



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

Papers downloaded from AgEcon Search may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

14 G 84 MR

AAEDC

BONUS FOOD STAMPS AND CASH INCOME SUPPLEMENTS

Their Effectiveness in Expanding Demand for Food

U. S. D. A.
National Agricultural Library
Received

Procurement Section
Current Serial Records

Economic
Research
Service

United States
Department of
Agriculture

Marketing
Research
Report No.1034

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

ABSTRACT

The Food Stamp Program expanded rapidly following liberalizations during 1970 in program benefits and eligibility criteria. In 1969, 3.3 million persons received \$264 million in bonus food stamps. By mid-1973, over 12 million persons were receiving bonus stamps valued at about \$2 billion annually. In 1969, the average dollar's worth of bonus stamps appeared to generate from 50 to 65 cents in additional food expenditures, with the balance having an income effect. Under the liberalized program, average effectiveness is approximately the same. Bonus stamps are still about twice as effective as cash income supplements in expanding demand for food. Demand expansion generated through bonus stamps in early 1973 accounted for nearly 1 percent of total U.S. food expenditures (\$125 billion in 1972). Substantial portions of bonus stamp dollars have been spent for meats, other protein foods, fruits, vegetables, and bakery products.

Keywords: Food Stamp Program, low-income families, food expenditures, income, food assistance.

PREFACE

In 1969, an administrative evaluation of Federal food programs was undertaken by an interagency technical committee. It included an analysis of the relative effectiveness of bonus food stamps and comparable cash income supplements in expanding demand for food. Since 1969, benefits of the Food Stamp Program have been increased and eligibility criteria have been revised. With rapid expansion in participation, the total value of bonus stamps has risen to levels constituting a measurable sector of total U.S. food expenditures.

In February 1973, an interagency committee from the Economic Research Service (ERS) and the Food and Nutrition Service (FNS), U.S. Department of Agriculture, initiated a study of impacts of bonus food stamps on demand for food under the liberalized program in operation since 1970 and a reexamination of income-food expenditure relationships. This report was prepared in response to the committee request. Its development was facilitated by unpublished working papers from the 1969 Office of Management and Budget (OMB) evaluation.

This report is not intended to provide measures of the effect of the Food Stamp Program on food expenditures of individual participating families. Instead it indicates measures of average relationships for bonus food stamps and comparable cash income supplements in expanding food expenditures among low-income families.

Appreciation is extended to the other committee workers who assisted in developing this report. These included: Stephen Hiemstra and J. C. Chai, FNS; Marshall Miller, Max Jordan, and Alden Manchester, ERS. Substantial contributions were made also by Harry Harp and Terry Crawford, ERS, relative to shifts in consumer demand for red meats.

CONTENTS

	<u>Page</u>
Summary and Conclusions	v
Introduction	1
The Pre-1970 and Liberalized Food Stamp Programs	3
Effects of Cash Income Supplements on Food Expenditures	5
The 1969 Evaluation	5
Results from EFNEP Study	9
An Alternative Estimate	11
Demand Expansion through Bonus Food Stamps	11
Under the Pre-1970 Program	12
Capabilities Under the Pre-1970 and Liberalized Programs	14
Families Expanding Their Demand for Food	22
Impacts on Food Markets	24
Impacts by Food Group	27
Red Meats	27
Future Information Sources	29
Food Program Studies	31
Other Federal Studies	31
Limitations and Alternatives	32

TABLES

	<u>Page</u>
1--Distribution of participants in the Food Stamp Program, by household size and income, June 1972	6
2--Income-food expenditure relationships among low-income families participating in Extension Service's Food and Nutrition Education Program (EFNEP), by Food Stamp Program status and household size, 1969	10
3--Estimates of demand expansion for food generated through bonus food stamps under the pre-1970 and liberalized Food Stamp Programs and cash income supplements, by household size and income	20
4--Food Stamp Program: Participation and value of bonus food stamps issued, 1965-73	25
5--Public and General Assistance Programs: Money payments to recipients, 1965-73	26
6--Estimated demand expansion for total red meats and beef generated through bonus food stamps, 1969-72	28
7--Meat: Consumption, prices, and expenditures, 1965-72	30

FIGURES

	<u>Page</u>
1--Changes in food stamp issuance schedules for 4-person households, 1969-72	4
2--Pre-1970 and liberalized food stamp issuance schedules compared with alternative estimates of income-food expenditure relationships for 4-person low-income households not receiving food stamps	16
3--Effectiveness of bonus food stamps in expanding food expenditures by 4-person participating households under pre-1970 and liberalized Food Stamp Programs	18
4--Cumulative distributions of ADC household food expenditures expressed in terms of their food needs, by Food Stamp Program status, Allegheny County, Pa., winter 1970	23
5--Household food expenditures versus food needs, ADC households, by Food Stamp Program status, Allegheny County, Pa., winter 1970	25

SUMMARY AND CONCLUSIONS

Food Stamp Program benefits were liberalized in 1970. Participating households now receive food stamps in amounts approximating the cost to them of a nutritionally adequate diet under the Economy Food Plan in exchange for a cash payment equivalent to less than 30 percent of their net income. For the average participant, the change resulted in a limited reduction in the payment for stamps and a near-doubling in the amount of bonus stamps received.

The liberalization of benefits under the Food Stamp Program in 1970 has caused only limited changes in the average effectiveness of bonus food stamp dollars in expanding demand for food. Bonus food stamps continue to be roughly twice as effective as equivalent cash income supplements in expanding demand for food.

Bonus food stamps yield income as well as food benefits to recipients even though all stamps are spent for food. The form of the benefits varies depending on the amount a family would spend for food in the absence of food stamps. To the extent that normal food expenditures exceed the cost of stamps, the family may substitute foods purchased with bonus stamps for foods which otherwise would have been bought with family dollars, freeing these funds for discretionary expenditures. Bonus stamp dollars not subject to this substitution process are automatically committed to expanding demand for food.

For example, consider the family spending \$100 a month on food before entering the Food Stamp Program. Suppose they are entitled to \$100 worth of food stamps after paying \$60 of their own money for the stamps. They continue getting \$100 worth of food each month but are now paying for it with food stamps. Thus, they have \$40 of discretionary income that had been going for food. Now consider another family that had been spending only \$60 a month for food and under the food stamp provisions became eligible, by paying the \$60 for food stamps, to receive \$100 worth of stamps. Their food demand has been effectively increased by \$40.

In the absence of food stamps, very low income families tend to increase their food expenditures by roughly 20 to 30 cents when they receive an additional dollar of income. Bonus food stamps appear to be at least 50 percent effective in increasing food expenditures. If recipients spend their income benefits from bonus food stamps in the same manner as they spend cash income supplements, as much as 60 to 65 cents of the average bonus food stamp dollar may be used to purchase foods which otherwise would not have been bought.

The revised food stamp issuance schedule is more effective than its predecessor in committing bonus food stamps to the purchase of supplemental foods in the lower and middle ranges of income eligibility and about the same at the highest income levels. However, several factors have kept demand expansion for food in the revised program from rising above earlier levels. About 6 percent of the participants now receive less than a full issue of stamps under the liberalized

program's variable purchase options, which are less effective than full participation in expanding demand for food. Also, the participation profile has shifted toward sectors of the food stamp issuance schedule where impacts are lower. Average household incomes have increased and more small households are receiving food stamps.

The effectiveness of bonus food stamps in generating additional food expenditures varies widely by household size and income, tending to increase with household size and decrease as income rises. In the upper range of income eligibility, cash income supplements may be nearly as effective as bonus food stamps in expanding demand for food.

