

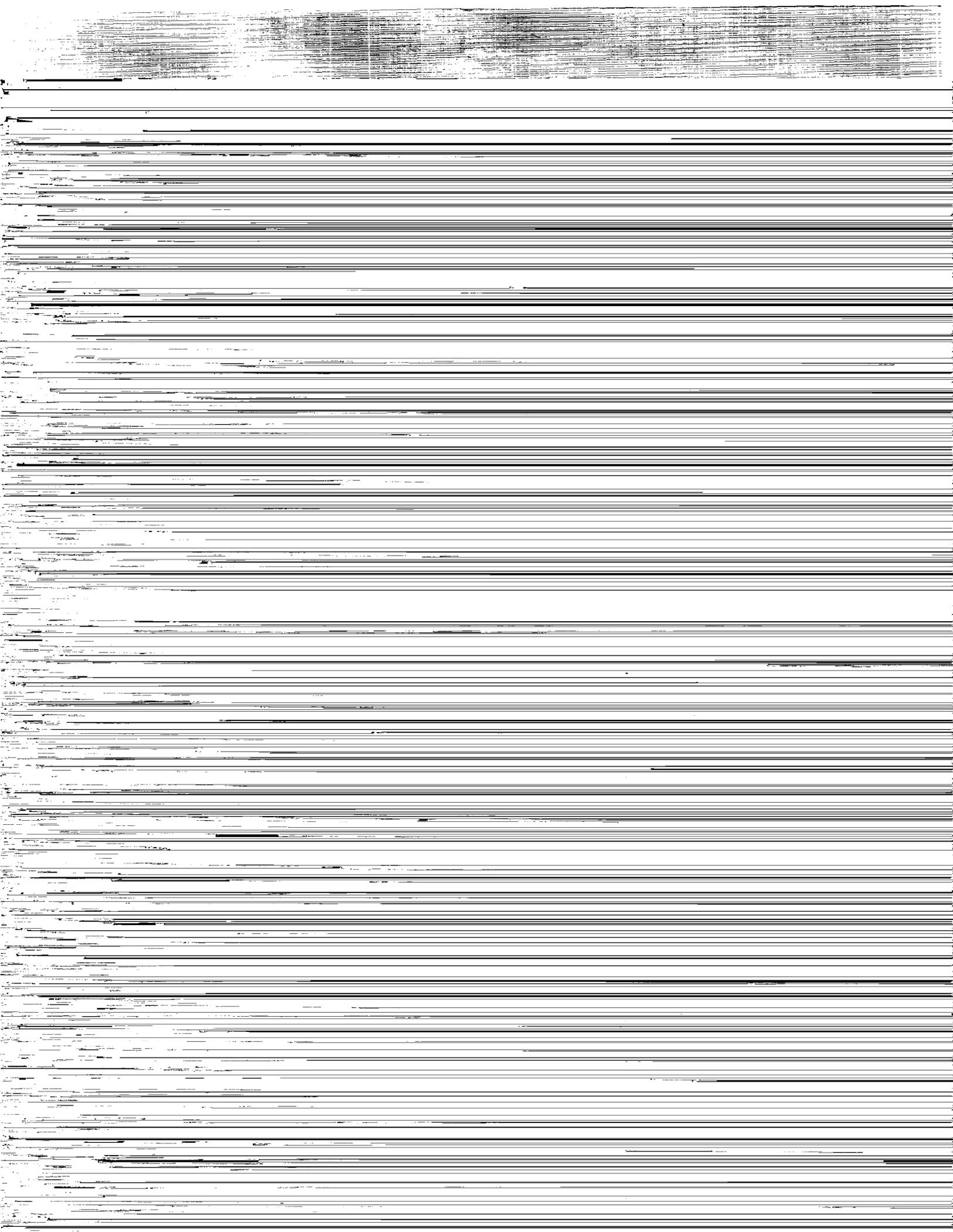


United States  
Department of  
Agriculture

Food and  
Nutrition  
Service

Office of  
Analysis and  
Evaluation

# **Food Stamp Research: Results from the Income Survey Development Program and the Promise of the Survey on Income and**



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## I. OVERVIEW

### A. PROMISE OF SIPP

A major new data collection effort by the Census Bureau has enormous promise as the base for analyses of who the Food Stamp Program is serving and how effectively the program is achieving its purpose of raising the food purchasing power of low-income households. This data collection effort is the Survey of Income and Program Participation (SIPP) which, in the 1984 panel, is following a sample of more than 20,000 households, collecting detailed data on economic and household characteristics on a month-by-month basis over two and one-half years. The wealth of longitudinal behavioral data potentially available from SIPP for addressing questions related to eligibility and participation in food stamps and other programs is much richer than any previously available data. For the first time the actual behavior of households and individuals can be traced over time and potentially valuable new insights gained about the monthly patterns of household composition, income change, receipt of program benefits, and program turnover. Such new insights should in turn lead to improved targeting of program benefits, better estimates of program cost, and improved measures of the adequacy of program benefits in fulfilling program objectives. This ability to address a more comprehensive set of program questions using SIPP should provide a basis for better informed policy decisions.

### B. BACKGROUND

Prior to SIPP, the analysis of the Food Stamp Program (FSP) as well as other income transfers and human resource programs was limited by the lack of income data. The majority of policy research relied on the March Income Supplement to the Current Population Survey (CPS) and the Integrated Quality Control System data base (IQCS), although some studies used the smaller Michigan Panel Study of Income Dynamics (PSID).

March CPS. The March CPS, also known as the Annual Demographic File, is an annual survey of a nationally representative sample of about 60,000 households and three times as many persons. The March survey collects a substantial amount of information for households, families, and individuals, including:

- o Employment status, occupation and industry, hours worked
- o Earnings, other income, program participation
- o Age, race, sex, marital status, ethnicity, education.

However, the income data available from the CPS has several limitations since the primary focus of the survey is to obtain estimates of the size and characteristics of the labor force.

First, the income measures from the CPS are for the previous calendar year (i.e., the March 1985 CPS asked questions about income received in 1984). This can lead to severe recall problems for the survey respondents. Second, the survey asks about income received from groups of income sources, where the income groups are not necessarily the combinations needed in addressing policy issues. Further, there is little redundancy in the income questions, reducing the extent to which the accuracy and completeness of the data can be checked. Finally, the CPS is not truly a longitudinal file since households are not followed for long periods of time, rather, the CPS is a series of successive cross-sectional files.

IQCS. The IQCS is an administrative file used to estimate the amount of food stamp and Aid to Families with Dependent Children (AFDC) benefits issued in error on a state by state basis. The data is obtained from reviews of a sample of 150 to 1,200 cases (i.e., program participant households) in each state over a six month period on a continuing basis. The full sample consists of approximately 45,000 cases. As a byproduct, the IQCS provides a source of detailed monthly data on the characteristics of participants in the FSP and AFDC, including:

- o Employment status, work registration
- o Earnings, other income, program participation
- o Assets; shelter, medical care and dependent care expenses
- o Age, race, sex, marital status, ethnicity.

Although the IQCS provides all the detailed information needed to determine the household's eligibility for food stamps, the file is limited to food stamp and AFDC participant households. Consequently, issues dealing with the household's decision to participate in the FSP cannot be effectively addressed using the IQCS. Furthermore, since the IQCS is not a longitudinal file it is not possible to examine the dynamics of household participation in the FSP.

PSID. The PSID, like the CPS, is an annual survey of a nationally representative sample. However, the PSID is a truly longitudinal data base with a primary focus on providing information on the income of families, particularly low-income families. Begun in 1968 with a sample of 5,000 families, the PSID provides annual information for families and individuals which includes:

- o Employment status, occupation and industry, hours worked
- o Earnings, other income, program participation

- o Assets

- o Age, race, sex, marital status, ethnicity, education.

While the PSID is a longitudinal file covering a long time period, the sample of households is relatively small compared to the March CPS or IQCS.

SIPP. While the CPS, IQCS, and, to a lesser extent, the PSID were the only data bases capable of supporting a large portion of policy analyses, as the policy questions asked became more detailed and sophisticated, major weaknesses in the use of these data for policy analysis became apparent:

- o The March CPS and the PSID measure economic data and household composition on an annual basis, whereas eligibility and benefit calculations for most federal programs are based on a monthly accounting period.
- o Asset holdings and liabilities are not measured in the CPS and are measured on an annual basis in the PSID.
- o Complicated program rules and insufficiently detailed data in the March CPS and the PSID makes the identification of households eligible for program assistance difficult.
- o The IQCS contains information for program participant households only.
- o The information on participation in other, non-food stamp, programs is limited in the March CPS, the PSID, and the IQCS.
- o It is known from comparison with program records that the CPS data underestimate transfer income, retirement and disability income, unemployment compensation, and property income.

The inability of the March CPS, the PSID, and the IQCS to provide the income and household composition data needed in addressing the more complex policy questions led to increasing appreciation of the need for more detailed and more frequent information on assets, income flows, noncash transfer income, household composition, and participation in government programs for both program participant and nonparticipant families, households, and persons. Although the CPS could potentially have been expanded to fill this need, rather than contemplating the major changes that would have been necessary in the survey instrument and procedures of the CPS--for which collecting income information is in any case a secondary goal--the decision was made to design a major new Survey of Income and Program Participation.

The primary advantages of SIPP over previous data bases are:

- o The monthly reference period allows need and eligibility to be assessed on the same accounting period as is used in program administration.
- o The longitudinal data allows questions related to the dynamics of income receipt and program participation to be addressed.
- o The richness of detail of the data allows a variety of issues, such as participation in multiple assistance programs, to be examined.
- o The potential matching of SIPP with administrative data would allow a wider variety of administrative issues to be addressed.

The promise of SIPP has already been demonstrated in a series of research studies on the Food Stamp Program based on the test survey for SIPP. The 1979 test panel, known as the Income Survey Development Program (ISDP) Research Panel, is very similar in content and structure to SIPP. The results from the set of food stamp studies based on the ISDP data, as presented in the body of this report, provide important new information on the economic status and behavior of FSP recipient households.<sup>1/</sup>

However, there are serious difficulties to be surmounted which were indicated by the ISDP experience and are becoming increasingly clear as SIPP starts to be used. Whereas before SIPP the call was for more and better data, it is now becoming clear that data collection efforts of this size and complexity present analytical, data preparation and data management problems that are orders of magnitude more difficult than any faced before. Discussion has turned from problems of inadequate data to problems of how best to use the complex data.

The experience in using the ISDP data on the FSP research studies reported in this paper indicate ways that the problems of data preparation and data management as well as the conceptual problems of longitudinal data can be handled. A key

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<sup>1/</sup> In addition to the research reported here, the ISDP data proved very useful for providing rapid information to FNS on very specific policy issues. For example, the ISDP was used to examine the adequacy of the earned income and child care deductions in the food stamp benefit formula. SIPP should be useful in this context as well.

rationale for this monograph is the hope that by sharing these ISDP experiences prospective SIPP research will benefit from the wide professional critique.

#### C. OBJECTIVES OF THIS MONOGRAPH

There are two basic objectives of this monograph. The first is to report the findings from a number of studies of FSP households all of which were based on the ISDP test panel. These studies are important in that they represent the best current information on questions such as how different asset limits would impact FSP eligibility or how FSP program exit rates are associated with factors such as finding a job. However, they are preliminary as more definitive research can soon be conducted based on the larger samples, longer time period, and more tested procedures of SIPP as well as on the more refined analytical procedures that are emerging from the earlier efforts.

The second objective is to provide a basis for learning from the ISDP experience. The research reported here can provide important insights into the complexities which arise in the use of longitudinal data files such as the ISDP and SIPP. Maximizing the benefits of the ISDP-based work is contingent upon the sharing of the approaches used, results obtained, and limitations of this research with both the policymaking and research communities.

#### D. ORGANIZATION OF THIS MONOGRAPH

This monograph is divided into two major sections. The first section provides an overview of the SIPP and ISDP surveys (Chapter II) and briefly summarizes the existing food stamp research which uses the ISDP test panel--Chapter III presents research on the economic status of the food stamp population, Chapter IV summarizes studies on the dynamics of food stamp participation, Chapters V summarizes research on the monthly patterns of income receipt, and Chapter VI present studies dealing with program participation and labor supply behavior of food stamp households. The second section of the monograph presents a discussion of the analytic and data issues which arise in research using panel data (Chapter VII). The final chapter summarizes the ISDP research and the promise of SIPP.

## II. THE SIPP AND ISDP SURVEYS

### A. THE HISTORY OF SIPP

A longitudinal survey of the scope of SIPP had never been designed or fielded on a nationally-representative basis. As a result, a major development effort--called the Income Survey Development Program (ISDP)--was authorized in 1975 by the Office

of the Secretary of the U.S. Department of Health and Human Services (DHHS) to precede the fielding of SIPP. The ISDP program sponsored extensive research into ways in which the measurement, collection, and processing of income, transfer program, and wealth data could be improved. It also undertook a series of test panels to try out alternative data collection and processing methods, the last of which (the 1979 ISDP Research Panel) was sufficiently large to provide reliable national estimates of many individual and household characteristics. The intent was to fully exploit the experience of the 1979 ISDP Research Panel in order to produce an optimal strategy for fielding the first and later waves of SIPP. Subsequent events prevented this intent from being fully realized.

The ISDP program was halted in 1982. Recognizing that the 1979 ISDP test panel was a valuable resource in itself, several government agencies, including the U.S. Department of Agriculture, Food and Nutrition Service (FNS), funded the work necessary to release public use versions of the cross-section files. In addition, the FNS funded the longitudinal linking of the data across waves, a data access system, and the FSP research discussed in this paper.

In the midst of the efforts to render the data usable for methodological and public policy research, the Census Bureau obtained the funding needed to conduct the full SIPP. Faced with stringent deadlines for fielding the initial wave, the Census Bureau relied heavily on the ISDP in developing questionnaires, data collection strategies, and processing systems. As a result, SIPP is very similar to the 1979 ISDP test panel--sharing several of the characteristics that led to the complexities in the ISDP data processing five years ago. The ISDP experience and associated research has thus acquired unique importance as a way to learn not only about the promise but also the potential pitfalls of using the SIPP data.

## B. THE 1979 ISDP RESEARCH PANEL

The 1979 ISDP Research Panel consists of a nationally representative sample of approximately 7,500 households.<sup>1/</sup> The sample design oversampled both low and high income households in order to improve the precision of measurement at both ends of the income distribution. The individuals in the initial sample households were followed for approximately one and one-half years.

The survey consisted of six three-month rounds (or waves) of interviewing using a technique called staggered interviewing. That is, the sample of households was divided into three groups of equal size (called rotation groups) and the survey was administered to the individuals in one group each month. The first rotation group received the Wave 1 interview during February 1979 with subsequent waves occurring every three months thereafter. Figure II.1 illustrates the outcome of this survey technique. Note that the third rotation group, although surveyed every three months, was not administered the Wave 4 instrument during the fourth round of interviewing. Instead, they were administered the Wave 5 questionnaire with the Wave 6 survey following three months later. As a result, for one-third of the sample there are five rather than six waves of data.

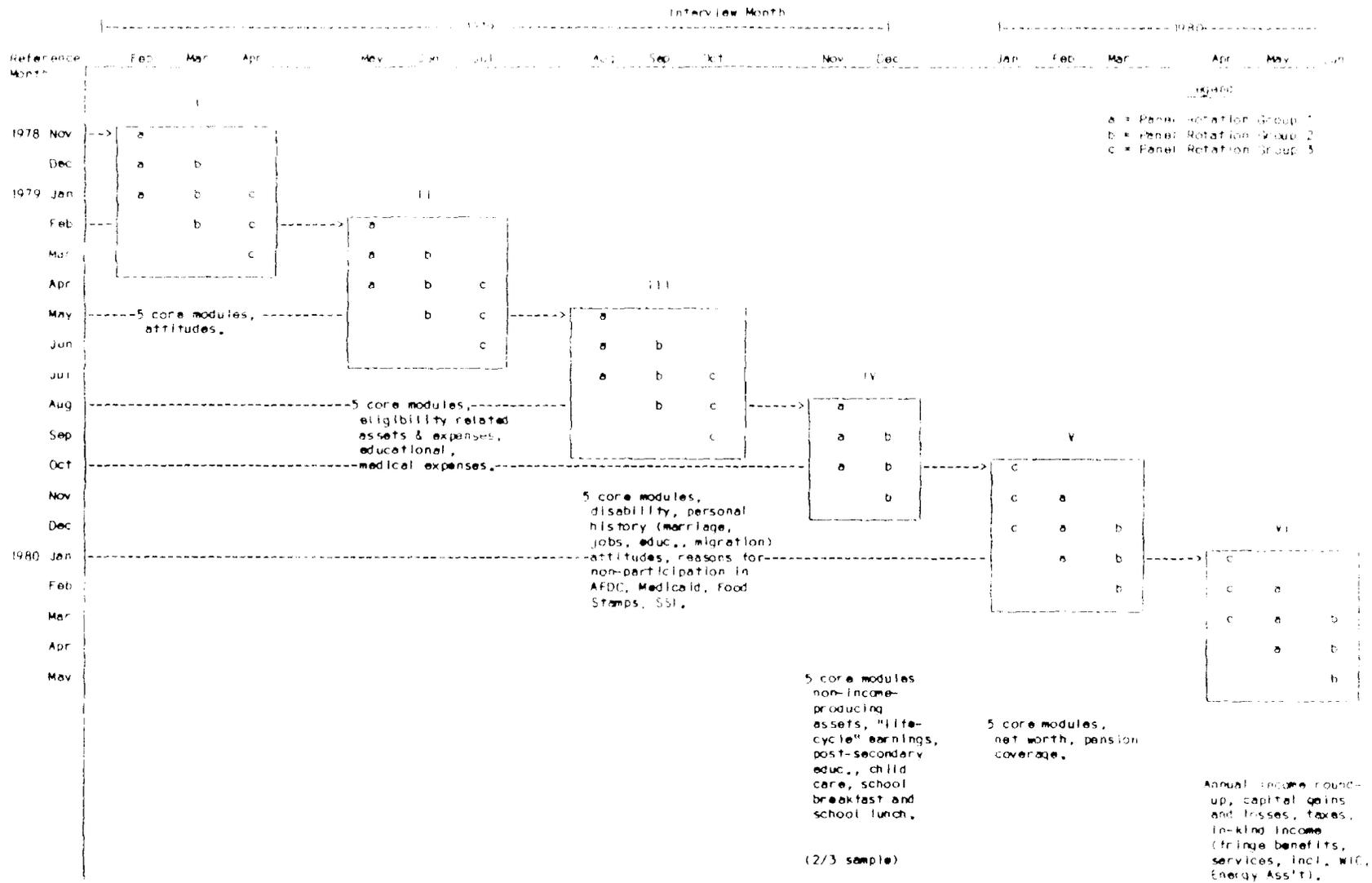
The survey instruments used in the 1979 ISDP Research Panel included five core modules and a series of supplemental modules which differed by wave. The five core modules were administered during each of the first five waves of interviewing and covered the following topics:

- o Household composition and characteristics, and person characteristics at the time of the interview
- o Reciprocity of income from assistance programs in each of the three months prior to the interview
- o Earned income and employment status for each of the three months prior to the interview

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<sup>1/</sup>This is actually a subset of all households in the original design. The total sample initially included approximately 8,300 households from the area frame sample and 3,000 households from samples drawn from program records. The 7,500 households are those households from the area sample successfully interviewed in early 1979 and subsequently reinterviewed throughout 1979 and early 1980.

