

Food Stamp Participation and Reasons for Nonparticipation: 1986

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ABSTRACT: The decision of eligible households to participate in the food stamp program is analyzed utilizing the 1986 Panel Study of Income Dynamics. Less than one-half of the sample of eligible households receive food stamps in 1986. The results of a multinomial logit model suggest that participation is related negatively to the age and educational level of the household head and positively to the benefit level. Participation is lower for single men and households residing in the West and higher for people with disabilities and households receiving some form of public transfer income. Problems regarding information about food stamps and personal attitudes toward food stamp use have the greatest impact on the decision to participate.

KEY WORDS: barriers to participation, food stamp participation, multinomial logit.

Introduction

Hunger remains an issue of public concern in the United States. One recent study estimated that 4 million children (under the age of

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12) in the United States “go to bed hungry or skip meals” at least part of the time, and an additional 9.6 million children are at risk of hunger (“Hungry Children Are Focus of Study,” 1995). Such reports persist despite the fact that there are a number of food assistance programs available to low-income households. The largest such program is the food stamp program, which in 1993 reached an average of 27 million recipients per month (U.S. Bureau of the Census, 1994, pg. 385). Despite this large number of recipients, reports of hunger raise the issue of whether the food stamp program is reaching all intended beneficiaries.

Several studies have addressed the question of: (a) whether eligible households actually receive food stamp benefits, and (b) reasons for nonparticipation (e.g., Blaylock & Smallwood, 1984; Capps & Kramer, 1985; Coe, 1983; Epperson, Huang, Fletcher, & Searce, 1980; Lane, Kushman, & Ranney, 1983; MacDonald, 1977). Most have attempted to identify household, demographic, and economic characteristics that distinguish participants from eligible nonparticipants. The results of individual studies differ in detail, but some general conclusions can be drawn. The probability of participation has been found to be related negatively to the educational level of the household head (Capps & Kramer, 1985; Coe, 1983; Lane, Kushman, & Ranney, 1983), and for eligible households headed by someone with a significant attachment to the labor force (Capps & Kramer, 1985; Coe, 1983; Epperson, Huang, Fletcher, & Searce, 1980; Lane, Kushman, & Ranney, 1983). Participation is higher for households headed by non-Whites (Capps & Kramer, 1985; Lane, Kushman, & Ranney, 1983) and those receiving other forms of public assistance (Capps & Kramer, 1985; Coe, 1983; Lane, Kushman, & Ranney, 1983) and lower for homeowners (Capps & Kramer, 1985; Lane, Kushman, & Ranney, 1983). Participation also is related negatively to the level of household income (Coe, 1983; Epperson, Huang, Fletcher, & Searce, 1980; Lane, Kushman, & Ranney, 1983) and positively related to family size (Capps & Kramer, 1985; Coe, 1983; Epperson, Huang, Fletcher, & Searce, 1980; Lane, Kushman, & Ranney, 1983).

These studies have identified household characteristics which are statistically significant in distinguishing participants from eligible nonparticipants. However, the reasons underlying statistical significance have been left largely to conjecture. Why is it, for example, that eligible households which receive other forms of public assistance are more likely to participate in the food stamp program, *ceteris paribus*?

Are they better informed of their eligibility than other eligible households? Do they face fewer administrative difficulties in obtaining food stamps than other eligible households face? Do they feel less stigma about receiving food stamps or do they perhaps have greater need than other households?

To address this issue, responses to survey questions regarding reasons for nonparticipation have been investigated (Blaylock & Smallwood, 1984; Coe, 1983; U.S. General Accounting Office, 1990). This study extends previous studies in two directions. First, the statistical results are linked explicitly to a utility maximizing model of the participation decision facing food stamp eligible households. Second, a statistical methodology is suggested that uses survey responses to explain the relationship between household demographic and economic characteristics and behavioral reasons for nonparticipation. This methodology offers certain advantages relative to previous studies. Coe (1983) used ordinary least squares (OLS) regression analysis on a categorical dependent variable, suggesting possible imprecise statistical estimates.¹ The studies by Blaylock and Smallwood (1984) and the U.S. General Accounting Office (1990) utilized a multinomial logit model, which is statistically more appropriate than OLS. However, these two studies confined their analyses to eligible nonparticipants only and did not include eligible participants. Because eligible participants were not included in these studies, interpretation of the results is unclear. For example, the Blaylock and Smallwood (1984) study found that the elderly and the nonelderly cited fairly similar reasons for nonparticipation. These findings may indicate that the elderly and nonelderly face similar barriers to participation. However, if elderly and non-elderly are equally likely to cite a particular reason for nonparticipation, because there are more elderly than non-elderly nonparticipants, a particular reason results in substantially more elderly people not participating than non-elderly. Therefore, many qualified elderly people are not receiving the benefits which would improve the quality of their lives.

The objective of the analysis in this paper is to overcome, to some degree, the limitations of previous studies. Utilizing data from 1986, a multinomial logit model is estimated for *all* eligible households. Compared to previous studies, this approach allows a more direct interpretation (as explained below) of the behavioral reasons underlying the statistical significance of various characteristics of eligible households relative to participation in the food stamp program.