Food expenditures among households of the same size with similar incomes differ greatly. Bonus stamps create the greatest demand expansion among low-spending families, who otherwise would maintain expenditures below or near minimum levels needed for nutritionally adequate diets. For this reason, bonus food stamps are more important in achieving food and nutrition objectives than indicated by measures of average effectiveness in expanding demand for food.

Participation by qualifying households increased rapidly under the liberalized program, rising nearly fourfold to more than 12 million persons by early 1973. The value of bonus food stamps increased eightfold to more than \$2 billion annually during the same period. This was equivalent to over 1.5 percent of total U.S. food expenditures. As of 1973, demand expansion for food through bonus stamps may have exceeded \$1 billion. About 30 percent of this expanded demand was for red meats, mostly beef. Other protein foods, fruits, vegetables, and bakery products are important channels for expanded food buying power.

During 1970 and 1971, rapid expansion in the issuance of bonus food stamps may have accounted for as much as 5 percent of the year-to-year increases in red meat consumption. These impacts now have been built into the demand structure. With a leveling off in food stamp issuance, the program's impact on demand for food as of early 1973 tended to be proportionate to the total expansion in purchases generated, or less than 1 percent of total U.S. food expenditures.

Demand expansion for food by low-income families also increased during the early 1970's as a result of income hikes through welfare grants, social security, higher minimum wages, and other payments, as well as from the liberalized Food Stamp Program. Income expansion from these sources may have greater impacts than bonus stamps in expanding the aggregate demand for food, because of the much larger amounts of money involved.

During 1974, a major increase in the issuance of bonus food stamps is underway as a result of rising food costs during 1973 and early 1974 and a near-total phaseout of the companion Commodity Distribution Program. In contrast to the expansion in the early 1970's, the primary impact of these additional bonus stamps will be in maintaining demand for food at levels above those which would have existed in the absence of the program. For transferees from the Commodity Distribution Program, bonus stamps will largely represent a replacement for the food donations formerly received.

BONUS FOOD STAMPS AND CASH INCOME SUPPLEMENTS

Their Effectiveness in Expanding Demand for Food

by

Robert B. Reese, J. Gerald Feaster, and Garey B. Perkins
Agricultural Economists
National Economic Analysis Division
Economic Research Service

INTRODUCTION

In 1969, an Office of Management and Budget task force evaluating food programs concluded that bonus food stamps had substantially greater impacts on food expenditures of low-income families than comparable cash income. Specific ratios were not derived, but about 20 cents of each additional dollar of cash income was estimated to be spent for food. In contrast, the average dollar's worth of bonus food stamps (total stamps minus those purchased by recipients) appeared to generate as much as 50 cents in additional food expenditures, with the balance having a cash income effect.^{1/}

^{1/} Food impacts reflect the portion of the total Federal contribution in bonus food stamps used by recipients for food purchases which would not have been made in the absence of the program. The balance of the Federal contributions was estimated to have been spent for foods which otherwise would have been bought with family funds. Such income benefits were derived by participants who normally spent more for food than they spent in buying food stamps and who chose to substitute a portion of their bonus food stamps for regular family food dollars. In this manner family funds were converted into the equivalent of a cash income supplement. It was projected that all food stamps were used in the purchase of foods, and none were diverted to unauthorized uses.

Family stamp purchase requirements, by household size and income, are developed in accordance with legislative guidelines regarding the maximum portions of net income which economically disadvantaged families should be asked to spend for food stamps. Food expenditures vary widely even among families of similar size and income level. Most families spend less for food stamps than they would otherwise spend for food. If this were not the case, many families spending at levels unlikely to provide them with a nutritionally adequate diet would find it difficult to participate in the Food Stamp Program. Thus, actions needed to bring food assistance to families needing it the most inevitably result in the creation of some income as well as food benefits.

In 1970, the Food Stamp Program (FSP) was liberalized. Income eligibility cut-off levels were raised in most States through a new national standard. With few exceptions, families received more stamps at slightly lower cost. Program emphasis shifted from supplementing household food expenditures to providing participants with food stamps in amounts approximating cost of total diets under the USDA Economy Food Plan. The value of bonus food stamps received by an average individual participant each month increased from roughly \$6.75 to nearly \$13.50.

Participation rose from about 3 million persons in 1969 to more than 12 million in early 1973. As of March 1973, more than \$2 billion in bonus stamps was being issued annually, an amount equivalent to over 1.5 percent of total U.S. food expenditures.

Participation in the Food Stamp Program is expanding in 1974, primarily as a result of a near-complete termination of the companion Commodity Distribution Program for low-income families. The rapid acceleration of food prices during 1973 and early 1974 has resulted in increases in the amount of bonus food stamps issued and the number of households meeting income criteria for participation. As of March 1974, about 13.6 million persons were receiving food stamps. An additional 1.9 million persons were participating in Commodity Distribution Programs which in most instances were to be phased out during mid-1974. As of March, bonus food stamps were being distributed at the annual rate of \$3.2 billion, or an amount equivalent to approximately 2 percent of total U.S. food expenditures. A portion of the increase over March 1973 levels, however, represented a replacement of donated commodities. These actions occurred subsequent to preparation of this analysis.

The rapid expansion of the Food Stamp Program since 1970 has generated questions, including:

1. Under the liberalized program, how effective are bonus food stamps in expanding demand for food--compared to cash income supplements?
2. How are participants spending their bonus food stamps?
3. What impact are bonus food stamps having on demand and prices for food?

In approaching these questions, it was evident that answers derived for the pre-1970 program might have limited applicability to the revised program. Efforts were made to determine which answers could be obtained from current information or data from research now underway and to delineate continuing information voids and how they might be filled.

Information available to the OMB task force in 1969 has been augmented by results from two surveys conducted in 1969-70. A sample survey of about 9,000 households participating in the Extension Service's Expanded Food and Nutrition Education Program (EFNEP) is the most extensive source of information on income-food expenditure relationships among low-income families including participants and

nonparticipants in Food Stamp and Commodity Distribution Programs. A study of the Allegheny County, Pa., Food Stamp Program provides an indepth study of income-food expenditure responses of families with similar incomes in the upper range of income eligibility. ^{2/}

Findings from available sources, while imprecise, indicate the direction of changes in demand expansion for food generated in the shift from the pre-1970 to the liberalized Food Stamp Program and the range within which such changes may occur. Although they do not provide precise estimates of the values, results shed new light on the economics of the food stamp issuance schedules.

The following sequence is used in this evaluation:

1. Changes from the pre-1970 to the liberalized Food Stamp Program;
2. Income-food expenditure relationships anticipated in the absence of food stamps;
3. Changes in income-food expenditure relationships associated with participation in the pre-1970 and liberalized programs;
4. Impacts of food stamps on demand for specific foods;
5. Additional inputs from research underway; and
6. Information voids and remedial alternatives.

THE PRE-1970 AND LIBERALIZED FOOD STAMP PROGRAMS

Procedural changes occurring in the shift from the pre-1970 to the liberalized Food Stamp Program are illustrated by the revisions of the food stamp issuance schedule for four-member households (fig. 1). These include:

- (1) Change in total food stamp issuance from a variable schedule, by income, to a single level for each household size based on cost of the Economy Food Plan, which is subject to revision with changes in food prices;
- (2) Moderate reductions in family stamp purchase requirements at lower and middle levels of income eligibility and elimination of purchase requirements at the very lowest income levels;

^{2/}A third recent study in Pennsylvania provides new data on nutritional benefits but limited data on income (cash or in-kind) and food expenditure relationships. See: Madden, J. Patrick and Yoder, Marion D. Program Evaluation: Food Stamp and Commodity Distribution in Rural Areas of Central Pennsylvania, Bulletin 780, Dept. Agr. Econ. and Rural Soc., Pa. State Univ., Col. Agr., Agr. Expt. Sta., University Park, Pa., June 1972.

