	All Eligibility Spells	All Participation Spells	All Eligibility Spells With No Participation
Race (1 = nonwhite)	38.1	42.2	34.0	37.3	41.3	34.0
Age	29.9 (0.2)	29.9 (0.3)	29.8 (0.3)	32.0 (0.2)	31.6 (0.3)	32.5 (0.3)
% never married	38.6	45.2	32.7	32.4	36.7	28.6
# of children under age 6	0.81 (0.02)	0.89 (0.02)	0.73 (0.02)	0.69 (0.01)	0.80 (0.02)	0.58 (0.02)
# of children under age 19	1.83 (0.02)	1.95 (0.03)	1.71 (0.02)	1.83 (0.02)	2.01 (0.03)	1.68 (0.02)
% reporting work disability	18.2	22.9	13.0	18.5	23.6	14.2
% working	35.4	16.1	53.6	45.9	24.9	63.3
Years of education	11.0 (0.1)	10.7 (0.1)	11.3 (0.1)	11.0 (0.1)	10.7 (0.1)	11.2 (0.1)
% with AFDC	44.6	100.0	0.0	34.5	69.0	7.8
% with food stamps	44.8	78.0	15.4	40.1	100.0	0.0
% with medicaid	52.8	100.0	12.7	43.2	78.9	15.3
% with housing assistance	18.6	24.1	13.2	18.9	25.6	13.4
Mean spell length	9.7 (0.2)	12.3 (0.3)	4.7 (0.2)	9.6 (0.2)	12.5 (0.3)	5.0 (0.1)
Number of spells	2375	1224	1193	2787	1340	1503

Standard errors in parentheses. See footnote 24 for information on how mean characteristics are calculated.

Table 5
Competing Risk Duration Models of AFDC
Participation and Eligibility Spells

	Spell of AFDC Eligibility		Spell of AFDC Participation	
	Ending With Income and Other Changes	Ending With Family Composition Changes	Ending With Income and Other Changes	Ending With Family Composition Changes
Race (1 = nonwhite)	-.130* (.098)	-.635** (.242)	-.097 (.220)	-.303 (.472)
Age (years)	.023** (.005)	-.023* (.013)	.009 (.013)	-.064* (.032)
Never married? (1 = yes)	-.032 (.112)	-.889** (.283)	-.087 (.237)	-1.038** (.442)
Education (years)	.097** (.018)	-.021 (.048)	.079* (.042)	-.114* (.087)
Disability? ^a (1 = yes)	-.428** (.121)	-.435* (.296)	-.139 (.237)	-.565 (.528)
# of children < age 6	-.157* (.072)	-.165 (.181)	.118 (.147)	-.588* (.327)
# of children < age 19	.003 (.062)	-.364* (.164)	.115 (.117)	-.343 (.339)
"Other" family income ^b /100	-.009 (.014)	.005 (.020)	.026* (.017)	.017 (.021)
State maximum AFDC benefit/100	.038 (.048)	.095 (.119)	-.265** (.100)	.052 (.181)
# state offices/100m population	-.073 (.074)	.123 (.154)	-.158 (.148)	-.121 (.303)
State unemployment/rate (x10)	-.004 (.003)	-.008* (.006)	.001 (.007)	-.012 (.010)
State rural population share (x10)	.012 (.047)	.010 (.010)	.086 (.093)	.163 (.164)
# of 4-month time parameters	5	5	5	5
# of observations	1175		466	
Likelihood value	-2403		-781	

Standard errors in parentheses. *Significant at the 10% level; **Significant at the 1% level. All columns include 3 regional dummies and a control for seam bias (see text).

^aWork disability reported.

^bIncome of mother's family or subfamily, minus AFDC and earnings.

