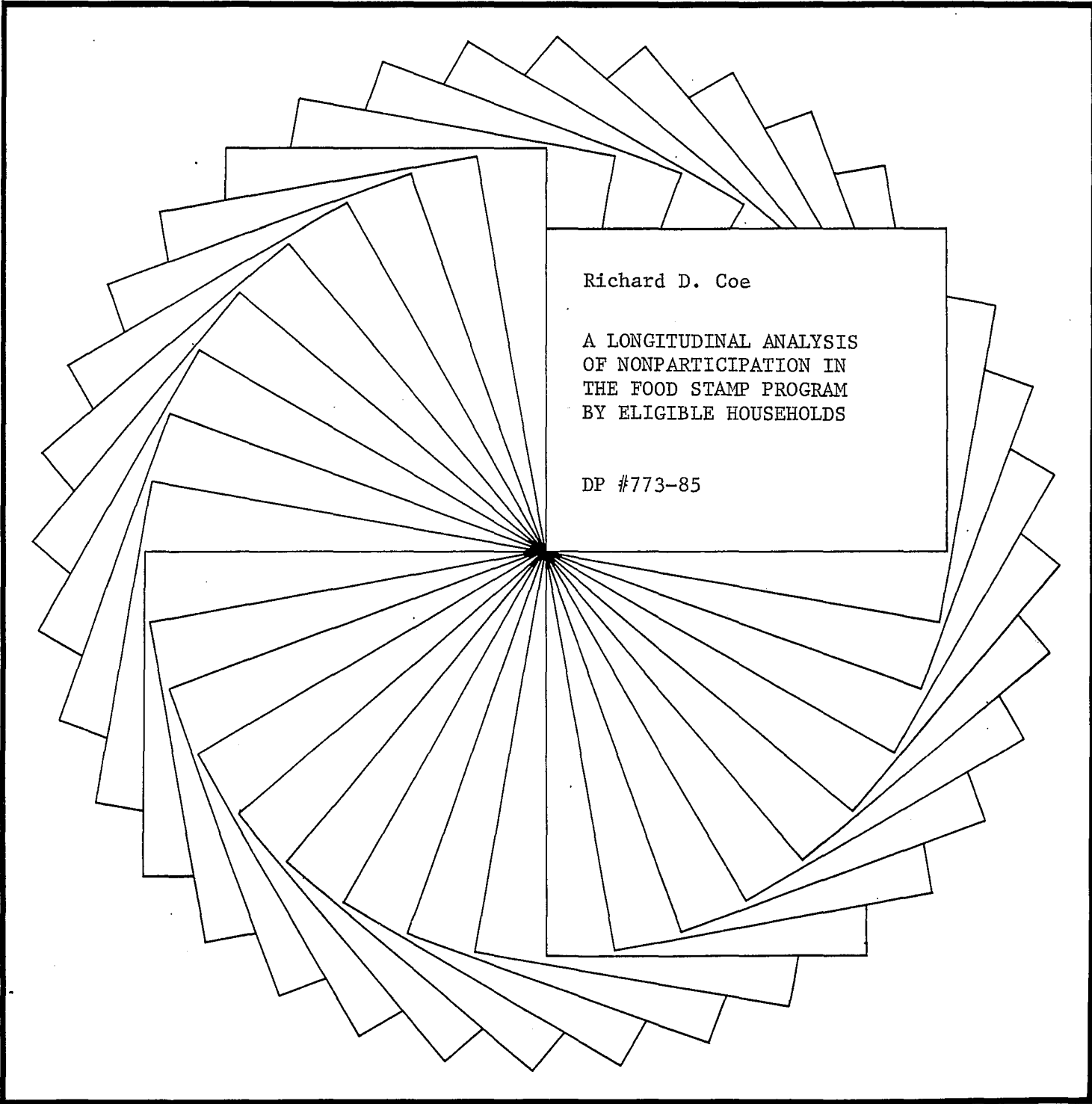University of Wisconsin-Madison

IRP Discussion Papers

Richard D. Coe

A LONGITUDINAL ANALYSIS
OF NONPARTICIPATION IN
THE FOOD STAMP PROGRAM
BY ELIGIBLE HOUSEHOLDS

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A Longitudinal Analysis of Nonparticipation
in the Food Stamp Program by Eligible Households

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ABSTRACT

The purpose of this study is to determine why households that are eligible to receive food stamps do not participate in the program. A sample of 700 households that were eligible for food stamps in both 1976 and 1979 was drawn from the Michigan Panel Study of Income Dynamics. These households were divided into four categories: those who were participants in both years, those who joined the program, those who quit the program, and those who did not participate in either year. A multinomial logistic model was estimated to determine the probability that a household would fall into one of these categories and to find the factors that influenced those probabilities. The model was then expanded by incorporating the reasons given by members of eligible households for not participating, in order to determine which barriers to participation were important for which groups, and how these barriers were affected by different circumstances faced by the household.

The results were informative. As theory predicts, the size of the benefit to which the household was entitled was a significant positive predictor of participation. Households that had high benefit levels in 1976 were more likely to participate in both years, and households that had large increases in their benefits were considerably more likely to join the program. Households headed by elderly people were much more likely not to participate in either year. No single reason accounted for this behavior. The work and welfare experiences of the household were extremely important in determining participation status. In general, eligible households in which the head was employed were more likely not to participate, primarily because of informational, administrative, and

need factors. If a nonemployed head became employed, the household was significantly more likely to quit the program, for both informational and administrative reasons. On the other hand, if an employed head became unemployed, the probability of joining the program increased dramatically, chiefly because of lower information barriers. Experiences with other welfare programs paralleled experiences with the Food Stamp program. Households receiving other forms of welfare in both years were very likely to receive food stamps in both years, whereas households receiving no other welfare in either year were likely not to receive food stamps in either year. Households that began receiving other forms of welfare also were more likely to begin receiving food stamps, again because of informational reasons. Finally, households that quit receiving other forms of welfare also were more likely to quit the Food Stamp program. Administrative problems were the major reason for these quits.

A Longitudinal Analysis of Nonparticipation in the

Food Stamp Program by Eligible Households

"I have seen reports in the press in past weeks of Americans
going hungry.... I admit to being perplexed by these accounts
because, the fact is, federal law guarantees that every person...
is eligible to receive free food stamps.... If the poor, who
are eligible by law for this help, are not receiving it, then
something is seriously wrong."

> President Ronald Reagan, Statement
> establishing President's Task Force
> on Food Assistance, 8/2/83

Apparently something is seriously wrong. Several studies have pre-
sented evidence that less than one-half of the households eligible to
receive food stamps actually participate in the program (U.S. Bureau of
the Census, 1976; Coe, 1979; MacDonald, 1977; Coe, 1983). This is not a
phenomenon which is unique to the Food Stamp program. The participation
rate among aged households eligible for Supplemental Security Income has
been placed at between 50 and 60 percent (Warlick, 1982; Menefee, et.
al., 1981; Coe, 1985). The Housing Allowance program participation rates
were less than 50 percent (Kozior, 1978). A recent study of par-
ticipation among female-headed households eligible for Aid to Families
with Dependent Children (AFDC) found a participation rate of only 45 per-
cent (Moffitt, 1983). (This estimate, it should be noted, is con-
siderably lower than previous estimates of AFDC participation rates--see
Michel, 1982; Boland, 1973.) It seems clear that nonparticipation by
welfare-eligible households is a widespread occurrence.

The purpose of this study is to analyze why it is that a household does not participate in a program for which it is eligible. Several reasons have been suggested, including benefit levels which are too low to make it worth the bother to apply, stigma, lack of information concerning eligibility, and administrative hassles. However, these factors (with the exception of benefit levels) are difficult to measure directly. Researchers have been forced to rely on easily measured demographic characteristics of eligible households, such as race, age, and region of residence, as proxy measures of the possible behavioral reasons underlying an eligible household's decision not to participate. The determination of exactly which behavioral reason a particular demographic characteristic is measuring has led to conclusions that are "tentative and ad hoc in nature" (Warlick, 1982, p. 238). MacDonald, for example, concluded his study of participation in the Food Stamp program thusly: "Although our multivariate analysis was moderately successful in explaining participation, it is difficult to infer the relative importance of stigma, access costs, and information costs because some explanatory variables can be interpreted as indicators of more than one cost. For instance, age of household could proxy for both stigma and access costs" (1977, p. 106).

In this study we draw on a sample of 700 households that were eligible to receive food stamps in both 1976 and 1979 to analyze the determinants of their participation status in those years and any changes in that status which may have occurred. By then introducing into the analysis the reasons given by the eligible nonparticipants for not participating in the program, we are able to obtain an idea of both the

circumstances which are important in predicting nonparticipation and the reasons these circumstances are important. The results indicate that nonparticipation is indeed a commonplace occurrence, one that is highly correlated with low benefit levels, older age, employment by the household head, and lack of contact with other parts of the welfare system. No single barrier to participation can account for the low participation rate, although lack of information concerning eligibility and administrative problems are two major factors in explaining why these circumstances are correlated with nonparticipation.
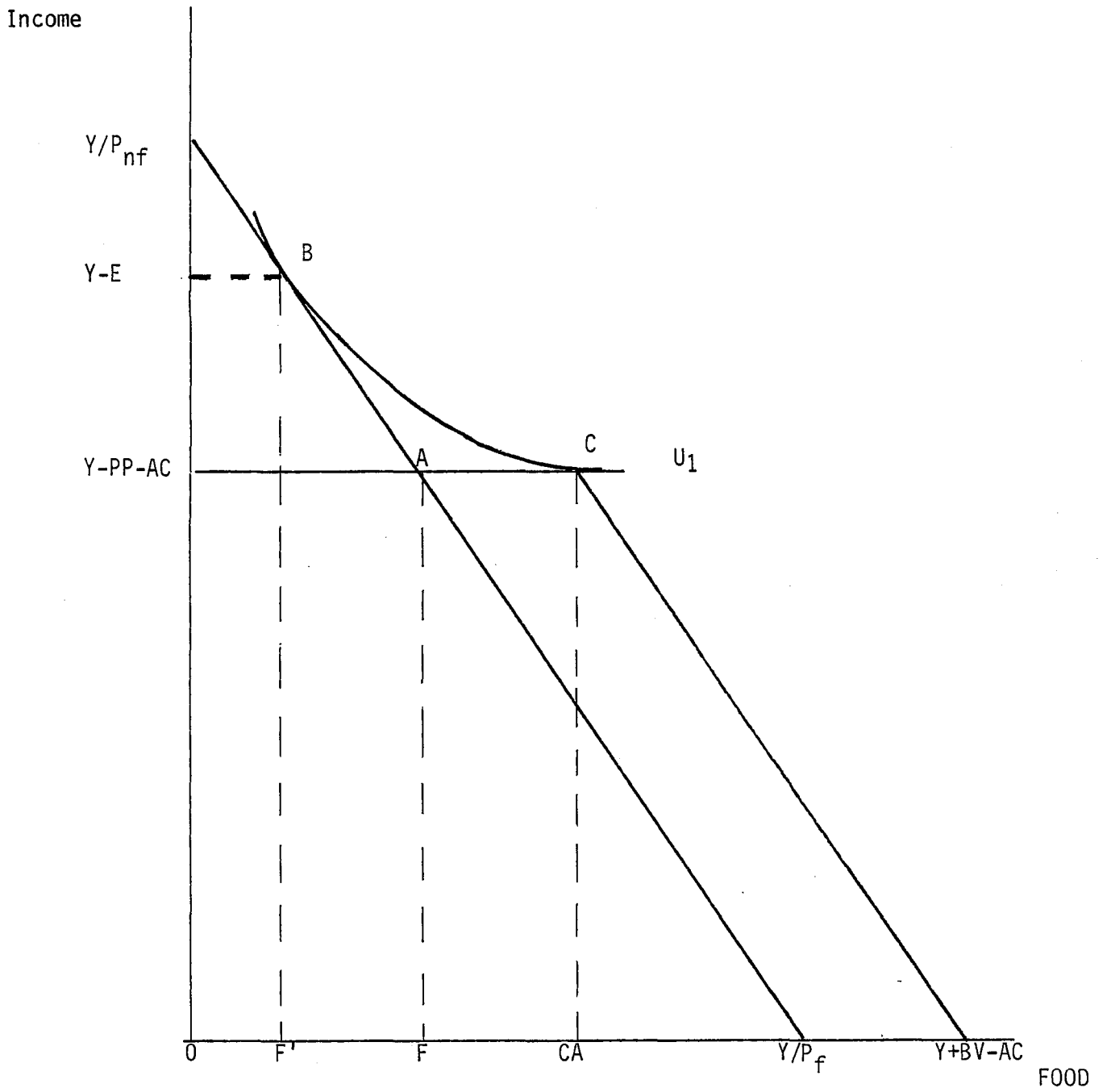
I. THE DETERMINANTS OF THE FOOD STAMP PARTICIPATION DECISION

A. The Single-Year Participation Decision, 1976

A person who is eligible to participate in the Food Stamp program is entitled to receive a specified amount of stamps,[1] which can be used at face value to buy food at retail food stores. Under the rules of the program in effect in 1976, the person was required to purchase his allotment of stamps (referred to as the coupon allotment, or CA). The amount paid for the allotment is called the purchase price (PP)[2]. The difference between the coupon allotment and the purchase price is the net value of the stamps to the individual, and is referred to as the bonus value (BV). In 1979 the purchase requirement was eliminated, and the individual received stamps whose face value equalled the bonus value, rather than the full coupon allotment.

Figure 1 illustrates the options available to the individual under the 1976 rules. If the person does not participate, he faces a nonpar-

FIGURE 1

Income

Y/P_nf

Y-E   B

Y-PP-AC   A   C   U_1

0   F'   F   CA   Y/P_f   Y+BV-AC

FOOD

ticipation budget line given by the intercepts Y/P_{nf} and Y/P_f, where Y represents money income and P_{nf} and P_f represent the price of nonfood and food items, respectively. In order to participate, the individual may have to incur some access costs, such as transportation expenses to the Food Stamp office, and in addition will have to pay the purchase price for his allotment of stamps. Thus money income is reduced, giving a new intercept on the vertical axis equal to (Y - PP - AC), where AC equals the monetary access costs of participation. In exchange, the person receives his coupon allotment, which enables him to buy CA of food at no additional cost. The person is also able to buy additional food at market prices, as indicated by the downward sloping segment of the participation budget line. If the person participated and consumed only food, he could purchase (Y + CA - PP - AC) quantity of food, or Y + BV - AC, yielding the new intercept of the horizontal axis.

An eligible person faced with these options would choose the one which allowed for the attainment of the highest level of utility. Clearly, a necessary condition for participation to occur is that BV > AC, otherwise the participation budget line would be to the left of the nonparticipation budget line.

If this condition is met, the participation decision is dependent on the person's taste between food and income. A sufficient condition for participation to occur is if the nonparticipation level of food consumed exceeds F. This is equivalent to the condition that the nonparticipation level of food expenditures (E) exceeds the sum of the access costs and the purchase price. This condition says that if a person would spend more than the access cost plus the purchase price for food in the absence

of participation, he could spend less and obtain at least as much food by participating, clearly a superior choice.