The Data

The data come from Wave XX of the Michigan Panel Study of Income Dynamics (PSID), which contains information about household income, demographic characteristics, and food stamp use for the year 1986 (Survey Research Center, 1987). Using a simulation of food stamp eligibility rules, 1,285 households which were eligible for food stamps at some time in 1986 were selected as the sample for this analysis. (A description of the procedures used to derive the sample are discussed in detail in the Appendix.) On a weighted basis,² 44.5% of the eligible households received food stamps at some time in 1986.³ Table 1 presents selected characteristics of this sample and subgroup participation rates. Eligible households headed by an elderly person and those headed by a single male were less likely to participate than other households. Participation rates increased as the number of children in the household increased and decreased as the number of work hours of the household head increased. Households headed by a non-White and those headed by an individual with a disability were more likely to participate than other households. Compared to other households, households residing in the West and those which owned their homes were less likely to participate. Participation rates increased as the bonus value to which the household was entitled increased. Finally, households which received income from either the Aid to Families with Dependent Children (AFDC) Program or the Supplemental Security Income (SSI) Program were considerably more likely to participate.

In addition to the extensive demographic and economic data included in the PSID, respondents who did not report receiving food stamps in 1986 were asked a series of questions concerning why they did not participate in the program. Based upon these responses, eligible nonparticipants were classified into four categories: (a) those who did not participate due to informational problems (e.g., they did not think they were eligible to receive food stamps; they did not know how to apply); (b) those who did not participate due to administrative problems (e.g., they had trouble filling out the application forms; they were treated rudely by the caseworker); (c) those who did not participate due to personal reasons (e.g., they have an aversion to receiving welfare; they didn't need the stamps; they were embarrassed to use the stamps); and (d) those who did not participate due to any reason not listed above. (The Appendix contains additional details regarding the questions and the classification of nonparticipants into the different categories.)

TABLE 1
Sample Distribution and Mean Participation Rates, by Household Characteristics

Household Characteristic	N	Weighted* Percent of Sample	Weighted* Participation Rate
Total	1,285	100.0%	44.5%
Age of household head			
Under 30 years old	379	26.2%	49.7%
30 to 59 years old	575	38.6%	49.4%
60 or more years old	331	35.2%	35.2%
Gender and marital status			
Single Female	749	61.0%	50.5%
Single Male	185	15.8%	18.1%
Married couple	351	23.2%	46.6%
Number of children			
None	595	56.3%	32.1%
One	206	14.5%	52.4%
Two	217	15.2%	59.8%
Three	168	9.3%	63.5%
Four	99	4.7%	80.3%
Race			
White	374	62.7%	37.8%
Non-White	911	37.3%	55.6%
Years of education			
Five or less	92	8.1%	43.6%
6-8	212	18.2%	49.2%
9-11	443	30.0%	53.8%
12	411	31.7%	40.2%
More than 12	127	11.9%	25.4%
Disabled			
Yes	190	16.1%	51.6%
No	1,095	83.9%	43.1%
Western region			
Yes	127	13.0%	38.1%
No	1,158	87.0%	45.4%
Annual work hours of head			
Zero	639	53.0%	49.2%
1-499	128	10.8%	56.6%
500-999	128	8.2%	39.2%
1,000-1,499	97	6.5%	36.3%
1,500 or more	293	21.5%	31.2%
Homeowner			
Yes	296	29.5%	32.2%
No	989	70.5%	49.6%
Monthly bonus value			
\$10 or less	202	25.2%	26.6%
\$11-\$24	108	10.5%	41.5%
\$25-\$49	178	13.8%	32.8%
\$50-\$99	312	21.6%	38.1%

TABLE 1 (Continued)

Household Characteristic	N	Weighted* Percent of Sample	Weighted* Participation Rate
\$100—\$149	156	9.2%	55.6%
\$150 or more	329	19.7%	78.9%
Transfer income status			
AFDC recipient	390	24.4%	87.2%
SSI recipient	153	12.6%	60.7%
Social Security	217	25.4%	24.1%
No transfer income	525	37.6%	25.1%

*The PSID oversamples low-income households (Survey Research Center, 1987). To ensure that the sample is representative of the population of the contiguous United States, weights are used to correct for the different sampling probabilities.

The distribution of the sample according to these categories is given in Table 2. One-third of the eligible nonparticipants indicated that they did not participate due to problems with information, and 23.2% did not participate due to administrative problems. Personal reasons accounted for 35.6% of the eligible nonparticipants, and the remaining 7.7% attributed their nonparticipation to some other reason.

TABLE 2

Distribution of Eligible Households by Reason Given for Not Receiving Food Stamps, 1986

Participation Status	N	Weighted* Percent of Eligible Households	Weighted* Percent of Eligible Nonparticipants
Participant	666	44.5%	—
Did not participate due to:			
Informational problems	195	18.6%	33.5%
Administrative hassles	201	12.9%	23.2%
Personal reasons	146	19.8%	35.6%
Other reasons	77	4.3%	7.7%
Totals:	1,285	100.0%	100.0%

*The PSID oversamples low-income households. To ensure that the sample is representative of the population of the contiguous United States, weights are used to correct for the different sampling probabilities.

The Model

Binary Models of Food Stamp Participation

Binary choice models assume that the individual is faced with making a choice between two alternatives. Most previous analyses of food stamp participation have specified that eligible households have two choices: participation and nonparticipation.⁴