Table 6
Competing Risk Duration Models Of Food Stamp
Participation and Eligibility Spells

	Spell of Food Stamp Eligibility		Spell of Food Stamp Participation	
	Ending With Income and Other Changes	Ending With Family Composition Changes	Ending With Income and Other Changes	Ending With Family Composition Changes
Race (1=nonwhite)	-.108 (.090)	-.311* (.206)	-.246* (.187)	-.448 (.352)
Age (years)	.011* (.005)	.003 (.010)	.004 (.011)	-.003 (.018)
Never married? (1=yes)	-.054 (.105)	-.791** (.253)	.034 (.205)	-.851* (.399)
Education (years)	.065** (.017)	-.035 (.040)	.099** (.037)	-.040 (.062)
Disability? ^a (1=yes)	-.380** (.113)	-.014 (.266)	-.271* (.207)	.101 (.372)
# of children < age 6	-.278** (.075)	.114 (.148)	-.217* (.129)	.014 (.257)
# of children < age 19	-.106* (.062)	-.406** (.143)	-.047 (.118)	-.662** (.270)
"Other" family income ^b /100	-.019* (.015)	-.005 (.027)	.016 (.028)	-.016 (.020)
State maximum AFDC benefit/100	.028 (.044)	.110 (.104)	-.076 (.083)	-.006 (.172)
# state offices/100m population	-.169** (.068)	.061 (.152)	-.276* (.159)	.448* (.216)
State unemployment rate (x10)	-.004* (.003)	.005 (.006)	-.001 (.005)	.010 (.010)
State rural population share (x10)	.009* (.004)	.012 (.010)	.028 (.096)	-.040 (.140)
# of 4-month time parameters	5	5	5	5
# of observations		1428		543
Likelihood value		-2958		-991

Standard errors in parentheses. * Significant at the 10% level; ** Significant at the 1% level. All columns include 3 regional dummies and a control for seam bias (see text).

^aWork disability reported.

^bIncome of mother's family or subfamily, minus AFDC and earnings.

Table 7
What Happens When an AFDC Eligibility Spell Starts?

Duration of AFDC eligibility spell (Includes only non-left censored spells)	Number of ongoing AFDC eligibility spells without previous AFDC receipt	Percentage beginning AFDC receipt in this month	Percentage right censored in this month	Percentage ending in this month without AFDC receipt
1 month	1175	19.7	4.3	22.7
2	626	6.2	4.2	20.9
3	430	4.9	6.1	12.8
4	328	2.7	10.7	20.7
5	216	5.1	6.0	13.4
6	163	1.2	6.8	11.0
7	132	1.5	3.0	12.1
8	110	4.6	10.0	12.7
9	80	1.3	2.5	10.0
0	69	1.5	8.7	8.7
11	56	1.8	8.9	3.6
12	48	4.2	12.5	16.7
13	32	0.0	12.5	9.4
14	25	4.0	12.0	4.0
15	20	0.0	15.0	5.0
16-28	38	2.6	26.3	13.2
Among all spells	1175	27.8	18.4	53.8

Table 8
What Happens When a Food Stamp Eligibility Spell Starts?

Duration of food stamp eligibility spell (Includes only non-left censored spells)	Number of ongoing food stamp eligibility spells without previous food stamp receipt	Percentage beginning food stamp receipt in this month	Percentage right censored in this month	Percentage ending in this month without food stamp receipt
1 month	1428	17.5	3.2	20.4
2	842	3.2	6.2	21.5
3	582	3.8	5.7	13.8
4	447	2.5	10.1	16.8
5	316	3.5	8.5	11.1
6	243	2.5	5.4	9.5
7	201	2.0	2.5	9.5
8	173	1.7	13.3	12.1
9	126	2.4	8.7	7.1
10	103	1.0	7.8	9.7
11	84	2.4	6.0	7.1
12	71	0.0	12.7	12.7
13	53	1.9	7.6	5.7
14	45	0.0	8.9	6.7
15	38	2.6	10.5	7.9
16-28	106	0.9	23.6	3.8
Among all spells	1428	24.0	21.9	54.1

Table 9
Competing Risk Duration Models of AFDC and Food Stamp Eligibility
Spells that Start Without Program Receipt in the First Month