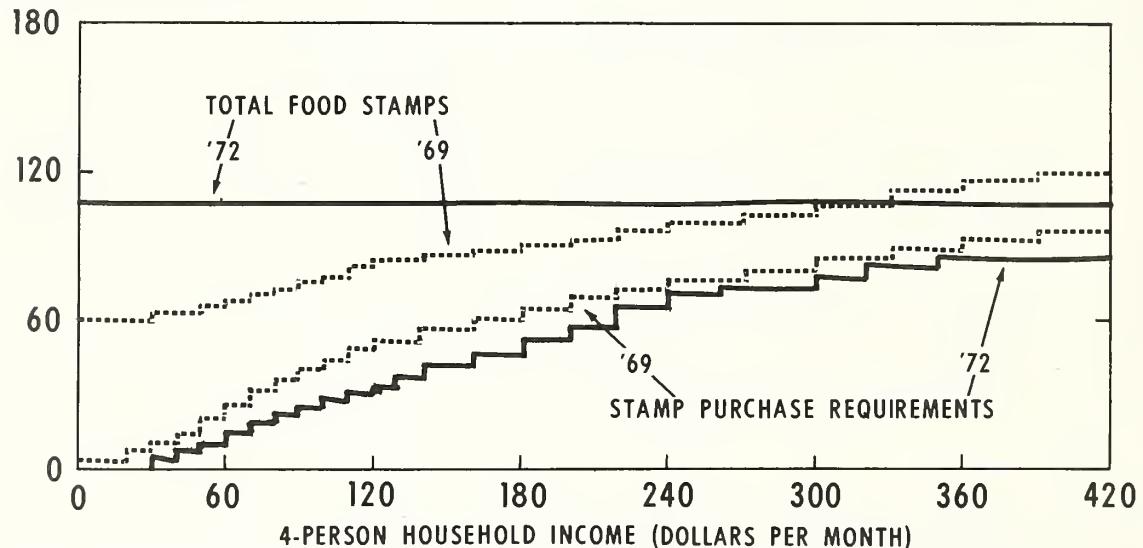
- (3) Increases in value of bonus stamps issued to families in the lower and middle sectors of eligibility, ranging from roughly 30 to 80 percent; and
- (4) Termination of regional variations in stamp issuance under the former northern and southern issuance schedules, resulting in moderately greater increases in benefits to southern families than amounts shown in figure 1.

Other primary changes not evident from the figure include:

- (1) Establishment of national income eligibility cutoffs in lieu of State cutoffs based on prevailing welfare standards, which expanded the range of income eligibility in all but five States;
- (2) Increases in minimum levels of bonus stamp issuance to small households with higher incomes to provide more appropriate incentives for participation; and
- (3) Authorization of variable monthly stamp purchases at 75, 50, and 25 percent of the full rate. It is estimated that 6 percent of the participants now purchase stamps in this way.

CHANGES IN FOOD STAMP ISSUANCE SCHEDULES FOR 4-PERSON HOUSEHOLDS, 1969-72*

FOOD STAMPS (DOLLARS)



*DATA FOR 1969 WERE BASED ON THE "NORTHERN" ISSUANCE SCHEDULE USED IN 31 STATES AND THE DISTRICT OF COLUMBIA. A "SOUTHERN" ISSUANCE SCHEDULE BASED ON THE LOWER COST "SOUTHERN" DIET WAS USED IN 10 STATES DURING 1969. IN 1972, THE NATIONAL ISSUANCE SCHEDULE WAS IN EFFECT.

Figure 1

Limited information is available concerning changes in the distribution of households, by size and income, participating in the pre-1970 and liberalized programs. Since mid-1970, however, participation has increased while average household size has decreased, indicating that many small households may have joined the program. Average incomes have increased, reflecting, in part, reductions in percentages of households with little or no income.

In June 1972, participation in each household size group was concentrated primarily in the middle and upper ranges of income eligibility (table 1). Roughly two-thirds of the households consisted of four or more persons. These larger households contained roughly 85 percent of all food stamp recipients.

Shifts, if any, in average effectiveness of bonus food stamps in expanding food expenditures may have been due to changes in (1) the stamp issuance schedule and (2) the profile of participation. To the extent that levels of effectiveness vary among sectors of the issuance schedule, weights to be applied will be imprecise.

EFFECTS OF CASH INCOME SUPPLEMENTS ON FOOD EXPENDITURES

The 1969 Evaluation

Average food expenditures by households of similar size increase with income. At all but the lowest income levels, however, families tend to spend a small percentage of each additional dollar of income for food.^{3/} Food appears to be a primary claimant of income dollars until minimum levels of food satisfaction are reached, and to be subordinate to other goods and services thereafter.

^{3/} Two measures are used, marginal propensities for food expenditures and income-food expenditure elasticities. Marginal propensities directly reflect shares of a \$1 increase in income spent for food (slopes of income-food expenditure relationships). Income-food expenditure elasticities, in contrast, measure the percentage increase in food expenditures associated with a 1-percent increase in income. Marginal propensities for food expenditure tend to be lower in absolute terms than income elasticities, as indicated in the following hypothetical examples:

- (1) A family with \$3,000 income is spending \$1,200 for food. At an income-food expenditure elasticity of 0.25, an increase of \$30 in income (1 percent) is associated with an increase of \$3.00 in food expenditures ($\frac{1}{4}$ of 1 percent). Ten cents of each additional dollar of income is spent for food.
- (2) A family with \$7,000 income is spending \$1,600 for food. At an income-food expenditure elasticity of 0.50, an increase of \$70 in income would result in an increase of \$8 in food expenditures ($\frac{1}{2}$ of 1 percent). Less than 12 cents out of each additional dollar of income is spent for food.

Table 1--Distribution of participants in the Food Stamp Program, by household size and income, June 1972

Status, monthly income, and distribution by size	Household size (number of persons)						Percent
	1	2	3	4	5	6	
<i>As of June 1972:</i>							
\$0 - 29	1/6.0	5.2	5.7	4.2	4.3	4.6	3.1
30 - 49	6.3	3.1	2.9	1.9	1.3	1.1	0.8
50 - 69	12.3	4.8	3.9	2.6	1.8	1.3	1.3
70 - 99	24.3	13.4	7.5	5.7	4.4	3.6	2.4
100 - 149	51.1	31.1	24.5	13.8	10.6	8.7	6.7
150 - 249	--	42.4	45.7	39.2	30.9	28.2	23.5
250 - 359	--	--	9.8	28.1	30.1	31.1	30.4
360 - 479	--	--	--	4.5	16.6	19.1	21.7
480 and over	--	--	--	--	2.3	18.9	10.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Share of total households participating	8.3	12.6	13.3	14.2	12.7	10.7	28.2

1/ Based on FNS Food Stamp Program Profiles for all households participating.

It is usually agreed that marginal propensities for food expenditures are low. Findings for different studies, however, vary moderately in regard to specific levels. Differences arise, in part, because food expenditures among families of similar size and income status vary widely. Associations between income and food expenditures tend to be statistically weak except when there are large numbers of observations over a range of income.