Either explicitly or implicitly, individuals are assumed to choose the alternative which yields the highest latent subjective evaluation, called V in this model. In many economic applications, V_j ($j=1,2$) is interpreted theoretically as the utility to be derived from each alternative j , and the model converts to the utility maximizing framework. In the case of food stamp participation, then, an eligible individual would participate, if $V_1 > V_2$, where V_1 is the utility to be derived from participation and V_2 is the utility to be derived from nonparticipation. V_1 is a function of the bonus value of food stamps (determined by household income and family size), which measures the increased consumption allowed due to receiving the stamps and the informational, pecuniary, and psychic costs of participation. V_2 is a function of the consumption opportunities available to the household, if they do not participate in the program. The latent evaluation of the utility of each alternative is assumed to be composed of deterministic and stochastic portions and can be expressed for each individual, i , as:

$$V_{ji} = B_j X_i + e_{ji} \quad (1)$$

The X_i theoretically would be comprised of the set of variables thought to influence the utility from each choice. Many of these variables are not observable directly. Most notably, the subjective probability of eligibility and the psychic costs of participation (i.e., stigma) are not observable. Consequently, in previous studies the vector of explanatory variables, X_i , has been comprised of demographic and economic characteristics of the household that were considered to be proxies for the actual behavioral reasons and opportunity cost of participation. B_j is a vector of coefficients relating the explanatory variables to the valuation of alternative j , and e_{ji} is a random error term. Assuming that the random errors (e_{ji}) are distributed as independent Type II log Weibull random variables, the probability that household i will make choice j is:

$$P_{ji} = \exp(B_j X_i) / \sum_j \exp(B_j X_i) \quad (2)$$

Since the probabilities must sum to one (i.e., the household must either participate or not participate), one alternative must be selected as the reference category. This choice is a matter of interpretational convenience. In traditional food stamp participation analysis, nonparticipation is chosen as the reference category, and the coefficients (B_j) are interpreted in terms of the effects on participation. With this normalization, the predicted probability of participation (P_1) becomes:

$$P_{1,i} = \exp(BX_i) / (1 + \exp(BX_i)), \quad (3a)$$

and the probability for nonparticipation (P_2) is:

$$P_{2,i} = 1 / (1 + \exp(BX_i)). \quad (3b)$$

Taking the log of the ratio of the probabilities yields:

$$\ln(P_1/P_2) = BX_i \quad (4)$$

Equations (3a) and (3b) can be used to form the log-likelihood function for the logit model (see Equation 7). Maximizing Equation 4 with respect to B will yield full-information maximum likelihood estimates of the effects of the explanatory variables on the probability of participation and nonparticipation, via substitution into Equations (3a) and (3b).

Multinomial Models of Participation and Nonparticipation

The binomial model is generalized easily into a multinomial logit model by expanding the choice set. For an eligible individual who chooses not to participate, $V_2 > V_1$. Because V_1 includes the bonus value of food stamps, which increases the consumption possibilities of the individual, one would expect $V_1 > V_2$ unless some other element in V_1 , such as the psychic cost of participation, exerts a sufficiently negative effect on V_1 so that $V_2 > V_1$. By expanding the choice set available to eligible nonparticipants to include their reason for nonparticipation, the negative element can be identified. In this analysis, the choices available to eligible nonparticipants are expanded to distinguish between the reasons for nonparticipation: informational, administrative, personal, and other. Thus, there are five choices available to an eligible household ($j=5$), which are designated as: 1, participant; 2, nonparticipant due to informational reasons; 3, nonparticipant due to administrative reasons; 4, nonparticipant due to personal reasons; and 5, nonparticipant due to some other reason. In this case, the most easily interpreted coefficients are obtained when *participation* is chosen as the reference alternative. Thus, the probability that the household did not participate for reason k ($k = 2-5$) is:

$$P_{k,i} = \exp(B_k X_i) / (1 + \sum_k \exp(B_k X_i)), \quad (5a)$$

and the probability of participation is:

$$P_{1,i} = 1 / (1 + \sum_k \exp(B_k X_i)) \quad (5b)$$

Taking the log of the ratio of the probabilities, with participation ($j = 1$) as the reference category, yields a series of estimation equations:

$$\ln(P_2/P_1) = B_2 X_i, \quad (6a)$$

$$\ln(P_3/P_1) = B_3 X_i, \quad (6b)$$

$$\ln(P_4/P_1) = B_4 X_i, \quad (6c)$$

$$\ln(P_5/P_1) = B_5X_i. \quad (6d)$$

The log-likelihood function for the sample under the model is:

$$\ln(L) = \sum_{j=1}^J \sum_{i=1}^N y_{ji} \ln(P_{ji}) \quad (7)$$

where N is the sample size, and Y_{ji} is a dummy variable, 1 if household i selects alternative j . P_{ji} is the predicted probability of eligible households with i characteristics selecting the j^{th} alternative. By maximizing Equation 7 with respect to the B_j , full-information maximum likelihood estimates of the effects of the explanatory variables on the choice probabilities can be obtained.

Interpretation of Effects

With binary logit models of participation, the effect of each characteristic (X_i) on the probability of participation (P_{ji}) can be determined by simply substituting the estimated B into Equation (3a), varying the value of the relevant X and calculating the change in P_j (Values must be assigned by setting the other independent variables at the sample means or modes). The problem is the *behavioral* interpretation of this effect. For example, suppose that the binary logit results show that the probability of participation is related negatively to the age of the household head. Therefore, households headed by elderly persons would be less likely to participate in the program, *ceteris paribus*, than other households. This result, however, does not tell *why* age is associated with a lower probability of participation. Several possibilities exist: (a) elderly persons may have more negative personal attitudes toward receiving welfare than other individuals; (b) they may be unaware of their eligibility; or (c) they may face greater access problems than other individuals face. For policy makers interested in increasing participation of eligible elderly, it is important to determine the actual reasons why they are less likely to participate than other individuals. The results from the binary logit model are useful in isolating household characteristics which are likely to lead to nonparticipation. However, results from the binary logit model do not provide information concerning the actual barriers to participation associated with these characteristics.