FIGURE 11.1  
SURVEY WAVES -- 1979-1980 ISDP RESEARCH PANEL



- o Unearned income for each of the three months prior to the interview
- o Characteristics of children under age 16 at the time of the interview.

Each of the supplemental modules was administered once during the survey, with Waves 2 through 5 containing at least one of the supplemental sets of questions. Figure II.1 also summarizes the contents of each of the five waves. As implied above, the reference period for most of the data collected was the three calendar months preceding the interview month. Hence, as can be seen from Figure II.1, the calendar period covered for each wave varies by rotation group.

Wave 2 was particularly important for FSP research. With supplementary funding from FNS, in addition to the five core modules, as noted, extra questions were asked on Wave 2 on work-related expenses, shelter costs, and asset holdings which allowed the identification of FSP eligibles as well as participants. This is the only source of nationally-representative integrated data on (1) income, (2) household composition, (3) work-related expenses relevant to allowable deductions against earned income, (4) asset information relevant to the resources test, and (5) shelter and other expenses allowable as deductions in computing FSP benefits. Such information does not exist for any other ISDP wave; current plans call for it to be collected in the course of SIPP. However, the SIPP data will be more difficult to use as it is scattered through different topical modules to be administered in different waves.

The dispersion of the FSP eligibility information throughout the different topical modules of SIPP is the result of the competing needs of the various federal agencies and programs and the academic community. Given the limited time available within each topical module and across the set of modules, it is necessary to choose among questions which are intended to aid in program planning (e.g., questions concerning FSP eligibility) and questions which address important social issues (e.g., questions concerning retirement decisions or health).

Although the 1979 ISDP permitted more comprehensive and extensive analyses of the FSP than had previously been possible, 1979 was not a typical year for the FSP. In that year, the structure of the FSP changed dramatically as the Food Stamp Act of 1977 was implemented. The provisions of that Act included a reduction of the net income eligibility standard, tighter restrictions on deductibles, an increase in the asset limit, and, most importantly, the elimination of the food stamp purchase requirement. Following the elimination of the purchase requirement and

the implementation of the other provisions of the Act, participation in the FSP increased rapidly, rising by about 3.4 million people over the following year. Given these changes, 1979 cannot be considered a representative year for the FSP. Furthermore, the more recent changes in the FSP due to the provisions of the Omnibus Reconciliation Act of 1981, the Food Stamp and Commodity Distribution Amendments of 1981, and the Food Stamp Act Amendments of 1980 and 1982, suggest that there is a need for FSP analyses using the more recent data of SIPP.

### C. THE STRUCTURE AND CONTENTS OF SIPP

The structure of SIPP, as noted, bears a close resemblance to the structure of the 1979 ISDP test panel.<sup>2/</sup> First, SIPP has a similar instrument design--which combines a set of core modules on levels of monthly economic well-being and changes in these levels over time with a set of topical modules which vary by wave. Some of these are fixed and assigned to particular waves; others are variable and designed in response to particular government agency program and policy analysis requirements. Second, SIPP has a similar wave, rotation group, and reference period structure, although spread of over a four-month rather than a three-month period. Thus, each SIPP wave has four rotation groups, which are interviewed (in rotation) every four months. For each interview month the reference period is the previous four months (that is, four months ago, three months ago, two months ago, and last month).

The sample of households is larger and the period of time covered is longer for SIPP than for the 1979 ISDP test panel. Through 1984, about 20,000 households were interviewed under SIPP, 5,000 each month. In 1985, a second panel of households was introduced bringing the total sample size of SIPP up to about 35,000 households. Each individual in the original sample frame will be interviewed every four months for a period of two and one-half years. Appendix Figure A shows the content and reference periods of SIPP for 1984, 1985, and most of 1986.

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<sup>2/</sup> This description draws heavily on Roger A. Herriot and Daniel Kasprzyk, The Survey of Income and Program Participation. SIPP Working Paper Series no. 8405. Washington, DC: U.S. Bureau of the Census, 1984.

### III. ECONOMIC STATUS OF THE FOOD STAMP TARGET POPULATION

Included in the ISDP based research on the economic status of food stamp research are studies which address the asset holdings of low-income and food stamp households (Bickel and MacDonald, 1981), the adequacy of benefits from food stamps in conjunction with other income maintenance programs (MacDonald, 1983, 1984), and the pattern and adequacy of multiple program benefits over time (Doyle, 1985; MacDonald, 1985). In this chapter, the studies dealing with each of these topics are summarized in turn.

#### A. ASSET HOLDINGS OF FOOD STAMP PARTICIPANT AND NONPARTICIPANT HOUSEHOLDS

Eligibility for food stamps is restricted to households which, in addition to meeting other requirements, have assets below a statutory limit. Such rules are designed to limit participation in the FSP to households without holdings of assets which can be readily liquidated and are therefore potentially available for the purchase of food. In 1980, Congress set the limit at \$1,500 for most households; households of two or more, at least one of whom is age 60 or older, are allowed up to \$3,000 in assets.<sup>1/</sup> Liquid assets, such as bank accounts, stocks, and bonds, are counted toward the limit. In addition, a portion of the value of some vehicles is counted. A homeowner's house and lot are not counted. Certain other nonliquid or employment-related assets, such as personal effects and tools of a trade, are also excluded.

Before the 1979 ISDP test panel there were no nationally representative data on assets available in enough detail to assess the dimensions of current asset holdings by low-income households. Wave 2 of the 1979 ISDP test panel provided the necessary data for such an assessment. The report by Bickel and MacDonald presents findings from this data base on the types and value of assets held by FSP participants and several categories of nonparticipants.<sup>2/</sup> In addition, in order to assess the sensitivity of food stamp eligibility to the resource test, Bickel and MacDonald simulate the impact of altering the FSP asset limits.

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<sup>1/</sup> Although the \$1,500 limit was increased briefly to \$1,750 under the Food Stamp Act of 1977, the \$1,500 and \$3,000 asset limits were first established in 1971.

<sup>2/</sup> This section summarizes Gary Bickel and Maurice MacDonald, Assets of Low Income Households: New Findings on Food Stamp Participants and Nonparticipants. Washington, DC: Food and Nutrition Service, U.S. Department of Agriculture, 1981.

The Bickel and MacDonald work is of particular interest for two reasons. First, Wave 2 of the 1979 ISDP test panel contains more detailed information on assets than any contemplated wave of SIPP. Second, in contrast to SIPP, the 1979 ISDP Wave 2 contains the integrated assets and expense information necessary for accurate determination of the pool of program-eligible units.

#### Data and Methodology

Wave 2 of the 1979 ISDP test panel provided information on assets of all household members, including savings accounts, checking accounts, cash on hand, certificates of deposit, stocks, bond, cars, trucks, other vehicles, homes, insurance policies, all types of income-producing properties (rental, commercial, industrial, farm), undeveloped land, and other assets such as trusts, estates, and mortgages. Certain types of assets were not included in the data collected. However, for most households, pension and retirement funds were the only potentially significant omission. Additionally, sufficient other information on households' incomes and characteristics was collected in order to distinguish between households eligible for food stamps, whether or not they actually participated, and households not eligible. The sample used for this study included about 7,200 households.

The analysis focused primarily on the actual food stamp eligibility unit or "food stamp household" within each sample household. All households were classified first according to the FSP income eligibility test and then the resource test. They were further classified into participants and nonparticipants according to whether they had reported receiving food stamps in any of the previous three months. (Three months was used to provide a broader measure of participants, given the relatively rapid entry and exit rates for the food stamp caseload.) Food stamp participants and three nonparticipant groups were defined to permit comparisons of asset holdings. The FSP nonparticipant groups were:

1. FSP eligible nonparticipant households
2. Low-income households which were ineligible for food stamps on the basis of their assets
3. Households which were ineligible for food stamps on all other grounds.

#### Findings

The limits on assets have a major impact on FSP eligibility. Over twelve million persons who otherwise would have been eligible for food stamps had assets high enough to exclude them from eligibility. Based on this finding, Bickel and MacDonald estimated the savings in potential benefits to be \$2.9 billion in

1981 (1981 dollars). Several other general patterns in the asset holdings of FSP participant households and others are noteworthy:

- o Nearly one-half (49 percent) of FSP participant households had no countable assets at all, while 91 percent had countable assets of \$500 or less.
- o FSP participant households had far fewer assets than households not eligible for the program. When all assets except homes were considered, 37 percent of participant households had no assets, and 90 percent had less than \$1,500. By comparison, 3 percent of FSP ineligible households had no assets, and only 21 percent had less than \$1,500.
- o FSP participants tended to have few liquid assets. Fifty-one percent of the participant households had no liquid assets, 93 percent had \$500 or less. There were no participant households in the sample with stocks or bonds.
- o FSP participant households had few assets in any other specific asset categories. Approximately one-half (51 percent) had no car, only 36 percent owned homes, 9 percent had life insurance policies, and 2 percent had rental property. No FSP participant in the sample reported any farm or business interests, undeveloped land, mortgages, royalties, estates, or trusts. By contrast, 87 percent of FSP households ineligible on the basis of either assets or income owned a car, 70 percent owned their homes, and 43 percent owned life insurance.
- o Among households eligible for food stamps, those who actually participated tended to have slightly fewer assets than those who did not. Thirty-seven percent of FSP participants, compared to 30 percent of FSP eligible nonparticipants, had no assets (excepting homes).
- o Households disqualified from food stamps solely on the basis of their assets were a relatively well-off group in terms of the types and value of assets they owned. Two-thirds (68 percent) of these households had total assets (not including homes) in excess of \$5,000.

Since the data for this report were collected in the Spring of 1979, both the income and asset limits in the FSP have changed. Thus, the figures in this report may not represent the current holdings of food stamps household. More recent data from SIPP is needed in order to obtain up-to-date information on the impact of the asset limit on FSP eligibility.

## B. THE PATTERN AND ADEQUACY OF MULTIPLE PROGRAM BENEFITS

The debate about whether and/or how to limit federal expenditures for income transfer programs has again focused attention on questions about the adequacy and equity of benefits available from the mix of social insurance, cash welfare, and in-kind programs that help maintain income security. With this debate comes disagreement about tradeoffs between the extent of income security provided and its costs. It has been argued that the gradual expansion and extension of income transfer programs has made multiple benefits available that provide more than is necessary for adequate support, and that it has reduced the incentive to work. Opponents reply that without multiple benefits there would be gaps in program coverage, and that the current system does not adequately provide for all.<sup>3/</sup> Once again, this issue could not be properly examined before the 1979 ISDP test panel became available since the ISDP provided, for the first time, concurrent information on monthly participation in a variety of income transfer programs, along with income information for the same period.

### Data and Methodology

The work by MacDonald on multiple program participation and the adequacy of benefits approached the issue by examining the relationship between income and poverty status<sup>4/</sup> before transfers and the relationship including transfer income for recipients of all major income support programs. The paper includes comprehensive descriptions of the incidence of multiple

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<sup>3/</sup> This section summarizes Maurice MacDonald, Multiple Benefits and Income Adequacy for Food Stamp Participant and Nonparticipant Households. Washington, DC: Mathematic Policy Research, February 1983. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service. Summary results from an extension of the analysis to include the impacts of nutrition and housing benefits are also included. See Maurice MacDonald, Multiple Benefits and Income Adequacy: Impacts of Nutrition and Housing Benefits. Madison, WI: Institute for Research on Poverty, August 1984.

<sup>4/</sup> The official Office of Management and Budget (OMB) 1979 annual poverty line was used as the household consumption need standard in evaluating the adequacy of benefits. Three month incomes below one-quarter of that level were classified as inadequate to meet the households needs. (For more information on the official poverty threshold and for poverty statistics see U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60.)

benefit recipiency, the effects of benefits on poverty status, and the characteristics of recipient and nonrecipient households for different programs. It then focuses on the effectiveness of the FSP in alleviating poverty within the context of multiple benefits.

The research reported here used Wave 2 of the 1979 ISDP test panel to examine the actual reported receipt of multiple benefits. It analyzes the incidence and effects of receiving benefits from one or more of the six most important cash and in-kind transfer programs: Food Stamps (FSP); Public Assistance (PA) including Aid to Families with Dependent Children and other welfare programs; Unemployment Insurance (UI); Old Age, Survivors, and Disability Insurance (OASDI); Supplemental Security Income (SSI); and Medicaid. The combined effect of a somewhat larger list of transfer programs on the adequacy of benefits as measured by national poverty guidelines is also examined. In estimating the effects of transfers on benefit adequacy, transfers were added sequentially to market (pretransfer) income in the same order that these programs count income from other programs in determining benefit entitlements: social insurance (OASDI and UI) first, then cash welfare (PA and SSI), followed by food stamps (FSP).<sup>5/</sup> (Medicaid was omitted from the income count since it is seen as meeting special rather than normal income requirements.) The sample used for this study included about 7,200 households.

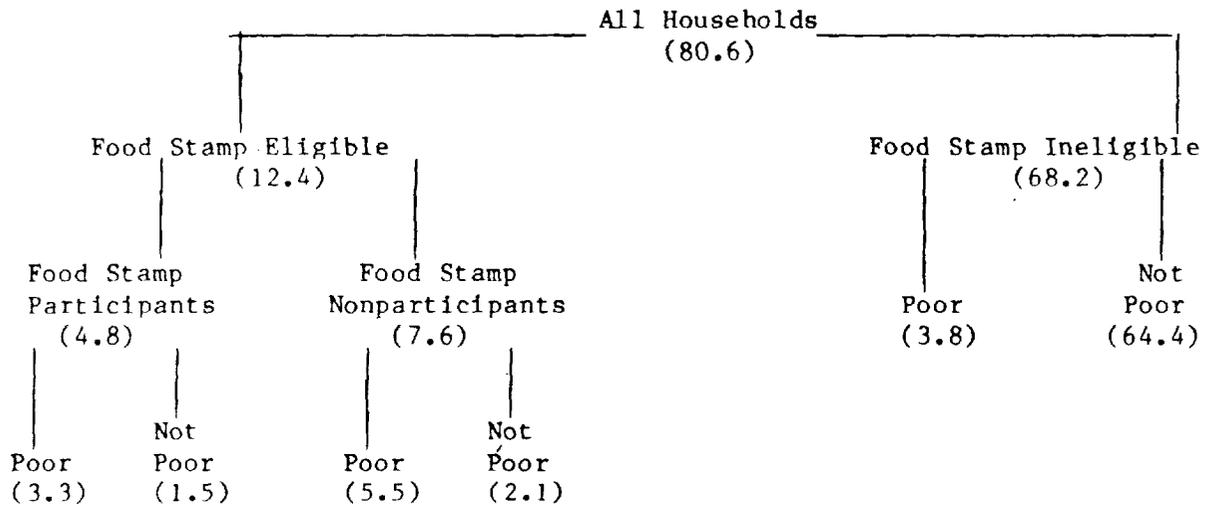
Figure III.1 displays categories of households, to explain how the analysis of multiple benefit recipiency was organized. As can be seen, the primary focus is on households that were eligible for food stamps in Spring 1979. Sufficient information on income types, assets, and relevant expenditures was collected by ISDP to classify all households into food stamp eligible or ineligible groups.

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<sup>5/</sup> There is a substantial literature on the evaluation of in-kind benefits (e.g., Smeeding, 1982, 1984; Manser, 1981) which proposes several different methods: market value, recipient or cash equivalent value, government cost, and poverty budget share. Government cost, since it includes administrative costs, would be likely to yield the highest valuation, while the poverty budget share would yield the lowest since it places a limit on the value of in-kind benefits. The approach used by MacDonald to value food stamp benefits was market value.

FIGURE III.1

CATEGORIES OF HOUSEHOLDS (IN MILLIONS) FOR MULTIPLE BENEFITS ANALYSIS, SPRING 1979



SOURCE: MacDonalD, M. Multiple Benefits and Income Adequacy for Food Stamp Participant and Nonparticipant Households. Washington, D.C.: Mathematica Policy Research, February 1983.

## Findings

In Spring 1979, there were 28 million households who reported receiving benefits from one or more of the six major assistance programs studied. Less than one-quarter of these had benefits from two or more major programs. The other three-fourths received benefits from only one program. A closer look shows that about two-thirds of all households reporting benefits from any of the major programs received only OASDI. The principal findings of the analysis of the receipt of multiple benefits were:

- o Social insurance recipients (recipients of OASDI and UI) frequently do not have multiple benefits and are usually ineligible for welfare. Only 17 percent of OASDI recipient households and 34 percent of UI recipient households received benefits from other programs.
- o In contrast, multiple benefits were widespread among food stamp, Medicaid, and cash welfare recipients. In each of these programs, over 80 percent of recipients obtained benefits from at least one other program. About two-thirds of food stamp participant households had three or more of the six major benefits (most frequently, food stamps, Public Assistance, and Medicaid).
- o Many households below the poverty line received few or no benefits. Of pretransfer poor households who remained poor when all transfer income was counted, 38 percent did not receive any of the six major benefits, 32 percent received only one benefit, and 27 percent received food stamps only.