If a person's nonparticipation level of food consumption is less than F, say F', then the participation decision will be determined by the relationship between the person's subjective willingness to trade nonfood consumption for additional food consumption and the trade which the program offers. This is most easily seen by examining the case of an individual who is indifferent between participation and nonparticipation, as illustrated by indifference curve U_1 in Figure 1. The person's subjective willingness to trade income for food is given by his marginal rate of substitution of food for income ($MRS_{f,y}$) between points B and C ($MRS_{f,y} = \Delta Y/\Delta F$). In the case illustrated by U_1, the additional nonfood consumption which must be given up in order to participate equals (Y - E) - (Y - PP - AC), or $\Delta Y = (PP + AC - E)$. The change in food consumption as a result of participating equals CA - F'. Therefore, for this individual,

$$(1) \quad MRS_{f,y} = -\frac{\Delta Y}{\Delta F} = \frac{PP + AC - E}{PP + BV - E}$$

The right-hand side of Equation (1) expresses the trade-off between nonfood and food consumption offered by the program. In the case illustrated in Figure 1, this trade-off equals the trade-off the individual is willing to make and remain at the same level of utility. Thus the individual is indifferent to participation. If the individual would have been willing to trade more income for the increase in food consumption offered by the program, participation would occur. Thus, par-

ticipation will occur if

$$(2) \quad MRS_{f,y} > \frac{PP + AC - E}{PP + BV - E.}$$

The right-hand side of Expression (2) is an increasing function of the access costs and of purchase price (assuming that BV > AC, a necessary condition for participation)[3], indicating that participation will be negatively related to the access costs and to the purchase price. By inspection, the right-hand side is a decreasing function of the nominal bonus value, indicating that participation will be a positive function of the bonus value. The right-hand side of Expression (2) decreases as the nonparticipation level of food expenditures increases. This reflects the fact that as the amount of nonparticipation food expenditures increase (as point B slides down toward point A), the amount of additional income which the individual must give up in order to participate decreases. (Recall also that a sufficient condition for participation is if the nonparticipation level of expenditures equals or exceeds the sum of the access costs and the purchase price.)

The right-hand side of Expression (2) is stated in nominal terms. To translate it into real quantities the numerator should be divided by the price of nonfood items (P_{nf}) and the denominator by the price of food (P_f). (Alternately, the right-hand side can be multiplied by the relative price ratio, P_f/P_{nf}). The effect of changes in prices on participation is ambiguous because two opposing influences are at work. Holding the nonparticipation level of food expenditures constant, the effect of a change in either the price of food or the price of nonfood items is straightforward. An increase in the price of food will increase

the right-hand side of Expression (2), thus making it less likely that participation will occur, ceteris paribus. This reflects the fact that a higher price of food reduces the value of the nominal coupon allotment, thereby reducing the benefit from participation. An increase in the price of nonfood items has the opposite effect, as the nominal purchase price and monetary access costs of participation are reduced in real terms.
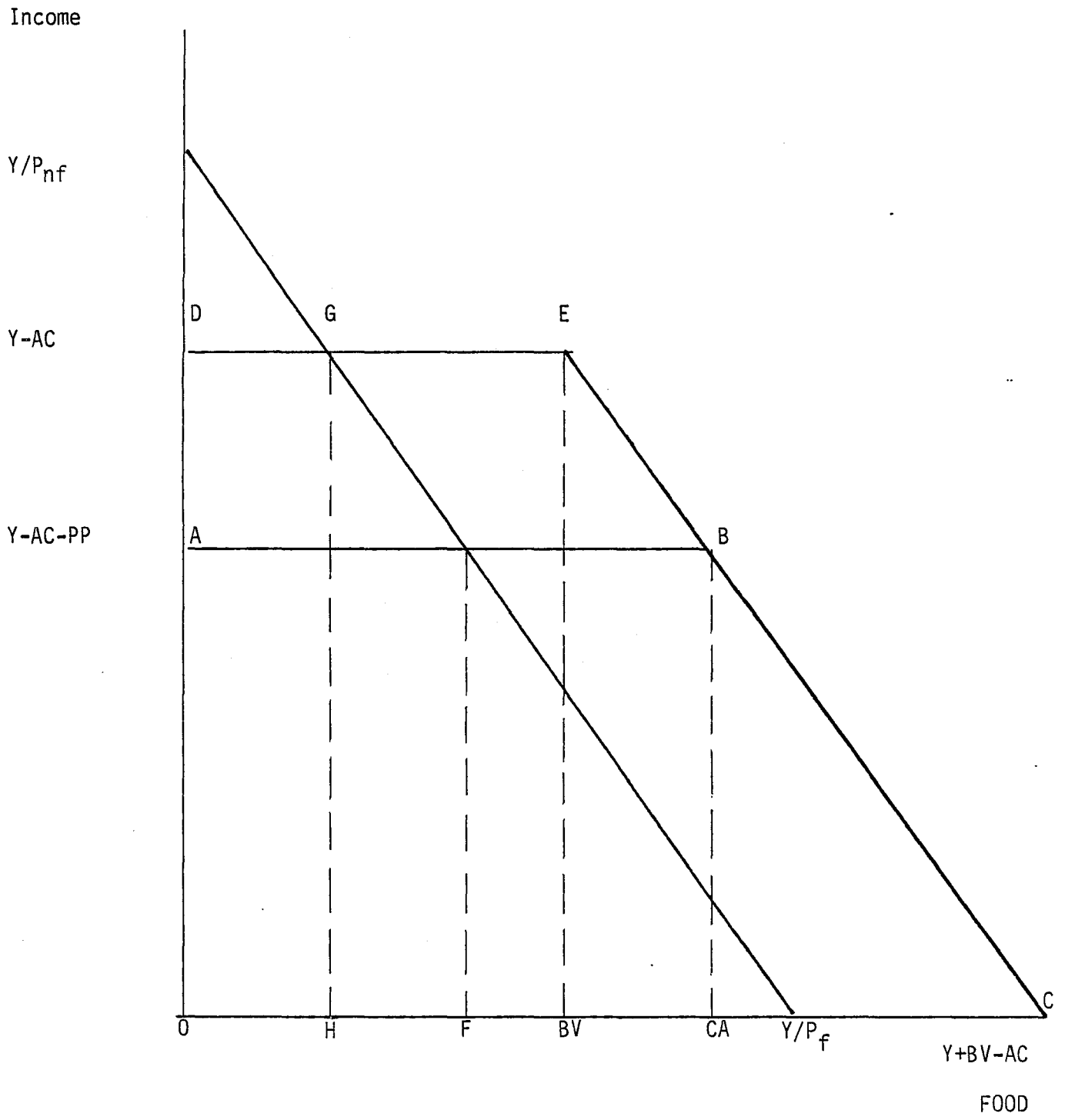
However, it is unlikely that changing prices will have no effect on the amount of nonparticipation food expenditures. If the demand for food is price inelastic, as most studies indicate, then higher food prices will increase nonparticipation expenditures on food, which will tend to increase the probability of participation. This effect may or may not be strong enough to offset the negative effect on participation of a decreasing real bonus value.[4]

B. The Single-Year Participation Decision, 1979

A similar analysis to that outlined above is applicable to the decision of whether to participate or not in 1979, with one major modification. In 1979 the purchase requirement was eliminated, and the household could receive _directly_ the difference in what would have been its coupon allotment and what would have been its purchase price. In other words, the net benefit (bonus value) remained constant (ceteris paribus), but the household now received only that amount in food stamps, without paying anything for them.

This change in program rules alters the options available to the individual, as illustrated in Figure 2. Budget line ABC delineates the

FIGURE 2

options which would have been available if the purchase requirement were in effect. With the purchase price eliminated but the bonus value held constant, the budget line shifts rightward by the same distance, but that shift now occurs with less reduction in the consumption of nonfood items. This is illustrated by budget line DEC. Thus the options available to the individual have increased as a result of the elimination of the purchase requirement. Because of this, the conditions for participation derived in the last section change. The necessary condition that the bonus value exceed the access costs remains unchanged. If the nonparticipation level of food consumption exceeds H, participation will occur. This is less than level F, the amount needed if the purchase price were in effect, thus making participation more likely, ceteris paribus. For an individual whose nonparticipation level of food expenditures is less than H, participation will occur if

$$(3) \quad MRS_{f,y} > \frac{AC - E}{BV - E}$$

Expression (3) is identical to Expression (2), with the purchase price omitted. With a positive purchase price, the right-hand side of (3) is less than the right-hand side of (2), other factors constant. Thus participation is more likely to occur if the purchase price is eliminated.

C. Other Factors Influencing the Participation Decision

The above model assumes that the individual is fully aware of the options available to him, feels no stigma from using food stamps, and

faces no time access costs to participation. Each of these factors has been suggested as a possible reason why a person does not participate in a welfare program for which he is eligible. We will discuss each factor in turn.

Previous studies have indicated that persons eligible for food stamps may not be fully informed of their eligibility status. This introduces an element of uncertainty into the welfare participation decision, an uncertainty that lowers the expected value of the bonus value to which the person is entitled.

A person who believes he has a 50-50 chance at a $100 bonus value will have an expected bonus value of $50. The person who knows with certainty that he is eligible will have an expected bonus value of $100, while the person who believes with certainty that he is not eligible to participate will have an expected bonus value equal to zero. The subjective probability of eligibility acts as a discount factor reducing the expected bonus value, or

$$E(BV) = PROB_e \ (BV), \ 0 \leq PROB_e \leq 1,$$

where E (BV) = the expected bonus value, and

$PROB_e$ = the subjective probability of eligibility.

Graphically, lower beliefs of eligibility result in smaller rightward shifts in the participation budget lines presented in Figures 1 and 2.

This lack of full information regarding eligibility alters the conditions for participation. In the face of uncertainty the necessary condition for participation is that the expected bonus value exceed the

access cost of participation. Clearly a person who is certain he is not eligible to participate will not incur any access costs when he knows he will receive nothing in return. Similarly, the conditions derived above which will determine whether the individual participates or not are likewise modified by substituting the expected bonus value for bonus value. Thus, for 1979, the condition for participation to occur is

$$(5) \quad MRS_{f,y} > \frac{AC - E}{PROB_e(BV) - E}.$$

For 1976, participation will occur if

$$(6) \quad MRS_{f,y} > \frac{PP + AC - E}{PP + PROB_e(BV) - E}.$$

The right-hand sides of both conditions are inversely related to the expected bonus value, indicating that the probability of participation will be positively related to the subjective probability of eligibility.

Stigma toward welfare receipt exists when a person has a dislike for receiving welfare income. This could occur because a person is embarrassed to use welfare or because the person feels a loss of self-worth from having to accept assistance. Strong feelings of stigma may prevent eligible individuals from participating. In the model developed above, feelings of stigma would result in a lower marginal rate of substitution between income and food consumption from welfare sources. In other words, a person with feelings of stigma from using food stamps would not attach as much utility to the increased food consumption made available from food stamps as would someone who felt no stigma. Thus, for any decrease in income resulting from participation, a person with

strong feelings of stigma would require larger increases in food consumption to hold utility constant, as compared to a person who felt no stigma. This results in a lower $MRS_{f,y}$, thus lowering the probability that participation will occur.

Becoming a participant in the Food Stamp program may involve an expenditure of time as well as money. Stories of the long waits at welfare offices are well known. If a person values his time, these time access costs can deter participation. Such costs have been ignored in the above model, and we will note only that the value of lost time must be weighed against the calculations of net benefit laid out above in order to determine if participation will occur.

D. Changes in Participation Status

The model developed above indicates what factors can be expected to be important in determining whether an eligible person will choose to participate in the Food Stamp program in a particular year. Given a person's decision in a particular year, we would not expect a change in participation status unless one of the factors that determined the initial decision changed. Letting X stand for the right-hand side of Expressions (5) and (6), for a person to be a nonparticipant in 1976 implies that

$$(7) \quad MRS_{f,y}^{1976} < X^{1976}.$$

In order for the person to become a participant in 1979,

$$(8) \quad MRS_{f,y}^{1979} > X^{1979}.$$

Since $MRS_{f,y}^{1979} = MRS_{f,y}^{1976} + \Delta MRS_{f,y}$ and $X^{1979} = X^{1976} + \Delta X,$

Expression (8) can be rewritten as

(9) $\Delta \text{MRS}_{f,y} - \Delta X > X^{1976} - \text{MRS}_{f,y}^{1976}.$

Expression (9) states that in order for a nonparticipant in 1976 to become a participant in 1979, the net change in the factors determining participation must be sufficiently large to overcome the initial difference in these factors. In other words, changes in participation status will be a function of both changes in the variables determining the single-year participation decision and the initial levels of these variables. This can be seen most clearly by comparing the above example to a 1976 nonparticipant who remained a nonparticipant in 1979. For such a person,

(10) $\text{MRS}_{f,y}^{1979} < X^{1979},$ or

(11) $\Delta \text{MRS}_{f,y} - \Delta X < X^{1976} - \text{MRS}_{f,y}^{1976}.$

This person may have experienced the same net change in the variables determining participation as the person who became a participant, but for this person the change was not large enough to overcome the initial difference which prevented participation. An analogous situation holds in distinguishing 1976 participants who remained participants from those who became nonparticipants.

II. A DESCRIPTIVE OVERVIEW OF PARTICIPATION IN THE FOOD STAMP PROGRAM

In order to analyze empirically the influence of the various factors which theoretically may be expected to determine a change in par-

ticipation status, a sample of households that were eligible for food stamps in both 1976 and 1979 was derived from the Panel Study of Income Dynamics.[5] The result was a sample of 700 households. Almost three-quarters of these households were headed by women, with elderly unmarried women being particularly conspicuous, accounting for 36.6 percent of the sample. The group had on average a low level of education, with over one-half of the household heads having 8 or fewer years of formal education. Almost one-half of the sample resided in the South. Less than 15 percent of the household heads worked 1,500 hours or more in 1979. As might be expected, these households were not well-off financially, with over 50 percent having average monthly income of less than $300 in 1979. Not surprisingly, 60 percent were officially poor in 1979, and over one-third (35.5 percent) of the sample had spent the previous three years in poverty.

Table 1 presents the experiences of these households with the Food Stamp program. Five hundred twenty households received food stamps in 1976, yielding a (weighted) participation rate of 47.7 percent. By 1979 the participation rate had increased to 54.7 percent, as 31 more households received food stamps. This aggregate increase of 31 participants was the net result of 110 households (representing 15.5% of the entire sample) which did not participate in 1976 becoming participants in 1979, and 79 households (representing 8.5% of the entire sample) which were participants in 1976 quitting the program in 1979. Three hundred forty-one households (39.2% of the sample) participated in both 1976 and 1979, while 170 households (36.7% of the sample) did not participate in either year.

Table 1

Food Stamp Participation Status of Households
Eligible in Both 1976 and 1979
(N = 700)

Participation Status	Number of Observations	Weighted Percentage
Participant in both 1976 and 1979	341	39.2%
Participant in 1979, nonparticipant in 1976	110	15.5
Participant in 1976, nonparticipant in 1979	79	8.5
Nonparticipant in both 1976 and 1979	170	36.7

Note: Household weights are based on the inverse of the sampling probability.

It is interesting to note that the single-year participation rates of this sample are only slightly higher than the annual participation rates for all eligible households found in other studies. This is somewhat surprising. The sample selected for this study represents a subset of all eligible households in a given year—a subset which was eligible for two years, not just a single year. As such, this group was presumably less well-off than a sample of all eligible households. If, as has been argued, the nonparticipation problem is confined primarily to the less needy of the eligibles (see Report of the President's Task Force on Food Assistance, 1984, p. 16), then one would expect the participation rate of the two-year eligibles to be markedly higher than the overall participation rate. Such was not the case.