The multinomial logit model overcomes this weakness by treating each reason for nonparticipation as a distinct alternative. Because these are mutually exclusive and exhaustive alternatives, the effects on participation of any particular explanatory variable *must* be offset exactly by corresponding changes in one or more of the expressed reasons for nonparticipation. If, for example, it is found that the effect of age is such that the probability of participation for a household headed by a 60-year-old is 30 percentage points lower than a household headed by a 20-year-old, *ceteris paribus*, then the effect of this age gap must *increase* by 30 percentage points the (combined) probability of citing a specific reason for nonparticipation (i.e., informational, administrative, attitudinal, or other). For example, the results might show that the probability of citing informational reasons for nonparticipation is 15 percentage points

higher for the household headed by the 60-year-old, that the probability of citing administrative reasons is 10 percentage points higher, that the probability of citing attitudinal reasons is 5 percentage points higher, and the probability of citing other reasons does not differ between the two households. These findings would imply that 50% of the negative effect of age on participation can be attributed to increased informational barriers, 33% can be attributed to increased administrative barriers, and 17% can be attributed to increased attitudinal barriers.⁵ In this manner, by using participation as the reference alternative, the effects of each significant explanatory variable on participation can be decomposed into portions associated with each type of reason: informational problems, administrative problems, personal reasons, and all other reasons.

Results

The Binomial Logit Model

The results of the binomial logit model of participation are reported in Table 3. Several demographic and economic variables were found to be significant in predicting participation among eligible house-

TABLE 3
Binomial Logit Results for Participation in the Food Stamp Program by Eligible Households (N = 1,285)

Independent Variable	Estimated Effect	Standard Error	Significance Level
Intercept	.771	.560	.169
Age	-.021**	.006	.001
Single female head	-.333	.246	.176
Single male head	-1.554**	.313	.000
Number of children	-.027	.121	.823
IA: Single female head × # of children ^a	-.134	.138	.333
Non-White	-.089	.164	.585
Education	-.104**	.029	.000
Disabled	.614*	.202	.002
West	-.467*	.231	.044
Work hours (100)	-.019	.012	.117
Homeowner	-.202	.174	.245
Bonus value	.009**	.002	.000
AFDC	2.763**	.251	.000
SSI	1.837**	.316	.000
Social Security	.592*	.297	.048

^aInteraction term between single female head and number of children in the household.
 * $p < .05$. ** $p < .01$.

holds. The probability of participation was related negatively to the age of the household head. Households headed by a single male were significantly less likely to participate than married couples (the omitted category). Participation was related negatively to the educational level of the household head and was lower in the West than in other regions of the country. Eligible households headed by a person with a disability were more likely to use food stamps. As might be expected, participation was related positively to the amount of food stamps to which the household was entitled (bonus value). Finally, the receipt of public transfer income was significant in predicting participation. Households receiving income from the AFDC program or the SSI program were more likely to participate in the food stamp program. Households receiving Social Security benefits also were more likely to participate than others, but the effect was not as strong as the effect of receiving benefits from one of the two welfare programs (i.e., Aid to Families with Dependent Children and Supplemental Security Income). Certain characteristics were not significant, including the number of children in the household, race, number of annual work hours of the household head, whether the household owned its home, and whether the household was headed by a single female.

The question remains why these demographic and economic characteristics are significant in predicting participation. Why, for example, are eligible households headed by a person with a disability more likely than others to use food stamps, other factors constant? Compared to others, are they needier, do they feel less stigma, or are they better informed about the benefits to which they are entitled?

The Multinomial Logit Model

As the preceding discussion explained, the results from the multinomial logit model will provide insight into why a particular demographic characteristic is significant in distinguishing eligible participants from eligible nonparticipants. The results for each independent variable that was found to be significant in the binomial logit model follow. The complete results for the multinomial logit model are reported in the Appendix.

Age of household head. The binomial logit results indicated that participation is related negatively to the age of the household head. Table 4 presents the results of the multinomial logit model with respect to age. Direct interpretation of the coefficients is difficult. However, substituting the estimated B_1 coefficients into Equations 5a and

TABLE 4

Multinomial Logit Results for the Independent Variable, Age of Household Head (N = 1,285)

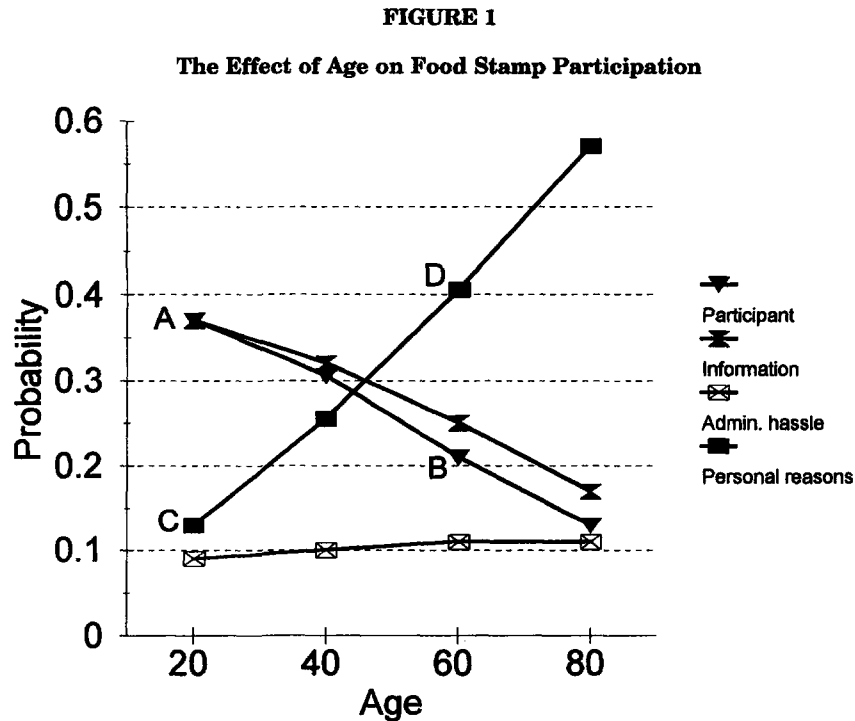
Category	Coefficient	Standard Error	Significance Level
Ln (P_2/P_1)	.003	.008	.720
Ln (P_3/P_1)	.023**	.009	.008
Ln (P_4/P_1)	.040**	.009	.000
Ln (P_5/P_1)	.013	.013	.311