Based on the analysis of the adequacy of the program benefits it was found that receipt of multiple program benefits did not lead to high income. The observed effects of multiple benefits on benefit adequacy include the following:

- o Of all pretransfer poor households, over one-half remained poor, 40 percent were removed from poverty by OASDI and/or UI, cash welfare and food stamps together removed another 5 percent.
- o Food stamps alone reduced poverty by 1 percent. If all eligible households had participated in the FSP, pretransfer poverty would have been reduced by 2 percent.
- o Among the pretransfer poor households who received food stamps, most (80 percent) remained poor after all transfers were counted. Of the 14 percent of food stamp households with money incomes below one-half of the poverty line, less than one-third still had incomes below that level after food stamp benefits were counted.

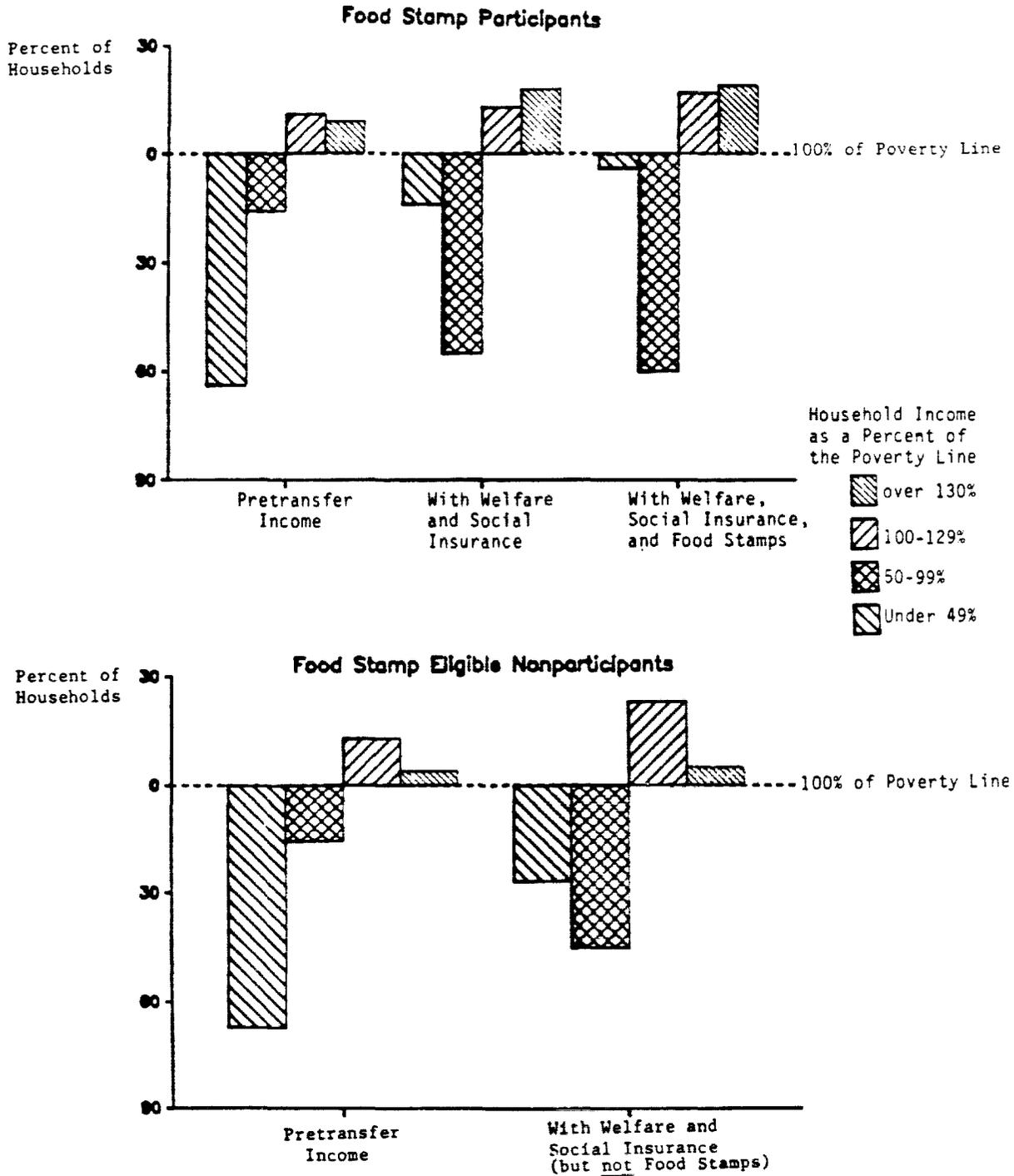
Perhaps a more informative way of examining multiple benefit effects is to look at actual dollars. The dollar difference between each household's quarterly income and the quarterly equivalent of the poverty threshold for that household when added together for all poor households is defined as the poverty income gap. In general, all three major types of transfers (i.e., social insurance, cash welfare, and food stamps) had greater percentage effects in reducing the poverty gap than they did in reducing poverty counts. This supports the finding that most of the effect of transfers was to help those with incomes below one-half of poverty. Among food stamp recipients, social insurance appeared less effective than did cash welfare in reducing the poverty income gap. In particular, it was found that:

- o Among all households nationwide, social insurance closed over 50 percent of the Spring 1979 \$20 billion poverty income gap, cash welfare reduced it by 11 percent, and food stamps reduced it by another 4 percent. After all benefits had been considered, one-third of the original gap between pretransfer income and the poverty line remained.
- o Among FSP participant households, social insurance reduced the Spring 1979 gap between the pretransfer incomes of FSP participants in poverty and the poverty line by 23 percent, cash welfare reduced it about one-third, and food stamps closed about one-fifth. After all benefits had been considered, about one-quarter of the gap between incomes and the poverty line remained.
- o In contrast, for FSP eligible households who did not participate, over one-half the poverty income gap remained after cash benefits were added.

Figure III.2 summarizes the results of the multiple benefit analysis by showing the Spring 1979 distribution of FSP eligible households relative to the official poverty line as they appeared (1) before government transfers, (2) after major cash transfers, and (3) after major cash transfers and food stamp transfers. Before government benefits were considered, 80 percent of FSP participants fell below national income poverty guidelines. This included 64 percent below one-half of the poverty line and an additional 16 percent between 50 and 100 percent of the poverty line. After all major transfer programs were considered, 64 percent of FSP participant still remained below income poverty guidelines, including 4 percent of FSP participants who remained below one-half of poverty. It is important to note once again that the FSP has changed considerably since Spring 1979. Consequently, more recent data from SIPP is needed to reflect the current adequacy of program benefits.

FIGURE III.2

EFFECT OF MULTIPLE BENEFITS ON INCOME  
AS A PERCENT OF THE POVERTY LINE, 1979



A later supplementary analysis of multiple benefit receipt used Wave 4 of the 1979 ISDP test panel to include the School Lunch Program and housing subsidies and Wave 6 to include the Special Supplemental Food Program for Women, Infants, and Children (WIC) (MacDonald, 1984). While this analysis is not strictly comparable to the main analysis primarily because using Waves 4 and 6 necessitated focusing on pretransfer poor households rather than FSP eligible household, this difference is not a major limitation on the analysis since the pretransfer poor define closely the subset of households who are eligible for most of the benefits of interest. The principal findings of this analysis were:

- o About 77 percent of both FSP and school lunch recipients reported receiving benefits from another program--compared with 88 percent for cash welfare.
- o When only cash benefits are counted, 11.2 percent of households were poor in late 1979 (the time of Wave 4). Adding the market value of food stamps, school lunches, and housing subsidies reduced the percent poor by 1.4 percentage points.<sup>6/</sup>
- o The WIC data from Wave 6 indicate that approximately 1 percent of all households and 3 percent of all pretransfer poor households reported receiving WIC. Of the pretransfer poor WIC recipients, 38 percent reported receiving food stamps in Wave 4 and 62 percent reported both food stamps and school lunches. There were no households with school lunch only in Wave 4 who reported receiving WIC in Wave 6.

#### C. MULTIPLE PROGRAM BENEFITS DURING THE COURSE OF A YEAR

The studies presented in the previous section considered the receipt of benefits from multiple assistance programs at any point in in the interview wave. By using the five waves of the ISDP test panel, the patterns of transitions between multiple benefit categories over the year (Doyle, 1985) and the receipt

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<sup>6/</sup> In estimating the value of benefits from food stamps, school lunch, and housing benefits, MacDonald used the market value approach.

of multiple benefits for the 12 months of calendar year 1979 (MacDonald, 1985) could be considered.<sup>7/</sup>

### Data and Methodology

Both the study by Doyle and the study by MacDonald used a linked longitudinal file created from the five waves of the 1979 ISDP test panel. This longitudinal file was created for the analysis of the dynamics of FSP participation and is discussed in the context of that work in the next chapter. By using the linked longitudinal file, the patterns of the receipt of benefits by households from multiple assistance programs over the full 12 months of 1979 could be examined. The five assistance programs considered in the studies were: Old Age, Survivors, and Disability Insurance (OASDI), Unemployment Insurance (UI); Supplemental Security Income (SSI); Aid to Families with Dependent Children (AFDC); and Food Stamps (FSP). Eleven program participation categories were defined. When only one of the five major programs was reported by the household for a month the benefit type was simply that benefit. When more than one benefit was reported, the household was classified by whether or not it received food stamps as well as by the largest benefit amount from the other cash programs. The residual group for each month consisted of households without benefits from any of the five programs analyzed plus recipients of one very infrequent benefit combination of two major benefit programs (AFDC and UI). Doyle combined several multiple assistance categories because of small sample sizes. On average, there were 3,174 households per month in the sample for the Doyle study and 3,205 for the MacDonald study.

### Findings

The study by Doyle examined the extent to which households switched between nine multiple benefit categories and the nature of those transitions. The study found that one-third of the sample of households reported some change in the multiple program category in which they participated during 1979 and one-fifth reported three or more transitions during the year. Other findings of interest include:

- o Households receiving OASDI only were the most stable group, with only 18 percent reporting transitions over the year. UI

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<sup>7/</sup>This section summarizes MacDonald, Maurice Serial Multiple Benefits and Monthly Income Adequacy. Washington, D.C.: Mathematica Policy Research, March 1985. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service and a memorandum from Pat Doyle of Mathematica Policy Research the U.S. Department of Agriculture, Food and Nutrition Service.

recipients were the least stable, with all recipient households reporting at least one transition.

- o Of those households receiving food stamps, the most stable households were those also receiving OASDI, with almost three-fourths reporting no transitions over the year. Households receiving food stamps only or food stamps and SSI were the least stable. Over three-fourths of both groups of households reported at least one transition. The final food stamp group, households receiving food stamps and AFDC, was somewhat more stable, with 40 percent of all households reporting no transition.
- o The most frequent transitions for households receiving food stamps only or food stamps in conjunction with some other program were to multiple program categories which included food stamps. For example, over 70 percent of the households receiving food stamps only which experienced a transition added participation in OASDI, SSI, or AFDC to their food stamp benefits.
- o Of those households not participating in any assistance program in January, over one-fourth had begun participating in at least one program by December. For 5 percent of the households, the program they entered was the FSP.
- o The number of months between transitions is short (2 to 3 months) for households with two or more transitions and approximately 90 percent of such households return to their original multiple benefit category.
- o For those households observed to have only one transition approximately 50 percent had no benefits in January but began receiving benefits during the course of the year, 25 percent were participating in one program for the full year and supplemented that program at some time during the year, and 20 percent simply discontinued benefits at some point in the year.

MacDonald examined average monthly participation rates and average length of participation for eleven multiple benefit categories and the effects of the different benefit combinations on the adequacy of the benefits. The principal findings of the MacDonald study were as follow:

- o Among those who received any benefits from the five transfer programs for the whole of 1979, those with only OASDI or only UI were by far the most frequent beneficiaries. Households receiving only food stamps were third in frequency at 7 percent of all 1979 recipients. About 30 percent of those who

received benefits from any program received them from two or more programs at some time during 1979, most of whom had benefits from only two programs.

- o The adequacy of different monthly benefit combinations was evaluated by comparing incomes with and without the cash benefits and the face value of any food stamps they received to a monthly poverty line determined by the net income limit for food stamp eligibility in July 1979.<sup>8/</sup> By that standard, sample households would have been in poverty for 35 percent of the months if they had not received assistance. The benefits they actually received were sufficient to reduce the percentage of 1979 months spent in poverty to 25 percent.
- o Whatever their income without the monthly benefits, receiving any single one of the cash benefits was always more advantageous for the household than receiving food stamps alone. Yet monthly food stamp benefits were sufficient to move about 30 percent of those recipients who would have been below one-half of the monthly poverty line above that standard.

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<sup>8/</sup>The monthly net income limit for the FSP is less than the official annual poverty line divided by twelve.

#### IV. THE DYNAMICS OF FOOD STAMP RECIPIENCY

The analysis of program turnover is crucial, among other reasons, in order to shed light on the major issues of long-term dependence on public transfers--how long do households typically remain recipients? What are the turnover patterns of different types of households? What factors affect turnover? The ISDP 1979 test panel provided the first nationally representative data with which monthly program caseload turnover rates could be analyzed. Such a task required monthly income and related information necessary to determine eligibility, detailed household characteristics, and monthly observation of program participation status. There are two studies which make full use of the longitudinal nature of the ISDP in looking at turnover in the FSP. The first study (Carr, Doyle, and Lubitz, 1984) generated overall estimates of turnover rates in food stamp participation and compared them with estimates generated from earlier, less representative data. In addition, separate estimates of turnover for important subgroups within the low-income population were calculated and changes in eligibility status were estimated over time.

The wide variation found by Carr et al. in food stamp turnover rates by type of household makes it important to identify what kinds of events cause households to enter and leave the food stamp caseload. The second turnover study (Lubitz and Carr, 1985) pursued this question by estimating the impact of particular events on the probabilities of entrance to and exit from the FSP. The ISDP data made such an analysis possible because it provided the month-to-month linked information needed to identify changes in household circumstances and to associate those changes with program entry and exit.

#### Data and Methodology

The data base from which estimates of turnover in the FSP were derived was a linked longitudinal household file developed from the first five waves of the 1979 ISDP test panel.<sup>1/</sup> Socio-demographic variables such as household composition, ethnicity, and education were included as well as indicators of food stamp receipt and all components of the eligibility determination process.

For the purpose of the turnover studies, longitudinal household units were constructed according to the status of the principal person(s) in the unit and complete income data from all five

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<sup>1/</sup>This section is primarily a summary of Timothy J. Carr, Pat Doyle, and Irene Smith Lubitz, Turnover in Food Stamp Participation: A Preliminary Analysis. Washington, DC: Mathematica Policy Research, July 1984. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service.

ISDP waves were used. Principal persons are generally the "reference person" in the terminology of the survey, and his or her spouse, if any. (They may be thought of as the heads of the household.) As a result of this approach, the composition and characteristics of units were allowed to change over time. For example, it is possible to observe an ongoing unit which with the passage of time gains or loses a household head or other member. For the purposes of the present analyses, the universe of households consisted of all units headed by a primary sample member. A primary sample member is an individual included in the initial sampling frame, and therefore followed throughout the survey to the extent possible. A household could be formed during any month and dissolved during any month. The only sample households excluded from the studies were units formed after the initial interview which were headed by individuals who were not present in Wave 1. About 7,000 sample household units were retained in the analysis.

The analysis in the study by Carr et al. was carried out in two phases. First, a descriptive analysis provided an overview of the general level of turnover in food stamp eligibility and participation during 1979, the manner in which turnover varied over the course of the year, and the manner in which turnover varied across socioeconomic groups.

Several indicators of turnover levels in program eligibility and participation were used. The most important of these were the entry rate and exit rate. For program participation, these are defined as the proportion of all households who did not receive food stamps in one month who were receiving food stamps in the next month and, similarly, the proportion of all households who did receive food stamps in one month who were not receiving them in the next month. Other measures of participation turnover used were the proportion of households that continuously received food stamps, the number of spells of food stamp participation during the sample period, and the average duration of food stamp participation. Analogous turnover measures were defined for program eligibility.

Since such descriptive analysis cannot identify the independent effects of individual factors, the second phase of the analysis estimated a multivariate statistical model of program participation and eligibility. The probabilities of entering and exiting from the FSP (or to and from eligibility for the program) were estimated (using event history analysis<sup>2/</sup>) as functions of household characteristics expected to affect eligibility and participation.

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<sup>2/</sup> See Tuma (1982) for a discussion of event history analysis.

## Findings

There was substantial movement of households into and out of the FSP; the number of households who received benefits from the program over the course of a year was over 70 percent greater than the number who received benefits in any given month. Furthermore, there were significant variations in observed turnover across socioeconomic groups. Specific findings of interest include the following:

- o Of all households who received food stamps in a given month, 7.3 percent left the program within the next month.
- o Given that a household did not receive food stamps in a given month, there was an 0.53 percent probability that it would enter the program in the next month.
- o Of the households who were present in the sample for the full calendar year and reported receiving food stamps at any time, about one-third received food stamps for the entire year.
- o The probability that a household was a food stamp recipient household at least once in the course of the year was nearly twice (1.74) the probability that it participated in the program in a given month.
- o There were systematic variations in entry and exit rates across households. The lowest monthly exit probabilities were for households who received AFDC and/or other types of welfare, nonwhite households, households containing an elderly or disabled person, households in which no person was employed, households whose head has relatively little formal education, and households headed by a single person.
- o The highest probabilities of entrance into the program were for households who received AFDC, households headed by a single person with children, nonwhite households, large households, households in which no person was currently employed, households whose head had little formal education, and households in which an elderly or disabled person was present.