National household food consumption surveys which include a proportionate sampling of the poor provide substantial numbers of observations over a range of income. Larger numbers, however, would be helpful in delineating income and nonincome elements associated with food expenditures among the poor. These elements include household size (economies of scale) and food needs (based on sex and age of household members). Local surveys of poverty populations, in contrast, tend to show limited variations in the range of income available to poverty households of any single size. This reflects the welfare population and the procedures used in determining amounts of welfare grants.

Differences in findings also arise from methodological variations. Among low-income families, measures based on food expenditures will vary from those based on money value of foods consumed, including nonpurchased foods. Very low food expenditures reported by poor families in numerous instances may reflect, at least in part, use of home produced or other nonpurchased foods received as gift or pay. To the extent that purchased foods supplement nonpurchased supplies, increases in money value of food consumption with income provide reasonable indicators of income-food expenditure relationships. Measures based only on food expenditures will show marginal propensities greater than those derived from money value of foods consumed, to the extent that average use of purchased foods is directly related to income.

The 1969 OMB task force concluded that low-income families may spend about 20 cents out of each additional dollar of income for food. This conclusion was reached after the task force evaluated divergent estimates derived from the 1955 and 1965 Household Food Consumption Surveys (HFCS) conducted by the Agricultural Research Service (ARS) and a series of local Food Stamp Program studies conducted jointly since 1961 by ERS and ARS.

The estimate of marginal propensity for food expenditure (0.2) was based primarily on the following data:

- (1) Coefficients of income elasticity (\$3,000 and under) for food at home from 1955 and 1965 HFCS (unpublished)--about 0.25. (Food expenditures in \$1,000 intervals were adjusted to three and one-half person households, and variables were weighted by the number of families in each income class.)
- (2) Coefficient of income elasticity (\$3,000 and under) from 1965 HFCS (Egbert and Hiemstra)--about 0.1. ^{4/} (Average per capita food expenditures and income were derived for three unweighted income intervals.)

^{4/} Egbert, Alvin C. and Hiemstra, Stephen J., *Shifting Direct Government Payments from Agriculture to Poor People: Impacts on Food Consumption and Farm Income*, Agr. Econ. Res., Vol. 21, No. 3, U.S. Dept. Agr., Econ. Res. Serv., July 1969, pp. 61-69.

(3) Coefficients of income elasticity (all incomes) for quantities of foods consumed at home from 1955 and 1965 HFCS (unpublished)--about 0.15. (Computation was based on per capita consumption and income.)

(4) Income-food expenditure relationships for selected groups of welfare households not participating in the St. Louis, Mo., Food Stamp Program during 1964 (unpublished)--slopes ranging from 0.05 to 0.19. 5/

Analysts of the 1965 HFCS generally agree that income elasticities for the middle income group were substantially higher than those for the poverty group. For the \$4,000 to \$8,000 category, Egbert and Hiemstra found elasticities of 0.3 to 0.5.

The data available to the task force have major limitations. These include:

(1) HFCS: Incomes were available in \$1,000 intervals. This limited evaluation of poverty populations essentially to households with incomes below \$3,000. The lowest income segments contained many small households and elderly persons. Numbers of observations in poverty levels were limited, and cross classification cells in many instances were small.

(2) Food Program studies: Case studies involved different time periods, program income eligibility criteria, income levels, and food expenditure patterns. With the exception of the St. Louis study, samples were not large enough to permit evaluations by specific household sizes.

5/

Welfare program and household size	Sample	Means for month	size	Income:Food expen-	"Least squares"	R ²
Old Age Assistance	(X)	diture (Y)	regressions			
1 person	113	\$102		\$33	$Y = 27 + 0.05X$	0.14
2 persons	121	185		58	$Y = 47 + 0.06X$	0.13
Aid-to-Dependent Children						
2 persons	114	106		52	$Y = 32 + .19X^*$	0.46
4 persons	125	156		85	$Y = 61 + .16X^*$	0.30
6 persons	125	206		106	$Y = 88 + .09X$	0.17

*Significant at 0.01 level.

Results from EFNEP Study

Subsequent findings from an unpublished analysis of EFNEP data by Feaster and Perkins indicate curvilinear income-food expenditure relationships for households not receiving food stamps. Households of all sizes which met food stamp income eligibility criteria in their States of residence (1969) tended to spend about 25 to 30 cents of each additional income dollar for food (table 2).

Other low-income households with incomes above prevailing State criteria--many of whom now may be eligible--were more likely to be spending only 10 to 20 cents of each additional income dollar for food.^{6/}

^{6/} Data in table 2 were derived from equations fitted for each individual household size. Multiple regression equations also were developed where household size was entered as an independent variable, as follows (t values are in parentheses):

Food stamp recipients

$$1) \text{ FE}_1 = 16.67 + 8.57(F) + .20(I_1); R^2 = .60; n=1066$$

(22.2) (22.5)

$$1a) \text{ FE} = 8.93 + 4.13(F) + .23(I); R^2 = .50; n=1066$$

(11.2) (26.4)

$$1b) \text{ FE}_1 = 18.85 + 9.70(F) + .19(I); R^2 = .60; n=1066$$

(26.1) (22.1)

Eligible nonparticipants

$$2) \text{ FE} = 7.71 + 3.10(F) + .27(I); R^2 = .50; n=2114$$

(11.1) (29.9)

Ineligibles

$$3) \text{ FE} = 27.05 + 6.71(F) + .11(I); R^2 = .20; n=2386$$

(13.6) (13.8)

Where:

FE = Reported family expenditures for food and food stamps (month).

$\text{FE}_1 = \text{FE} + \text{value of bonus food stamps.}$

F = Number of household members

I = Reported family income (month).

$I_1 = I + \text{value of bonus food stamps.}$

Table 2--Income-food expenditure relationships among low-income families participating in Extension Service's Food and Nutrition Education Program (EFNEP), by Food Stamp Program status and household size, 1969

Food program status and household size (number of persons)	Number (n)	Mean income and range 1/	Intercept 2/	Slope 2/	t-value 3/	R ²	Income elasticity coefficients 4/
<u>Food stamp participants</u>							
1	80	\$94 + \$67	\$14.20	0.16	5.3	0.26	.031
2	131	138 + 89	31.30	.12	3.6	.09	.40
3	107	177 + 97	26.40	.20	8.5	.41	.66
4	135	206 + 129	45.40	.14	6.9	.26	.60
5	105	223 + 109	41.00	.18	6.0	.26	.64
6	150	233 + 119	37.00	.24	8.5	.33	.54
7	102	211 + 137	27.70	.27	11.7	.58	.80
8	86	227 + 134	39.80	.23	7.2	.38	.55
9	68	234 + 128	26.80	.30	10.7	.63	.91
10	38	224 + 151	19.60	.36	9.6	.72	.94
<u>Eligible nonparticipants 5/</u>							
1	223	76 + 22	11.90	0.22	4.9	0.10	0.56
2	281	109 + 40	12.30	.30	10.0	.26	.57
3	208	130 + 54	16.20	.30	10.2	.33	.58
4	249	159 + 66	21.70	.27	9.6	.27	.56
5	245	177 + 73	23.60	.27	9.5	.27	.58
6	224	192 + 83	30.30	.27	10.0	.31	.62
7	202	209 + 85	20.10	.32	12.2	.43	.68
8	170	222 + 99	31.80	.26	9.0	.33	.40
9	104	239 + 104	31.30	.28	6.4	.29	.73
10	86	225 + 101	35.30	.28	5.3	.25	.55
<u>Ineligible for food stamps 6/</u>							
1	160	191 + 114	45.80	.07	1.0	.01	.39
2	369	272 + 120	46.00	.08	4.8	.06	.33
3	428	303 + 125	52.60	.09	7.1	.11	.34
4	440	322 + 133	58.70	.10	7.2	.11	.37
5	337	344 + 127	71.90	.10	3.6	.04	.29
6	278	365 + 130	41.30	.19	10.0	.27	.57
7	157	372 + 140	70.50	.12	4.8	.13	.35
8	111	379 + 146	69.00	.15	4.7	.17	.53
9	54	361 + 120	36.30	.22	5.4	.36	.53
10	36	388 + 153	70.90	.14	2.3	.14	.43

1/ Family income from all sources during past month. Excludes money value of bonus stamps. Income range of + one standard deviation from mean will include roughly two-thirds of all observations.