	Spell of AFDC Eligibility		Spell of Food Stamp Eligibility	
	Ending Without AFDC Receipt	Ending With AFDC Receipt	Ending Without Food Stamp Receipt	Ending With Food Stamp Receipt
Race (1 = nonwhite)	-.131 (.108)	.393* (.255)	-.099 (.092)	-.164 (.264)
Age (years)	.025** (.006)	.009 (.018)	.011* (.005)	-.024* (.016)
Never married? (1=yes)	-.052 (.119)	.403* (.301)	-.159* (.110)	-.203 (.287)
Education (years)	.060** (.018)	-.032 (.058)	.030* (.018)	.017 (.072)
Disability? ^a (1=yes)	-.168 (.146)	.841** (.330)	-.205* (.124)	.850** (.291)
# of children < age 6	-.049 (.079)	.052 (.202)	-.134* (.080)	-.033 (.193)
# of children < age 19	-.060 (.070)	.103 (.168)	-.153** (.065)	-.092 (.174)
"Other" family income ^b /100	.014 (.031)	-.001 (.001)	-.023* (.014)	-.049 (.052)
State maximum AFDC benefit/100	.101* (.052)	-.143* (.103)	.093* (.045)	.100 (.128)
# state offices/100m population	.029 (.089)	.297* (.153)	-.079 (.071)	.052 (.229)
State unemployment rate (x10)	-.005* (.003)	-.003 (.008)	-.006* (.003)	.004 (.007)
State rural population share (x10)	-.001 (.005)	-.007 (.010)	.009* (.005)	.001 (.014)
# of 4-month time parameters	5	3	5	3
# of observations	944		1178	
Likelihood value	-1997		-2477	

Standard errors in parentheses. *Significant at the 10% level; **Significant at the 1% level. All columns include 3 regional dummies and a control for seam bias (see text).

^aWork disability reported.

^bIncome of mother's family or subfamily, minus AFDC and earnings.

Table 10
AFDC Post-Program Spells and Ongoing Eligibility

Months After AFDC Spell Ends	Number of Ongoing Post-Program Spells ^a	Percentage Still Eligible
1	385	50.1
2	350	43.1
3	318	41.8
4	279	41.9
5	204	40.2
6	191	39.8
7	177	36.7
8	158	38.0
9	126	34.1
10	124	35.5
11	117	35.9
12	109	31.2
13	79	25.3
14	76	26.3
15	71	26.8
16	66	28.8
17	53	26.4
18	50	26.0
19	44	18.2
20	43	23.3
Average of all months	3113	37.9

Estimated AFDC dollars available to those whose eligibility continues after
the end of the participation spell:^b

Prior to the end of the participation spell . . . \$308
After the end of the participation spell \$268

^aNumber of post-AFDC spells of this length that have not returned to AFDC or otherwise ended.

^bCompares simulated AFDC dollars one month before the spell ends with simulated AFDC dollars in the second month after the spell ends.

Table 11
Food Stamp Post-Program Spells and Ongoing Eligibility

Months After Food Stamp Spell Ends	Number of Ongoing Post-Program Spells ^a	Percentage Still Eligible
1	451	59.9
2	417	57.1
3	373	54.2
4	321	52.3
5	234	51.3
6	216	49.5
7	196	50.5
8	177	48.6
9	142	53.5
10	135	55.6
11	126	54.0
12	115	54.8
13	85	45.9
14	80	37.5
15	76	44.7
16	72	41.7
17	56	32.1
18	51	31.4
19	49	28.6
20	48	29.2
Average of all months	3528	50.7

Estimated food stamp dollars available to those whose eligibility continues after the end of the participation spell:^b

Prior to the end of the participation spell . . \$134
After the end of the participation spell . . . \$144

^aNumber of post-food stamp spells of this length that have not returned to food stamps or otherwise ended.

^bCompares simulated food stamp dollars one month before the spell ends with simulated food stamp dollars in the second month after the spell ends.

Table 12
Reasons for Spell Endings
 (By eligibility status following spell ending)

	Percentage of Endings Showing Change in				Number of Spell Endings	Percentage who Return to Program ^a
	Own Earnings	Non-earned Income	Family Composition	None of These		
A. AFDC Spell Endings						
All spell endings	42.0	12.0	24.8	21.2	400	19.5
Spell endings without continued eligibility	44.9	11.7	32.8	10.6	274	15.0
Spell endings with continued eligibility	35.7	12.7	7.1	44.4	126	29.4
B. Food Stamp Spell Endings						
All spell endings	35.0	24.1	24.1	16.8	457	20.4
Spell endings without continued eligibility	35.7	18.0	39.1	7.1	266	12.8
Spell endings with continued eligibility	34.0	32.5	3.1	30.4	191	30.9

Changes and ongoing eligibility calculated by comparing the month before the spell ends with the second month after the spell ends.