The multivariate results tend to support the findings of the descriptive analysis. In particular, after controlling for other factors, entry rates were higher and exit rates lower for households with a nonwhite household head, no earner present, a single household head, elderly or disabled members, and AFDC recipients.

The principal findings of the descriptive analysis of program eligibility are as follows:

- o There appeared to be substantial turnover in food stamp eligibility. The probability that an eligible household became ineligible each month was about 17 percent, and the probability that a previously ineligible household became eligible was 6.3 percent. Both these probabilities are substantially higher than the corresponding probabilities of participation change.
- o The types of households with the highest propensity to become eligible for food stamps were those who received AFDC and other types of welfare, households headed by a single person with children, nonwhite households, households whose head had relatively little formal education, households in which no person was working, and households containing elderly or disabled persons.
- o The types of households with the lowest propensity to become ineligible were those who received AFDC and other types of welfare, those with a head over the age of 65, those with a single head, those with a single member, those in which no one was employed, and those containing a disabled person.

Most of the relationships between characteristics and eligibility transitions observed in the descriptive analysis are maintained when other factors are held constant. In particular:

- o Households with elderly or disabled members, those on AFDC, and those who were nonwhite were all more likely to become eligible for the Food Stamp Program than otherwise similar households.
- o Single headed households with children were more likely to become eligible than were other households.
- o Households with elderly or disabled members, nonwhite households, single headed households, nonearners, and AFDC recipients were all more likely to remain eligible for food stamps than were other types of household.

The Role of  
Changes in  
Household  
Circumstances

The subsequent study by Lubitz and Carr extended the earlier research on turnover by examining the role of changes in household circumstances on the likelihood that a household would enter or leave the FSP.<sup>3/</sup> Whereas the initial study identified

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<sup>3/</sup>This section summarizes Irene Smith Lubitz and Timothy J. Carr's Turnover in the Food Stamp Program in 1979: The Role of Trigger Events, February 1985. Washington, DC: Mathematica Policy Research. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service.

in Food Stamp  
Turnover

characteristics of households that are correlated with higher or lower probabilities of transition in and out of the FSP, the subsequent study identified particular events that evidently precipitate changes in program status. For example, the findings of the Carr et al. study include a higher than average program entry rate for households with no earner present. The trigger events analysis estimated the probability of program entry in the months immediately following the loss of earnings.

Five potential types of events were defined as trigger events (i.e., events reasonably likely to "cause" or precipitate a change):

- o Large changes in monthly pretransfer income between one month and the next.<sup>4/</sup> Those cases in which the income change resulted in a change in eligibility status were also differentiated from those in which it did not.
- o A change in the number of employed household members from one month to the next. Multiple-earner were also differentiated from single-earner households.
- o A change in asset holdings, specifically a decline in assets as a possible trigger of program entrance.
- o Changes in receipt of Unemployment Insurance, either exhaustion of UI benefits (as an entry trigger) or beginning to receive benefits (as an exit trigger).
- o Household composition change, defined as a change from having one head to two heads, or vice versa.

The methodology employed had two parts. First, a descriptive investigation of the relation between trigger events and transitions was undertaken to track households in the ISDP sample through the course of calendar year 1979 on a month-to-month basis. When a comparison of a household's circumstances in successive months indicated that a trigger event had occurred, the household was further tracked to determine whether a transition (entrance or exit) occurred. The probability that a household experienced a transition after a trigger event, and the

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<sup>4/</sup>The effect of changes in total income on transitions into and out of the program was analyzed; however the analysis was not satisfactory because these changes confounded exogenous changes in the household's economic status (such as the loss of a job) with changes in transfer income brought on by that event.

elapsed time between the two events, was then tabulated and analyzed.

Second, a multivariate analysis of the effect of trigger events on entry and exit rates was used to isolate the independent efforts of different trigger events. This analysis (based on event history analysis) estimated transition probabilities as functions of explanatory variables in a manner similar to more familiar regression models. The emphasis was on isolating the separate effects of the different trigger events on transition rates.

It is important to note that for many of the trigger events being considered the number of cases available for analysis is quite small. With unweighted sample sizes of less than 10 or 20 for households entering or exiting from the FSP following a trigger event, the analysis cannot support definitive conclusions about the impact of changes in household circumstances on program participation.

The principal findings of the Lubitz and Carr study were as follow:

- o Trigger events were strongly correlated with the probability that a household experienced a transition (entry or exit). A household that experienced a trigger event was far more likely to experience a transition within six months than a household selected at random.
- o Most instances of entering and exiting from the program in response to trigger events occurred in the same month as the trigger event or shortly thereafter.
- o The event most likely to precipitate entry into the program was a decrease in the number of earners present in the household. Declines in pretransfer income resulted in households' becoming eligible to participate in the program. Household splitting, and exhaustion of UI benefits were also significant trigger events.
- o The events most likely to precipitate exit from the program were an increase in pretransfer income and an increase in the number of earners present in a household. Beginning to receive UI and becoming a couple (i.e., moving from one-head to two-head status) were also significant trigger events.
- o Changes in pretransfer income and in the number of earners were experienced by a large proportion of all households in the course of the year. To this extent, labor market phenomena are more important in explaining turnover than less frequent demographic phenomena such as changes in household composition.

## V. MONTHLY PATTERNS OF INCOME RECEIPT

The FSP is a monthly program. Eligibility is based on income for a monthly accounting period and benefits are provided monthly. Therefore, survey data with monthly observations provide much more accurate information for describing FSP participating and nonparticipating households and for examining analytical issues concerning FSP design and operations. With the monthly observations from SIPP, the household's income, receipt of other transfers, and household composition can be examined for the particular months during which the household reported receipt of FSP benefits. In contrast, the traditional data sources for FSP analyses such as the CPS and the PSID collect data about the past year. Since many low income households experience large income fluctuations from part year employment and earners leaving or entering the household unit, analyses of issues such as the incomes of FSP participants during their period of participation that are based on the CPS and PSID must rely on strong assumptions and are therefore imprecise.

This study examined monthly patterns of income receipt and focused on the degree to which the assumptions about intrayear income flows used by analysts with CPS data were valid. One application, in which the assumptions concerning intrayear patterns of income are particularly important, is in the analysis of the effects of proposed program changes on program costs and the distribution of benefits. FNS and other agencies make extensive use of microsimulation models based largely on CPS data for the analysis of potential program changes.

Ideally, the microsimulation model would use monthly data in estimating the impact of program changes. However, prior to SIPP such data were not available and the data base most commonly used in microsimulation was and is the annual March CPS. Since the March CPS does not have information on intra-year income flows and household composition, assumptions about such intra-year patterns need to be made and built into the microsimulation models. The availability of the 1979 ISDP test panel provided the opportunity to test the assumptions underlying the microsimulation estimates which were obtained from the food stamp model used by FNS.

The FNS food stamp model--Micro Analysis of Transfers to Households (MATH)--is a CPS-based microsimulation model. As it was originally developed, the model created variables which represent income received in a typical month by each individual surveyed using the following assumptions:

- o Annual earnings are assumed to be evenly distributed over the reported number of months worked.



Due to the lack of longitudinal editing and imputation for nonresponse on income questions (discussed in Chapter VII)--a potential source of bias in studies of income receipt over time--the study was restricted to households for which all income amounts were completely reported in each wave they were interviewed. The husband-wife data base included 3,283 families with complete data. The poor and near-poor data base included 9,383 individuals, 7,468 of whom were present in the ISDP sample for all 12 months of calendar year 1979. Individuals not present for a period were treated as receiving no income for that period.

### Findings

In the construction of transfer program simulation models that operate on the March CPS, it has been assumed that husbands and wives who both reported working for part of the year tended to work during different parts of the year. This follows the theory (called the added worker effect) that when household heads are unemployed, secondary workers such as previously nonworking spouses enter the job market in order to maintain customary household income levels.

Analysis of the ISDP data provides clear evidence that the added worker effect does not explain the labor force pattern of most husband-wife families. About 40 percent of couples had both spouses working; about 35 percent had the male working while the spouse did not; about 7 percent had the female working while the spouse did not. About 18 percent had neither spouse working.

This should not be unexpected given that people are documented to marry persons similar to themselves along a wide range of personal characteristics: ethnic and religious backgrounds, age, level of formal schooling completed, and type of occupation. All these characteristics strongly affect the degree of an individual's attachment to the labor force and lead to a tendency for men with strong labor force attachments to marry women who also work for large portions of the year. In such cases there is necessarily substantial overlap in the periods they work.

More detailed findings on labor force attachment of husband-wife families include the following:

- o The majority of elderly families (head over 65) had no labor force activity. In January, for example, 64 percent did not work; in December, the proportion had increased to 71 percent.
- o For white families 35 to 40 percent had both spouses working; 30 to 35 percent had only the sample reference person working; 7 to 9 percent had only the spouse working; about 20 percent had neither working.

## VI. PROGRAM PARTICIPATION AND LABOR SUPPLY BEHAVIOR OF FOOD STAMP HOUSEHOLDS

Two studies based on ISDP cross-section data deal with the relationships between program participation and labor supply decisions: the work by Czajka (1981) on determinants of participation in the FSP and the work by Fraker and Moffitt (1985) on the effects of food stamp benefits on the market labor of female heads of household.

### A. DETERMINANTS OF PARTICIPATION IN THE FOOD STAMP PROGRAM

It has been well established that participation in the FSP among the eligible population has been and continues to be less than 100 percent. Policymakers, analysts, and other observers cite as explanations such factors as complex eligibility criteria, benefits being outweighed by costs for some households, the welfare stigma, or lack of program knowledge. But measuring the extent of and understanding the true reasons for nonparticipation depends on adequate data. Before ISDP (with the exception of local area studies) research was limited by the unavailability of subannual income data and any but the most basic assets data. The 1979 ISDP test panel--in particular Wave 2--was especially designed to yield more accurate and detailed income and assets data for the shorter time periods that better approximated those used in administering the FSP. It also made possible a close look at the characteristics of the eligible population and the economic, social, and demographic factors that differentiate food stamp participants from nonparticipants.<sup>1/</sup>

#### Data and Methodology

The analysis by Czajka used Wave 2 of the 1979 ISDP test panel and was done in terms of reference month--i.e., three months ago (month 1), two months ago (month 2), and one month ago (month 3). Reference months were used because the only calendar month common to the entire Wave 2 sample was April 1979. The study was also restricted to those households determined to be eligible: excluding those households reporting receipt of food stamp benefits who were seemingly ineligible. Since households in similar circumstances who did not receive food stamps could not be included among the eligibles, the inclusion of "seemingly ineligibles" among the recipients would yield biased estimates of the effects of household characteristics upon participation.

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<sup>1/</sup> This section summarizes John L. Czajka, Determinants of Participation in the Food Stamp Program: Spring 1979. Washington, DC: Mathematica Policy Research, November 1981. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service.

The analysis had two components. The first looked at food stamp reciprocity simply as a function of prewelfare income and total cash income. The second employed two sets of regression equations to estimate the net effect of economic circumstances on the likelihood of the food stamp eligible unit or "food stamp household" within each sample household receiving food stamps. One set of regression equations controlled for the separate effects of prewelfare income, the expected value of the food stamp allotment, employment income, whether unemployed, plus several demographic variables. The demographic variables were included as further measures of need, potential access to other economic resources, and an indirect measure of perceived stigma. The other set of regression equations controlled, in addition, for welfare receipt. The reason for the two formulations is the potential circularity of assuming welfare participation affects food stamp participation when in some cases the reverse may be true.

#### Findings

The monthly income patterns reflected in the Wave 2 of the 1979 ISDP data provide strong evidence for the importance of income in determining the probability that an eligible household will participate in the FSP. Participation diminished significantly as a food stamp household's prewelfare income (measured relative to the poverty line) rose. The average net participation rate among households with prewelfare incomes as high as three-quarters of the poverty line or higher was only one-quarter what it was among households with incomes less than one-half the poverty line. Since the higher income households constituted more than 40 percent of all eligible households, their low participation depressed the overall participation rate substantially. The overall participation rate<sup>2/</sup> ranged from 28 to 31 percent for the three reference months of Wave 2 of the ISDP.

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<sup>2/</sup>The participation rates found in the ISDP were substantially lower than the 61 percent found by Beebout (1981) for July 1981, using an administrative count of food stamp recipients and a microsimulation estimate of food stamp eligibles. Possible explanations for this discrepancy include: (1) the Beebout estimates are participation rates for persons while Czajka estimated food stamp household participation rates. Since large households have higher participation rates and weigh more heavily in the computation of a person level participation rate than a household rate, the person rate will tend to be higher; (2) Czajka eliminated seemingly ineligible households from his calculations, while Beebout's estimates include them in the numerator but not the denominator. The inclusion of the ineligible in Beebout's calculations will lead to higher estimates of participation; and, (3) there appears to have been a significant amount of underreporting of food stamp reciprocity in Wave 2 of the ISDP. Czajka (1982) discusses possible sources of this underreporting.

- o For nonwhite households there was more monthly fluctuation although no obvious trend over the year. In March, for example, 42 percent had both spouses working; 28 percent had only the reference person working; 26 percent had neither working. In June, 32 percent had both spouses employed; 35 percent had only the reference person working; 26 percent had neither working.
- o The upper bound estimate of the number of families where the spouse went into the labor force because the reference person lost his or her job was only 15 percent of the total number of families with at least one spouse working sometime during the year.

The second component of the analysis focused on the income patterns in poor and near-poor households. The major focus was on four types of unearned income:

- o Workmen's Compensation
- o Unemployment Compensation
- o Asset Income
- o Other (Nonwelfare) Unearned Income.

Welfare income was given less attention because direct estimates of welfare income are not used in the CPS-based simulation model. Rather, welfare income is simulated from other data on the household.

On the CPS file, part-year workers can be distinguished from full-year workers and information is available on weeks worked and weeks looking for work. Beyond that, little can be inferred about individual patterns of income receipt within the calendar year. For this reason, the analysis of unearned income patterns from the ISDP summarized here focuses on the work/nonwork period distinction. The patterns of unearned income receipt are based on data on poor and near poor individuals:

- o Workmen's Compensation. The ISDP data indicate that about half the respondents who reported receiving workmen's compensation (53 percent) reported receipt during the work period. Of these, more than half (57 percent) reported receiving it only during the work period. These results should be interpreted cautiously, however, because the sample was very small; 71 individuals reported receiving it during the year, of which the vast majority (65) were part-year workers.
- o Unemployment Insurance (UI). According to the ISDP data, 17.6 percent of UI recipients in the sample (poor and near-poor) were full-year workers and 42 percent were part-year workers

reporting UI receipt while working. These seem unusually high proportions. However, examination of the extent of the overlap between work and UI suggests periods were ones of transition from work to nonwork or vice versa--a finding that is supported by the difference in UI benefit amounts according to work/nonwork status. Persons receiving benefits during both work and nonwork periods reported average receipts of \$191 during the former and \$331 during the latter.

- o Asset Income. More than half (55 percent) of the ISDP sample of individuals in poor/near-poor households who reported receiving asset income received it throughout the year. For the elderly (over age 60) the proportion was much higher (72 percent). For those who did receive asset income for only part of the year, the ISDP data cannot yield unbiased estimates due to the fact that lump sum recall amounts were evenly allocated over the relevant recall period (three or six months). The amounts of asset income for those who reported receiving both while working and while not working were very similar in the two periods (\$33 and \$32, respectively).
- o Other (Nonwelfare) Unearned Income. This category includes regular sources (such as social security, veterans benefits, and public and private pensions) and irregular miscellaneous income. The patterns of other unearned income receipt by the ISDP poor/near-poor population were very different for the elderly and the nonelderly. Over three-quarters of the elderly reported receiving such income continuously throughout the year versus one-quarter of the nonelderly. The patterns of other income receipt by the nonelderly varied by whether they were regular or irregular sources, it appears that two-thirds of the recipients of regular income received it for more than a quarter of the year, half of which received it for the full 12-month period. On the other hand two-thirds of those receiving income from irregular sources received it for three months or less. Finally, for the elderly, whether they were working or not made no difference to the amount received (\$325-\$330 per month); but for the nonelderly the amount received was higher during periods of work (\$452 per month) than periods of nonwork (\$348 per month).

There is a puzzle, however, in that the participation rate of the 365 households with zero gross cash income did not follow the general pattern. (Note that these were households with no welfare income.) These households--presumably the neediest segment of the population--accounted for 10 percent of all eligibles and had a food stamp participation rate of only 4 to 6 percent for the three reference months covered by the study. The most plausible explanation is that the group included a significant proportion of households that were in fact ineligible for the FSP but were retained in the sample because of the imperfect replications of the FSP eligibility criteria. That is, some of the zero income households had effective incomes which were not zero and as a result were not eligible to receive food stamps. For example, the group might have included a large number of students living away from home. It might have included persons whose prospective income was not zero (for example, persons waiting for a job to begin or persons with relatively large assets--not large enough to disqualify them from food stamps, but enough to allow them to subsist without an income flow for a time). More generally, it might have included persons whose reported income and assets excluded important resources. It is interesting to note that even the extremely detailed monthly data on income and assets from Wave 2 the 1979 ISDP did not resolve the puzzle of these seemingly very poor nonrecipients.

Other economic variables appear to be much less important influences on participation than income. Liquid asset holdings did lower the probability of participation--but only marginally. Moreover, too few households held liquid assets of any size for this to have much influence on the overall participation rate.

Previous studies have shown welfare reciprocity to be a very powerful predictor of food stamp use, and the present study replicates these earlier findings. At the same time, however, it is not clear what this result actually means. Food stamp reciprocity may precede welfare reciprocity in some instances. In others it may be decided jointly with welfare. In either situation calling welfare reciprocity a determinant of food stamp reciprocity may greatly simplify reality. The strong association between welfare reciprocity and food stamp reciprocity needs to be better understood. Further research exploiting the longitudinal nature of SIPP may shed more light on this relationship in two ways. First, the actual sequencing of receipt of these two forms of transfer income over the two to two and one-half year followup period can be examined. The extent to which one comes before the other versus being received simultaneously would be very informative. Second, household decisions with regard to welfare and food stamps should be modeled jointly, since the household may well consider them simultaneously.