Note: P_1 = probability of being a participant; P_2 = probability of being a nonparticipant because of informational problems; P_3 = probability of being a nonparticipant because of administrative hassles; P_4 = probability of being a nonparticipant because of personal reasons; and P_5 = probability of being a nonparticipant because of other reasons.

* $p < .05$. ** $p < .01$.

5b enables one to calculate for similar households headed by individuals of different ages: (a) the probability of participation, and (b) the probabilities of citing various reasons for nonparticipation. The resulting calculations are presented in Figure 1.⁶

For a household headed by a 20-year-old individual with the characteristics in Note 6, the probability of participation was 37.6% (Point A in Figure 1). For a similar household with a 60-year-old head, the probability of participation fell to 21.6% (Point B). Thus, a 40-year increase in the age of the household head, *ceteris paribus*, was associated with a 16 percentage point decrease in the probability of participation. Because the probability of citing personal reasons for nonparticipation increases sharply with age, the decreased probability of participation attributed to the increase in the probability of citing personal reasons as the reason for nonparticipation. As shown in Figure 1, the probability increased from 14.1% for a 20-year-old head (Point C) to 40.2% for a 60-year-old head (Point D), which is an increase of 26.1 percentage points. This result suggests that the negative relationship between age and participation can be attributed to the fact that, compared to other people, the elderly may have more negative personal feelings toward using food stamps either due to a dislike of welfare or feelings of stigma; they may feel less need for food stamps than younger household heads; or both. In this case, the increased probability of citing personal reasons as a reason for non-participation (26 percentage points) more than offset the decreased probability of participation (16 percentage points), a possibility mentioned in Note 5. Because the



probability of citing information problems decreases with age, the increased probability of citing personal reasons compensated for the decreased probability of citing information problems, as shown in Figure 1.⁷

Single male heads of household. The binomial logit results showed that eligible households headed by a single male were less likely to use food stamps than similar households headed by a married couple. Households headed by a single female were not statistically different when compared to similar households headed by a married couple. Table 5 presents the probabilities of being classified into one of the five response categories. Married couples had a 37.4% probability of participating, and the probability for single males was only 10.0%.⁸ Two factors accounted for this lower probability. First, single males were more likely than married couples to cite informational barriers to participation; 28.1% of males versus 15.4% of married couples. Second, males were considerably more likely than married couples (48.6% of males versus 26.1% of married couples) to cite personal attitudes as reasons for not using food stamps.

TABLE 5

The Effect of Being a Single Male Head of Household on Food Stamp Participation

Participation Status	Married Couple	Single Male
Participant	.374	.100
Nonparticipant due to:		
Informational problems	.154	.281
Administrative hassles	.173	.099
Personal reasons	.261	.486
Other	.038	.036

Note: Entries represent probabilities of either participating or citing one of the reasons for nonparticipation. The calculation of these probabilities assigned the following values for the other continuous independent variables: age, 48; number of children, 0; education, 10; work hours, 0; bonus value, 77. The following household characteristics were assigned: the household head was a non-disabled White person who owned the home, did not live in the West, and received no income from AFDC, SSI, or Social Security Income programs.

Years of education. The results reported in Appendix Table A-2 indicate that the educational level of the household head was related negatively to the probability of participation, *ceteris paribus*. For example, a household headed by an individual with five years of education had a 39.1% probability of participation. A similar household headed by an individual with 15 years of education had only a 16.2% probability of participating. Because the probability of not participating due to personal reasons increases as the level of education increases, the decreased probability of participation is attributed to the increased education level of nonparticipants. For the example cited above, the probability of citing personal reasons for nonparticipation was 18.1% for the household head with five years of education versus 46.3% for the head with 15 years of education. People with higher education levels either felt less of a need for food stamps, perhaps reflecting their presumably higher permanent income; felt more embarrassed to use food stamps; or had a greater dislike for welfare in general than individuals with less education.

Disability. Households headed by a person with a disability were more likely to participate than other households, *ceteris paribus*. As shown in Table 6, the probability of participation for a household headed by a person with a disability increased by 16 percentage points from 26.7% (Row 1, Column 1) to 42.7% (Row 1, Column 2). The primary reason for this change was that the probability of citing

TABLE 6
The Effect of Disability and Region on Food Stamp Participation

Participation Status	Without a Disability, Non-West	With a Disability, Non-West	Without a Disability, West
Participant	.267	.427	.186
Nonparticipant			
due to:			
Informational problems	.298	.274	.455
Administrative Hassles	.109	.164	.111
Personal reasons	.308	.121	.223
Other	.017	.014	.025

Note: Entries represent probabilities of participating or citing one of the reasons for nonparticipation. To calculate these probabilities, the following values were assigned to the other continuous independent variables: age, 48; number of children, 0; education, 10; work hours, 0; bonus value, 77. The following household characteristics were assigned: the household head was a White single female who did not own her home, and received no income from AFDC, SSI, or Social Security Income programs.