2/ Linear least squares regressions: Monthly food expenditures = $a_1 + b_1$ (monthly income).

3/ t-values 1.96 and above are significant at 95 percent confidence level.

4/ Derived from: Log food expenditures = $a_1 + b_1$ (log income).

5/ Household met FSP income criteria in State of residence.

6/ Incomes above FSP criteria.

EFNEP families reported food expenditures only. No values were derived for consumption of home produced or other nonpurchased foods. Average incomes of households eligible to receive food stamps were low, reflecting EFNEP targets of educating those with the greatest need. These elements may contribute to the relatively high marginal propensities for food expenditures observed among the "eligible" group.

An Alternative Estimate

A second estimate of income-food expenditure relationships for low-income households not receiving food stamps was derived for four-person nonparticipating households, based on survey data on responses at three average income levels.

These were:

- (1) Relatively high income (\$285 per month)--Allegheny County, Pa., four-person ADC households (94 observations);
- (2) Low income (\$129 per month)--St. Louis, Mo., four-person ADC households (125 observations);
- (3) Very low income (\$0-\$49 per month)--a limited number of observations in all household sizes, 10 surveys.

Average income-food expenditure relationships were available from Allegheny County and St. Louis. For the very poor, specific measures are lacking. However, few households reported food consumption valued at less than two-thirds of the cost of the USDA Economy Food Plan.

An income-food expenditure regression line was constructed, using Allegheny County data in determining the level and OMB task force estimates of a marginal propensity for food expenditures (0.20) as the slope. Findings for low (St. Louis) and very low income families were compatible with estimates from this relationship. Similar relationships were found for two- and six-person ADC households--the only other categories for which comparable data are available.

The divergence in findings from the EFNEP and other studies was not resolved. Marginal propensities for food expenditures by very low income families were estimated to range from less than 0.2 to 0.3. Propensity estimates slightly above 0.2 for purchased foods eaten at home may provide a new basis for consensus.

DEMAND EXPANSION THROUGH BONUS FOOD STAMPS

Indicators of demand expansion for food generated by bonus stamps have been obtained through a series of local studies since 1961 relating to operations of the Food Stamp Program. Results reflect operations under the pre-1970 program. Little information is available regarding demand expansion through food stamps under the liberalized programs.

Indirect measures were derived regarding changes in the effectiveness of bonus food stamps in expanding food expenditures under the two phases of the program. These were obtained by relating average income-food expenditure relationships in the absence of stamps to the pre-1970 and the post-1970 food stamp issuance schedules. Since estimates of cash income-food expenditure relationships vary moderately, results provide a range of estimation regarding levels of bonus stamp impacts under the two programs. Although precise measures of bonus stamp effectiveness were not derived, the direction of shifts under the liberalized program was indicated.

Under the Pre-1970 Program

In evaluating the effectiveness of bonus food stamps in generating supplemental food expenditures, the OMB task force considered findings from three Food Stamp Program surveys conducted jointly by ERS and ARS. Demand expansion ratios, expressed in terms of percentages of the dollar value of bonus food stamps received, represented higher average money value of foods consumed by participating households than those of nonparticipants. Propensities for food consumption among the household groups were assumed to be equal.

Results included:

<u>Study 7/</u>	<u>Method</u>	<u>Demand expansion ratios 7/</u>
Detroit, Mich. (1962)	Comparison of average food expenditures of matched groups of participating and non-participating households before and after initiation of the Food Stamp Program.	0.81
Fayette Co., Pa. (1962)	Same as Detroit.	0.42
Washington Co., Miss. (1967)	Comparison of average food expenditures of participants and nonparticipants (one-time survey).	0.35

In each of the three areas, donated commodities had been issued to low-income families prior to initiation of the Food Stamp Program. FSP impacts were over and above benefits received through the Food Distribution Program.

7/ Reese, Robert B. and Adelson, Sadie F., Food Consumption and Dietary Levels Under the Pilot Food Stamp Program--Detroit, Michigan and Fayette County, Pennsylvania, Agr. Econ. Rpt. No. 9, U.S. Dept. Agr., Econ. Res. Serv. and Agr. Res. Serv., June 1962. Data for Washington Co., Miss., are unpublished.

The demand expansion ratio for Fayette County, Pa., was reduced by (1) larger than usual issues of donated commodities in the spring (program closeout) and (2) heavy seasonal consumption of home produced and lower priced local foods during the "after" survey (fall). Higher year-round effectiveness ratios for bonus food stamps would have been anticipated.

In Washington County, Miss., incomes were very low. Numerous participating families were near-totally subsisting on foods bought with food stamps. Average food expenditures by both participants and nonparticipants were less than the cost of the Economy Food Plan (based on the "Southern" Low Cost Food Plan).

Localities with relatively liberal welfare programs tended to establish Food Stamp Programs, while very poor counties tended to maintain Commodity Distribution. For this reason, nationwide average demand expansion ratios for bonus food stamps were estimated around 50 percent or more, well above those for cash income supplements.

Findings from a one-time survey of Food Stamp Program participants and non-participants in Allegheny County, Pa., in early 1970 provide additional information on demand expansion ratios prior to the program changeover. Ratios derived for selected household categories, by welfare program and household size, were as follows:

Results within each group reflect responses by households with similar cash incomes at levels approaching program income eligibility cutoffs.

Estimates of average bonus food stamp effectiveness were not projected for the overall Allegheny County Program. The average food demand expansion ratio may have been below levels found in earlier studies. However, since bonus food stamps were equivalent to an income increase of roughly 5 to 8 percent, average food expenditures by ADC participants were well above amounts which would have been anticipated from income effects only.

The demand expansion ratios cited above were based on data derived at different times, localities, and under varying levels of Food Stamp Program income eligibility cutoffs. Two studies involved a measurement of responses by matched groups of households before and after initiation of the program. In the others, comparisons were based on food consumption by participants and nonparticipants in the Food Stamp Program. Results would reflect differences in attitudes toward

more or better food among the two groups, a factor involved in their decision to join or stay out of the program. For these reasons, individual demand expansion ratios, high or low, should be viewed with caution. These data, however, are consistent in indicating that bonus food stamps in pre-1970 programs were substantially more effective than cash income supplements in expanding demand for food.

Capabilities Under the Pre-1970 and Liberalized Programs

If the dollar value of bonus food stamps had been given as a cash income supplement to recipients, roughly 20 to 30 cents of each dollar granted would have been spent for additional food. This minimum demand expansion is exceeded substantially through the use of bonus food stamps because of the food expenditure "lock-in" mechanism. Bonus food stamps are automatically 100 percent effective in expanding demand for food when the cost of food stamps equals normal food expenditures. For families whose food expenditures exceed the cost of food stamps, bonus food stamps are locked-in to a position of partial effectiveness to the extent that the total value of food stamps received exceeds amounts they otherwise would have spent for food. In such instances, the balance of the bonus stamps is "unlocked," or not automatically committed to the purchase of supplemental food when recipients spend all of their food stamps. Additional demand expansion for food also results from voluntary actions by homemakers using "unlocked" buying power to increase food expenditures.^{8/} The amount of "unlocked" buying power made available through bonus food stamps reflects the difference between amounts a family would normally spend for food and the cost of food stamps.