In both 1976 and 1979 households that did not report receiving any food stamps were asked a series of questions regarding the reason they did not participate in the program. Table 2 gives the distribution of those responses by participation status. For households that joined the program, a belief that they were not eligible to participate in 1976 was by far the most prominent barrier to participation, accounting for 38.5 percent of these households. Informational problems were not as prevalent a reason for those who quit the program by 1979, accounting for approximately 20 percent of these households. Administrative problems were the dominant reasons mentioned by those who stopped participating, accounting for almost 40 percent of the responses. These responses include those who indicated that they had been told by local welfare officials that they were not eligible to participate.[6] For those eligible households that did not participate in either year, informational

Table 2

Reasons Given by Eligible Households for Not
Participating in the Food Stamp Program

Reason for not Participating	Reason Given in 1976 By Those Who Joined the Program		Reason Given in 1979 By Those Who Quit the Program		Reason Given in 1979 By Those Who Never Participated	
	Number of Observations	Weighted Percentage	Number of Observations	Weighted Percentage	Number of Observations	Weighted Percentage
Informational Problems						
Did not believe eligible because of financial reasons	39[a]	38.5%	9	6.8%	24	12.6%
Did not believe eligible because of nonfinancial reasons			13	14.3	43	23.4
Purchase Price Problems[b]	17	8.4	–	–	–	–
Administrative Problems						
Administrative hassle	11	3.4	12	21.0	13	4.4
Tried, but refused	14	9.2	15	18.9	33	17.0
Personal Problems						
No need	4	6.8	3	11.5	21	13.8
Physical access problem	5	5.2	4	6.1	8	5.8
Bonus value too low	7	7.3	5	7.4	1	0.1
Personal attitude	2	4.1	5	3.7	7	6.9
Other	11	17.2	13	10.5	20	16.0
Total	110	100.0	79	100.0	170	100.0

[a] In 1976 respondents were not asked why they thought they were not eligible to receive food price requirement was eliminated in 1979.

[b] The purchase price requirement was eliminated in 1979.

barriers were the major problem,[7] accounting for 36 percent of the responses. These beliefs in ineligibility stemmed from two distinct factors -- financial factors (i.e., a belief that income or assets were too high to qualify) and nonfinancial, or categorical, factors (i.e., no dependent child in household). Unfortunately, the data on the nonfinancial factors were not sufficiently detailed to allow better specification of the reason for the (apparently) mistaken belief in ineligibility. Finally, it should be noted that a nontrivial number of the responses for all the groups fell into the analytically amorphous category of "Other."

III. THE EMPIRICAL RESULTS

A. The Model Specification

A person who is eligible for food stamps in both 1979 and 1976 can fall into one of four possible states: the person can be a participant in both 1979 and 1976, a participant in 1979 and a nonparticipant in 1976 (i.e., the person can join the program), a nonparticipant in 1979 and a participant in 1976 (i.e., the person can quit the program), or the person can be a nonparticipant in both years. We are interested in determining the probability that an eligible individual will be in one of these categories and the factors which affect that probability. Because of several desirable statistical properties, in a mutually exclusive multiple-choice situation such as this the probabilities are most often expressed in the following form:

$$(12) \quad P_1 = \frac{e^{(a_1 + b_1 x)}}{1 + e^{(a_1 + b_1 x)} + e^{(a_2 + b_2 x)} + e^{(a_3 + b_3 x)}}$$

$$(13) \quad P_2 = \frac{e^{(a_2 + b_2 x)}}{1 + e^{(a_1 + b_1 x)} + e^{(a_2 + b_2 x)} + e^{(a_3 + b_3 x)}}$$

$$(14) \quad P_3 = \frac{e^{(a_3 + b_3 x)}}{1 + e^{(a_1 + b_1 x)} + e^{(a_2 + b_2 x)} + e^{(a_3 + b_3 x)}}$$

$$(15) \quad P_4 = \frac{1}{1 + e^{(a_1 + b_1 x)} + e^{(a_2 + b_2 x)} + e^{(a_3 + b_3 x)}} \quad .$$

The P_i's are the probabilities that an eligible individual will fall into one of the four possible states, x is a set of independent variables hypothesized to influence those probabilities, and the a_i's and b_i's are the coefficients to be estimated. In a multinominal logistic model such as this, the coefficients are estimated by forming the ratios P_i/P_4, i = 1,2,3 and taking the natural logarithm of each side, yielding

$$(16) \quad LN \ (P_i/P_4) = a_i + b_i x, \ i = 1,2,3,$$

from which maximum likelihood estimates of a_i and b_i can be obtained.

The behavioral model developed in Section II provides some clues concerning the variables that can be expected to influence these probabilities. Such variables include the bonus value, the purchase price, access costs, the subjective belief of eligibility, and a number of taste-related variables, such as feelings of stigma and the marginal rate of substitution between food and income. Changes in participation status will be influenced by the initial level of these variables plus any changes which may occur over the relevant period. However, measures of several of these variables, most notably the subjective belief of eligibility and the various taste-related variables, are not readily

available. Faced with this problem, researchers have been forced to utilize variables which are thought to reflect the unmeasured factors (see, for example, MacDonald, 1977; Warlick, 1982; and Coe, 1983). In this study, age and the work and welfare experiences of the household head were used as substitute measures of the nonprogrammatic variables.[8]

B. The Effect of the Program Variables

The results of estimating the model are presented in Table 3. With respect to the program variables, virtually all the coefficients on the bonus value--both the initial level and the change--are significant, while the coefficients on the purchase price are uniformly insignificant. These results are most easily interpreted by substituting the estimated coefficients into the probability formulae given in Equations (12) through (15) and calculating the probabilities at selected values of the independent variable. Figure 3 presents these calculations graphically for different levels of the 1976 bonus value. As expected, the probability of participating in both years and the probability of becoming a participant are both positively related to the level of the initial bonus value, while the probability of never participating decreases sharply as the initial bonus value increases. An eligible person entitled to a $10 bonus value in 1976 had a 15.8 percent probability of being a participant in both years, a 15.0 percent probability of joining the program, and a 45.9 percent probability of not participating in either year. A person entitled to a $200 bonus value had a 37.1 percent probability of being a participant in both years, a 41.5 percent probability of joining the program, and only a 5.4 percent probability of not participating in either year.

Table 3

Multinomial Logistic Results for Change in Food Stamp
Participation Status, 1976-1979

Independent Variable	$LN(P_1/P_4)$	$LN(P_2/P_4)$	$LN(P_3/P_4)$
Constant	.733 (.672)	1.132 (.765)	1.120 (.816)
1976 bonus value ($100)	1.572** (.346)	1.661** (.377)	.928* (.445)
Change in bonus value ($100)	.697* (.337)	1.046** (.363)	.411 (.445)
1976 purchase price ($100)	-.109 (.333)	.136 (.370)	.293 (.407)
Age (10 years)	-.498** (.092)	-.580** (.105)	-.602** (.120)
Work hours of head, 1976 (100 hours)	-.077** (.024)	-.156** (.033)	-.052+ (.030)
Change in work hours of head (100 hours)	-.035 (.026)	-.144** (.036)	.034 (.031)
Received AFDC in both 1976 and 1979	3.413** (.458)	1.503** (.534)	.678 (.603)
Received AFDC or SSI in 1976, received neither in 1979	2.821** (.495)	1.884** (.610)	2.338** (.546)
Received AFDC or SSI in 1979, received neither in 1976	1.756** (.376)	2.289** (.375)	-1.159 (1.052)
Received SSI in 1979, received either SSI or AFDC in 1976	3.155* (.343)	1.670** (.421)	1.616** (.469)
Received neither AFDC nor SSI in either 1979 or 1976	-	-	-

(Continued)

Table 3 (Continued)

Significance levels: **.01, *.05 +.10.

P_1 = Probability of being a participant in both 1979 and 1976.

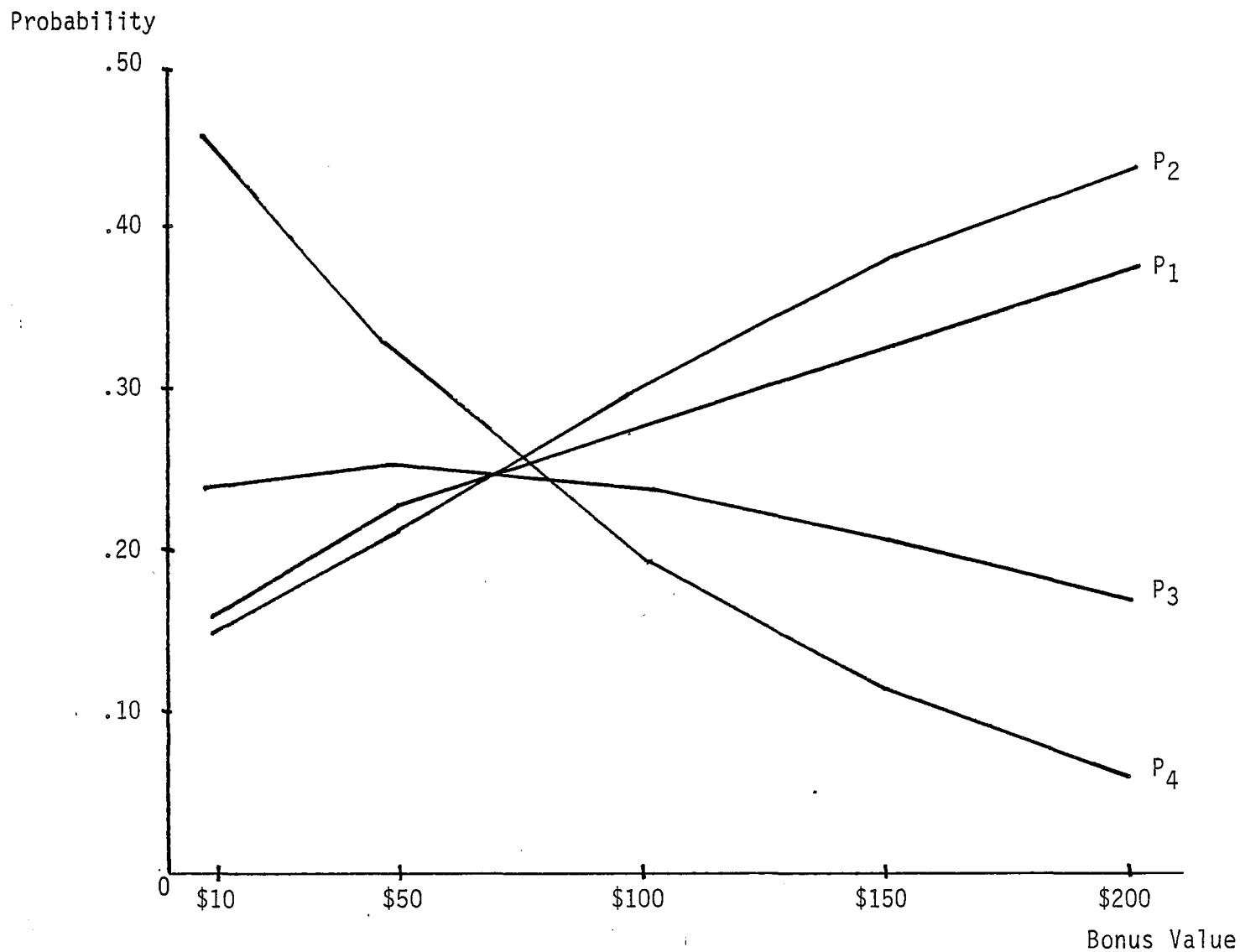P_2 = Probability of being a participant in 1979, a nonparticipant in 1976.

P_3 = Probability of being a nonparticipant in 1979, a participant in 1976.

P_4 = Probability of being a nonparticipant in both 1979 and 1976.

NOTES: All program variables are in real terms. Numbers in parentheses are asymptotic standard errors. The data have been weighted by the inverse of the sampling probability.

FIGURE 3

EFFECT OF INITIAL BONUS VALUE ON CHANGE IN PARTICIPATION STATUS

P_1 = Participant in both years.

P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.

Note: Probabilities were calculated from results reported in Table 3.
        Other program variables were assigned their mean values, as were
        the work hour variables. Age was set equal to 30 years. Dummy
        independent variables were set equal to zero.

Figure 4 shows the effect of changes in the bonus value on change in participation status. Again the results are as expected. Most notable is the positive impact that increases in the bonus value have on joining the program. A person with no change in bonus value had a 29.2 percent probability of joining the program. If that person had experienced a $100 increase in bonus value, the probability of joining would have increased to 42.6 percent. Conversely, the probability of never participating declines sharply as the change in the bonus value increases, as to a lesser degree does the probability of quitting the program.
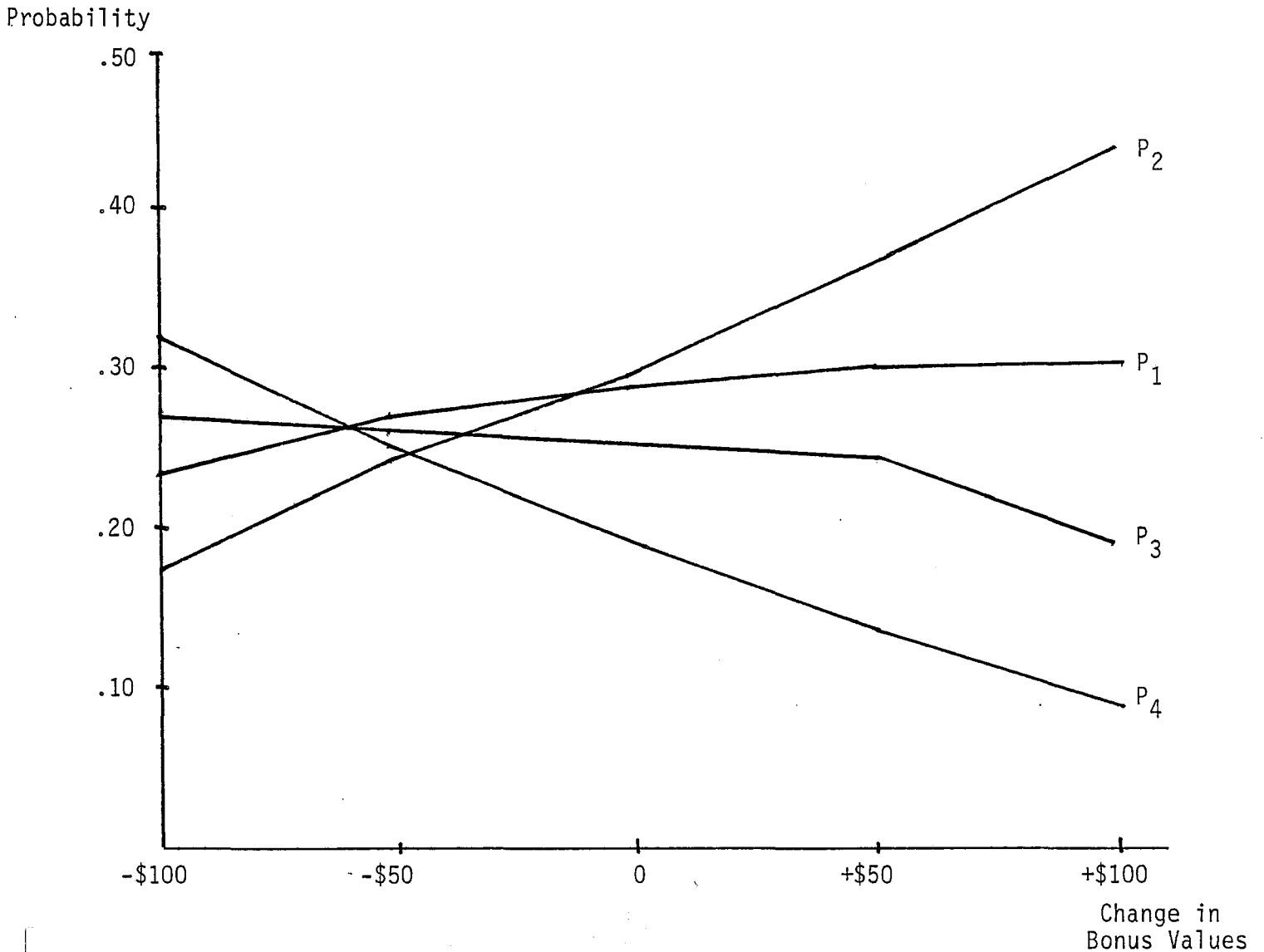
C. Age and Change in Participation Status

Figure 5 presents the effect of the age of the household head on changes in participation status. The most striking result is that the probability of never participating increases dramatically with age. Assuming mean values on the other independent variables, a household headed by a 20-year-old has only a 17.1 percent probability of never participating. For a household headed by a 60-year-old, the probability increases almost fourfold to 65.7 percent. A household headed by an 80-year-old has an 85 percent probability of not participating in the Food Stamp program in either year. Thus it is clear that nonparticipation is a particularly acute problem for the elderly.