Among the sociodemographic variables examined, the number of children under age 16 exhibited the strongest overall relationship to food stamp participation. However, further research is required to identify the source(s) of this relationship: possibly the absolute level of benefits provided to large households or the frequent inability of such households to raise their incomes above the poverty level via the marketplace.

A sizable differential in participation by level of educational attainment was apparent, with the less educated (fewer than six grades) showing substantially higher participation rates than the more educated (four or more years of college). One interpretation views education in terms of the potential earnings capacity it implies. The distribution of eligible households by educational attainment also provides evidence of the possible role of education in determining the size of the eligible population: eligible households had markedly less education than the general population.

Participation rates among the elderly were relatively low, in line with earlier results which might be explained by a more extensive accounting of assets. Relatively high participation was noted among blacks and single female-headed households. These might be related to regional or local factors, but the ISDP data do not contain the necessary information to find out.

#### B. THE EFFECTS OF FOOD STAMP PARTICIPATION ON THE MARKET LABOR OF FEMALE HEADS OF HOUSEHOLD

Despite the wealth of literature on the effects of transfer programs on labor supply, the study by Fraker and Moffitt (1985) is the first economic analysis of the effects of the FSP on work effort.<sup>3/</sup> A model of the household's joint decision regarding market labor and participation in the Food Stamp and AFDC programs is specified and estimated on a sample of 358 female heads of households with dependent children (using ISDP data from Wave 5).<sup>4/</sup> The analysis sample for this initial research effort was limited to low-income, female-headed households with dependent

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<sup>3/</sup> This section summarizes Thomas Fraker and Robert Moffitt, The Effects of Food Stamp Participation on the Market Labor of Female Heads of Household. Washington, DC: Mathematica Policy Research, March 1985. Prepared for the U.S. Department of Agriculture, Food and Nutrition Service.

<sup>4/</sup> These 358 households represent 78 percent of all female-headed households with dependent children in the Wave 5 sample.

children to minimize the number of programs being modeled and to increase the interpretability of the results.<sup>5/</sup> Estimates of the model's parameters are used to predict how work effort and program participation would be affected by selected hypothetical changes in rules governing food stamp benefit amounts. The effects of work effort and program participation responses on average and aggregate benefit levels are also examined.

### The Model

The model of labor supply and program participation used by Fraker and Moffitt is based on the microeconomic theory of household decision making in the presence of limited household resources. The household budget limitations illustrate the combinations of goods that the household can purchase with its entire income. In this application of the theory, a household is assumed to weigh the tradeoff between leisure and income and then to choose the number of hours of work per month which give it the greatest level of satisfaction (utility). For single women with dependent children (the largest demographic category of food stamp recipients), the Food Stamp and AFDC programs introduce substantial complications into this tradeoff. Household decisions to participate in these programs are modeled as occurring simultaneously with the hours-of-work decision. The empirical specification of the model consists of three equations:

1. A labor supply equation, in which the FSP maximum benefit and the benefit reduction rate<sup>6/</sup> are hypothesized to affect work effort via the level of nonlabor income and the effective marginal wage rate.
2. A food stamp participation equation, in which the probability of participation in the FSP depends on the difference in household utility when participating in the program and when not participating.
3. An AFDC participation equation that is analogous to the FSP participation equation.

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<sup>5/</sup> The income criteria which was used to limit the sample included: 1) hourly wage of \$15 or less for the household head, 2) countable assets of \$2750 or less (\$4000 or less for households with more than one person and which contain an elderly person), 3) earnings of other adults of \$2500 per month or less, 4) unearned, nontransfer income of \$1000 per month or less, and 5) transfer income not including AFDC and UI of \$1000 per month or less.

<sup>6/</sup> The maximum benefit is the level of benefits available to the household without income. The benefit reduction rate on earnings within the program refers to the rate at which benefits are reduced for each dollar of earned income.

Data and  
Methodology

The model was estimated on the basis of 358 cases from Wave 5 of the ISDP 1979 test panel. To avoid the severe modeling and estimation problems associated with multiple, interacting programs, the analysis was limited to low-to-moderate-income households with dependent children headed by unmarried, nonelderly, and nondisabled women. These households were categorically eligible for AFDC benefits, either eligible for food stamps or able to become eligible by reductions in hours of work, but unlikely to be eligible for SSI or Social Security. (The Medicaid program was not considered in this study.)

Findings

Estimates of the food stamp and AFDC participation equations showed that a program's maximum benefit amount (at zero hours of work by the female head) had a statistically significant positive effect on participation in the program.<sup>7/</sup> In contrast, and somewhat surprisingly, a program's benefit reduction rate was not found to significantly affect participation in that program, although the estimates do suggest the possibility of a weak inhibiting effect of the benefit reduction rate on program participation.

Nonlabor income (excluding benefits from the Food Stamp and AFDC programs) was found to have a generally insignificant effect on participation in both programs. However, the wage rate (after income and payroll taxes, but not after food stamp and AFDC implicit taxes) had a significantly negative effect on participation in both programs, as expected.

Estimates of the hours of work equation indicated that the Food Stamp and AFDC programs' maximum benefit amounts and benefit reduction rates had statistically significant but small impacts on work effort. The findings imply that moderate changes in food stamp (or AFDC) regulations which alter the program's benefit reduction rate or the maximum benefit have only small effects on the work effort of female heads of households.

Estimates of the parameters in the three equations were used to simulate the effects on hours of market labor and food stamp benefit amounts of three hypothetical changes in current FSP regulations:

1. Increasing the benefit-reduction rate (i.e., the implicit tax rate on earned income) from .30 to .33

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<sup>7/</sup> In this study, an estimate is referred to as statistically significant if a test of the hypothesis that the explanatory variable has no impact on the dependent variable can be rejected at the 10 percent level of significance.

2. Replacing the uncapped 18 percent earned income deduction with a 100 percent deduction up to a maximum of \$75 per month
3. Eliminating the \$10 minimum benefit for one and two person households.

The estimated work effort of female heads of households participating in the FSP after each hypothetical change was compared to the estimated work effort of female heads of participating households before each change. The differences which were found were small. The average hours of work per week fell by 1 percent in response to the increase in the benefit-reduction rate, fell by 2 percent in response to the change in the earned income deduction, and was virtually unaffected by the change in the minimum benefit. The effect of the combined changes was a 3 percent reduction in market labor. The estimated labor-supply responses were small for two reasons:

1. The program changes being considered were small.
2. The estimates of the model parameters which characterize the labor-supply responses to changes in the net wage rate and nonlabor income were small (but statistically significant).

The average household food stamp benefit and the total amount of benefits to all 358 households in the analysis file were simulated first under the assumption that program participation and hours of work did not change in response to the three hypothetical program changes and then under the assumption that the households did adjust their participation and work behavior in response to the program changes.<sup>8/</sup> The decline in the average household's estimated benefit was 3 to 12 percent less under the assumption that households did change their behavior, depending upon the specific change or combination of changes being considered (see Figure VI.1). However, the decline in the total amount of benefits for all households was 1 to 3 percent more under the assumption of changes in household behavior (see Figure VI.2). The difference in the findings with respect to average and total benefits is the result of the households' program participation response. Each of the hypothetical program changes reduced the level of participation in the FSP, thereby leading to a further

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<sup>8/</sup>Not all of the 358 households in the analysis file were simulated to participate in the FSP under each set of hypothetical changes. The average food stamp benefit under each hypothetical program was computed on the basis of participating households only.

FIGURE VI.1

REDUCTION IN THE AVERAGE HOUSEHOLD FOOD STAMP BENEFIT  
 IN RESPONSE TO HYPOTHETICAL PROGRAM CHANGES, WITH AND  
 WITHOUT THE ASSUMPTION OF BEHAVIORAL RESPONSES

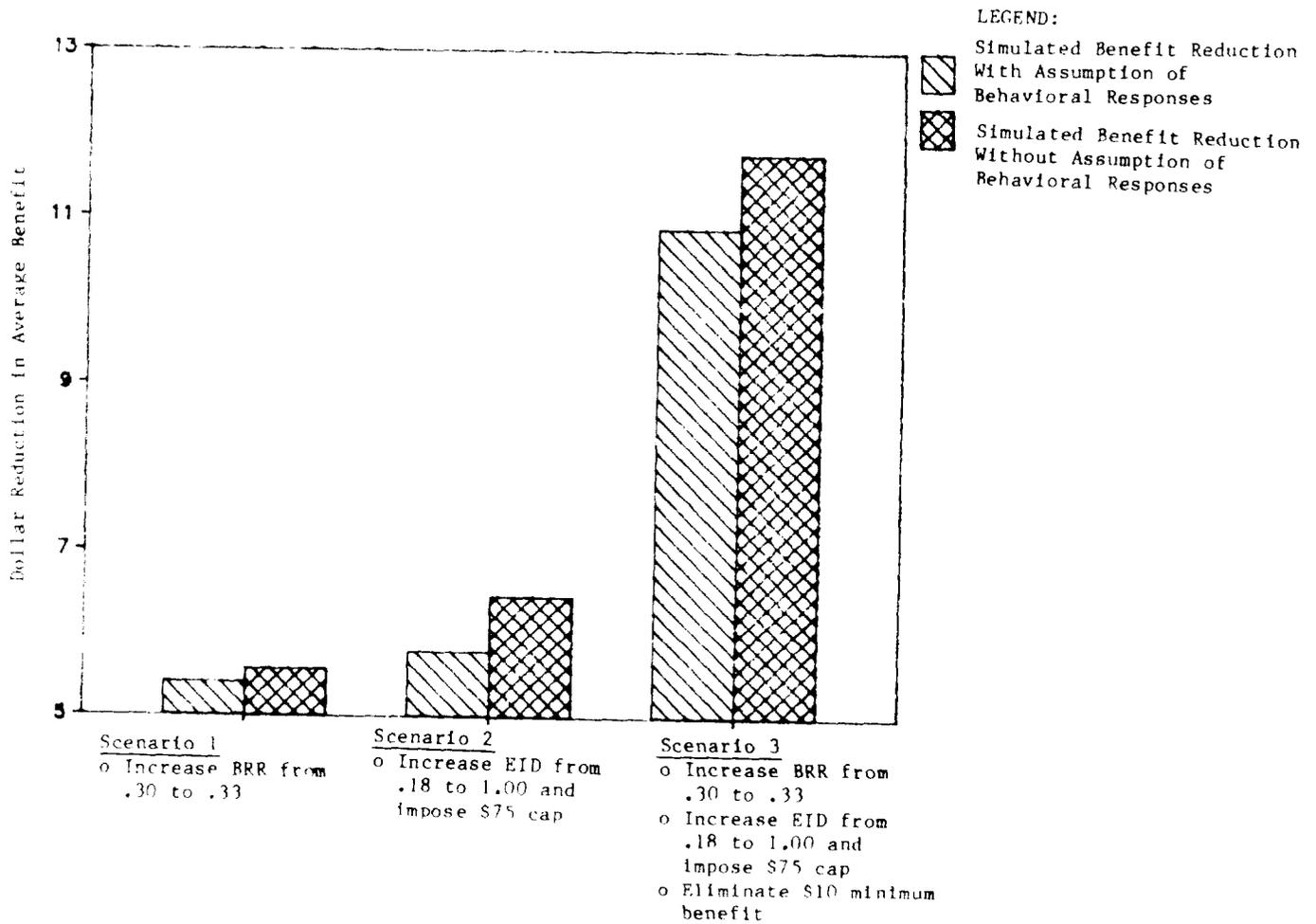
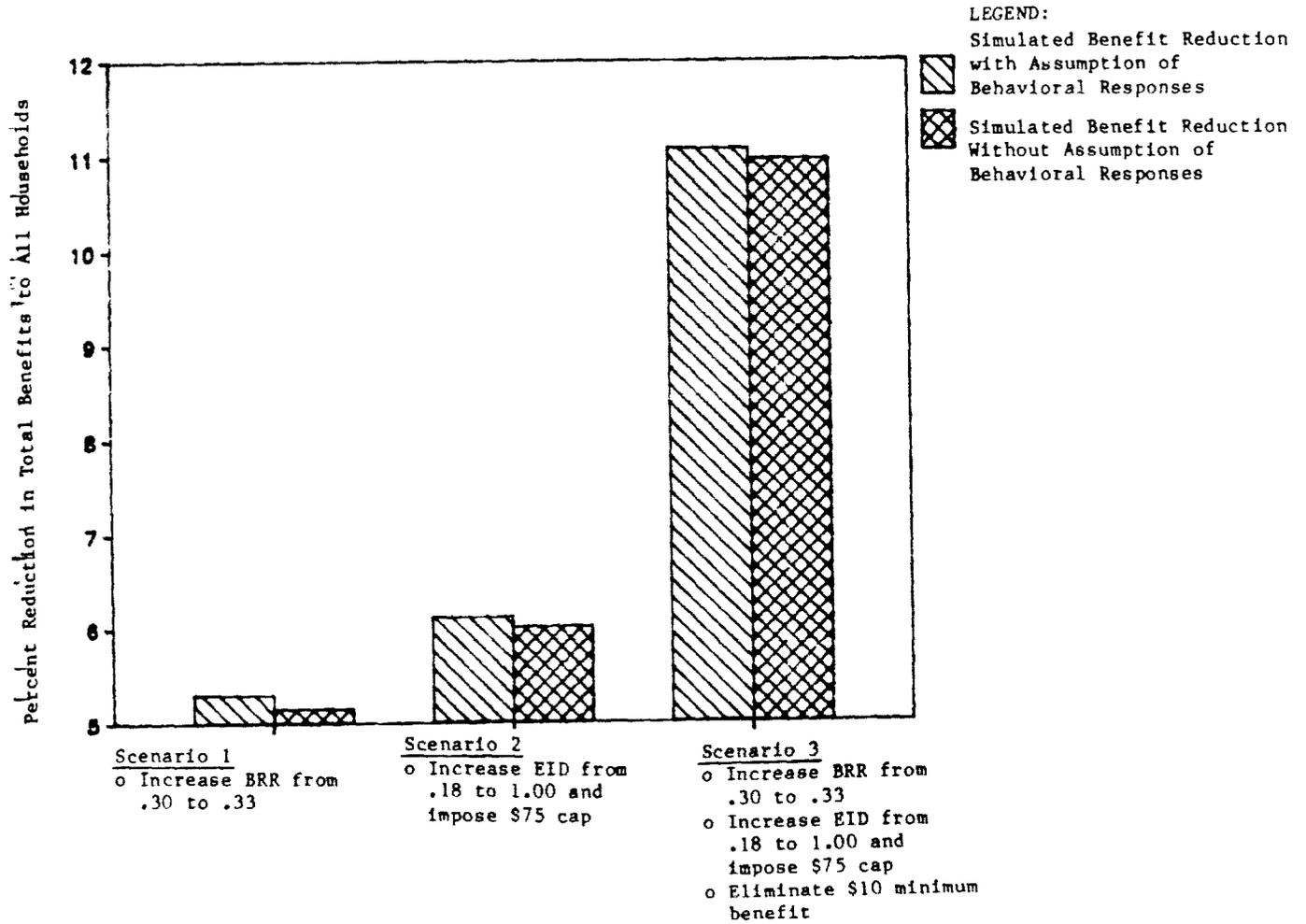


FIGURE VI.2

PERCENT CHANGE IN AGGREGATE FOOD STAMP BENEFITS  
 IN RESPONSE TO HYPOTHETICAL PROGRAM CHANGES, WITH  
 AND WITHOUT THE ASSUMPTION OF BEHAVIORAL RESPONSES



reduction in total benefits. This decline in total benefits due to a decline in participation dominated the tendency for work effort reductions to increase benefits and moderated the fall in the average household benefit which resulted from the program changes.

## VII. ISSUES IN THE USE OF PANEL DATA

The richness of panel data lies in its ability to trace individual, family, or household behavior patterns over time (i.e., longitudinally). At one level, policy analysts automatically think in longitudinal terms because they ask about changes in behavior which, by definition, take place over time. But on another level, the fact that these questions typically must be addressed with cross-sectional data has accustomed analysts to thinking in oversimplified terms, using descriptive and multivariate analytic techniques that do not deal effectively with the complexities of longitudinal data. Similarly, data base con-

characteristics of other types of program filing units) over time very complex. The second is that the data represent a collection of strands of experience, but the beginning and end segments of the experience may not be observed due to the limited time frame of the sample (e.g., 2 years of program participation cannot be observed in a 1 year sample). When data cannot be observed because of the limit of the time frame we refer to the data as being censored.

In this subsection, the problems involved in defining the longitudinal household unit and in analyzing data which are censored are discussed first, followed by discussions of the methods of presenting descriptive summaries of longitudinal data and the issues involved in the multivariate analysis of longitudinal data.

#### Household Definition

Changes in household structure (e.g., separation, divorce, marriage) frequently have implications for program eligibility, participation, and benefit amounts. With cross-section data, the issue of changes in household structure does not arise. One is forced simply to compare households with one type of structure with households with another at given points in time and compare differences in the incidence of types of families at different points in time.

In a longitudinal framework, where household composition changes do occur, the appropriate concept of a household or family over time is not as easily defined. In a recent paper by Dicker and Casady (1982), four methodologies for defining longitudinal family units were reviewed and a fifth approach suggested. The five longitudinal family definitions were:<sup>2/</sup>

1. Cohort model -- the family is treated as continuous only if there are not changes in the original unit. If a changes does occur the family is dropped from the sample.
2. Dynamic cohort model -- any change in the family unit results in the "death" of the old family and the "birth" of a new family.
3. Infinite extended family model -- all persons who were members of the original family in the sample are included in the family for the duration of the study, regardless of the combinations of persons formed.

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<sup>2/</sup> Although Dicker and Cassady focus on the definition of families over time the discussion is essentially the same for defining longitudinal households.