Participating families normally spending at unsatisfactory or near marginal levels relative to capabilities for obtaining nutritionally adequate diets tend to be locked into spending all or most of the bonus stamps for additional food. Others spending at levels which should provide them with adequate diets would not be locked into expanding their food expenditures, but may do so voluntarily.

^{8/} Demand expansion for food generated by an average dollar in "unlocked" bonus food stamps will be less than that derived from a dollar of additional cash income. Food buying impacts from "unlocked" bonus stamps are estimated to range from roughly 20 to 30 percent to zero, depending on the proportion of the family's total bonus food stamps which is unlocked. When the total income supplement in the form of bonus food stamps is available for discretionary expenditure, the "unlocked" bonus food stamps are equivalent to cash income. Marginal propensities for increasing both food and nonfood expenditures determine how the "unlocked" bonus food stamps are spent. In contrast, when the family's additional income from bonus food stamps is partially "locked" and "unlocked," the demand expansion for food generated by the "locked" bonus food stamps satisfies all or a portion of the family's marginal propensity to increase food expenditures. The "unlocked" bonus food stamps provide a residual of discretionary income which the family will allocate between food and nonfood expenditures in a manner which will move toward an equilibrium at the expanded income level. When locked-in demand expansion for food exceeds roughly 20 to 30 percent of the total bonus food stamps (an amount equivalent to the marginal propensity to increase food expenditures), families will probably spend their "unlocked" bonus food stamps primarily for nonfood items.

As income increases among low-income families, average food expenditures rise toward levels which should provide nutritionally adequate diets. As incomes rise, however, the range of household food expenditures around the mean also widens. Substantial numbers of families in upper poverty income levels continue their food expenditures at or near marginal levels. This is illustrated by findings for four-person welfare non-food stamp family expenditures in Allegheny County, Pa., and St. Louis, Mo.:

	<u>St. Louis</u>	<u>Allegheny Co.</u>		
	<u>Percent</u>			
<u>Households with food expenditures:</u>				
<u>Less than cost of Economy Food</u>				
Plan	49	28		
<u>From Economy up to Low Cost Food</u>				
Plan	18	21		
Above cost of Low Cost Plan	<u>33</u>	<u>51</u>		
Total	100	100		

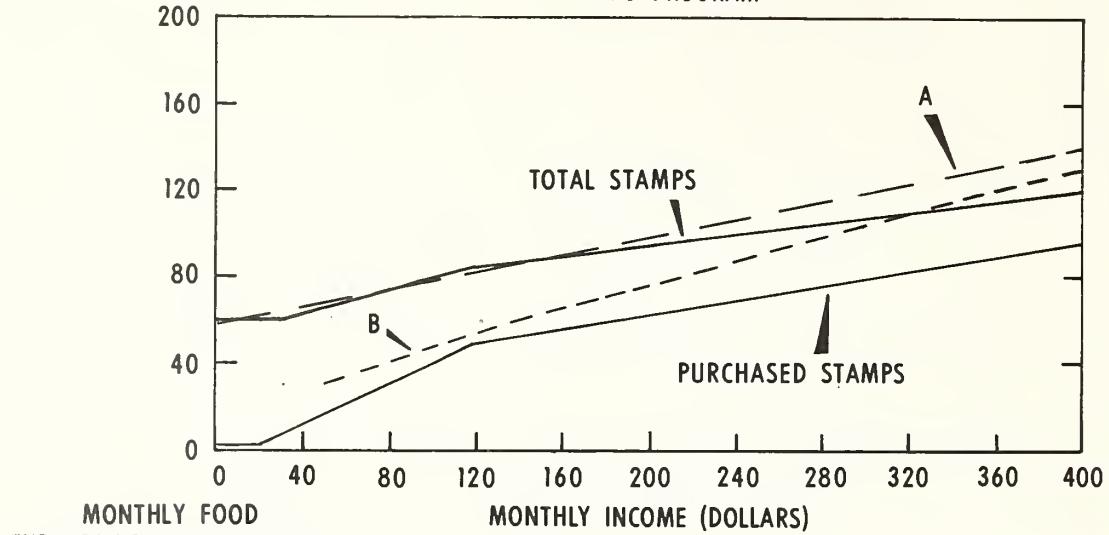
Demand expansion capabilities under the pre-1970 and liberalized Food Stamp Programs were evaluated by comparing food stamp issuance schedules with average income-food expenditure relationships for low-income families not participating in a food program. Estimates of locked-in demand expansion for food were obtained for average households at each income level. Results understate total demand expansion attained since they reflect (1) no voluntary demand expansion and (2) only a portion of locked-in expansion effects at higher income levels. However, findings indicate the nature and scope of the lock-in effect under the two phases of the program, and income levels where the programs were most and least effective.

Normal income-food expenditure relationships fitted to the pre-1970 and liberalized food stamp issuance schedules indicate the availability of "locked" and "unlocked" bonus food stamps for average families at each income level. Four-member households provide an example (fig.2). Relationships A and B show income-food expenditure relationships based on average propensities for food expenditures of 0.2 and 0.3, respectively, and provide a range of estimates. At these rates, families are presumed to spend 20 or 30 cents, respectively, of each additional dollar of income for food. Bonus food stamps constitute the difference between stamp purchases and total food stamps issued. Using average relationship B as an example, at any income level:

PRE-1970 AND LIBERALIZED FOOD STAMP ISSUANCE SCHEDULES COMPARED WITH ALTERNATIVE
ESTIMATES OF INCOME-FOOD EXPENDITURE RELATIONSHIPS FOR 4-PERSON LOW-INCOME
HOUSEHOLDS NOT RECEIVING FOOD STAMPS*

MONTHLY FOOD
EXPENDITURES AND STAMPS
(DOLLARS)

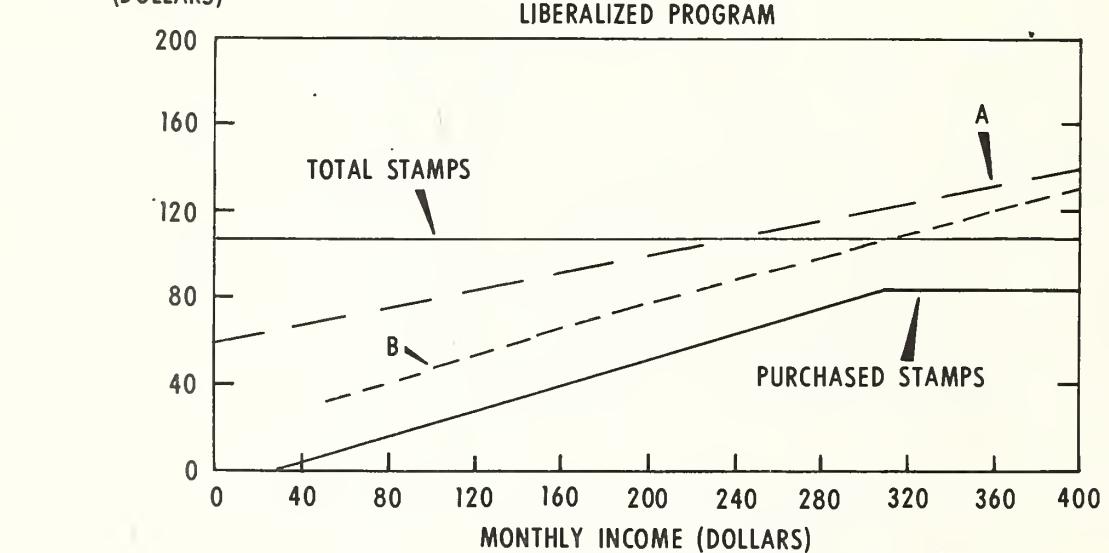
PRE-1970 PROGRAM



MONTHLY FOOD
EXPENDITURES AND STAMPS
(DOLLARS)