D. The Labor Market Experiences of the Household Head

In evaluating the effect on participation of the labor market experiences of the household head, three comparison groups suggest themselves. What was the difference in participation status between a house-

FIGURE 4

EFFECT OF CHANGE IN BONUS VALUE ON CHANGE IN PARTICIPATION STATUS

Probability

P_1 = Participant in both years.

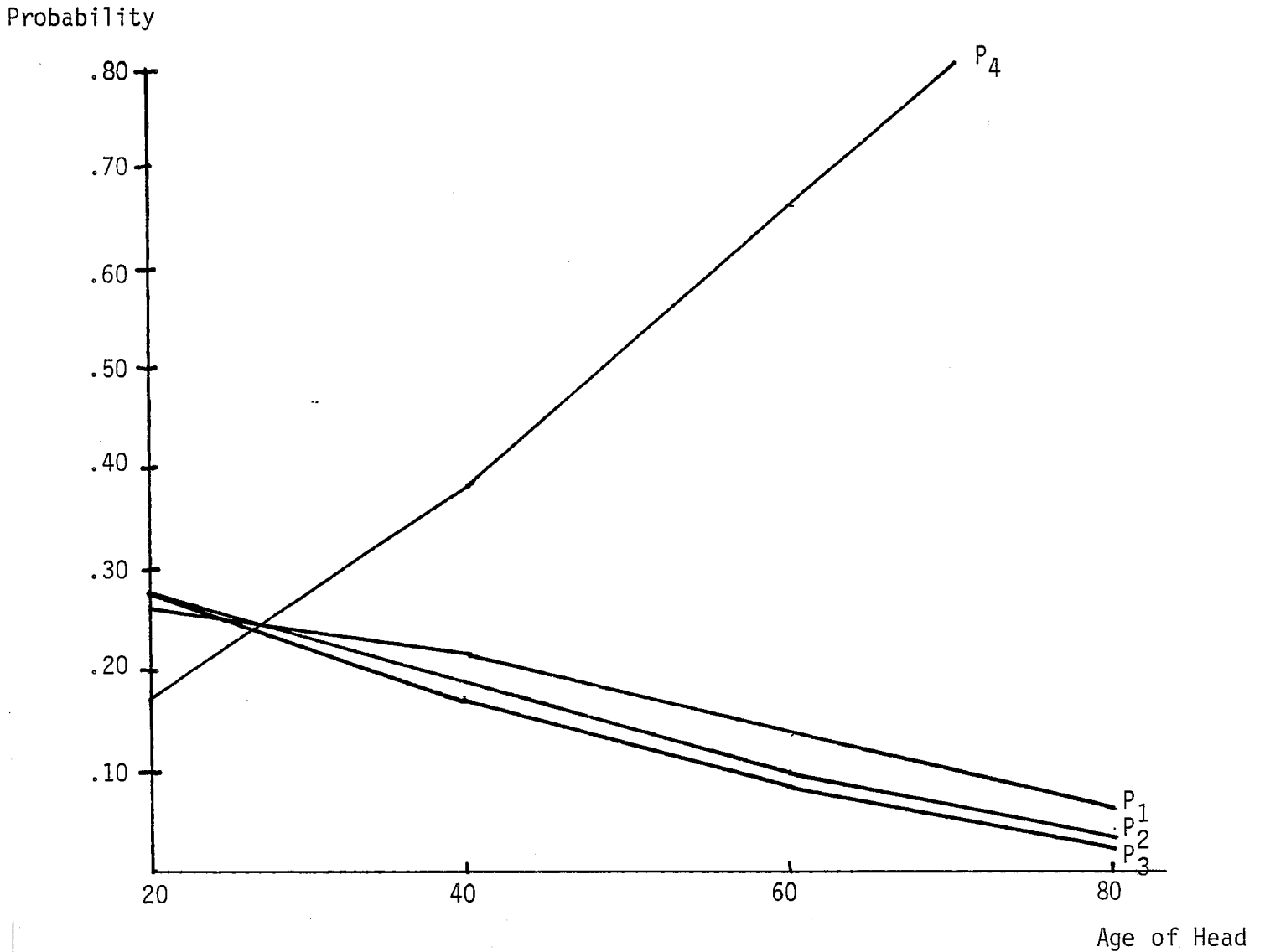P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.

Note: Probabilities are calculated from results reported in Table 3.
1976 bonus value was set equal to $110. Purchase price and work
hours were assigned mean values. Age was set equal to 30. Dummy
independent variables were set equal to zero.

FIGURE 5

EFFECT OF AGE ON CHANGE IN PARTICIPATION STATUS

Probability

P_1 = Participant in both years.

P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.

Note: Probabilities are calculated from results reported in Table 3.
        Other independent variables were assigned their mean values.
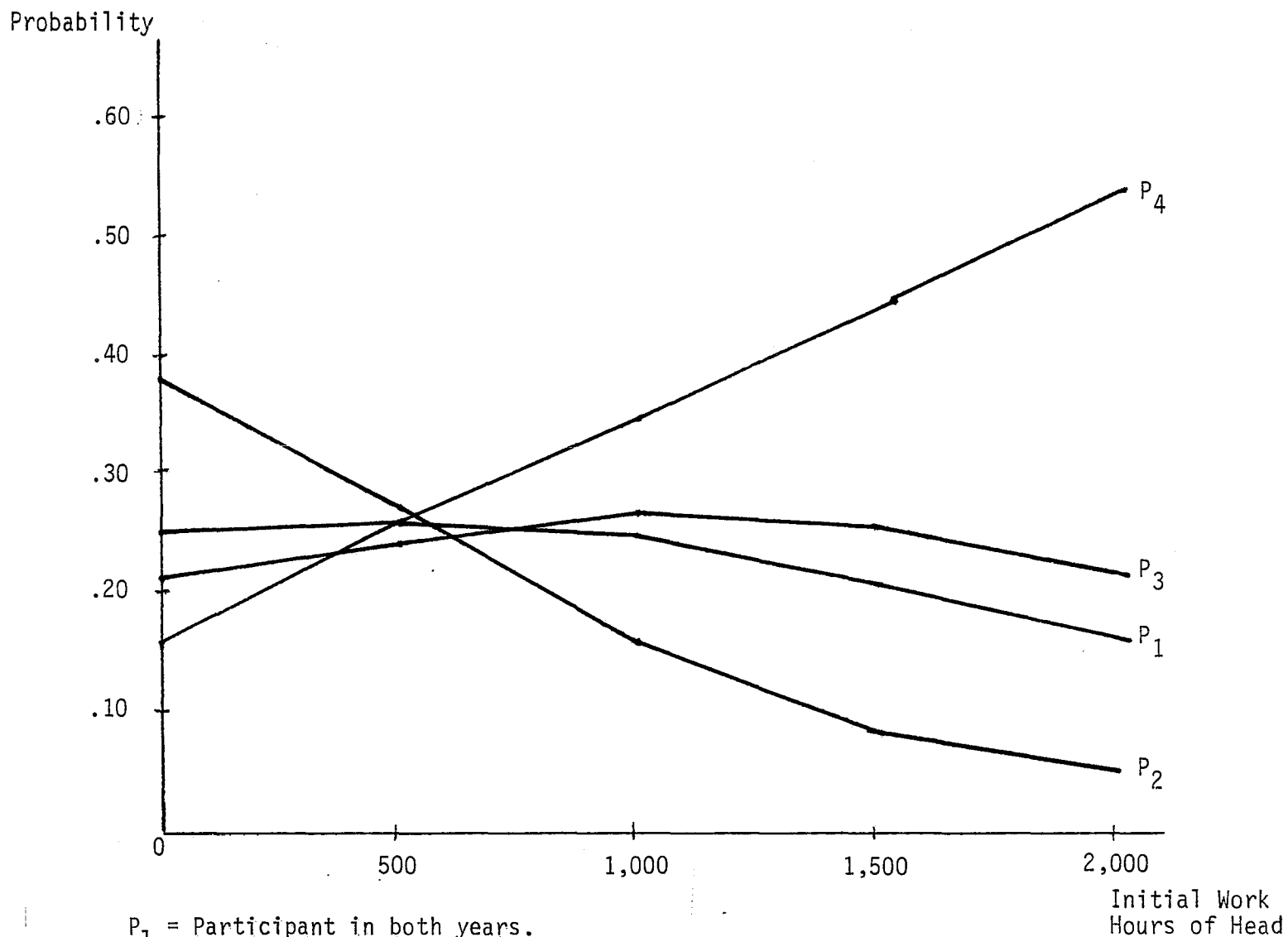   Dummy variables were set equal to zero.

hold in which the head was fully employed in both 1976 and 1979 and a household in which the head was nonemployed in both years? What was the difference between a household in which the head was fully employed in 1976 and remained employed and a household in which the head was fully employed in 1976 but was nonemployed in 1979? Finally, what was the difference in participation status between two households headed by two nonemployed persons in 1976, one of whom remained nonemployed and the other who became fully employed? The first comparison focuses on the effect of a difference in initial work hours (which do not change), the second comparison focuses on the effect of a decrease in work hours, and the third examines the effect of an increase in work hours.

1. The effect of initial work hours. As can be seen in Figure 6, the primary effect of higher initial work hours is to increase the probability that an eligible household will never participate in the program (with a concomitant decrease in the probability that the household will begin receiving food stamps). A household in which the head was nonemployed in both 1976 and 1979 had only a 17.0 percent probability of not participating in either year and a 37.1 percent probability of joining the program. If an otherwise identical household had been headed by someone who was fully employed in both years, the probability of not participating in both years would have increased to 54.1 percent, while the probability of beginning to receive food stamps would have been only 5.2 percent.

2. A decrease in work hours. What would be the effect if the employed household head, instead of remaining fully employed, were to experience difficulties in the labor market? Figure 7 illustrates the

FIGURE 6

EFFECT OF INITIAL WORK HOURS ON CHANGE IN PARTICIPATION STATUS

Probability

P_1 = Participant in both years.

P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.

Note: Probabilities are calculated from results reported in Table 3.
Program variables were assigned their mean values. Age was set
equal to 30. Change in work hours was set equal to zero, as
were the dummy independent variables.

FIGURE 7

EFFECT OF A DECREASE IN WORK HOURS ON CHANGES IN PARTICIPATION
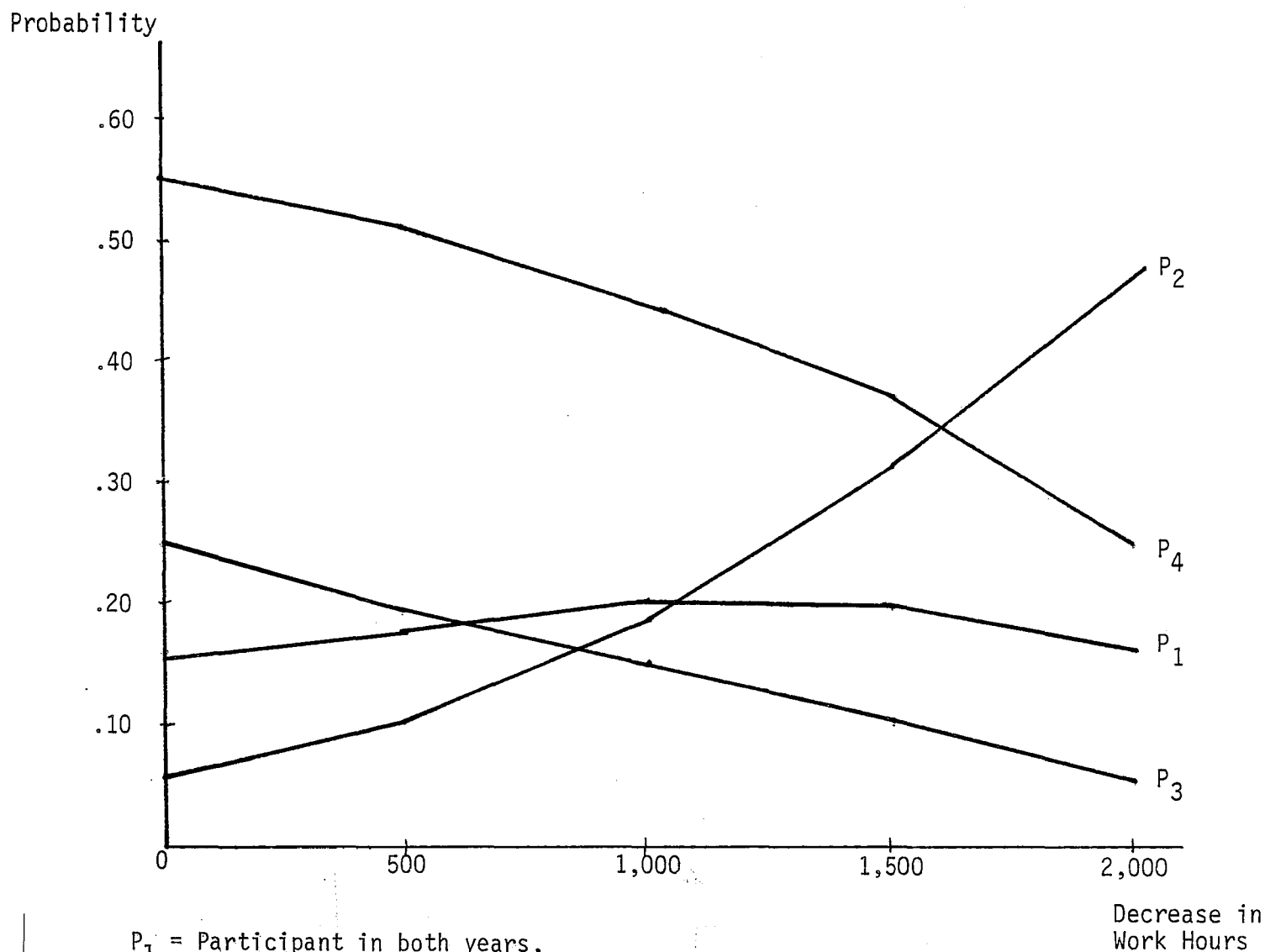STATUS FOR A HOUSEHOLD HEADED BY A FULLY EMPLOYED PERSON IN 1976

P_1 = Participant in both years.