Changes in family composition include persons who marry out of AFDC as well as those whose family size changes.

^aPercentage of spell endings where the individual is observed to return to AFDC or food stamp participation at some later point in the data.

Table 13
Competing Risk Duration Models of AFDC and Food Stamp Spells

	Spell of AFDC Participation			Spell of Food Stamp Participation		
	Income & other changes—no ongoing eligibility	Income & other changes—ongoing eligibility	Ending with family composition change	Income & other changes—no ongoing eligibility	Income & other changes—ongoing eligibility	Ending with family composition change
Race (1 = nonwhite)	.010 (.269)	-.300 (.428)	-.330 (.471)	-.323 (.265)	-.173 (.271)	-.435 (.356)
Age (years)	.022* (.015)	-.019 (.032)	-.062* (.032)	-.001 (.017)	.010 (.016)	-.002 (.002)
Never married? (1 = yes)	-.517* (.312)	.505 (.439)	-1.060** (.445)	.001 (.274)	.063 (.315)	-.865* (.403)
Education (years)	.093* (.048)	.066 (.113)	-.115* (.085)	.154** (.057)	.046 (.053)	-.039 (.064)
Disability? ^a (1 = yes)	-.278 (.299)	.070 (.404)	-.519 (.531)	-.004 (.292)	-.580* (.321)	.082 (.373)
# of children < age 6	-.176 (.174)	-.049 (.293)	-.552* (.313)	-.166 (.172)	-.260* (.187)	.023 (.254)
# of children < age 19	.099 (.155)	.171 (.217)	-.335 (.329)	-.186 (.190)	.084 (.169)	-.660** (.270)
"Other" family income ^b /100	.031* (.015)	-.031 (.094)	.016 (.022)	.020 (.044)	.004 (.042)	.016 (.022)
State maximum AFDC benefit/100	-.322** (.134)	-.139 (.168)	.047 (.186)	-.080 (.119)	-.094 (.117)	.001 (.017)
# state offices/ 100m population	-.010 (.169)	-.394 (.405)	.075 (.245)	-.214 (.211)	-.364* (.241)	.434* (.218)
State unemployment rate (x10)	-.001 (.088)	-.004 (.011)	-.013 (.010)	-.002 (.008)	.006 (.008)	.009 (.010)
State rural population share (x10)	.056 (.118)	.144 (.199)	.172 (.165)	.025 (.132)	.036 (.137)	-.033 (.142)
# of 4-month time parameters	3	3	3	3	3	3
Number of observations		466			343	
Likelihood value		-870			-1117	

Standard errors in parentheses. *Significant at the 10% level; **Significant at the 1% level. All columns include 3 regional dummies and a control for seam bias (see text).

^aWork disability reported.

^bIncome of mother's family or subfamily, minus AFDC and earnings.