MONTHLY INCOME (DOLLARS)

LIBERALIZED PROGRAM



*PRE-1970 FOOD STAMP ISSUANCE BASED UPON "NORTHERN" SCHEDULE (1969) USED IN 38 STATES
-SLIGHTLY HIGHER THAN "SOUTHERN" SCHEDULE. LIBERALIZED PROGRAM HAS NATIONAL SCHEDULE.
ALTERNATIVE ESTIMATES OF INCOME - FOOD EXPENDITURE RELATIONSHIPS:

$$A \text{ -- } Y = 59 + .20(I)$$

$$B \text{ -- } Y = 8.01 + 1.79(F) + .31(I) - .00007(I)^2 + .10181(F)^2$$

WHERE Y = FOOD EXPENDITURES, I = MONTHLY INCOME, AND F = FAMILY SIZE.

Figure 2

- (1) Total food stamps minus B equals the value of bonus stamps locked in or committed to supplemental food purchase;
- (2) B less purchased stamps constitutes unlocked or noncommitted food buying power which may be used voluntarily by the homemaker in expanding food expenditures above the locked-in level; and
- (3) Homemakers who normally have lower than average food expenditures (B) have a correspondingly greater "lock-in" and reduction in amounts of "unlocked" bonus food stamps. The reverse is true for homemakers with above-average normal food expenditures.

Results indicate differences in estimates of effectiveness of bonus food stamps in generating demand expansion for food arising from assumptions relating to "normal" food expenditures by low-income families. When allowance is made for additional "lock-in" for low food spenders and voluntary actions, relationships derived from the EFNEP study (B) indicate that bonus food stamps were highly effective in increasing demand for food--at all but the highest levels of eligible income. Under alternative income-food expenditure relationship A, impacts ranged from limited to moderate.

Although measures of demand expansion are imprecise, the procedures used indicate changes in effectiveness resulting from the shift in program provisions. From data shown in figure 2, alternative estimates were derived for maximum and minimum impacts of bonus food stamps on demand expansion for food before and after the program revision (fig. 3). Maximum impacts were based on total issuance of bonus food stamps. Minimum impacts reflected either locked-in demand expansion for average households at each income level or normal cash income effects, whichever was higher.

With the program changeover, the value of bonus food stamps given families with little or no income increased substantially. For four-person households the value rose from less than \$60 to \$108 per month in 1972. The expansion in benefits diminished slowly to approximately the \$300 income level. At highest eligible incomes there was little change in the amount of bonus food stamps issued.

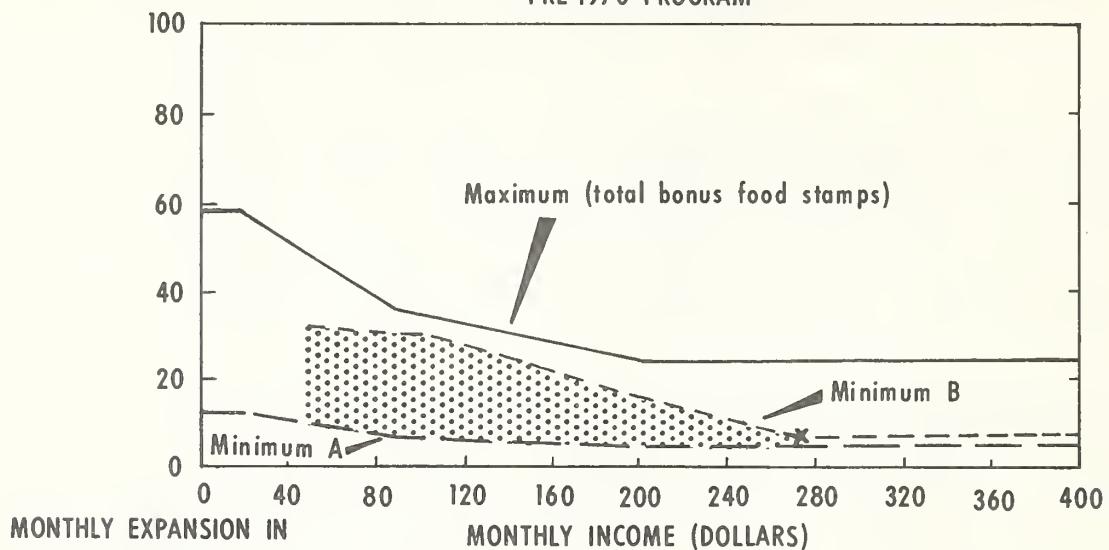
In evaluating minimum impacts on demand expansion for foods, the following results were obtained. Assuming that low-income families spend about 20 cents of each additional dollar of income for food:

- (1) Under the pre-1970 program, no locked-in demand expansion for food was demonstrated over and above amounts which would have been anticipated to result from increases in income in the form of bonus food stamps.
- (2) Under the liberalized program, locked-in demand expansion exceeded that derived from income effects for four-member households with incomes up to about \$175 per month.

EFFECTIVENESS OF BONUS FOOD STAMPS IN EXPANDING FOOD EXPENDITURES
BY 4-PERSON PARTICIPATING HOUSEHOLDS UNDER PRE-1970 AND
LIBERALIZED FOOD STAMP PROGRAMS

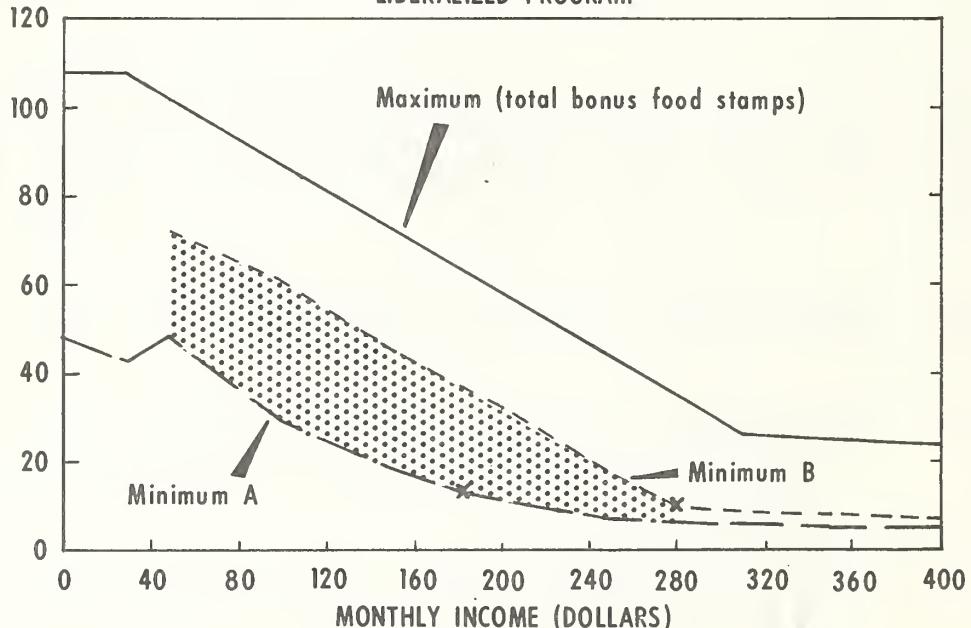
MONTHLY EXPANSION IN
FOOD EXPENDITURES
(DOLLARS)

PRE-1970 PROGRAM



MONTHLY EXPANSION IN
FOOD EXPENDITURES
(DOLLARS)

LIBERALIZED PROGRAM



AT X, MINIMUM IMPACTS SHIFT FROM GREATER THAN INCOME EFFECT TO
LEVELS WHICH REFLECT INCOME EFFECTS ONLY.