P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.
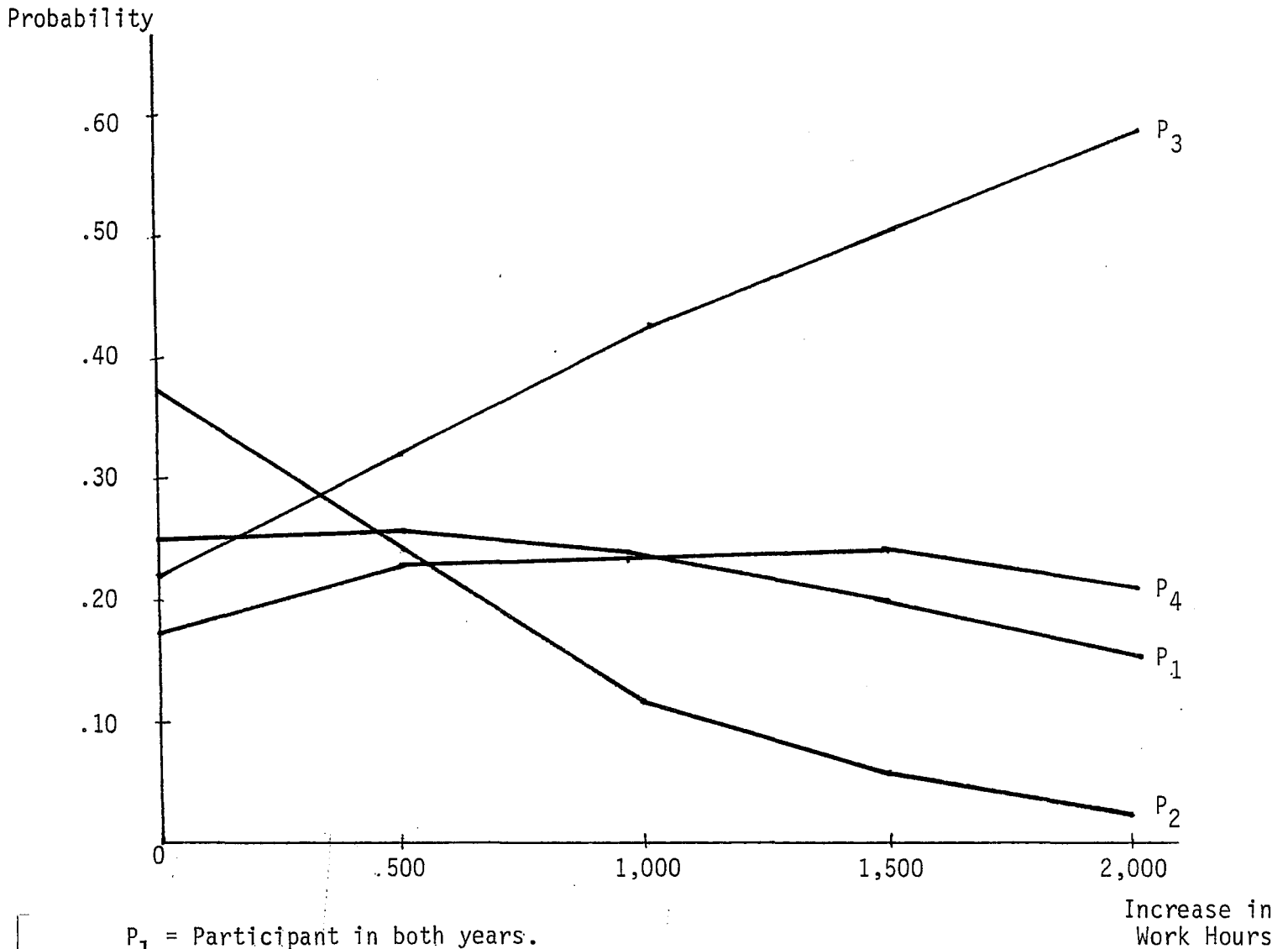
Note: Probabilities are calculated from results reported in Table 3.
       Program variables were assigned their mean value. Age was set
       equal to 30. 1976 work hours were set equal to 2,000. Dummy
       independent variables were set equal to zero.

effect. As expected, a reduction in work hours[9] results in a higher pro-
bability of joining the program and a lower probability of never par-
ticipating, as well as a lower probability of quitting. If a fully
employed person were to become nonemployed, the probability of becoming a
participant would equal 48.1 percent, almost ten times the probability of
joining for the head who remained fully employed. Conversely, the proba-
bility of never participating or of quitting the program was considerably
lower for the household headed by the person who became unemployed (28.1
and 6.3 percent, respectively; compared to 54.1 and 24.0 percent for the
head who remained employed). It appears from these results that the Food
Stamp program does indeed serve as a safety net to those who experience
misfortune in the labor market, even for those who were eligible while
they were employed. Why it takes a triggering mechanism such as the loss
of a job before these people participate is a question we will address
below.

3. **An increase in work hours.** We can also examine the flip-side of
the coin--what happens when a nonemployed eligible person becomes
employed but still remains eligible? As shown in Figure 8, an increase
in work hours is positively correlated with the probability of quitting
the program and negatively correlated with the probability of joining the
program. A nonemployed person in 1976 who remained nonemployed had a
37.1 percent probability of joining the program and a 21.4 percent proba-
bility of quitting the program. If the person had become fully employed
in 1979, the probability of quitting the program would have more than
doubled to 57.4 percent, while the probability of joining the program
would have been reduced virtually to zero.

FIGURE 8

EFFECT OF A INCREASE IN WORK HOURS ON CHANGES IN PARTICIPATION
STATUS FOR A HOUSEHOLD HEADED BY A NON-EMPLOYED PERSON IN 1976

P_1 = Participant in both years.

P_2 = Joined the program.

P_3 = Quit the program.

P_4 = Nonparticipant in both years.

Note: Probabilities are calculated from results reported in Table 3.
Program variables were assigned their mean value. Age was set
equal to 30. 1976 work hours were set to zero, as were the
dummy independent variables.

E. The Welfare Experience of the Household

Table 4 summarizes the effect of different welfare experiences on participation in the Food Stamp program. A substantial interrelationship between the two is apparent. Households eligible for food stamps but having no connection with other parts of the welfare system in either year had a high probability (52.4 percent) of not participating in the Food Stamp program in either year. On the other hand, eligible households that received welfare in both years had very high probabilities (in the 70-80 percent range) of participating in the Food Stamp program both years. Changes in welfare status also paralleled changes in Food Stamp participation status. Eligible households that began receiving welfare payments had a 48.3 percent probability of joining the program, a considerably higher probability (in absolute terms) than any other group. On the other hand, food-stamp-eligible households that stopped receiving welfare had noticeably higher probabilities of quitting the Food Stamp program as well.

The relationship between changes in welfare status and changes in Food Stamp participation status was not, however, symmetrical. This is best seen by examining the conditional probabilities of joining and quitting the program --conditional on the initial (1976) participation status.[10] Of those eligible households that were not participating in 1976 and began receiving other forms of welfare, 74.2 percent [.483/(.483 + .168)] began using food stamps. On the other hand, of those households that were participating in 1976 and subsequently ceased receiving other forms of welfare, only 32.9 percent quit receiving food stamps as well. And while this is a considerably higher conditional probability of

Table 4

Effect of Welfare Status on Change in Participation Status

	Probability of:			
Welfare Status	Partici-pating in Both Years	Joining the Program	Quitting the Program	Not Partici-pating in Either Year
Did not receive any welfare in either year	.180	.152	.144	.524
Received AFDC in both 1979 and 1976	.785	.099	.041	.075
Received SSI in 1979, received welfare in 1976	.673	.129	.115	.083
Began receiving welfare	.334	.483	.014	.168
Quit receiving welfare	.501	.166	.246	.087

NOTE: Probabilities are calculated from results reported in Table 3. Other independent variables were assigned their mean values.

quitting than that of households that remained on welfare (or began receiving it), it is lower than the 44.4 percent conditional probability of quitting for households that had no contact with other parts of the welfare system. These results suggest that experience with other welfare programs is an important precondition to Food Stamp program participation, perhaps for reasons of better information or less administrative hassle. Once participating, however, an eligible person is likely to continue participating even after exiting from the welfare program which first introduced him to the Food Stamp program, because the person is now informed of his eligibility or has learned the proper administrative procedures.

V. WHY DO ELIGIBLE HOUSEHOLDS JOIN, QUIT, OR NEVER PARTICIPATE IN THE FOOD STAMP PROGRAM?

The results presented above indicate that the benefit level, the age of the household head, and the labor market and welfare experiences of the household are all significant in predicting an eligible household's participation status. However, as noted earlier, except for the benefit level, it is difficult to determine why these variables exert an influence on the participation decision. Is age negatively related to participation because the elderly feel more stigma toward receiving welfare, are less informed of their eligibility, or face higher access costs? In order to answer questions such as this we incorporate into the model the responses eligible households give regarding why they did not participate, as shown in detail in Table 2.

These responses will allow for a more refined categorization of participation status. For example, households that joined the program can

be subdivided into different categories depending on the barrier to participation they overcame, as indicated by the reason given for not participating in 1976. Due to the limited number of observations, four such categories (as indicated in Table 2) suggest themselves—those who joined by overcoming informational barriers (N = 39), by overcoming purchase-price problems (N = 17), by overcoming administrative problems (N = 25), and those who joined by overcoming any of the other barriers to participation, which for sake of expository ease will be labelled personal problems (N = 29). We now have a seven-category variable defining participation status rather than the four-category variable used above. By reestimating this model with this more refined dependent variable, we can determine which factors are correlated with overcoming which barriers for those who joined the program. The results of such an estimation are presented in Table 5.

A. <u>Work, Welfare, and the Barriers Overcome by Those Who Join the Program</u>

In Figure 7 we saw that the probability of joining the program increased sharply as the work hours of the household head decreased. The results in Table 5, as illustrated in Figure 9, indicate that for those who join, the probability of overcoming informational barriers was most strongly influenced by this labor market experience. The probability of joining by overcoming informational barriers was zero for a fully employed person who suffered no decrease in work hours; the probability equalled 17.8 percent for an identical person who stopped working altogether. It is interesting to note that the separation from the labor market must be virtually complete before the person overcomes the belief

Table 5

Multinomial Logistic Results on the Barriers
Overcome by Those Who Became Participants, 1976-1979

Independent Variable	$LN(P_1/P_7)$	$LN(P_2/P_7)$	$LN(P_3/P_7)$	$LN(P_4/P_7)$	$LN(P_5/P_7)$	$LN(P_6/P_7)$
Constant	.753 (.645)	.773 (1.186)	-6.244* (2.643)	.072 (1.481)	.057 (.966)	1.140 (.818)
1976 bonus value ($100)	1.546** (.345)	.838 (.549)	1.496+ (.837)	1.997** (.648)	1.968** (.430)	.915* (.444)
Change in bonus value ($100)	.711* (.339)	.804 (.516)	2.573** (.870)	1.315* (.646)	.910* (.444)	.405 (.445)
1976 purchase price ($100)	-.151 (.653)	.673 (.528)	-2.412** (1.065)	.481 (.655)	.087 (.468)	.310 (.408)
Age (10 years)	-.494** (.093)	-.780** (.146)	.014 (.297)	-.887** (.232)	-.493** (.133)	-.602** (.121)
Work hours of head, 1976 (100 hours)	-.076** (.024)	-.304** (.072)	.017 (.076)	-.110+ (.058)	-.148** (.042)	-.053+ (.031)
Change in work hours of head (100 hours)	-.035 (.027)	-.302** (.077)	-.028 (.086)	-.093 (.065)	-.123** (.045)	.033 (.031)
Received AFDC in both 1976 & 1979	3.410** (.460)	1.760* (.883)	5.787** (1.675)	.457 (1.081)	.990 (.660)	.640 (.606)
Received AFDC or SSI in 1976, received neither in 1979	2.778** (.496)	3.774** (.849)	-5.418 (54.498)	-7.413 (59.467)	-8.715 (61.251)	2.299** (.547)
Received AFDC or SSI in 1979, received neither in 1976	1.740** (.375)	3.506** (.699)	2.300 (1.850)	1.402 (.865)	1.787** (.455)	-1.185 (1.054)
Received SSI in 1979, received either SSI or AFDC in 1976	3.136** (.342)	1.858** (.864)	3.823* (1.642)	3.074** (.928)	1.061+ (.567)	1.597** (.468)
Received neither AFDC nor SSI in either 1979 or 1976	-	-	-	-	-	-

(Continued)

Table 5 (Continued)

Significance levels: $**.01$, $*.05$, $+10$.

P_1 = Probability of being a participant in both 1979 and 1976.

P_2 = Probability of being a participant in 1979, a nonparticipant in 1976 due to informational problems.

P_3 = Probability of being a participant in 1979, a nonparticipant in 1976 due to purchase-price problems.

P_4 = Probability of being a participant in 1979, a nonparticipant in 1976 due to administrative problems.

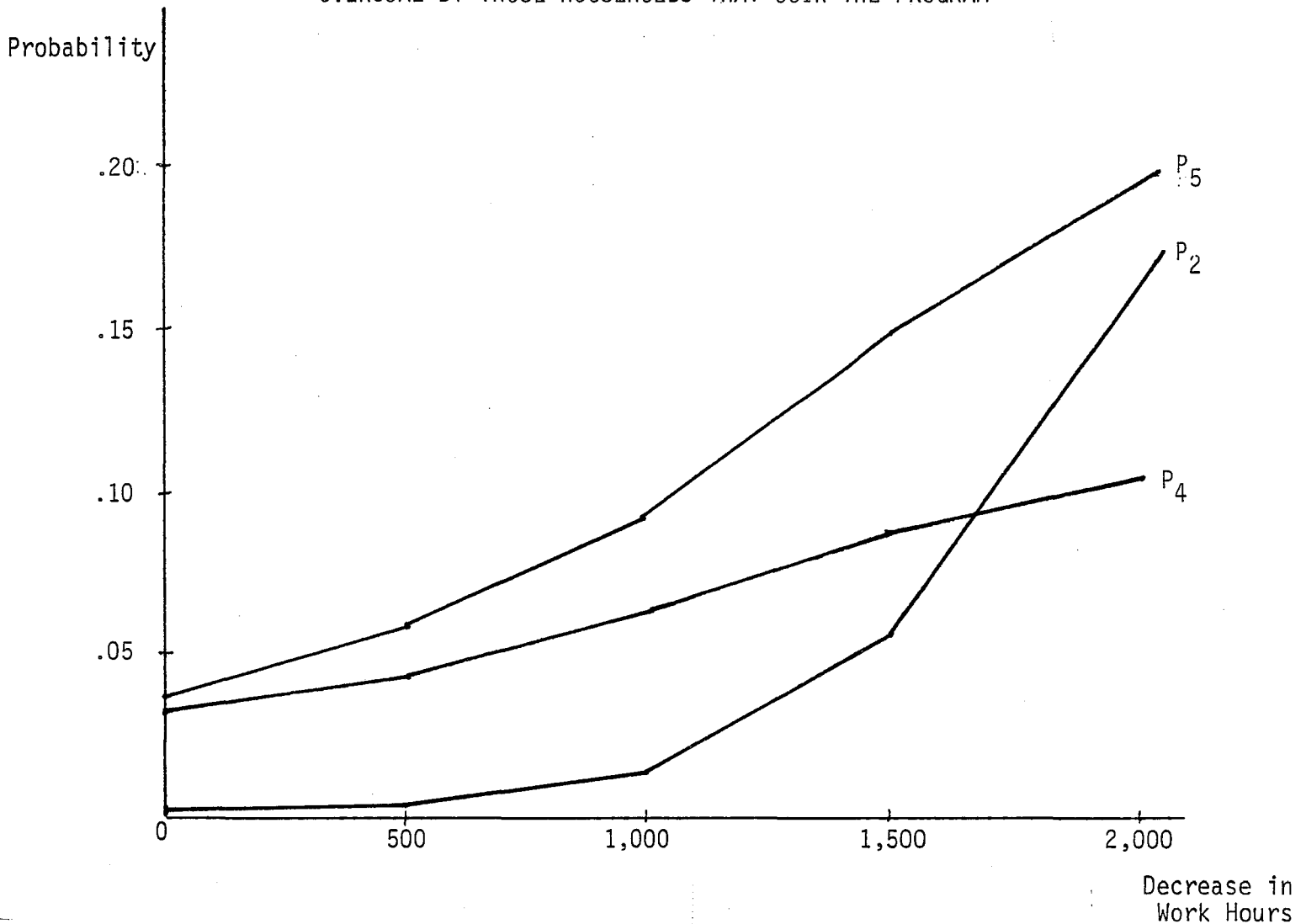P_5 = Probability of being a participant in 1979, a nonparticipant in 1976 due to personal reasons.