4. Key element model -- a "key element" of the family is defined (e.g., household head) and whoever is associated with the key element at any given time is in the family at that point.
5. Dicker and Casady's reciprocal rule -- following a change in the composition of the family, the decedent family which receives the majority of members from the antecedent family is identified as the same family. The smaller decedent family is considered a newly formed family. In the event of an even split of the antecedent family, the antecedent family is treated as dissolved and the decedent families are all considered newly formed families.

These methods have been criticized for: (1) neglecting important segments of the program participant population (e.g., cohort model), (2) failing to consider the continuity of families following a change in composition (e.g., dynamic cohort model), (3) failing to consider the disruption of the family unit (e.g., infinite extended family model), and (4) the arbitrary choice of which decedent family constitutes the same family as the antecedent family (e.g., key element model, Dicker and Casady model). There have been several methods proposed which are similar to the Dicker and Casady method but less arbitrary in defining the "same" family over time (e.g., Siegel, 1981; McMillen and Herriot, 1983).

An alternative approach which has been suggested to the defining of longitudinal households is to focus only on individuals over time, with household composition a characteristic or attribute of the individual. While such an approach may be adequate for some issues (e.g., number of persons on the FSP or the number of persons in poverty) for program questions related to caseload size and turnover the individual would not be the appropriate longitudinal unit.

The longitudinal definition of the household used in the studies on FSP turnover and multiple benefit reciprocity (and therefore in the longitudinal analysis file) was determined by the status of the reference person (and spouse, if present) in units headed by primary sample members. In addition, the central data system contained variables which denoted who lived with whom during each month of the survey thus permitting the analyst to apply the particular definition of longitudinal households which was most suited to the issue being addressed.

With respect to developing longitudinal households units in SIPP, there are several points to be made. First, since the Census Bureau has developed monthly household and family units,

the data on the SIPP files can be arranged so that the analyst can be flexible in defining what constitutes a unit over time. Second, additional information available in SIPP can be used to improve the method of defining family groupings within households. Currently, the family definition relies principally on the relationship of individuals to the head of the household, where the determination of a subfamily group when the head is not married relies somewhat arbitrarily on the age of the youngest subfamily members. The additional information being collected in SIPP could be used to improve the family unit construction.

Limited Time  
Frame and  
Censored  
Observations

As noted above, the failure to observe the beginning and/or end point of a period of program participation can occur as the result of the restricted time frame within which the data are collected. This issue of data censoring is of primary importance to the study of the dynamics of program participation, consequently, this discussion will be couched in terms of FSP caseload turnover.

Point-in-time samples, which form the basis of cross-section work, are the most extreme cases of data censoring. They provide a picture of the current caseload at the time of observation. Responses to questions about length of participation will yield profiles of program participation for the current caseload, but these profiles can provide a misleading view of the length of program participation because households who participate in the FSP for a short period of time (i.e., have a short participation spell) are less likely to be having a participation spell at a particular point in time, and, thus are less likely to be represented when the sample is drawn. This leads to overestimates of long-term benefit reciprocity. To obtain insight into the flows of households into and out of program participation or eligibility, households must be followed through time.

The fixed time-period approach of ISDP and SIPP follows all households for a fixed period of time. It is useful for examining the proportion of the "current" caseload that will leave by the next or subsequent periods or the proportion not currently participating that will enter in the next or subsequent periods. However, the fixed time-period approach does suffer to some degree from data censoring. The set of observations will include households with spells of food stamp participation which are already in progress at the beginning of the sample time period (called left-censored spells) and spells still in progress at the end of the sample time period (right-censored spells). The distorting effect of the censoring will be reduced and the reliability of the estimates of turnover will be improved the longer the time period over which the sample is

followed. For this reason, the two and one-half years of longitudinal data that will be collected by SIPP should provide estimates of turnover superior to those possible with the ISDP. The problem of left-censoring could be reduced (except for any problems of recall) if SIPP were to include questions about program duration and previous program spells at the time of the first interview. If this were done, turnover estimates based on SIPP would provide a reliable lower bound on expected spell duration--a lower bound because the length of spells still in progress when the observation period ends would still be underestimated.

The distorting effects of spell censoring can be reduced if appropriate estimation techniques are used. Maximum likelihood estimation techniques can be used to correct for right-censoring (and have been used in the studies of FSP turnover summarized in this monograph). Left-censoring is a much more complicated issue and has still to be satisfactorily resolved. One method is to restrict the sample to spells which begin within the sample frame. This approach may lead to sample selection bias. A second method used in much of the work done to date assumes, implicitly or explicitly, that the prior history of the spell does not affect the probability of exiting from the spell. This approach runs the obvious risk of estimation bias. As before, the best protection is a long observation period.

Representa-  
tiveness of  
the Sample  
Over Time

A potential problem with the ISDP and SIPP, which is not a problem for a cross-section data file, is that although the sample may be representative of the appropriate population when it is first drawn, it will become less so over time because persons will enter the sample universe subsequent to the Wave 1 interview. There is no provision in SIPP to sample these people (except in the remote possibility that they move into one of the sample households). Obviously this is not a problem for a short time period, but it could make the SIPP sample increasingly less representative over the two and one-half years the sample is being followed.

Presentation  
of Descriptive  
Results

The presentation of descriptive results based on longitudinal data is more difficult than the presentation of a static view using cross-section data since changes over time are difficult to describe clearly and concisely. Summary statistics which are suitable for cross-section data (e.g., totals and averages) can provide only limited information on the dynamics of program participation over time. In this subsection a number of approaches to summarizing longitudinal data are presented.

Transition Tables. The simplest method for presenting a description of the patterns of changes over time is the use of

transition tables. These tables, which were used in both the FSP turnover studies and the study on the patterns of multiple benefit reciprocity, involve the comparison of the household's status (e.g. program participation/nonparticipation) at two or more points in time. Table VII.1 illustrates the framework of a transition table for FSP participation in two periods. Using such tables, the internal movement of households between participation categories can be seen as well as the net result of all of the households' movements.

Transition tables can also be used to describe the pattern of changes for specific sample subgroups. These subgroups can be defined on the basis of an unchanging characteristic (e.g., race) or a characteristic which may change over time, (e.g., employment status, household structure). These characteristics are incorporated in the transition table by dividing the transition table categories into important characteristic categories (e.g., participant--white, participant--nonwhite, nonparticipant--white, nonparticipant--nonwhite). Because of the many possible transition tables which could be generated, it is important to focus the analysis on very specific questions or issues.

A limitation of the transition table approach is the loss of clarity and ease of interpretation as more time periods and/or more participation states (e.g., participation in multiple programs) are incorporated in the table. In addition, since the number of time periods which can be easily included in the table is limited, it is not possible to summarize the duration of spells of participation or nonparticipation using transition tables.

Flow Diagrams. A second approach which would permit a comparison of the changes which occur between two time periods is the flow diagram. As shown in Figure VII.1, the number of households in each of three participation categories in period 2 are shown as the net result of the flow of households into and out of the category in period 1. Like the transition table, the flow diagram is not easily extended beyond a small number of periods or to address issues of duration.

Tree Diagrams. An alternative approach to both transition tables and flow diagrams which permits the presentation of patterns of change over a longer period is the tree diagram. Based on figures similar to Figure VII.2, the month by month pattern of behavior could be examined with the conditional and/or unconditional probability of being on each branch reported.

TABLE VII.1

EXAMPLE OF A TRANSITION TABLE FOR  
 FOOD STAMP PROGRAM PARTICIPATION IN PERIOD 1 AND PERIOD 2

	Period 2		
Period 1	Participant	Nonparticipant	Total
Participant			
Nonparticipant			
Total			

FIGURE VII.1  
EXAMPLE OF FLOW DIAGRAM FOR FOOD STAMP PROGRAM  
PARTICIPATION IN PERIOD 2

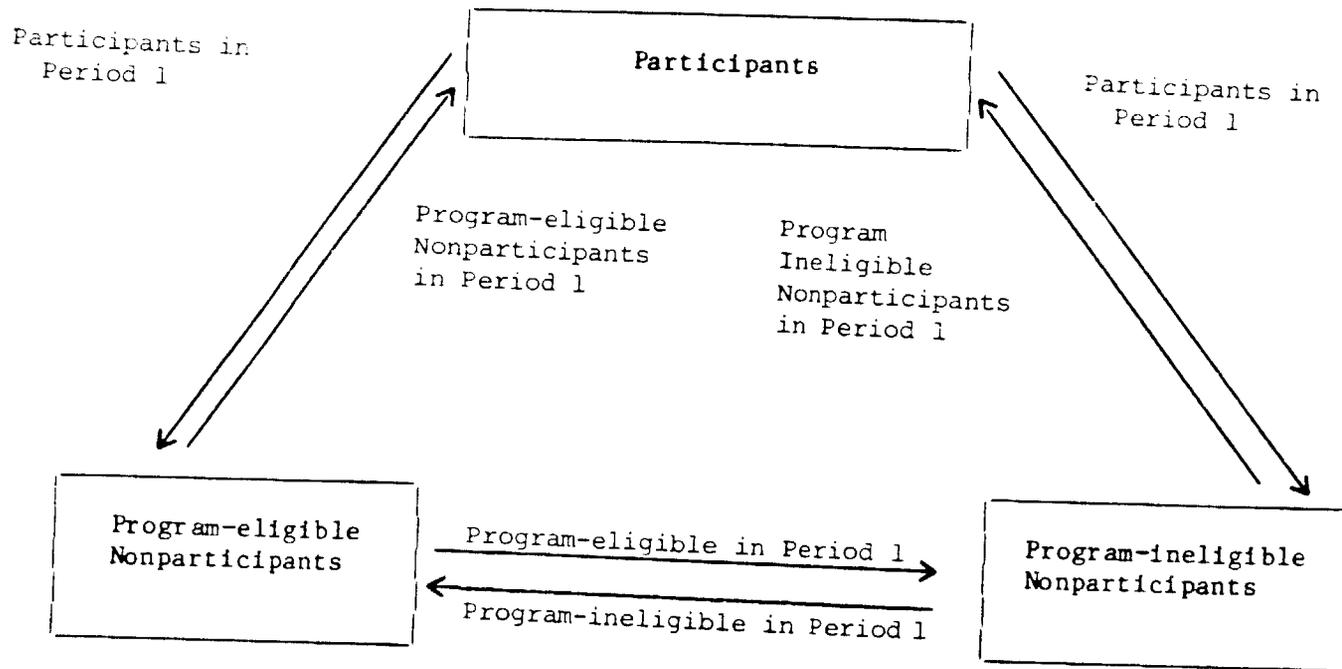
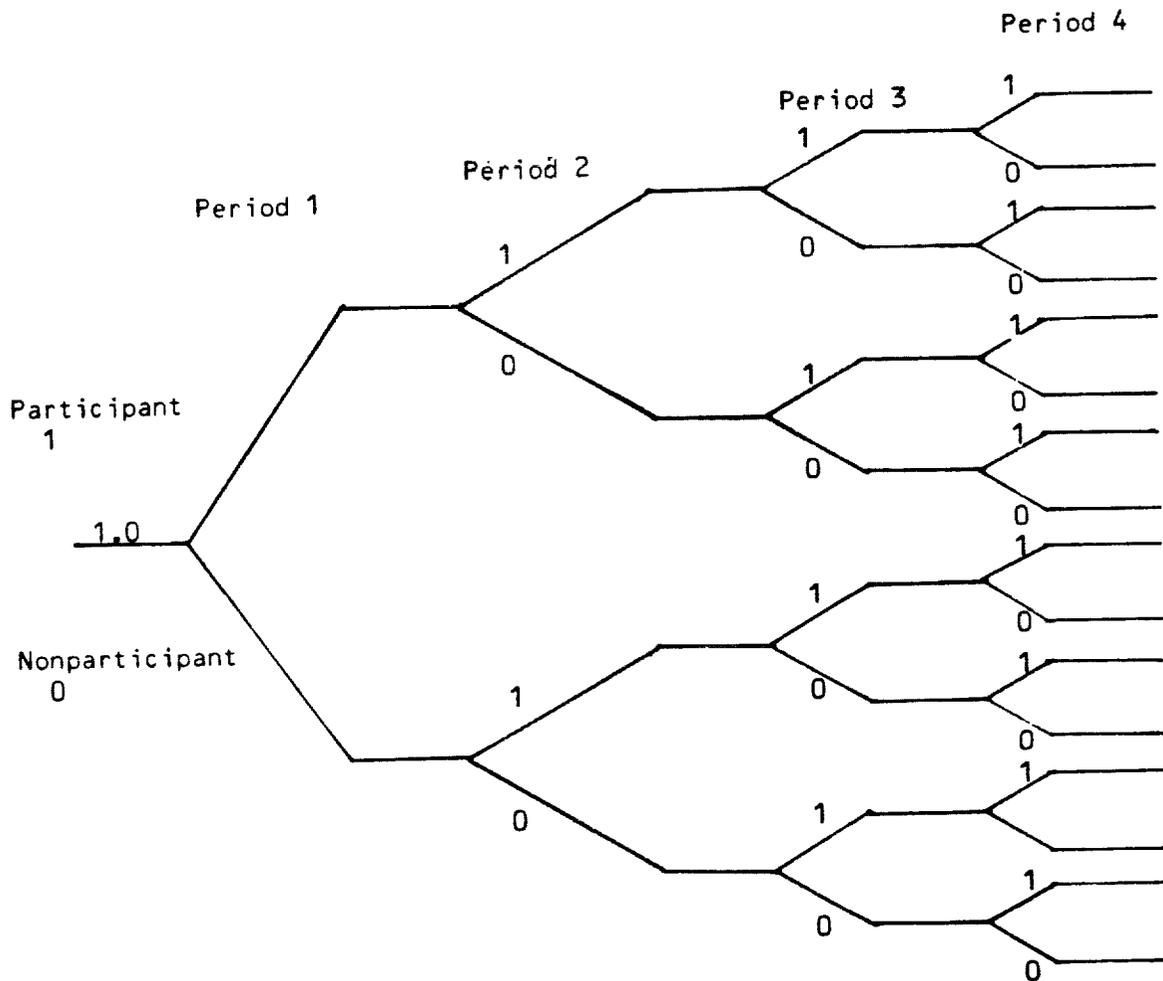


Figure VII.2

EXAMPLE OF TREE DIAGRAM FOR FOOD STAMP PROGRAM  
PARTICIPATION IN PERIOD 1 THROUGH PERIOD 4



Although the tree diagram presents a clearer picture of the pattern and duration of participation over time, as the number of periods increases the ability to easily interpret the tree diagram will decline. For long periods of time a simpler method of describing the pattern of changes is needed.

Pattern Codes. One possible method of presenting participation patterns over a long period is pattern codes. Pattern codes are created by assigning each position in a sequence of digits to a time period and assigning each participation category a particular value. Thus, if participation takes the value 1 and nonparticipation takes the value 0, the pattern code for a household which participated in the program in periods 2, 6, 8, and 9 and did not participate in periods 1, 3, 4, 5, 7, and 10 would be: 0100010110. By examining the frequency of pattern codes and the frequency of the occurrence of shorter patterns, a clear picture of the patterns and duration of program participation could be obtained.

Pattern codes would be particularly useful for summarizing the patterns of participation in multiple programs over time. While a complete understanding of program participation over time requires that the interdependence of a broad group of welfare programs be considered, the analysis of the dynamics of multiple assistance program participation is quite complicated. Even a simple case which considers only three assistance programs -- Food Stamps (FSP), Aid to Families with Dependent Children (AFDC), and Supplemental Security Income (SSI) -- results in seven possible multiple program categories: FS only, AFDC only, SSI only, FS/SSI, AFDC/SSI, FS/AFDC/SSI, and a residual category of no program participation. Pattern codes are one method for fairly concisely summarizing the dynamics of multiple program participation.

Life Tables. Although tree diagrams and pattern codes can be used to obtain information on the duration of spells of program participation, like simple averages, such approaches do not adjust for censoring of the data. One approach which does deal with the right-censoring of the data (i.e., the failure to observe the end of a spell of participation or nonparticipation) is life tables. (There is not a descriptive approach which can effectively handle left-censoring.)

Life tables are designed to measure mortality and are used by demographers and others in studies of population growth, longevity, fertility, and migration. In the context of program participation, a life table would depict the expected duration of a spell of program participation or nonparticipation for

households beginning such a spell.<sup>3/</sup> The basic measure from the life table is the survival rate--the probability that a spell will last beyond a given number of periods--and is the basis of the descriptive and analytic work in the two studies on dynamics of FSP participation.

### Issues in Multivariate Analysis

While the descriptive approaches outlined in the previous subsection can be used to provide information on the dynamics of program participation, they cannot separate the impact of household characteristics, socioeconomic variables, and program characteristics. In addition, many of the difficulties which arise in presenting changes over time in a descriptive framework (e.g., difficulties in handling multiple time periods, censoring of the data) can be controlled for in a multivariate framework. This subsection briefly considers the issues involved in the multivariate analysis of the dynamics of program participation. Since it is important to understand both the methodological issues and the alternative approaches for dealing with the issues, existing multivariate research on the dynamics of program participation are summarized. For ease of presentation, the studies have been separated into those which focus primarily on participation in the FSP (Table VII.2) and those dealing with participation in AFDC (Table VII.3). These tables and the studies in these tables will be referenced throughout this subsection.

Theoretical Model. To date there has been little work to develop a fully dynamic theory of the joint decisions on labor force and program participation. Existing empirical work on Food Stamp and AFDC program participation, with the exception of Hutchens (1981), has been based either implicitly or explicitly on a static model of utility maximization in which the household's decision on program participation depends on the returns to program participation (benefits), returns to non-participation (wages), and the costs of participation (stigma effects). The model developed by Hutchens (1981) extends the static model to a multi-period framework. The need for further theoretical work on the dynamics of program participation is evidenced by the lack of consensus in the existing work as to the proper specification of the empirical models.