Figure 1a
HAZARD RATES-AFDC ELIGIBILITY SPELLS
Competing Risk Model

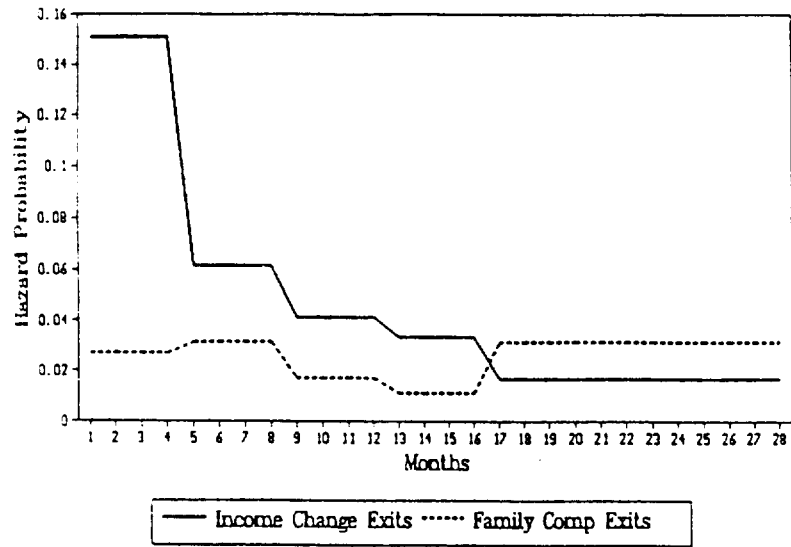
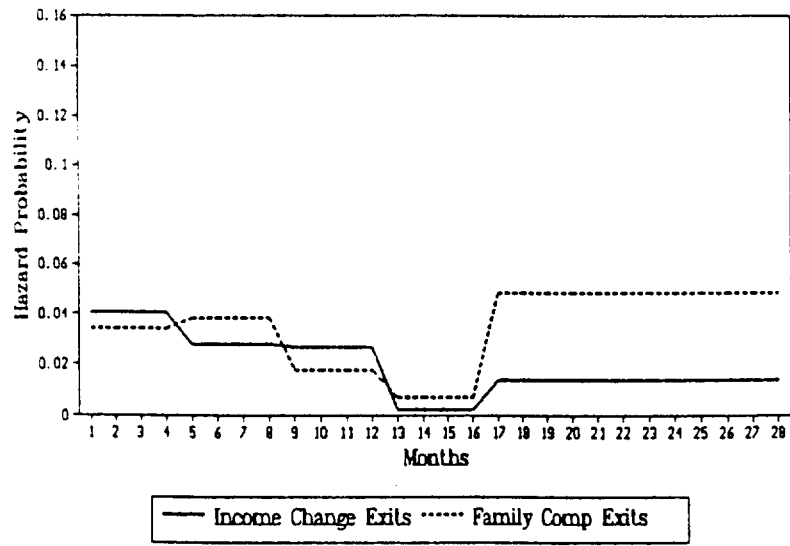


Figure 1b
HAZARD RATES-AFDC PARTICIPATION SPELLS
Competing Risk Model



Hazard rates are estimated for a divorced white woman with two children, one under age 6, with 11 years of school and \$100 in "other" family income. Her state is midwestern; pays a maximum of \$350 in AFDC benefits; has 12.1 agency offices per million persons; has an unemployment rate of 6.5 percent; and 22.5 percent of its population lives in rural areas.

Figure 2a
 HAZARD RATES—FD STAMP ELIGIBLTY SPELLS
 Competing Risk Model

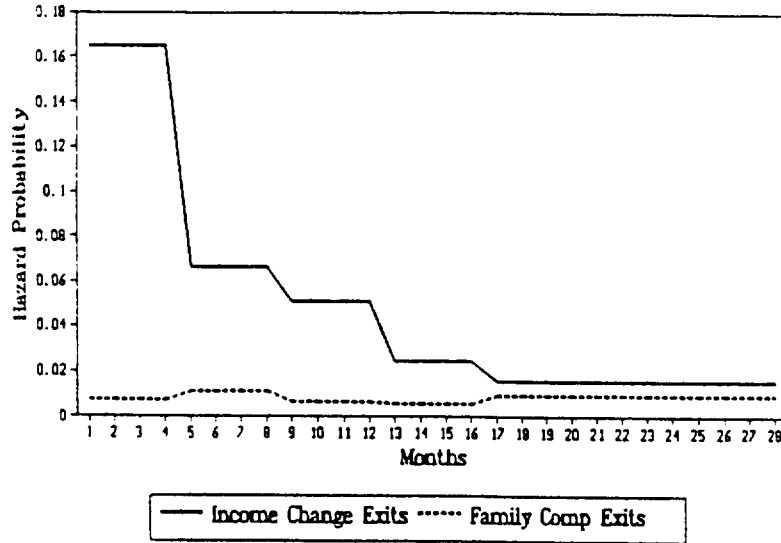
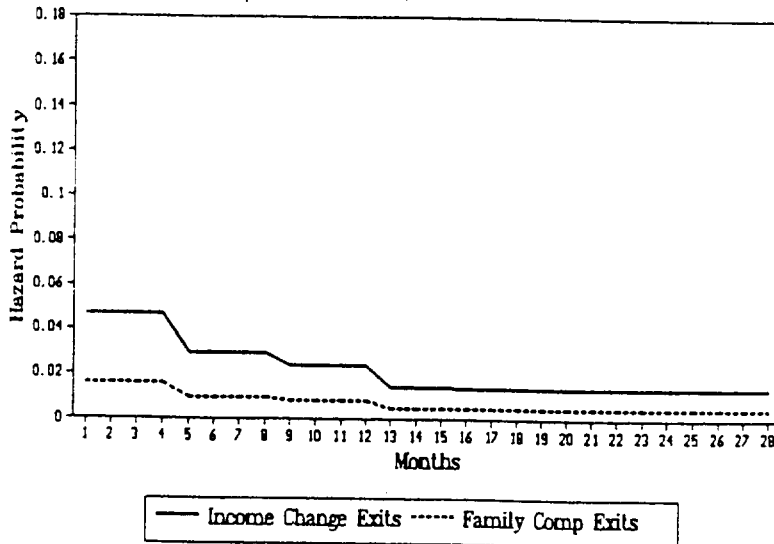