P_6 = Probability of being a nonparticipant in 1979, a participant in 1976.

P_7 = Probability of being a nonparticipant in both 1979 and 1976.

Notes: All program variables are in real terms. Numbers in parentheses are asymptotic standard errors. The data are weighted by the inverse of the sampling probabilities.

FIGURE 9

EFFECT OF A DECREASE IN WORK HOURS ON THE BARRIERS
OVERCOME BY THOSE HOUSEHOLDS THAT JOIN THE PROGRAM

P_2 = Participant in 1979, nonparticipant in 1976 due to informational problems.

P_4 = Participant in 1979, nonparticipant in 1976 due to administrative problems.

P_5 = Participant in 1979, nonparticipant in 1976 due to personal reasons.

Note: Probabilities are calculated from results reported in Table 5.
Variables were assigned their mean values. 1976 work hours were
set equal to 2,000. Age was set equal to 30. Dummy independent
variables were set equal to zero. P_3, the probability of being a
participant in 1979 and a nonparticipant in 1976 due to purchase
price problems, is not shown due to extremely small probabilities.

that he is not eligible to participate. If work hours decreased by 1,000 hours, the probability of joining by overcoming informational barriers would be only 1.5 percent.

The probability of joining by overcoming personal reasons preventing participation also increased as work hours decreased. For a fully employed person who experienced no reduction in work hours, the probability of overcoming this conglomerate of reasons was only 3.2 percent. If the person had become nonemployed, the probability would have increased to 19.7 percent. The probability of joining by overcoming administrative difficulties was not significantly affected by changing work hours. One likely explanation of this result is that eligible employed persons are not likely to attempt to obtain food stamps and thus are not likely to encounter problems with the local administration. Therefore, it would not be likely that they would overcome this improbable barrier if they became nonemployed.

It was noted earlier that households that began receiving other forms of welfare had a high probability of beginning to receive food stamps as well. The results shown in Table 6 help to explain why this is so. In interpreting these results it is important to remember the distinction between the absolute and relative size of the different probabilities. It is two distinct questions to ask what barrier were households that began receiving welfare most likely to overcome when they joined the Food Stamp program, and what barrier were they most likely to overcome compared to households with other welfare experiences. For example, households that began receiving welfare had a 21.7 percent probability of joining the Food Stamp program by overcoming personal barriers to

Table 6

Effect of Welfare Status on the Barriers Overcome
by Those Who Joined the Food Stamp Program

| Welfare Status | Reason for Not Participating in 1976 | | | |
	Informational Problems	Purchase-Price Problems	Administrative Problems	Personal Problems
Did not receive any welfare in either year	.014	.001	.024	.101
Received AFDC in both 1979 and 1976	.012	.039	.006	.039
Received SSI in 1979, received welfare in 1979	.014	.006	.083	.046
Began receiving welfare	.168	.003	.036	.217
Quit receiving Welfare	.111	.000	.000	.000

NOTE: Entries are the probabilities that a household will fall into the category "A participant in 1979, a nonparticipant in 1976 due to _____ reason." Probabilities are calculated from results presented in Table 5. Other independent variables were assigned their mean values.

participation--higher than the probability of joining by overcoming any other barrier. Yet this was also true for households receiving no welfare, who had a 10.1 percent probability of joining by overcoming personal barriers. While this difference between the two groups is large and significant, it is not as large as the difference in the probability of joining by overcoming informational barriers. For households receiving no welfare, the probability of joining by overcoming informational barriers was only 1.4 percent compared to a 16.8 percent probability for households that began receiving welfare. Thus the primary effect of coming into contact with other parts of the welfare system was that households that once thought they were not eligible to participate began receiving food stamps. It is also interesting to note in this regard that the informational barrier was the only barrier to participation overcome by those relatively few households that quit receiving other forms of welfare but still joined the Food Stamp program. The inference is that previous contact with the welfare system provided the knowledge to overcome the informational barrier. This knowledge was not lost when the individual stopped receiving welfare.

Other results from Table 6 are worth mentioning. Although households that received AFDC in both years did not have high probabilities of joining the Food Stamp program (primarily because they were very likely to be participants in both years), those that did join apparently did so to a large degree by overcoming purchase-price problems, which had prevented participation in 1976. (Those who received SSI in both years were also significantly more likely to overcome purchase-price problems, although the absolute size of the effect was quite small.) This occurred

despite the fact that the level of the purchase price was not itself a significant predictor of joining the program. What this suggests is that while the _level_ of the purchase price itself was not preventing participation by eligible households in 1976, eligible households receiving other forms of welfare were being adversely affected by the existence of the purchase requirement. Stated differently, the existence of the purchase requirement was not a major barrier to those not on welfare because of the greater importance of informational and personal barriers, such as feelings of stigma. However, for those eligible households receiving other forms of welfare, who were considerably less likely to be uninformed or to have feelings of stigma, the purchase price was a more important barrier to participation.

While receiving AFDC was conducive to overcoming purchase-price problems, households that received SSI in both years appeared to benefit from a reduction in administrative barriers to participation. Households receiving SSI in 1979 and some form of welfare in 1976 had an 8.3 percent probability of joining by overcoming administrative problems—the highest probability of overcoming this barrier for any of the welfare experiences as well as the most likely barrier overcome by those who received SSI. This result suggests that continued contact with the SSI system teaches a recipient enough about the administrative oddities of the welfare bureaucracy that the recipient eventually figures out (perhaps with the assistance of a persistent caseworker) how to overcome the administrative roadblocks to Food Stamp participation.

B. Why Eligible Households Quit the Food Stamp Program

In Table 2 we saw that of those households that quit receiving food stamps, 39.9 percent replied that they did not participate in 1979 because of administrative difficulties, 39.2 percent indicated that personal reasons prevented participation, and 21.1 percent responded that they did not think they were eligible to participate. In a manner analogous to the procedure used to reclassify households that joined the program, these responses can be used to subdivide households that quit into three categories based on their reason for not participating. By reestimating the model utilizing this more refined six-category dependent variable, we can determine the relationship between the experiences of the household and the reason for quitting the Food Stamp program. The results are reported in Table 7.

We saw in Figure 8 that the probability of quitting increased sharply as an eligible person went from nonemployment to full employment. As seen in Figure 10, the primary reason why this is so is because informational problems increase dramatically as the change in work hours increases. An eligible household headed by a nonemployed person in 1976 who experienced no change in work hours had a miniscule .9 percent probability of quitting the program due to informational factors. If the head had become fully employed, the probability would have increased to 24.3 percent. There is some evidence, however, that participants in the program (at least those with the characteristics assumed in Figure 10) realize that they can increase their work hours some without becoming ineligible. The probability of quitting due to informational problems

Table 7

Multinomial Logistic Results on the Reasons
Why Eligible Households Quit Participating, 1976-1979

Independent Variable	$LN(P_1/P_6)$	$LN(P_2/P_6)$	$LN(P_3/P_6)$	$LN(P_4/P_6)$	$LN(P_5/P_6)$
Constant	.853 (.679)	1.258 (.770)	-.670 (1.771)	1.880+ (1.126)	-1.808 (1.287)
1976 bonus value ($100)	1.580** (.347)	1.678** (.378)	.959 (.956)	1.498* (.593)	.393 (.646)
Change in bonus value ($100)	.713* (.342)	1.062** (.365)	-.159 (1.089)	.768 (.568)	.252 (.640)
1976 purchase price ($100)	-.122 (.336)	.134 (.373)	.940 (.884)	.136 (.609)	.391 (.553)
Age (10 years)	-.522** (.094)	-.600** (.106)	-1.153** (.313)	-.838** (.172)	-.228 (.180)
Work hours of head, 1976 (100 hours)	-.077** (.024)	-.158** (.033)	-.037 (.068)	-.154** (.054)	.011 (.041)
Change in work hours of head (100 hours)	-.023 (.027)	-.139** (.036)	.150** (.054)	-.007 (.048)	.005 (.046)
Received AFDC in both 1976 & 1979	3.413** (.460)	1.457** (.535)	2.200* (1.097)	-.551 (.985)	1.119 (.817)
Received AFDC or SSI in 1976, received neither in 1979	2.905** (.500)	1.913** (.611)	3.820** (1.099)	2.683** (.680)	.936 (.925)
Received AFDC or SSI in 1979, received neither in 1976	1.824** (.380)	2.318** (.378)	1.672 (1.693)	-1.164 (1.493)	-9.031 (39.346)
Received SSI in 1979, received either SSI or AFDC in 1976	3.219** (.348)	1.688** (.423)	4.219** (1.426)	1.479** (.679)	1.236* (.615)
Received neither AFDC nor SSI in either 1979 or 1976	-	-	-	-	-

(Continued)

Table 7 (Continued)

Significance levels: **.01, *.05, + .10

P1 = Probability of being a participant in both 1979 and 1976.

P2 = Probability of being a participant in 1979, a nonparticipant in 1976.

P3 = Probability of being a nonparticipant in 1979 due to informational
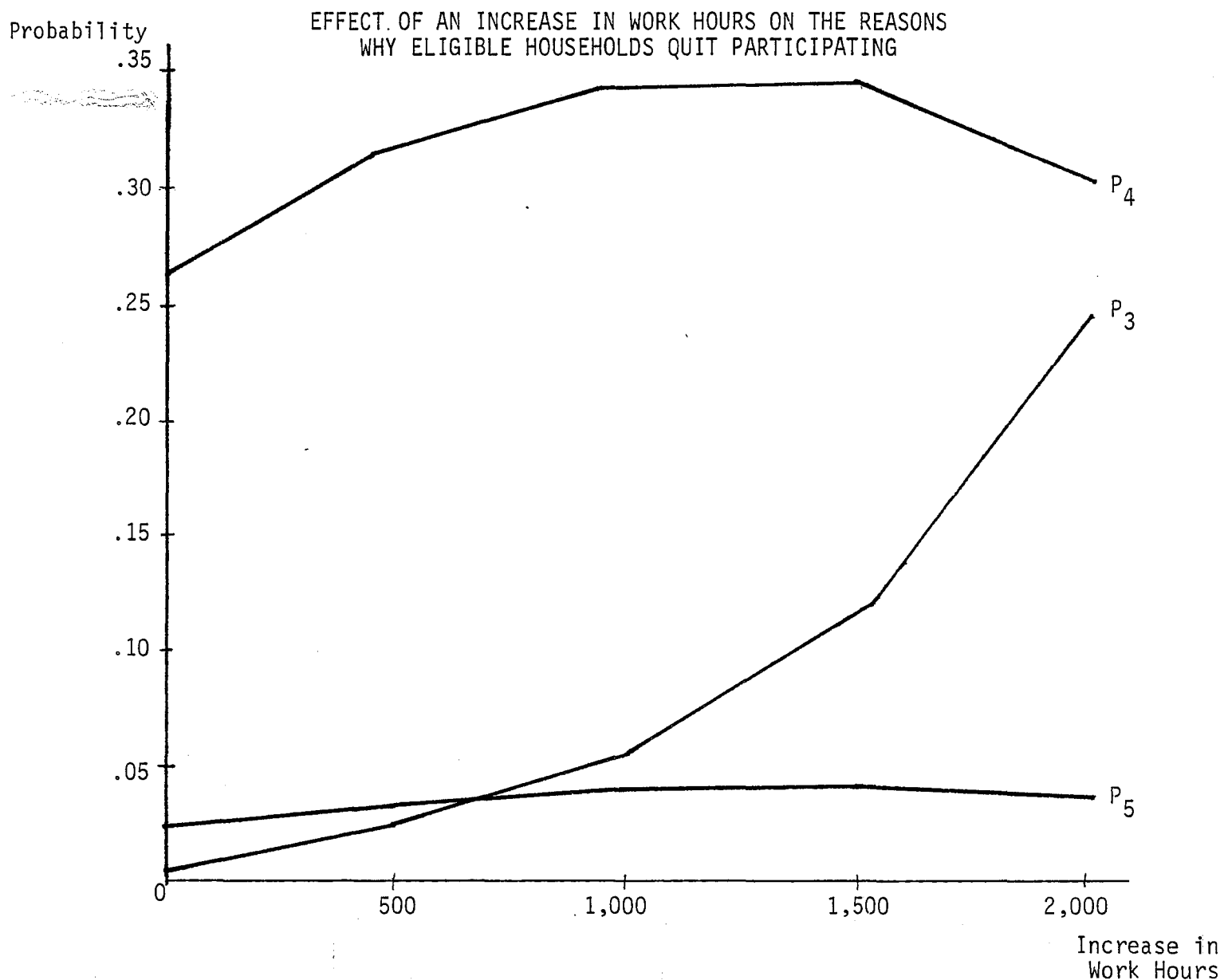   problems, a participant in 1976.

P4 = Probability of being a nonparticipant in 1979 due to administrative
     problems, a participant in 1976.

P5 = Probability of being a nonparticipant in 1979 due to personal reasons,
     a participant in 1976.

P6 = Probability of being a nonparticipant in both 1979 and 1976.

NOTES: All program variables are in real terms. Numbers in parentheses are
       asymptotic standard errors. The data are weighted by the inverse of
       the sampling probabilities.

FIGURE 10

EFFECT. OF AN INCREASE IN WORK HOURS ON THE REASONS
WHY ELIGIBLE HOUSEHOLDS QUIT PARTICIPATING

P_3 = Participant in 1976, nonparticipant in 1979 due to informational problems.

P_4 = Participant in 1976, nonparticipant in 1979 due to administrative problems.

P_5 = Participant in 1976, nonparticipant in 1979 due to personal reasons.

Note: Probabilities are calculated from results reported in Table 7.
Program variables were assigned their mean values. Age was set
equal to 30. 1976 work hours were set equal to zero, as were the
dummy independent variables.

increases to only 5.6 percent for a household in which the head goes from nonemployment to half-time employment.