One area, in particular, in which further theoretical work would be useful is in modeling the relationship between changes in household circumstances, such as marriage, and subsequent program entry or exit. Existing work has treated such changes quite

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<sup>3/</sup>Note this approach assumes that there is a single, nonrepeatable spell.

differently. Two of the AFDC studies (Bane and Ellwood, 1983; O'Neill et al., 1984) view such changes as alternative states to which the household can exit from the program, while the food stamp turnover work (Lubitz and Carr, 1985) models such changes as trigger events which influence the household's decision to enter to or exit from the program. The latter approach, which is more intuitively appealing, could be extended through the use of time-varying explanatory variables in the model.

Censored Spells. Failure to account for left- and/or right-censored spells in estimating models of spell duration can lead to biased parameter estimates. Maximum likelihood estimation techniques can be and have been used to correct for right-censoring. The majority of the existing work on program participation has corrected for right-censoring. The FSP study by Coe (1979) and a portion of the AFDC study by O'Neill et al. (1984) are the exceptions as they make no corrections for right-censoring.

Left-censoring is a much more complicated issue and, in general, the analytic issues in developing a means of correcting for the problem have not been resolved (Flinn and Heckman, 1982). The most common methods used in dealing with left-censoring have been to restrict the sample to spells which begin within the sample time frame (Appendix Table A - Kirlin and Merrill, 1983; Appendix Table B - Boskin and Nold, 1975) or to assume, implicitly or explicitly, that the prior history of the spell does not affect the spell (Appendix Table A - Coe, 1979, 1981; Carr, Doyle, and Lubitz, 1984; Lubitz and Carr, 1985; Appendix Table B - Hutchens, 1981). The first approach raises issues of sample selection bias, the second of biased parameter estimates if the assumption is incorrect. Plotnick (1983-Appendix Table B) makes an ad hoc attempt to adjust for left-censoring; however, as he notes, the method used may instead provide a correction for either unmeasured heterogeneity or duration dependence (both of which are discussed below).

Unmeasured Heterogeneity. Characteristics which vary among individuals or which vary across time for the same individual, if not controlled for the estimation, will lead to biased parameter estimates. Existing work has addressed the problem of unmeasured heterogeneity in one of two ways: O'Neill et al. (1984-Appendix Table B) attempted to find measure of characteristics which are typically unmeasured using a series of questions designed to measure personality traits such as motivation and efficacy. Carr, Doyle, and Lubitz (1984-Appendix Table A) and Lubitz and Carr (1985-Appendix Table A) estimate models, based on Tuma (1982), which allow program entry and exit to depend on both observed characteristics and a random disturbance term. The unmeasured

components are assumed to be uncorrelated across spells within this framework. Flinn and Heckman (1982) present a more general model specification in which correlation of the unobserved components is permitted across spells.

The remaining studies in Appendix Tables A and B either ignore the issue of unmeasured heterogeneity or address the problem indirectly through corrections for other problems.

Duration Dependence. Duration dependence arises if an individual's probability of exiting from a program rises or falls with the length of time in which they participate in the program. In other words, the causal relationship changes with time on the program. Failure to consider duration dependence may lead to biased parameter estimates.

A decline over time in the probability of exit cannot be unambiguously attributed to duration dependence since exit probabilities for a group of heterogeneous individuals with constant exit rates will decline with time on the program. This decline occurs since those individuals with high exit rates will leave the program, leaving on the program the individuals with lower exit rates. Since both duration dependence and population heterogeneity can produce a declining exit probability, including time on the program as an explanatory variable will not necessarily control for duration dependence. If there is unmeasured heterogeneity in the population, time on the program may provide a control for those characteristics associated with individuals with lower exit rates. Of the studies summarized, only Coe (1981-Appendix Table A) and O'Neill et al. (1984-Appendix Table B) attempt to deal explicitly with the issue of duration dependence by estimating separate exit probabilities by length of spell. Several other studies (Appendix Table A - Carr, Doyle, and Lubitz, 1984; Lubitz and Carr, 1985; Appendix Table B - Plotnick, 1983) make implicit assumptions about the nature of duration dependence in their choice of estimation technique -- all assume no duration dependence. A more appropriate method would be to estimate models which explicitly incorporate time dependent elements and test for duration dependence. Such approaches are discussed in Tuma (1982) and Flinn and Heckman (1982).

Prior History. If an event is repeatable, as is program participation, then it is not reasonable to assume that successive occurrences of the event are independent, even after controlling for household characteristics. Although the assumption of the independence of each occurrence of program participation is commonly made, several of the existing studies include as explanatory variables measures of previous program experience (Appendix Table A - Coe, 1981; Kirlin and Merrill 1983; Appendix



the collection and preparation of the data and the construction of the data base to be used in the analysis. In this subsection, issues related to data content, data preparation, and data access and management are addressed in turn.

Data  
Content

While SIPP is an extremely rich data set, it is important to note that because of the need to satisfy competing program and research interests SIPP does not have all of the information needed for analyzing income and program participation patterns. In particular, there is not an integrated eligibility module in SIPP such as that which was administered in Wave 2 of the 1979 ISDP. In order to determine program participation rates or to analyze the determinants of program participation, it is necessary to identify the pool of eligible units. Nationally representative household surveys such as SIPP are the only data sources which permit this identification. However, in SIPP the assets and expense information needed to determine program eligibility was designed to be collected over a series of topical modules administered across several waves. Administering these modules at different times introduces a number of complexities in their combined use to simulate program eligibility. Aside from the increased cost of linking the data, analytic problems arise because of sample attrition and changes in household and family circumstances between survey waves. Furthermore, there is no guarantee that all of the expense information will be collected on a regular schedule because these questions are part of the variable topical module.

Another area in which SIPP is weak is in the collection of information on the duration of participation in the major transfer programs. There is one topical module (subject to revision) which provides a history of program participation. However, this module does not provide the information needed to identify the beginnings of all spells, particularly those completed prior to the fifth wave. As left-censoring of spells is a serious analytic problem it would be preferable to replace this module with additional core questions in the first wave regarding the length of time program participants have been participating in the relevant program.

Other areas of concern include the methods being employed to determine family composition within a household (SIPP relies on a cross section definition developed from individuals' relationships to the household head), the absence of complete information on school enrollment,<sup>4/</sup> and the lack of precise questions on

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<sup>4/</sup> Questions on school enrollment are being added in the 1985 panel.

individuals' covered by the less known assistance programs like the Special Supplemental Food Program for Women, Infants and Children (WIC) and the School Lunch and School Breakfast Programs.

Data  
Preparation

The issues which arise in data preparation involve those, such as data imputation, that are not unique to panel data but are exacerbated by the need to construct longitudinal files and those, such as inconsistencies in month-to-month income data, that are unique to panel data.

Validity of Observed Month-to-Month Changes. Perhaps the major advantage of SIPP is the ability to observe month-to-month changes in income and program participation instead of being restricted to annual observations and imputing monthly variation. However, research using the 1979 ISDP test panel (Moore and Kasprzyk, 1984) indicates the presence in the data of some implausible fluctuations--probably due at least in part to the imputation procedures used to correct for missing data and other data base construction problems.

Moore and Kasprzyk found that there was more variation reported between one month and the next when the months were in different waves than when they were in the same wave of the ISDP. Some of this difference may be due to imperfections in recall by the respondents or to errors in the linking of the responses of individuals between waves. But some of it may be due to imputations for missing reciency information which appeared reasonable from a cross-section perspective but in fact introduce spurious variation in a longitudinally linked file. It is impossible to measure the extent of the latter for the ISDP test panel because there are no flags to identify nonresponses. However, the SIPP file will include imputation flags which will enable the users to determine whether any observed variation could be due to editing for nonresponse. In addition, improved methods of tracking individuals over time under SIPP should reduce the problem of mismatching the responses of individuals between waves.

Data Imputation and Longitudinal Weights. Panel surveys, like all surveys, are subject to problems of nonresponse. However, in panel surveys the researcher must deal with problems of nonresponse to particular survey waves, as well as nonresponse to specific items in the interview and failure to respond to the survey at all. To the extent that these types of nonresponse are not randomly distributed, nonresponse will introduce bias into the data. In order to minimize the extent of such bias and make full use of the information collected, data imputation and/or weighting is needed.

In cross-section analysis, item nonresponse is generally dealt with using data imputation, while interview nonresponse is handled with sample weights. Nonresponse in the longitudinal context is much more complex. For the imputation of item nonresponse, the typical cross-section approach of data imputation based on values for similar individuals in the same time period will produce false variation over time since the imputed value is likely to be different from values in preceding and subsequent periods (as well as from the true missing value). Imputation approaches are needed which consider the full set of data available over time in the longitudinal file.

At present, appropriate techniques for longitudinal imputation are not available. As a result, no longitudinal imputation was done for the ISDP test data and, the research summarized in this monograph attempted to adjust for nonresponse using ad hoc procedures (primarily by restricting the analysis sample to those households which had data for more than half of the responses deemed crucial to the studies). However, longitudinal imputations are planned by the Census Bureau for SIPP. Possible approaches to such imputation have been outlined in Samuhel and Huggins (1984) and Kalton and Lepkowski (1983). The fact that cross-section wave-specific imputation is being done first in SIPP will complicate the task of longitudinal imputation further and will inevitably lead to noncomparabilities between the cross-section files and the longitudinal files.

Interview nonresponse in cross-section files is dealt with by increasing the weights of interview respondents so that they represent the interview nonrespondents as well. In the context of longitudinal files, this approach would be appropriate for those households which did not respond to any of the waves of the survey but would not necessarily be appropriate for those households who failed to respond to a subset of the interview waves. The problem with creating weights which are representative of the population within each wave (i.e., adjusting for nonresponse within each wave) is that an individual's weight is likely to vary across waves, making analysis difficult. For the research reported in this monograph, relative weights were constructed which are, in effect, the inverse of the sampling ratio for primary sample members. These weights made it possible to obtain unbiased estimates of the distributional characteristics of the population; for example, the estimate of the proportion of the population receiving food stamps should be unbiased. However, the weights will not generate aggregate totals that match totals available from other data; for example, the estimated number of participant households will not necessarily match FSP administrative data.

Recent work by Judkins et al. (1985), Little and David (1983), Kalton and Kasprzyk (1982) and Kalton (1984), among others, has examined various issues involved in nonresponse in panel data and has suggested several methods of dealing with such nonresponse using longitudinal weighting, longitudinal imputation, and combinations of imputation and weighting. The Census Bureau is currently carrying out extensive research on nonresponse and will incorporate its findings into the SIPP longitudinal files.

Data Access  
and  
Management

Like the questionnaires themselves, and like the SIPP files now becoming available, the ISDP tape files available from the Census Bureau were organized in a series of cross-section files, one for each wave.<sup>5/</sup> The data were grouped by household, where a household simply represents a group of people living together at the time of the interview. Within each household there were records for each person present at the interview as well as for each individual present at any time during the three calendar months preceding the month of the interview. The files included interview-specific information as well as retrospective data covering the three calendar months prior to the interview.

A number of features of the ISDP survey panel and resulting public use files--which are also true of the SIPP cross-section files now being released by the Census Bureau--complicated data access.<sup>6/</sup>

- o Staggered Interviewing. Because one-third of the sample was interviewed in each of the three months constituting one wave, the reference period for the three months prior to the interview is a different calendar period for each third of the sample (rotation group). Hence, data typically must be accessed from more than one interview to study a common calendar period for the whole sample.
- o Different Reference Periods for Wave-Specific Information. A number of variables (such as relationship to household head, home ownership) were asked as of the time of the interview, whereas data on employment and income were asked as of the three months preceding the month of the interview. Thus, for any one interview, there is a potential mismatch between the

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<sup>5/</sup> This section summarizes Pat Doyle and Constance F. Citro, The ISDP/RAMIS II System and Development. Washington, D.C., Mathematica Policy Research, May 1984.

<sup>6/</sup> There were additional complicating features that do not characterize SIPP and are not listed here.

wave-specific data and the monthly data--since the monthly data for the month of the interview were asked at the subsequent interview.

- o Skipping a Wave. Because of scheduling requirements for other waves, the interviewing schedule had the third rotation group skip the Wave 4 interview. (This is similar to the SIPP situation in which only three of four rotation groups were administered Wave 2.) Such skipping meant that a fraction of the sample did not have any information on the interview-specific supplemental items. It also meant that to analyze all cases for the reference months involved the user must access data from two waves.

An important objective of the system of data access for the ISDP files was to allow researchers flexibility in defining what constitutes the same unit over time. For one application it may be appropriate to view households as the same if all adults remain the same. For another it may be sufficient for the reference person (household head) to be the same. For a third, the changes may have to be restricted to a child growing to adulthood and leaving the household. From the cross-section ISDP files, the user knows who lived with whom at the time of each interview. In addition, historical data were collected on dates when persons moved in or out and the relationship of the outmovers to the existing sample members.<sup>7/</sup> From these data, monthly household composition for the ISDP file was determined on a longitudinal basis as follows:

- o Composition at the time of the interview was deemed to be the composition during the interview month.
- o In situations where no composition change was observed between two consecutive waves, N and N+1, the Wave N+1 composition was assigned to intervening months.
- o In situations where composition was observed to have changed between Waves N and N+1, an attempt was made to pinpoint the date of that change based on individuals' reported enter and left dates in Wave N+1. Composition for months prior to that

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<sup>7/</sup>Note that all dates were collected with the same series of questions. Therefore, in order to distinguish between, say, enter dates which imply a simple move from one house to another and enter dates which denote entrance into the sample it was necessary to link data from more than one wave.

date was obtained from Wave N and composition for subsequent months was obtained from Wave N+1.

- o For months preceding the Wave 1 interview, due to the absence of an earlier wave, composition was assigned according to function of the relationship reported at the time of the Wave 1 interview.

Given the rules for food stamp participation, in most cases the composition of the food stamp unit was expected to be the same as that of the household. However, previous work had found that in a number of cases a subset of the household was the food stamp unit and in a few cases more than one subset were food stamp units.

The determination of food stamp unit composition by month for recipient households on the ISDP file was a two-stage process.<sup>8/</sup> In the first stage, the composition of the units was determined for the three reference months of each wave for the household as it existed at the time of the interview month for that wave. In the second stage, a composition was adjusted to make it consistent with the monthly household composition file. If the monthly household composition file showed that the person reporting food stamp receipt was not present during the first reference month, for example, then the food stamp files were edited to show that the food stamp unit was formed in the second month.

It is interesting to note that in no wave did more than 5 percent of households contain more than one unit reporting food stamp reciprocity. And in no case did more than two food stamp units within a household appear genuine.

The need to arrange information in analysis files according to the researcher's definition of a longitudinal unit makes heavy demands on the data access system. It implies a software system that is capable of using information on which persons were included in the researcher's definition of the continuing unit to assemble the relevant information from the data base. Commercial software called data base management systems (DBMS) is capable of performing that function, although they add overhead cost and other problems to the data access function. Considerable experimentation is now underway on the use of such systems for ISDP and SIPP access.

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<sup>8/</sup>No attempt was made to determine the food stamp unit composition for households who were eligible for food stamps but not recipients.

## VIII. ISDP RESEARCH AND THE PROMISE OF SIPP

As discussed in Chapter I the two objectives of this monograph were to report the findings from the FSP research based on the ISDP test panel and to provide a basis for learning about the ISDP experience by sharing the problems faced, approaches used, and limitations of this work. The research summarized in this monograph has used the ISDP test panel to address questions on a wide range of food stamp issues, including the patterns of receipt of food stamps and other benefits over time, the impact of changes in household circumstances on the duration of spells of participation in the FSP, the assumptions on intra-year income receipt underlying the FSP microsimulation model used by FNS, and the factors affecting participation in the FSP. SIPP, with its larger sample and longer time period, will provide a stronger base for addressing these and other policy questions concerning the FSP.

One important by-product of the ISDP-based studies has been a greater appreciation of the complexity of the analytical and data issues which are inherent in the use of panel data. Although much has been learned from the research summarized here, further work is needed in a number of methodological and data-related areas. Of particular importance to research on FSP issues are: determining the appropriate longitudinal household unit and developing data base management systems which allow flexibility in the definition of the household unit over time, developing estimation techniques to handle cases for which the beginning of a food stamp spell is not observed (i.e., left-censoring), and developing appropriate techniques for longitudinal weighting and imputation for nonresponse. Several of these issues are being addressed by the Census Bureau in the development of the SIPP public use files; however, there will be a number of issues remaining to be dealt with by analysis using SIPP. It is to be hoped that the ISDP research summarized in this monograph will provide some guidance for those analysts.

Although not addressed directly in this monograph, it is clear that substantial resources have been allocated to the development and implementation of SIPP. Furthermore, there is a substantial investment of time, effort, and money required by the users of SIPP in order to undertake analyses which exploit the longitudinal nature of the data. While much has been learned about the appropriate data management and analytical techniques to be used with panel data there are many issues still to be resolved. Given these costs, it is important to consider whether the policy questions which can be best addressed with the longitudinal files of SIPP--the stability of program populations, the impact of program changes, the behavioral responses of program participants and nonparticipants, the processor by which individuals enter or leave program participation--warrant the continued investment in the promise of SIPP.