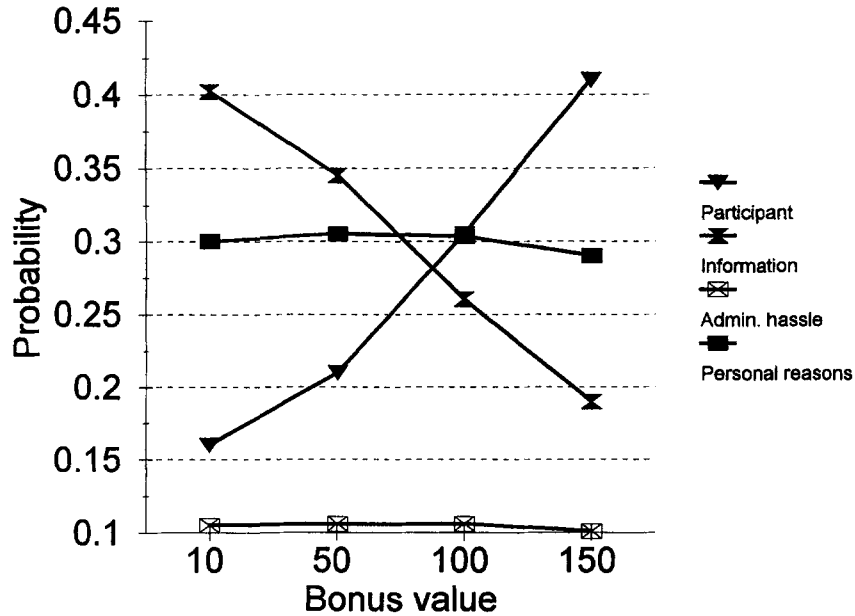
personal reasons for nonparticipation fell sharply for households headed by a person with a disability from 30.8% for individuals *without* a disability not in the West (Row 4, Column 1) to 12.1% for individuals *with* a disability not in the West (Row 4, Column 2). Perhaps, individuals with disabilities were more likely to participate than individuals without disabilities because they felt a greater need for food stamps or had less negative feelings toward receiving welfare.

The western region. Eligible households residing in the West were less likely to use food stamps than eligible households residing in other regions. As seen in Table 6, for the prototypical household the probability of participation fell from 26.7% (Row 1, Column 1) to 18.6% (Row 1, Column 3) for a household in the West. This reduced probability was explained by a higher probability of households in the West citing informational problems compared to similar households not in the West (45.5% versus 29.8%). Compared to other households, households in the West were more likely either to think they were not eligible for food stamps or to be unaware of how to acquire them.

Bonus value. Households entitled to relatively high benefit levels were more likely to participate in the program than those entitled to relatively low benefit levels, as illustrated in Figure 2. This increased probability of participation was offset by a lower probability of citing

FIGURE 2

The Effect of Bonus Value on Food Stamp Participation



informational problems as a barrier to participation. This result suggests that, *ceteris paribus*, households with higher incomes, and therefore entitled to lower benefits, were more uncertain about their eligibility status. This uncertainty about eligibility lowered their probability of participation. This finding is consistent with the results of other studies which have found a negative relationship between household income and the probability of participation (Coe, 1983; Epperson, Huang, Fletcher, & Searce, 1980; Lane, Kushman, & Ranney, 1983). Blaylock and Smallwood (1984) also found a positive relationship between household income and the probability of citing informational barriers to participation. Similarly, Hill (1990) found a negative relationship between the benefit level available from the SSI Program and the probability of being uninformed about eligibility.

Transfer income status. Receiving public transfer income increased the probability of participation, as seen in Table 7. A prototypical household receiving no transfer income had a 26.7% probability of participation (Row 1, Column 4); a similar household receiving AFDC

TABLE 7
The Effect of Different Types of Transfer Income on Food Stamp Participation

Participation Status	Type of Transfer Income Received			
	AFDC	SSI	Social Security	None
Participant	.869	.751	.386	.267
Nonparticipant Due to:				
Informational problems	.064	.113	.302	.298
Administrative hassles	.030	.071	.048	.109
Personal reasons	.034	.058	.248	.308
Other	.003	.006	.017	.017

Note: Entries represent probabilities of either participating or citing one of the reasons for nonparticipation. The calculation of these probabilities assigned the following values to the other continuous independent variables: age, 48; number of children, 0; education, 10; work hours, 0; bonus value, 77. The following household characteristics were assigned: the household head was a White, single female without a disability, who did not own her home, and did not live in the West.

income had an 86.9% probability (Row 1, Column 1), which is a 60.2 percentage point increase. Similarly, a household receiving SSI income had a greatly increased probability of using food stamps: 75.1% for SSI recipients vs. 26.7% for those not receiving any transfer income. (Row 1, Column 2). The effect of Social Security income also was positive, although not as large, because the probability of participation increased by 11.6 percentage points from 26.7% to 38.6% (Row 1, Column 3).

What factors accounted for the effect of receiving transfer income? Regarding the receipt of AFDC income, all reasons contributed to the increased probability of participation. Compared to other eligible households, eligible AFDC households were less likely to cite informational problems, personal reasons, and administrative hassles as barriers to participation. Quantitatively, low levels of problems with information and low levels of negative personal reasons (or more need) accounted for the largest portions of participation. The probability of citing informational barriers decreased 23.4 percentage points (from .298 to .064), and the probability of citing personal reasons decreased 27.4 percentage points. Combined, the reduced probability of citing these two barriers to participation accounted for 84% of the 60.2 percentage point increase in the probability of participation. The reduced

probability of citing administrative hassles accounted for most of the remainder.