Figure 2b
 HAZARD RATES—FD STAMP PARTICIPTN SPELLS
 Competing Risk Model



Hazard rates are estimated for a divorced white woman with two children, one under age 6, with 11 years of school and \$100 in "other" family income. Her state is midwestern; pays a maximum of \$350 in AFDC benefits; has 12.1 agency offices per million persons; has an unemployment rate of 6.5 percent; and 22.5 percent of its population lives in rural areas.

Figure 3a
 HAZARD RATES-AFDC ELIG W/O AFDC RECEIPT
 Competing Risk Model

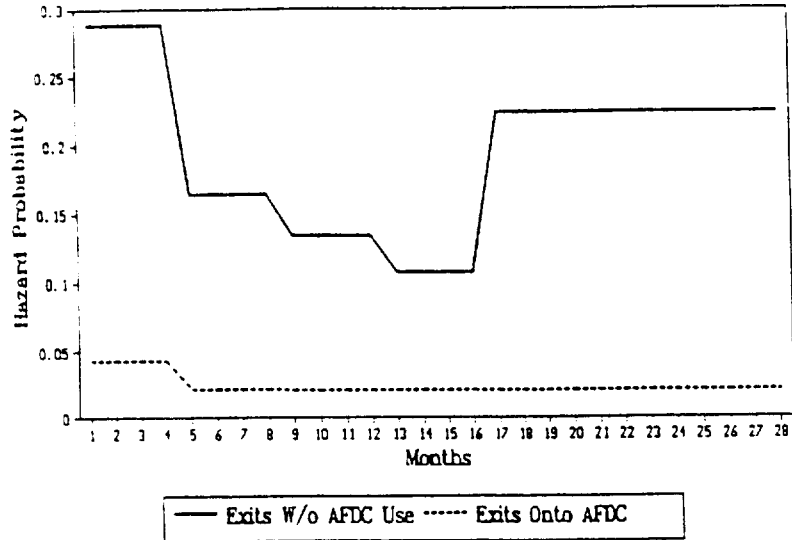
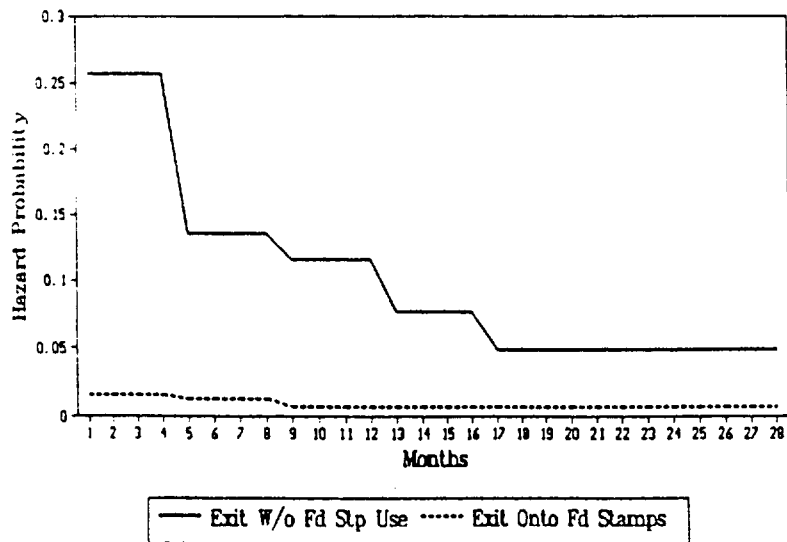