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APPENDIX FIGURE A

SURVEY WAVES -- SIPP  
THROUGH 1984

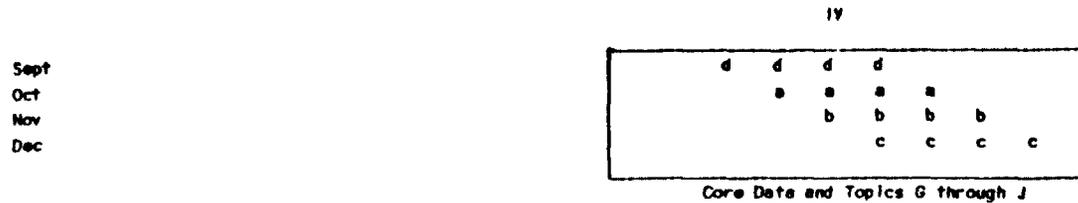
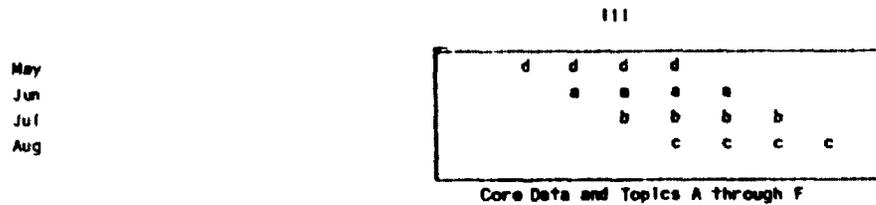
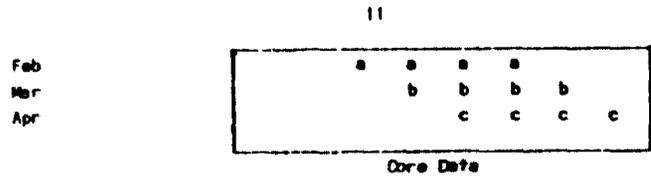
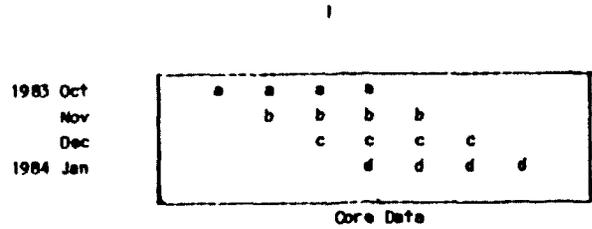
Interview  
Month

Legend

- a: 84 Panel Rotation Group 1
- b: 84 Panel Rotation Group 2
- c: 84 Panel Rotation Group 3
- d: 84 Panel Rotation Group 4

Core Data: Income, Program Participation,  
Labor Force activity, composition

- Topic
- A: Health and Disability
  - B: Work History
  - C: Education History
  - D: Health Care Utilization and Financing
  - E: Social Services in Health
  - F: Social Services in Training
  - G: Assets and Liabilities
  - H: Pension and Retirement
  - I: Housing Costs
  - J: Energy Usage



Reference  
Month



1985 - SUBJECT TO REVISION

Interview  
Month

Y (84) I (85)

1985 Jan	d	d	d	d				
Feb	e,e	e,e	e,e	e,e				
Mar		b,f	b,f	b,f	b,f			
Apr			c,g	c,g	c,g	c,g		
May				h	h	h	h	

Core and Topics K through O for the 84 panel

VI (84) II (85)

May			d	d	d	d		
Jun			e,e	e,e	e,e	e,e		
Jul				b,f	b,f	b,f	b,f	
Aug					c,g	c,g	c,g	c,g

Core and Topics P through S for 84 panel

VII (84) III (85)

Sep			d,h	d,h	d,h	d,h		
Oct				e,e	e,e	e,e	e,e	
Nov					b,f	b,f	b,f	b,f
Dec						c,g	c,g	c,g

Core and Topic G for both Panels  
and Topic H for 84 Panel

Legend (continued)

- e: 85 Panel Rotation Group 1
- f: 85 Panel Rotation Group 2
- g: 85 Panel Rotation Group 3
- h: 85 Panel Rotation Group 4

- Topic:
- K: Child Care
  - L: Duration of Welfare
  - M: Support of Non Household Members
  - N: Reservation Wage
  - O: Work Related Expenses
  - P: Annual Income and Taxes
  - Q: Employee Benefits
  - R: Education Financing and Enrollment
  - S: Training Questions

Reference  
Month

S	O	N	D	J	F	M	A	M	J	J	A	S	O
e	c	o	e	a	e	e	p	e	u	u	u	e	c
p	f	v	c	n	b	r	f	y	n	l	g	p	f

|-----1984-----|-----1985-----|

APPENDIX FIGURE A (continued)

1986 SUBJECT TO REVISIONS  
(excludes 1986 panel)

Interview  
Month

Legend (continued)

Topic T: Marital, Fertility, and  
Migration History  
U: Household Relationships

VIII (84) IV (85)

1985 Jan	d,h	d,h	d,h	d,h
Feb	e,e	e,e	e,e	e,e
Mar		b,f	b,f	b,f
Apr		c,g	c,g	c,g

Core data and Topic T for both panels  
and Topics M, N, O, and U for 84 panel

IX (84) V (85)

May	d,h	d,h	d,h	d,h
Jun	e,e	e,e	e,e	e,e
Jul		b,f	b,f	b,f
Aug		c,g	c,g	c,g

Core data and Topics P, Q, R, for both panels  
and Topic S for 84 panel

VI (85)

Sep									
Oct									
Nov									
Dec									

Core data and Topic G

Reference  
Month

S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
e	f	v	c	n	b	a	p	y	n	y	g	p	f	v
-----1985-----							-----1986-----							

APPENDIX TABLE A

SUMMARY OF THE METHODOLOGY OF MULTIVARIATE STUDIES ON THE DYNAMICS OF FOOD STAMP PROGRAM PARTICIPATION

Study	Program(s) Considered	Issue(s) Addressed	Sample Time Frame	Sample, Sample Period (Sample Size)	Data Source (Limitations)	Unit Followed Over Time	Definition of a Spec.	Endogenous variables
Coe (1979)	FS	Determinants of turnover in FSP population	Two points-in-time	All households in 1977 which did not use food stamps in 1973 (5,132 households)  All households in 1977 which did use food stamps in 1973 (835 households)	PSID (annual data)	Head of household	Receipt of food stamps in 1976	Whether household received food stamps in 1976 given did not receive in 1973  Whether household received food stamps in 1976 given food stamps were received in 1973
Coe (1981)	FS, AFDC, SSI, GA, and Social Security	Patterns of participation in welfare programs  Determinants of turnover in FSP population	Fixed time-period	All individuals for which there was data for the entire period 1969-1978 (5,573 individuals)	PSID (annual data)	Head of household	Number of consecutive calendar years of receipt of any welfare income	Whether individual received any welfare income in a given year  Whether individual received any welfare income in only one of the ten sample years  Whether individual received any welfare income in six or more of the ten sample years  Whether individual started receiving welfare given previously not receiving  Whether individual stopped receiving welfare given previously receiving
Kirlin and Merrill	FS and FS Inclusion	Determinants of turnover in	Fixed time-period	Random sample of FS cases from	Case files of the South East	Head of household	Number of consecutive months	Probability of exit from FS

APPENDIX TABLE A (continued)  
Page 1 (continued)

Study	Program(s) Considered	Issue(s) Addressed	Sample Time Frame	Sample, Sample Period (Sample Size)	Data Source (Limitations)	Unit Followed Over Time	Definition of a Spell	Endogenous Variables
Carr, Doyle, and Lubitz (1984)	FS	Determinants of turnover in FSP population	Fixed time- period	Household units, 1979 (667 food stamp spells, 7,276 non-food stamp spells)  FS eligible household units, 1979 (506 food stamp spells, 1,344 non-food stamp spells)	ISDP	Households headed by primary sample members followed regardless of changes in household composition	Number of con- secutive months during which family receives food stamps  Number of con- secutive months during which family receives no food stamps	Probability of entry to FSP given not previously on food stamps  Probability of exit from FSP given previously on food stamps
Lubitz and Carr (1985)	FS	Determinants of turnover in FSP population  Relationship of "trigger events" (e.g., job loss or gain, change in family status) and FSP popula- tion turnover	Fixed time- period	Household units, 1979 (625 food stamp spells, 5,295 non-food stamp spells)	ISDP	Households headed by primary sample members followed regardless of changes in household composition	Number of con- secutive months during which family receives food stamps  Number of con- secutive months during which family receives no food stamps	Probability of entry to FSP given not previously on food stamps  Probability of exit from FSP given previously on food stamps

Study	Estimation Technique	Types of Exogenous Variables Included	Method of Handling Right-censored Spells <sup>1</sup>	Method of Handling Left-censored Spells <sup>2</sup>	Method of Handling Prior Event History	Method of Handling Heterogeneity <sup>3</sup>	Method of Handling Duration Dependence <sup>4</sup>
Coe (1979)	Path model regression analysis	Personal characteristics in 1973 and 1976 Family status in 1973 and 1976 Changes in labor force status between 1973 and 1976 Changes in AFDC status between 1973 and 1976	Not considered	Not considered	Not considered	Not considered	Not considered
Coe (1981)	Pooled ordinary least squares	Personal characteristics at beginning of sample period Family status in each year Labor force status in each year Labor force conditions in each year Previous welfare program experience	Not considered	Not considered	Included measures of previous welfare program experience as explanatory variables	The correction for prior event history may also correct for unmeasured heterogeneity	Estimated separate equations for probability of one year of welfare receipt and probability of 6 or more years of welfare receipt
Kirchin and Merrill (1983)	Maximum likelihood estimation of discrete analogue to continuous hazard model for each assistance category	Personal characteristics at beginning of spell Labor force status at beginning of spell Labor force conditions within spell	Incorporated in the likelihood function	Restricted spells to those beginning within sample period	Included measures of previous program participation as explanatory variables	The correction for duration dependence may also control for heterogeneity	A measure of length of spell was included as an explanatory variable

APPENDIX TABLE A (continued)  
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Study	Estimation Technique	Types of Exogenous Variables Included	Method of Handling Right-censored Spells <sup>1</sup>	Method of Handling Left-censored Spells <sup>2</sup>	Method of Handling Prior Event History	Method of Handling Heterogeneity <sup>3</sup>	Method of Handling Duration Dependence <sup>4</sup>
Kirlin and Merrill (1983) (continued)		Program characteristics at beginning of spell Occurrence of a recertification within spell Number of months of spell (For analysis of case re-opening, variables defined as of end of previous spell)					
Carr, Doyle, and Lubitz (1984)	Maximum likelihood estimation of continuous constant hazard model (Event history analysis)	Personal characteristics at beginning of spell Labor force status at beginning of spell Program characteristics at beginning of spell	Incorporated in the likelihood function	Assumed prior history of spell does not affect spell	Each occurrence assumed to be independent	A random error term was included in the model to reflect unmeasured heterogeneity	Transitions assumed to be independent of state
Lubitz and Carr (1985)	Maximum likelihood estimation of continuous constant hazard model (Event history analysis)	Personal characteristics at beginning of spell and changes within spell Labor force status at beginning of spell and changes within spell	Incorporated in the likelihood function	Assumed prior history of spell does not affect spell	Each occurrence assumed to be independent	A random error term was included in the model to reflect unmeasured heterogeneity	Transitions assumed to be independent of state

<sup>1</sup> A right-censored spell is a spell for which the ending date is not observed.

<sup>2</sup> A left-censored spell is a spell for which the beginning date is not observed.

<sup>3</sup> Heterogeneity refers to characteristics which vary among individuals or across time for the same individual.

<sup>4</sup> Duration dependence arises if an individual's probability of exiting from the program changes with the length of time participating in the program.

## APPENDIX TABLE B

## SUMMARY OF THE METHODOLOGY OF MULTIVARIATE STUDIES ON THE DYNAMICS OF AFDC PROGRAM PARTICIPATION

Study	Program(s) Considered	Issue(s) Addressed	Sample Time Frame	Sample, Sample Period (Sample Size)	Data Source (Limitations)	Unit Followed Over Time	Definition of a Spell	Endogenous Variables
Roskin and Noid (1975)	AFDC	Determinants of turnover in the AFDC popu- lation	Opening cohort	Female headed households with children on welfare in 1965, 1965-1970 (Number of spells unknown, 440 households)	State of California AFDC five- year survey (nonrepre- sentative sample)	Female household head	Number of consecutive months during which family receives AFDC income  Number of consecutive months during which family receives no AFDC income (for families with at least one spell on AFDC)	Probability of exit from AFDC given previously on AFDC  Probability of re-entering AFDC given previously not on AFDC
Hutchens (1981)	AFDC	Determinants of turnover in the AFDC popu- lation	Fixed time- period	Female headed households with children, 1970- 1971 (319 AFDC spells, 454 non-AFDC spells)	PSID (annual data)	Sample restricted to households with same headship status in 1970 and 1971	Number of consecutive calendar years during which family receives AFDC income  Number of consecutive calendar years during which family receives no AFDC income	Probability of receiving AFDC payments in 1971 given not pre- viously receiv- ing AFDC  Probability of not receiving AFDC payments in 1971 given pre- viously receiv- ing AFDC
Plotnick (1983)	AFDC	Determinants of turnover in the AFDC popu- lation	Fixed time- period	Female headed households with children, 1971- 1974 (384 AFDC spells, 483 non-AFDC spells)	Control group of the DIME (non-represen- tative sample)	Female household head (Marriage treated as sample attrition)	Number of consecutive months during which family receives AFDC income  Number of consecutive months during which family receives no AFDC income	Probability of entry on AFDC given not pre- viously on AFDC  Probability of exit from AFDC given previously on AFDC
Bane and Ellwood (1983)	AFDC	Duration of welfare spells  Determinants of routes of exit off of welfare	Fixed time- period	Female headed households with children, 1968-1979 (477 spells)	PSID (annual data)	Female household head (Marriage as route of exit off welfare)	Number of consecutive calendar years during which household receives annual welfare income of more than \$250	Probability of exiting from welfare by a particular route (via marriage, earnings increase, or other) given previously on welfare

APPENDIX TABLE B (continued)  
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Study	Program(s) Considered	Issue(s) Addressed	Sample Time Frame	Sample, Sample Period (Sample Size)	Data Source (Limitations)	Unit Followed Over Time	Definition of a Spell	Endogenous Variables
O'Neill, Wolf Bassi, and Hannan (1984)	AFDC	Duration of welfare spells  Determinants of routes of exit off of AFDC	Fixed time- period	(1) Female headed households with children, 1968- 1981 (727 spells)	(1) PSID (annual data)	(1) Female household head (Marriage treated as route of exit off AFDC)	(1) Number of consecu- tive calendar years during which family receives AFDC income	(1) end (2) Probability of exit from AFDC by a particular route (via marriage or other) given previously on AFDC
				(2) Mother-child families, where mothers were 14- 24 in 1968, 1968-1979 (1,044 spells)	(2) NLS (annual data; no data for 1974, 1976, and 1979)	(2) Females who were 14-24 in 1968	(2) Number of consecu- tive calendar years during which family receives welfare	
				(3) AFDC case- opening cohorts dating from 1965 through first quarter 1981, 1965-May 1982 (11,910 spells)	(3) AFDC caseload information (no measures of recipient characteris- tics)	(3) Head of house- hold	(3) Number of months AFDC case remains open	(3) Log of the AFDC exit rate for each cohort in each year

Study	Estimation Technique	Types of Exogenous Variables Included	Method of Handling Right-censored Spells <sup>1</sup>	Method of Handling Left-censored Spells <sup>2</sup>	Method of Handling Prior Event History	Method of Handling Heterogeneity <sup>3</sup>	Method of Handling Duration Dependence <sup>4</sup>
Boskin and Noid (1975)	Logit	Personal characteristics at beginning of spell Labor force status (imputed) at beginning of spell	Incorporated in the likelihood function	Samples included only families beginning welfare spell in first month of study	Each occurrence assumed to be independent	Not considered	Transitions assumed to be independent of state
Hutchens (1981)	Logit	Personal characteristics in current year Labor force status in current year Program characteristics in current year	Incorporated in the likelihood function	Assumed prior history of spell does not affect spell	Binary variables indicating receipt of AFDC payments in earlier periods were included as explanatory variables	The correction for prior event history may also correct for unmeasured heterogeneity	The correction for prior event history may also correct for duration dependence
Plotnick (1985)	Maximum likelihood estimation of continuous constant hazard model (Event history analysis)	Personal characteristics at beginning of spell Labor force status at beginning of spell Labor force conditions at beginning of spell Program characteristics at beginning of spell	Incorporated in the likelihood function	A binary variable indicating the spell was in progress in January 1971 was included as an explanatory variable	Number of months of AFDC receipt in months 1 to 24 used as an explanatory variable in obtaining estimates for entry and exit rates for months 25 and 48	The correction for left-censoring may also correct for unmeasured heterogeneity	The correction for left-censoring may also correct for duration dependence
Bene and Ellwood (1983)	Multinomial logit on all years combined	Personal characteristics at beginning of spell Labor force status in year prior to spell Labor force conditions at beginning of spell Program characteristics in each year Duration of spell Reason for entry to AFDC	Incorporated in the likelihood function	Restricted spells to those beginning within panel period	Each occurrence assumed to be independent	Not considered	Estimated a different base exit probability for each year of spell (explanatory variables alter base exit probabilities proportionally in each year)

Study	Estimation Technique	Types of Exogenous Variables Included	Method of Handling Right-censored Spells <sup>1</sup>	Method of Handling Left-censored Spells <sup>2</sup>	Method of Handling Prior Event History	Method of Handling Heterogeneity <sup>3</sup>	Method of Handling Duration Dependence <sup>4</sup>
O'Neill, Wolf, Bassi, and Hannan (1984)	(1) and (2) Maximum likelihood estimation of discrete analogue to continuous hazard model	(1) and (2) Personal characteristics at beginning of spell and changes in selected characteristics over course of spell Labor force status at beginning of spell and in each year Labor force conditions at beginning of each spell and in each year Program characteristics in each year Duration of spell Reason for entry to AFDC	(1) and (2) Incorporated in the likelihood function	Restricted spells to those beginning within panel period	Each occurrence assumed to be independent	(1) and (2) Included personal initiative and competence score to reflect usually unmeasured characteristics	A series of binary variables indicating age of spell were included as explanatory variables
	(3) Ordinary least squares	(3) Labor force conditions in each year Program characteristics in each year Duration of spell Measures of secular and seasonal timing of spell	(3) Not considered			(3) Not considered	

<sup>1</sup> A right-censored spell is a spell for which the ending date is not observed.

<sup>2</sup> A left-censored spell is a spell for which the beginning date is not observed.

<sup>3</sup> Heterogeneity refers to characteristics which vary among individuals or across time for the same individual.

<sup>4</sup> Duration dependence arises if an individual's probability of existing from the program changes with the length of time participating in the program.