The results were similar with respect to the receipt of SSI payments, except that there was no noticeable reduction in complaints about administrative hassles. The results indicate, that, compared to other households, households which received other welfare income were both more knowledgeable concerning their eligibility for food stamps and had less negative attitudes toward using them. Furthermore, AFDC recipients were less likely to complain about administrative hassles than households receiving no transfer income, presumably because they were more familiar with the workings of the local welfare office. This effect was not as pronounced for SSI recipients as it was for recipients of other types of transfer income.

The relatively high participation rate of Social Security recipients (38.6%) can be explained by their being less likely to cite both personal reasons and administrative problems as barriers to participation than individuals who received no transfer income. Informational problems, however, were at least as high for Social Security recipients as for households receiving no transfer income. This finding contrasts with the result for SSI recipients and may reflect the Social Security Administration being required by law to inform SSI recipients of their potential food stamp eligibility and to provide them with an application form. No similar requirement exists with respect to low-income Social Security recipients.

Summary and Conclusion

The results showed that participation in the food stamp program was related negatively to the age and educational level of the household head and was related positively to the benefit level. Compared to other households, participation in the food stamp program was lower for single males and households residing in the West and was higher for disabled people and for households receiving some form of public transfer income. Informational factors were important in accounting for nonparticipation among single male household heads and among individuals residing in the West. Furthermore, eligible households which received cash welfare income (either AFDC or SSI) were considerably less likely to cite informational problems, *ceteris paribus*. Differing personal reasons regarding the receipt of food stamps (either differences in perceived need or differences in attitudes, includ-

ing stigma) were important in explaining the negative effect on participation of age, education, and being a single male household head. Personal reasons also were important in accounting for the higher participation rates among individuals with a disability and those who received cash transfer income, including Social Security.

The objectives of this study were to provide additional insight regarding the issue of nonparticipation in the food stamp program and to suggest a methodology for determining why particular demographic and economic characteristics are significant in distinguishing eligible participants from eligible nonparticipants. The results showed that in 1986 less than one-half of the households eligible to receive food stamps actually participated in the program. This result is similar to the findings of several previous studies which used survey data from the 1970s. Results suggest that nonparticipation in the food stamp program by eligible households was as pronounced in 1986 as it was in the 1970s. Eligible nonparticipants indicated that informational barriers and personal attitudes toward the use of or need for food stamps were the major reasons for their lack of participation.

Notes

1. The use of OLS introduces the possibility of heteroskedasticity, as well as probability estimates outside the range of 0 to 1. See Pindyck and Rubinfeld, (1991), pp. 250–251.
2. The PSID oversamples low-income households. Sampling weights equal to the inverse of the sampling probabilities are used to ensure that the data are representative of the population as a whole. For a complete description of the PSID data, see Survey Research Center (1987).
3. The participation rate reported in the text is similar to that found by other studies utilizing household survey data (e.g., Coe, 1983; U.S. Congressional Budget Office, 1988; Lane, Kushman, & Ranney, 1983; MacDonald, 1977). Analysts who have combined administrative records of the number of food stamp recipients with household survey data have found higher participation rates (e.g., Allin, Beebout, Doyle, & Trippe, 1990). An interesting study which compared the two methodological approaches is contained in U.S. Congressional Budget Office (1988).
4. The choice model also could be extended to encompass other choices available to the household, such as working (as part of the decision to become eligible for food stamps) and participating in other welfare programs. See Fraker & Moffitt (1988). The analysis in this study is limited in that it treats these other choices as exogenous to the decision of food stamp eligible households to participate.

5. This attribution procedure can be more complicated than this example portrays. A variable that is associated with a lower participation rate also may be associated with a *lower* probability of citing a particular reason for nonparticipation. Working from the example presented in the text, it is possible that households headed by a 60-year-old person are 10 percentage points less likely to cite administrative reasons as a barrier to participation, despite their 30 percentage point lower participation rate. In this case, the combined probability of citing the other three reasons for nonparticipation must be 40 percentage points higher for the household headed by the older person.
6. The calculations assigned the following values for the other continuous independent variables: education, 10; number of children, 0; work hours, 0; bonus value, 77. The following household characteristics were assigned: the household head was a White, single female who received no transfer income, did not own her home, did not have a disability, and did not live in the West.
7. The results also show why care must be taken in interpreting the coefficients in Table 4. The coefficient for $\ln(P_3/P_1)$ is positive and highly significant. This is not due, however, to P_3 (the probability of citing administrative problems) increasing with age. P_3 , in fact, remains relatively constant (see Figure 1). However, when combined with a sharply decreasing P_1 , the ratio of P_3/P_1 increases significantly.
8. The values assigned to the other independent variables were the same as delineated in Note 6, with the additional assignment of age as 48. (The assumption of a single female head was replaced by the assumptions, respectively, of a married couple and a single male head.) These assignments for independent variables will be used for all probability calculations in the remainder of the paper and will be denoted as representing the prototypical household.

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Appendix

I. Derivation of Sample of Food Stamp Eligible Households

Data collection for the PSID does not correspond to the administrative rules used to determine food stamp eligibility, which complicates efforts to simulate the eligibility of survey respondents. The following procedures were used to determine if sample households were eligible to receive food stamps in 1986:

- 1) Annual household income was divided by 12 to derive monthly gross household income. If this amount exceeded the food stamp gross income eligibility thresholds, the household was eliminated from the sample.

- 2) The standard deduction, earned income deduction, and excess shelter expense deduction were subtracted from monthly gross income to arrive at monthly net food stamp income. If this amount exceeded the net income eligibility thresholds, the household was eliminated from the sample. To estimate the monthly bonus value to which the household was entitled, this measure of monthly net income was combined with family size and applied to the food stamp regulations regarding bonus value.