Although increasing informational problems is the primary reason why larger increases in work hours are associated with increasing probabilities of quitting the program, it is also clear from Figure 10 that informational problems are not the most important reason why eligible households stop receiving food stamps (again, assuming the household characteristics noted in Figure 10). The primary reason that eligible households quit, regardless of the amount of increase in work hours, is because of administrative problems associated with receiving food stamps. This is virtually the sole reason that households headed by nonemployed persons quit. And although the probability of quitting because of administrative problems does not increase much as the change in work hours increases, it is still the most important reason for quitting, even for a household in which the head became fully employed, with a probability of 31.4 percent, compared to a 24.3 percent probability of quitting because of informational problems.

We saw above that eligible households that stopped receiving other forms of welfare were significantly more likely to quit receiving food stamps. As can be seen in Table 8, by far the most important reason why these households leave the Food Stamp program is because of administrative problems, with a probability of 17.5 percent compared to approximately 2 percent for the other possible reasons.[11] When an individual quits receiving other forms of welfare, either the person is told by local welfare officials (or thinks that he is told) that he is now unable to receive food stamps, or else the administrative hassles involved in

Table 8

Effect of Welfare Status on the Reasons Why
Eligible Households Quit Participating

	Reason Why Quit the Program		
Welfare Status	Informational Reasons	Administrative Reasons	Personal Reasons
Did not receive any welfare in either year	.003	.075	.053
Received AFDC in both 1979 and 1976	.003	.006	.023
Received SSI in 1979, received welfare in 1976	.025	.050	.028
Began receiving welfare	.004	.007	.000
Quit receiving welfare	.018	.175	.022

Note: Entries are the probabilities that a household will fall into the category "A participant in 1976, a nonparticipant in 1979 due to _____ reason." Probabilities are calculated from results reported in Table 7. Other independent variables were assigned their mean values.

receiving food stamps are no longer worth the effort, if other welfare benefits are not included in the package.

C. Why Households Never Participate

Table 2 presented the distribution of responses to the 1979 sequence of nonparticipation questions given by households that did not receive food stamps in either year. By utilizing these responses we can divide this group of households into subgroups based on their reason for not participating. From Table 2 it appears that five distinct reasons contain sufficient observations to warrant a separate category—financially based informational reasons, nonfinancially based informational reasons, administrative reasons, no need, and other personal reasons. The results of reestimating the model with this newly defined eight-category dependent variable are presented in Table 9.

1. _The Effect of Age._ One of the more striking results presented earlier was the relationship between the age of the household head and the probability of never participating. An average household headed by a 20-year-old had roughly a 22 percent probability of never participating. A similar household headed by an 80-year-old individual had an 85 percent probability of never participating. Figure 11 shows the relationship between age and the various reasons given for not participating.

The first point to note from Figure 11 is that, with one exception, all the barriers to participation increase with age. Comparing a household headed by a 20-year-old to a similar household headed by an 80-year-old, the probability of never participating because of nonfinancial information barriers increases from 1.0 percent to 14.2 percent.

Table 9

Multinomial Logistic Results on the Reasons
Why Eligible Households Never Participated, 1976-1979

Independent Variable	$LN(P_1/P_8)$	$LN(P_2/P_8)$	$LN(P_3/P_8)$	$LN(P_4/P_8)$	$LN(P_5/P_8)$	$LN(P_6/P_8)$	$LN(P_7/P_8)$
Constant	2.368* (1.103)	2.820* (1.158)	2.732* (1.196)	2.481+ (1.400)	-.405 (1.305)	.021 (1.289)	-1.715 (1.548)
1976 bonus value ($100)	2.488** (.710)	2.583** (.725)	1.832* (.759)	.627 (.944)	-.553 (.874)	1.555* (.764)	1.223 (.881)
Change in bonus value ($100)	.168 (.523)	.541 (.536)	-.117 (.599)	-.378 (.726)	-2.400 (.816)	-.407 (.607)	.089 (.717)
1976 purchase price ($100)	.132 (.559)	.394 (.579)	.537 (.607)	1.063 (.687)	.038 (.652)	.719 (.601)	-1.617* (.818)
Age (10 years)	-.655** (.144)	-.746** (.152)	-.752** (.164)	-.652** (.187)	-.022 (.164)	-.239 (.167)	.093 (.190)
Work hours of head, 1976 (100 hours)	-.063 (.042)	-.144** (.047)	-.039 (.046)	-.074 (.055)	.075+ (.044)	-.001 (.045)	.087+ (.048)
Change in work hours of head (100 hours)	-.060 (.044)	-.170** (.050)	.009 (.046)	-.056 (.055)	.017 (.047)	-.061 (.047)	-.002 (.057)
Received AFDC in both 1976 & 1979	4.364** (1.208)	2.419* (1.238)	1.628 (1.270)	-9.571 (67.710)	1.986 (1.330)	1.481 (1.304)	.551 (2.072)
Received AFDC or SSI in 1976, received neither in 1979	2.201** (.570)	1.256+ (.670)	1.707** (.618)	-1.565 (1.618)	-1.296 (.931)	-1.788 (1.411)	-8.841 (33.34)
Received AFDC or SSI in 1979, received neither in 1976	2.544** (.541)	3.067** (.538)	-.355 (1.124)	1.816** (.625)	.544 (.590)	.854 (.603)	.754 (.647)
Received SSI in 1979, received either SSI or AFDC in 1976	4.112** (.510)	2.626** (.564)	2.553** (.601)	1.658* (.652)	.816 (.573)	1.439* (.566)	1.310* (.623)
Received neither AFDC nor SSI in either 1979 or 1976	—	—	—	—	—	—	—

(Continued)

Table 9 (Continued)

Significance levels: **.01, *.05, +.10

P_1 = Probability of being a participant in both 1979 and 1976.

P_2 = Probability of being a participant in 1979, a nonparticipant in 1976.

P_3 = Probability of being a participant in 1976, a nonparticipant in 1979.

P_4 = Probability of being a nonparticipant in both years and citing financial informational problems in 1979.

P_5 = Probability of being a nonparticipant in both years and citing nonfinancial informational problems in 1979.

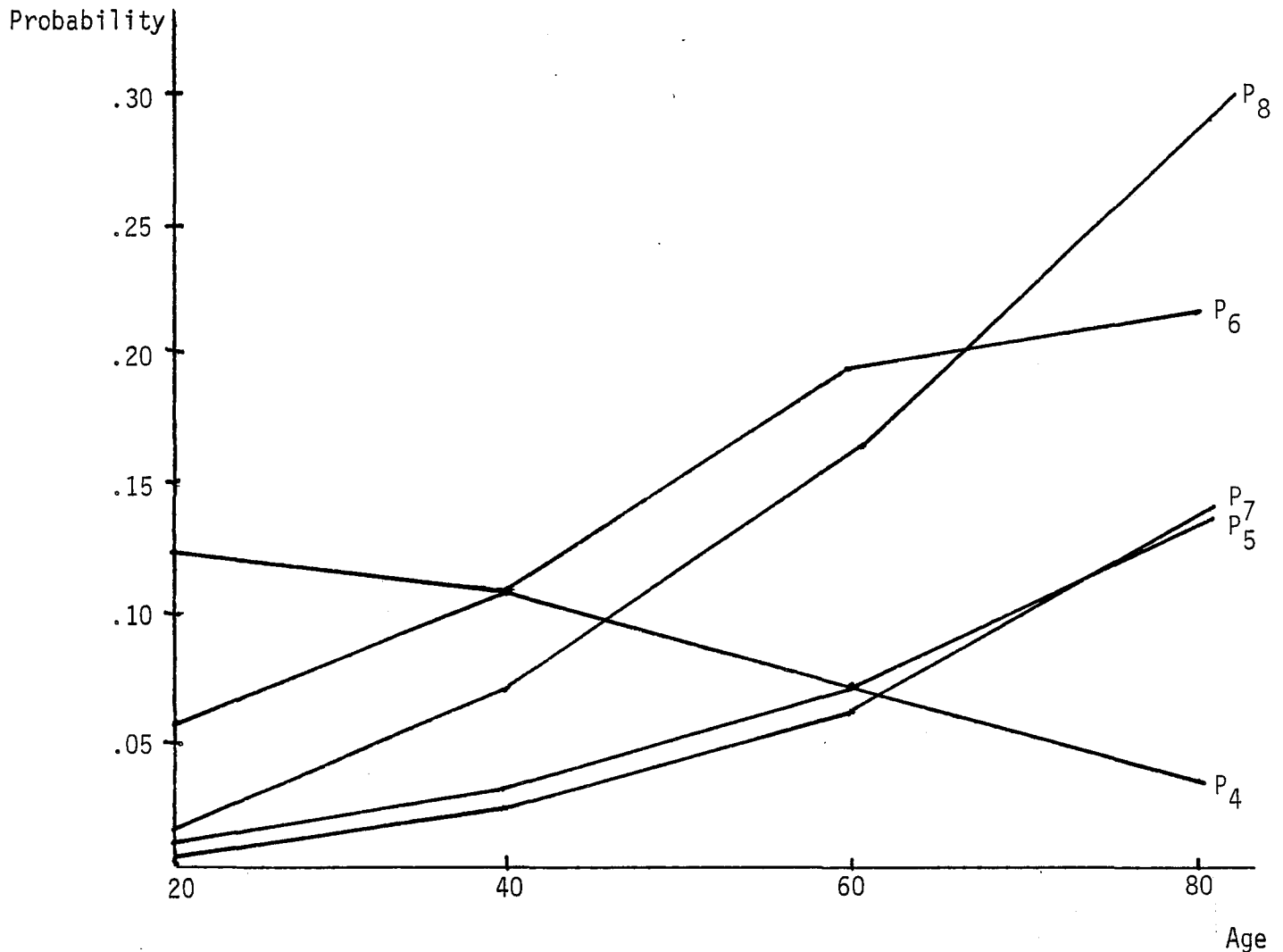P_6 = Probability of being a nonparticipant in both years and citing administrative problems in 1979.

P_7 = Probability of being a nonparticipant in both years and citing no need in 1979.

P_8 = Probability of being a nonparticipant in both years and citing personal reasons in 1979.

Notes: All program variables are in real terms. Numbers in parentheses are asymptotic standard errors. The data are weighted by the inverse of the sampling probabilities.

FIGURE 11

AGE AND THE REASONS WHY ELIGIBLE HOUSEHOLDS NEVER PARTICIPATE

P_4 = Probability of not participating in either year due to financially based informational problems.

P_5 = Probability of not participating in either year due to nonfinancially based informational problems.

P_6 = Probability of not participating in either year due to administrative problems.

P_7 = Probability of not participating in either year due to no need.

P_8 = Probability of not participating in either year due to personal reasons.

Note: Probabilities are calculated from results reported in Table 9. Other independent variables were assigned their mean values. Dummy independent variables were set equal to zero.

The probability of not participating because of administrative problems increases from 5.4 to 21.0 percent. The probability of not participating because of a feeling that one does not need food stamps increases from 0.5 percent to 14.4 percent. Finally, the largest absolute increase occurs in the probability of citing the catch-all category of personal reasons as a barrier to participation. A 20-year-old has only a 1.8 percent probability of falling into this category; for an 82-year-old the probability increases to 28.7 percent.

An alternative way of assessing the impact of these different barriers is to ask the following question: what percentage of the increased probability of never participating can be accounted for by the increased probability of citing a particular barrier? Table 10 provides the answer. As the age of the household head increases from 20 to 40 years, the probability of never participating increases by 13.7 percentage points. Administrative hassles accounted for 45.3 percent of this increased probability. (Or, in other words, the probability of never participating because of administrative problems increased by 6.2 percentage points (13.7 x .453) as the age of the head increased from 20 to 40 years.) Personal reasons were the second most important barrier in this age range. As the age of the head increased, the impact of administrative problems declined, while personal reasons and the need barrier increased in importance.

The exception to the general rule of participation barriers increasing with age were the financially based informational barriers. The probability of never participating because of a belief that one's income or assets were too high decreased with age. Thus the infor-

Table 10

Accounting for the Relationship Between Age and the
Probability That an Eligible Household
Will Never Participate

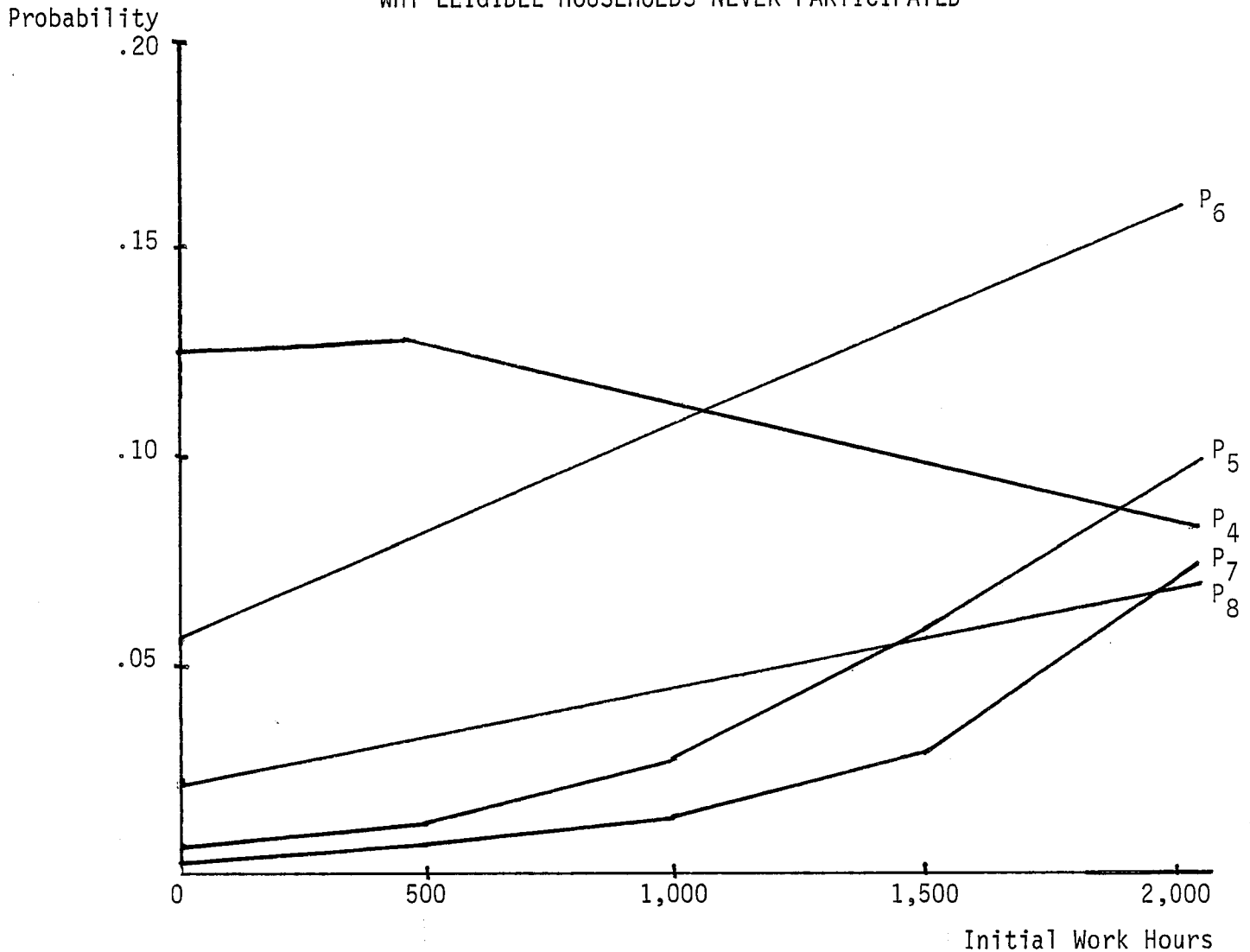|	Percentage Point Increase in the Probability of Never Participating as the Age of Household Head Increases from:		
	20 to 40 Years	40 to 60 Years	60 to 80 Years
	13.7	23.9	23.7
Percentage of Increased Probability Accounted for by the Following Reasons:			
Did not think eligible because of financial reasons	-5.1%	-13.8%	-18.1%
Did not think eligible because of nonfinancial reasons	16.8	20.9	24.9
Administrative problems	45.3	31.3	8.0
No need	11.7	19.2	32.5
Personal reasons	31.4	42.2	52.7
Total	100.0	100.0	100.0

Note: Entries are calculated from results reported in Table 9. Other independent variables were assigned their mean values. Dummy variables were set equal to zero.

mational barriers faced by the elderly are of a particular nature. They apparently believe that the Food Stamp program is a categorical eligibility program rather than a universal means-tested income maintenance program. From the available data we have virtually no knowledge of what other eligibility conditions the elderly feel are attached to the Food Stamp program. Presumably they would not believe they were under a work requirement. However, they may think that the Food Stamp program is similar to the AFDC program in that it requires a dependent child in order to qualify. The elderly may also believe that neither homeowners, recipients of Social Security, nor recipients of Supplemental Security Income can participate.[12]

2. The Effect of Labor Market Experience. We saw in Figure 6 that households in which the heads were employed in both 1976 and 1979 were considerably more likely not to participate in either year than households in which the heads were nonemployed in both years. Figure 12 illustrates the relationship between unchanging work hours and the reasons given for not participating. Three reasons in particular distinguish the employed from the nonemployed. Administrative problems are the single largest barrier facing the employed. The probability of an employed person mentioning administrative problems is 16 percent, compared to 5.6 percent for a nonemployed person. An employed head is also considerably more likely to claim that he has no need for food stamps, perhaps because the job provides a constant source of cash flow. Finally, and somewhat surprisingly, the employed were more likely to mention nonfinancial informational barriers to participation. One would have perhaps expected the employed to be more likely to believe they were

FIGURE 12

THE EFFECT OF INITIAL WORK HOURS ON THE REASONS
WHY ELIGIBLE HOUSEHOLDS NEVER PARTICIPATED

P_4 = Probability of not participating in either year due to financially
based informational problems.