Figure 3b
 HAZARD RATES-FS ELIG W/O FS RECEIPT
 Competing Risk Model



Hazard rates are estimated for a divorced white woman with two children, one under age 6, with 11 years of school and \$100 in "other" family income. Her state is midwestern; pays a maximum of \$350 in AFDC benefits; has 12.1 agency offices per million persons; has an unemployment rate of 6.5 percent; and 22.5 percent of its population lives in rural areas.

Figure 4a

HAZARD RATES-AFDC PARTICIPATION SPELLS
3-Way Competing Risk Model

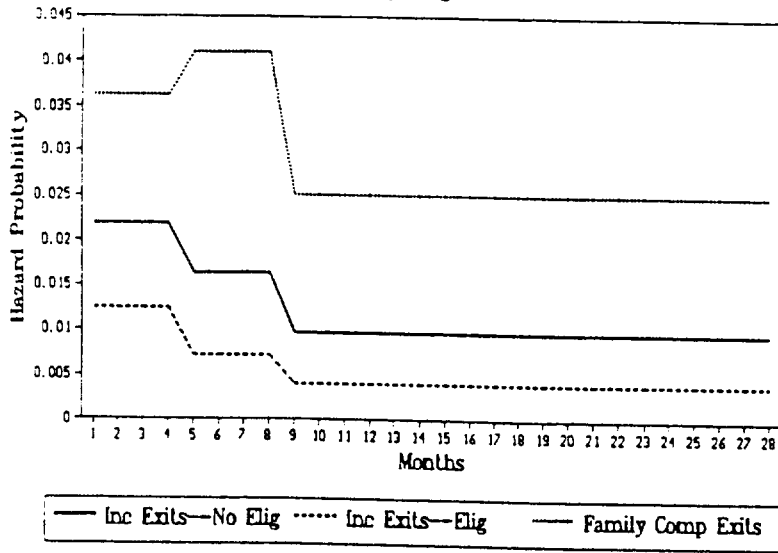
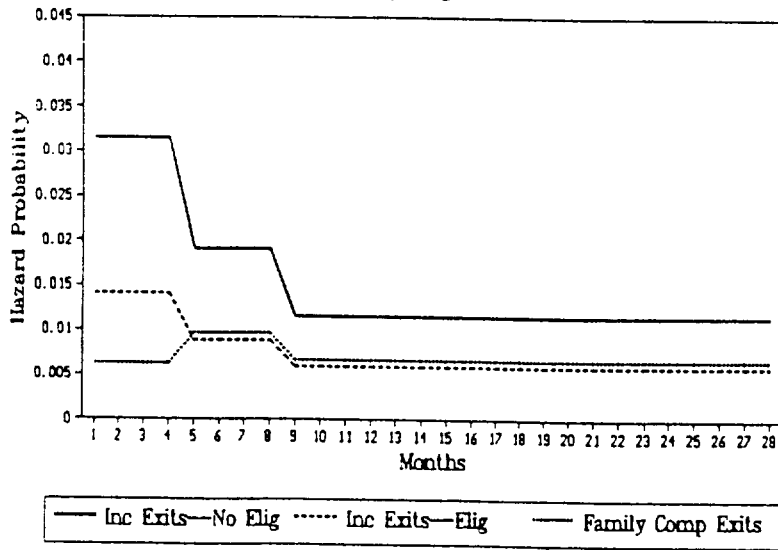


Figure 4b

HAZARD RATES-FS PARTICIPATION SPELLS
3-Way Competing Risk Model



Hazard rates are estimated for a divorced white woman with two children, one under age 6, with 11 years of school and \$100 in "other" family income. Her state is midwestern; pays a maximum of \$350 in AFDC benefits; has 12.1 agency offices per million persons; has an unemployment rate of 6.5 percent; and 22.5 percent of its population lives in rural areas.