- 3) Households must pass an asset test in order to be eligible. No direct data were available on asset holdings. Such holdings were estimated by assuming that reported asset income (rent, dividends, inter-

est) represented an eight percent return on the value of assets. If this estimated amount exceeded the asset eligibility thresholds, the household was eliminated from the sample.

4) Households which underwent a substantial change in composition during the course of the year were eliminated from the analysis, due to the difficulty of accurately assigning income.

5) Households in which the income of family members other than the head and spouse exceeded \$5,000 were eliminated from the analysis, due to the possibility that they would qualify as multiple households according to food stamp regulations.

II. Categorization of Responses to Nonparticipation Questions

Respondents who reported that they did not receive any food stamps in 1986 were asked a series of questions regarding their nonparticipation in the program. The first question asked respondents whether they thought they were eligible to receive food stamps at some time in 1986. Those who did not think they were eligible were asked why they did not believe they were eligible. Those who thought they might be eligible were asked whether they had tried to get food stamps at some time. For those who tried, questions were asked concerning why they were unable to get stamps. Respondents who didn't try were asked why they didn't.

This sequence involved both closed- and open-ended questions, which relied on the judgment of coders, who classified responses into categories of reasons, as reported in Table A-1. (For multiple responses, coders were instructed to code either the first mention or the most dominant response.) This classification scheme involves some judgment by the analyst. For example, a descriptive analysis of the same data conducted by the U.S. General Accounting Office (1988) reported a higher percentage of eligible nonparticipants who cited informational problems as the reason for nonparticipation than was found in this study. In the U.S. General Accounting Office Study (1988), respondents who replied that they thought they were not eligible for food stamps because they didn't like welfare were classified as nonparticipants due to informational problems. Categorizing this reason as an informational problem (rather than a personal reason) likely contributed to the higher level of nonparticipation in the U.S. General Accounting Office study (1988) than in the present study. In the results reported in Table A-1, such respondents were classified in Category 8 (i.e., too embarrassed; don't like welfare).

TABLE A-1

Detailed Distribution of Reasons Given for Not Receiving Food Stamps, 1986

Reason Given for Not Receiving Food Stamps	N	Weighted* Percent of Eligible Nonparticipants
1. Did not know anything about eligibility	16	3.4%
2. Thought ineligible because income or assets too high	108	18.9%
3. Thought ineligible for some other reason	71	11.4%
4. Told ineligible by welfare officials	85	8.5%
5. Administrative hassles	100	12.3%
6. Physical access problems	16	2.7%
7. Did not need food stamps	105	27.4%
8. Too embarrassed; don't like welfare	41	8.6%
9. Other reasons	77	7.7%

*The PSID oversamples low-income households. To ensure that the sample is representative of the population of the contiguous United States, weights are used to correct for the differential sampling probabilities.

For the analysis reported in the text, the categories were combined as follows: Categories 1–3 were combined and labeled *Information Problems*, Categories 4–6 were grouped as *Administrative Hassles*, Categories 7–8 were labeled *Personal Reasons*, and Category 9 formed the *Other* analysis category.

III. Complete Results of the Multinomial Logit Analysis

The complete results of the multinomial logit analysis are presented in Table A-2.

TABLE A-2

Multinomial Logit Results on Food Stamp Participation (N = 1,285)

Independent Variable	LN (P ₂ /P ₁)	LN (P ₃ /P ₁)	LN (P ₄ /P ₁)	LN (P ₅ /P ₁)
Intercept	-0.949 (.721)	-1.896* (.773)	-3.560** (.756)	-2.107 (1.208)
Age	.003 (.008)	.023** (.009)	.040** (.009)	.013 (.013)
Single female head	.997** (.347)	-.124 (.326)	.500 (.317)	-.452 (.516)
Single male head	1.921** (.399)	.738 (.417)	1.939** (.384)	1.252* (.570)
Number of children	.245 (.162)	-.064 (.161)	-.084 (.170)	.106 (.252)
IA: Single female head × number of children*	-.573** (.218)	.482** (.182)	.115 (.198)	.398 (.290)
Non-White	-.146 (.215)	.620** (.214)	-.572* (.238)	1.025** (.336)
Education	.084* (.036)	.057 (.039)	.182** (.038)	.035 (.059)
Disabled	-.553* (.266)	-.063 (.262)	-1.406** (.314)	-.715 (.470)
West	.785** (.272)	.376 (.320)	.041 (.315)	.737 (.440)
Work hours (100)	.012 (.015)	.010 (.016)	.033* (.015)	.017 (.024)
Homeowner	-.200 (.226)	.528* (.229)	.137 (.222)	.226 (.366)
Bonus value	-.012** (.002)	-.007** (.002)	-.007** (.002)	-.015** (.004)
AFDC	-2.706** (.363)	-2.500** (.360)	-3.389** (.469)	-2.673** (.634)
SSI	-1.998** (.429)	-1.454** (.399)	-2.706** (.517)	-2.028** (.713)
Social Security	-.352 (.376)	-1.194** (.399)	-.583 (.398)	-.395 (.566)

Note: Standard errors are in parentheses. P₁, probability of being a participant; P₂, probability of being a nonparticipant because of informational problems; P₃, probability of being a nonparticipant because of administrative hassles; P₄, probability of being a nonparticipant because of personal reasons; and P₅, probability of being a nonparticipant because of other reasons.

*Interaction term between single female head and number of children in the household.

*p < .05, **p < .01.