P_5 = Probability of not participating in either year due to nonfinancially
based informational problems.

P_6 = Probability of not participating in either year due to administrative
problems.

P_7 = Probability of not participating in either year due to no need.

P_8 = Probability of not participating in either year due to personal reasons.

Note: Probabilities are calculated from results reported in Table 9.
        Program variables were assigned their mean values. Age was set
        equal to 30. Change in work hours was set equal to zero, as
        were the dummy independent variables.

<u>financially</u> ineligible, because their gross income may be considerably above the income eligibility limits. The earned income deduction (equal to 20 percent of earnings) could potentially lower net income sufficiently to enable them to qualify, yet they may be unaware of it. But, in fact, it was the nonemployed who were more likely to mention financially based informational barriers. One possible explanation for these results is that the working poor may believe they are categorically ineligible to participate precisely because of the fact that they are working. The philosophy that welfare was not intended for those who are able to work was recently advanced to justify the Reagan administration's tighter eligibility standards for certain welfare programs.[13]

3. <u>The Effect of Welfare Experiences.</u> We saw earlier that households that had no contact with other parts of the welfare system were significantly more likely to never receive food stamps. This can be attributed to a variety of reasons, as can be seen from Table 11. In particular, households that received no other welfare were considerably more likely to cite administrative problems, personal reasons, and a belief in financial ineligibility as reasons for never participating. The inference is that contact with other parts of the welfare system results in better information about Food Stamp eligibility and less administrative hassle in receiving one's food stamp allotment.

VI. SUMMARY OF RESULTS

What picture emerges from this barrage of results concerning participation in the Food Stamp program by eligible households? First of all, the results do not support the idea that the nonparticipation issue

Table 11

The Effect of Welfare Status on the Reasons Why
Eligible Households Never Participated

Welfare Status	Reason for Never Participating				
	Did Not Think Eligible Because of Financial Reasons	Did Not Think Eligible Because of Nonfinancial Reasons	Administrative Problems	No Need	Personal Reasons
Did not receive any welfare in either year	.103	.055	.156	.039	.104
Received AFDC in both 1979 and 1976	.000	.020	.004	.012	.007
Received SSI in 1979, received welfare in 1976	.029	.007	.035	.008	.006
Began receiving welfare	.081	.012	.047	.011	.013
Quit receiving welfare	.006	.004	.007	.000	.030

Note: Probabilities are calculated from results reported in Table 9. Other independent variables were assigned their mean values.

can be written off as solely a matter of the less needy opting not to
participate. The households examined in this study were eligible for
food stamps in two separate years spanning a four-year period, a fact
which presumably qualifies them as potential members of the long-term
needy population. And it is true that their participation rate was
somewhat higher than the participation rate of all households eligible in
a single year. Yet the fact remains that the difference was marginal,
indicating that many of the longer-term needy are not receiving benefits
to which they are entitled.

This raises the obvious question of why it is that these households
do not participate in the program. Four sets of variables were used to
measure various factors which were thought to influence the participation
decision. These factors included program parameters, age, work status,
and welfare status. We will discuss each in turn.

The program parameters of interest were the bonus value and the
purchase price. The bonus value measures the gain from participating and
would be expected to exert a positive influence on participation. The
results support this hypothesis. The initial (1976) benefit level was a
positive predictor of those who participated in both years and a negative
predictor of those who did not participate in either year. Those
entitled to a higher bonus value in 1976 were more likely to participate
in that year and to remain participants; those entitled to lower benefits
were more likely not to participate and to remain nonparticipants,
ceteris paribus. Changes in the benefit level were likewise significant
in predicting changes in participation status. Large increases in the
bonus value resulted in high probabilities of joining the program, with

resultant low probabilities of quitting or never participating.
Decreases in the bonus value had the opposite effect.

The level of the purchase price did not systematically affect the
participation decision, as would theoretically be expected. This does
not mean, however, that the purchase requirement did not prevent anyone
from participating, or that the elimination of the purchase price was not
a beneficial policy initiative. In fact, the results suggest that one
group in particular did benefit from the removal of the purchase
requirement—households that received other forms of welfare in both 1976
and 1979. For this group other barriers to participation, such as infor-
mational problems, were low, and consequently the purchase price was a
relatively more serious problem. For the entire sample, the level of the
purchase price was not significantly related to the probability of
falling into any of the four participation categories.

Age was the one demographic characteristic of the household used to
explain participation. Households headed by older people were con-
siderably more likely to not participate in either year. The results
indicated that a number of barriers to participation increased with age.
The probability that an eligible person does not participate because he
feels that he does not need food stamps increases sharply with age. The
probability of falling into the catch-all category of personal reasons
for nonparticipation also increases for older persons. Elderly house-
holds were significantly more likely to believe that they did not qualify
for food stamps—a belief based on nonfinancial factors rather than on
their income and assets. In fact, despite their lower participation
rates, the elderly were _less_ likely to believe that they were financially

ineligible to participate. The elderly apparently do not realize that the Food Stamp program is a universal means-tested income maintenance program. They appear to believe that the program is similar in nature to a welfare program such as AFDC, which in general is limited to households with children present.

Labor markets and the welfare system are two major institutions of income support in our society, so perhaps it is not surprising that people's contacts with these institutions are important in determining participation status. However, the contacts exert opposing influences. In general, contact with the labor market (in the form of work hours) results in substantially lower probabilities that the household will participate, while contact with other parts of the welfare system results in considerably higher probabilities of participation. Differential effects on informational barriers to participation are one reason for this dichotomy. Informational problems are an important reason explaining why high initial work hours are strongly correlated with never participating. The positive relationship between an increase in work hours and the probability of quitting the program is primarily due to increasing informational problems as work hours increase. On the other hand, decreases in work hours are positively related to the probability of joining the program by overcoming informational barriers, but the results indicate that a major shock in the form of a large reduction in hours is needed in order to trigger recognition of eligibility.

While contact with the labor market appears to increase informational barriers, contact with other parts of the welfare system lowers them. This is implicit in the fact that households that received welfare in

both years were considerably more likely to participate in both years.
Conversely, households that did not receive welfare in either year were
considerably more likely not to participate in either year, to a large
extent because of informational problems. Furthermore, eligible house-
holds that began receiving welfare were significantly more likely to
begin receiving food stamps, primarily as a result of overcoming infor-
mational barriers. Even those relatively few households that quit
receiving other forms of welfare but still joined the Food Stamp program
did so by overcoming informational barriers.

While information factors were important in explaining how the par-
ticipation decision was affected by the labor market and welfare status
of the household--especially when that status underwent a major change--
other barriers were also influential. People who worked were more likely
to feel that they did not need food stamps. They were also more likely
to complain about administrative problems--either they were told they
were not eligible to participate or else they in particular were con-
cerned about the long lines and excessive paperwork encountered at the
local welfare office. Households that quit receiving other forms of
welfare were likely to quit the Food Stamp program as well, primarily
because of administrative problems, a factor which was also important in
explaining why households that received no welfare in the two years were
likely not to receive food stamps either.

VI. CONCLUSION

This analysis focused on a group of households that were eligible for
food stamps in both 1976 and 1979. In each of these years only about

one-half of these households participated in the program, a finding consistent with several previous studies. What can be done to combat this low participation rate and deliver food stamps to more households that have been legislatively deemed in need of assistance?

The problem can be divided into two parts--getting those who have never participated into the program, and preventing participants from leaving the program. The former problem appears to be the more difficult. The elderly and the working poor are the most conspicuous groups in this category. They are not well informed about their eligibility. This informational barrier appears to be based to a large degree on nonfinancial rather than financial reasons. This implies that efforts are needed to inform these groups that the Food Stamp program is a universal means-tested income support program and is open to those who have jobs and to households that contain no dependent children. With regard to the elderly, those who receive SSI are much better informed of their eligibility, and efforts should continue to coordinate the administration of these programs. However, two major problems face any policy designed to rely on the SSI program to recruit more elderly who are eligible for food stamps. One, not all households that are eligible for food stamps are eligible for SSI. Two, the participation rate by the eligible elderly in the SSI program is only slightly more than 50 percent, for reasons very similar to those discussed here (see Coe, 1985). Relying on contacts with other welfare programs to inform food-stamp-eligible households in essence begs the question of how those households come into contact with the other programs in the first place.

But even when informed, both of these groups face other barriers to participation. One approach to overcoming these barriers is to increase benefit levels, which increases the gain from participating and helps overcome a variety of reasons for nonparticipation. By focusing the increase at the lower levels of benefit (e.g., doubling the minimum benefit), the cost can be kept in check while still encouraging increased participation.

One particularly difficult barrier to overcome is the fact that both the working poor and the elderly are more likely to respond that they do not need food stamps. While it is possible that the economic position of these households is not as grim as the data indicate, a more plausible explanation is that they have become accustomed to their inadequate--but survivable--standard of living, and see little reason to improve their position. One possible approach to this problem is to inform eligible people of the purpose of the program in an attempt to convince them that the more nutritionally adequate diet made available by using food stamps benefits society as a whole as well as the individual. Improved nutritional levels lead to better health, which in turn increases the productivity of those working as well as reducing the nation's health costs, a significant portion of which is borne by the general public.

Persuading eligible people who are already participating from not leaving the program appears to be a more tractable problem. Administrative problems are a major reason why people quit the program. Hiring more caseworkers, improving their training, and streamlining the rules and regulations which govern the program are all relatively straightforward steps that could be taken. Opening welfare offices at

hours other than the traditional 8-5 working hours is another proposal which could prove particularly beneficial to the working poor.

The results of this study indicate that there is no single magic solution to the nonparticipation problem. The barriers to participation are varied. A clear prerequisite to participation is the knowledge that one is eligible to participate. But that is only the first hurdle to overcome. Several other initiatives will be required if we are to deliver food stamps to those considered in need of assistance.

Notes

[1]The exact amount of stamps the person (household) receives depends on the size and income level of the household.

[2]This is not quite accurate. The household in fact had the option of taking 1/4, 1/2, or 3/4 of its coupon allotment at a proportionally reduced purchase price. Furthermore, a household could technically exercise this option twice a month for one-half of its coupon allotment each time, effectively presenting a choice of buying 1/8, 1/4, 3/8, etc. of its coupon allotment at a proportionally reduced purchase price. Despite the fact that high purchase prices were thought by many observers to be a major barrier to participation, this option was apparently rarely used. MacDonald reports that this variable purchase option was used by only 6 percent of recipient households (1977, p. 34).

[3]The partial derivative of the right-hand side of Expression (2) with respect to the purchase price equals $(BV - AC)/(PP + BV - E)^2$, which will be positive if $BV > AC$. Thus the right-hand side of (2) will increase as purchase price increases, making participation less likely.

[4]Letting Y stand for the right-hand side of Expression (2) and adding the relative price ratio results in

$$Y = \frac{PP + AC - E}{PP + BV - E} \cdot \frac{P_F}{P_{NF}} \, ,$$

where P_F equals the price of food and P_{NF} equals the price of nonfood items. If food expenditures are a function of the price of food [$E = f(P_F)$], the total derivative of Y with respect to the price of food equals

$$dY/dP_F = Y/P_F + Y/E \ (dE/dP_F).$$

The first term is positive; $Y/E = P_F P_{NF}(AC - BV)/[P_{NF}(PP + BV - E)]^2$, which is negative if $BV > AC$. If the demand for food is price inelastic, then $dE/dP_f > 0$, and the sign of dY/dP_F is indeterminate.

[5]An appendix detailing the procedures used to determine eligibility and describing the resultant sample is available upon request from the author.

[6]Information as to when the household was told it was ineligible or the reason given for ineligibility by the local official was not available.

[7]The distributions presented in Table 2 for this group are based on the responses to the 1979 sequence of nonparticipation questions. Households that did not participate in either year would also have answered the 1976 sequence of nonparticipation questions. In general, the responses were similar, although some changes did occur. The most noticeable change was a relatively large group that did not believe it was eligible to participate in 1976 falling into the "Other" category in 1979, a dubious switch indicating possible coding difficulties. From an analytical perspective, if the 1976 responses of this group were utilized rather than the 1979 responses, informational factors became relatively more important in explaining nonparticipation. An appendix discussing this issue is available upon request from the author.

[8]Other demographic characteristics, such as race, region, and city size, were tried and found to be inconsequential in predicting participation status.

[9]Changes in the work hours of the household head can occur because a different person becomes the head of the household as well as because the same head experiences a change in work hours. It should be noted, however, that only 27 of the 700 sample observations experienced a change in headship over this period.

[10]Thus the conditional probability of joining the program is the probability of joining if the household were not participating in 1976, equal to $P_2/(P_2 + P_4)$. Similarly, the conditional probability of quitting is the probability of quitting if the household were participating in 1976, equal to $P_3/(P_1 + P_3)$.

[11]While the probability of quitting because of informational reasons was significantly higher for those who quit welfare than for households that received no welfare in either year, the absolute size of the effect was small.

[12]In some states an elderly SSI recipient is not eligible for food stamps. Individual states have changed their position concerning this rule in the past, and this may have resulted in confusion regarding the current rule.

[13]"1 just don't accept the assumption that the federal government has a responsibility to supplement the income of the working poor through a whole series of transfer payments." David A. Stockman, Director of the Office of Management and the Budget, as reported in Donnelly (1981, p. 668).

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