Figure 3

Using findings from the EFNEP study (marginal propensity of 0.3):

- (1) Participating families in the pre-1970 program with incomes up to about \$260 per month tended to be locked-in to a demand expansion position in amounts greater than would have been generated from supplemental income alone.
- (2) Under the post-1970 program, the above lock-in extended to families with incomes up to about \$280 per month. Ratios of locked-in demand expansion to bonus stamps, however, increased throughout most of the lower income range, as follows:

<u>Monthly cash income</u>	<u>Minimum demand expansion (B)</u> <u>as percent of value of bonus</u> <u>food stamps</u>	<u>Pre-1970</u>	<u>Liberalized</u>
		<u>Percent</u>	
\$50	66	76	
100	66	73	
150	59	67	
200	50	58	
250	1/	45	
300	1/	1/	

1/Less than 30 percent (estimated income effect).

The analysis based on EFNEP data was expanded to include five- and six- member households, as well as the four-member units cited above (table 3). Findings were comparable generally with those for four-person households except that (1) demonstrated levels of minimum demand expansion for food increased with household size, and (2) demand expansion ratios under the two programs tended to differ only at higher income levels, where the liberalized program was more effective.

The post-1970 food stamp issuance schedules are more effective in generating demand expansion for food than the pre-1970 schedules. Households in the lower and middle range of income eligibility tend to spend a higher percentage of the post-1970 bonus stamps for supplemental food purchases than before. Households with incomes approaching eligibility cutoffs continue to spend about the same percentage of their bonus stamps for foods which otherwise would not have been purchased. The shift to the liberalized Food Stamp Program was accompanied by an immediate increase of moderate but undetermined proportions in the average effectiveness of bonus stamps.

The maximum percentage-wise increase in the effectiveness of bonus stamps in expanding demand for food is estimated to have occurred at the time of the program changeover. Subsequent rapid expansion in program participation is estimated to have been accompanied by limited reductions in the percentage of the average bonus stamp dollar spent for supplemental food. Currently, the ratio of demand expansion for food generated by bonus stamps may approximate the pre-1970 level.

Table 3--Estimates of demand expansion for food generated through bonus food stamps under the pre-1970 and liberalized Food Stamp Programs and cash income supplements, by household size and income

Household size and monthly income	Food Stamp Issuance Schedule										Estimated range in additional food purchases per dollar of bonus food stamps			
	Estimated average food expenditures		Pre-1970 Program				Liberalized Program				Pre-1970 Program (1969)		Liberalized Program (1972)	
	in absence of Food Stamp Program 1/		1969 2/		1972 3/		1970 4/		1972 5/		1970 6/		1972 7/	
	Per dollar:		Family	Bonus	Total	Family	Bonus	Total	Family	Bonus	Minimum	High	Minimum	High
	Total per month 4/	of supplemental food	stamp	food	food	stamp	food	food	stamp	food	Minimum	High	Minimum	High
	income 5/	income purchases	stamps	stamps	purchases	stamps	stamps	purchases	stamps	stamps	6/	7/	6/	7/
Dollars														
4 persons														
\$50		32	0.30	19	38	57	8	100	108	0.66	0.76	0.76	0.76	0.83
100		47	.30	36	32	68	24	84	108	.66	.76	.73	.73	.81
150		62	.29	51	27	78	39	69	108	.59	.71	.67	.67	.76
200		76	.28	64	24	88	53	55	108	.50	.64	.58	.58	.70
250		90	.28	75	20	95	68	40	108	8/.25	.51	.45	.45	.60
5 persons														
\$50		35	.30	24	45	69	10	118	128	.76	.83	.79	.79	.85
100		50	.30	41	39	80	24	104	128	.77	.84	.75	.75	.82
150		64	.29	56	34	90	40	83	128	.76	.83	.73	.73	.81
200		79	.28	69	30	99	54	74	128	.67	.76	.66	.66	.76
250		93	.28	80	27	107	69	59	128	.52	.65	.59	.59	.71
300		106	.27	89	25	114	84	44	128	.32	.50	.50	.50	.64
6 persons														
\$50		38	.30	27	51	78	10	138	148	.78	.85	.80	.80	.86
100		53	.30	44	45	89	26	122	148	.80	.86	.78	.78	.84
150		67	.29	59	40	99	42	106	148	.80	.86	.76	.76	.83
200		82	.28	72	36	108	55	93	148	.72	.80	.71	.71	.79
250		96	.28	83	34	117	70	78	148	.62	.72	.67	.67	.76
300		109	.27	93	32	124	85	63	148	.47	.61	.62	.62	.72

1/ Based on information from a sample of EFNEP households not receiving food assistance. Reported food expenditures (cash or credit) were for the past month. Low expenditure levels indicate that purchased items may have been supplemented by home produced and other nonpurchased foods. Since food expenditure levels tend to be lower than those observed in other household food surveys, estimates of effectiveness of bonus food stamps will be higher than those which may be derived from other sources.

2/ The 1969 food stamp purchase requirements and bonus stamp values are approximations derived from a sample of ENEP recipients of food stamps, about 60 percent under the Northern schedule of issuance and 40 percent the Southern. The following formulas providing continuous, composite measures were used:

$$PR = -25.60 + 8.09(F) + .40(1) - .00040(1)^2 - .40611(F)^2 \quad R^2 = .90$$

(19.5)	(56.8)	(40.0)	(12.5)
--------	--------	--------	--------

$$VBS = 10.43 + 9.78(F) - .14(1) + .00018(I)^2 - .32816(F)^2 \quad R^2 = .92$$

(50.2)	(42.1)	(18.0)	(21.5)
--------	--------	--------	--------

3/ The 1972 food stamp purchase requirements and bonus food stamp values were based upon the National Issuance Schedule, and involved averagings of rates for two income intervals in several instances.

4/ Food expenditure estimates were derived from quadratic equation (A) or its logarithmic form (B):

$$(A) \quad \text{FE} = 8.01 + 1.79(\text{F}) + .31(\text{I}) - .00007(1)^2 + .10181(\text{F})^2 \quad R^2 = .50$$

(2.2)	(11.1)	(1.2)	(1.7)
-------	--------	-------	-------

5/ Impacts of cash income supplements were derived from equation (A) using the following formula:

$$1CS = \frac{\partial FE}{\partial I} = .31 \pm .000141$$

6/ Estimates of minimum effectiveness of bonus food stamps in expanding food expenditures are those occurring automatically with expenditure of total food stamps received and make no allowance for voluntary increases above "lock-in" levels. Ratios were computed as follows:

$$\frac{\text{Minimum ratio}}{\text{VBS}} = \frac{\text{1969 ratio}}{\text{Col. 5}}, \quad \frac{\text{Minimum ratio}}{\text{Col. 6-Col. 2}} = \frac{\text{1972 ratio}}{\text{Col. 8}}, \quad \frac{\text{Minimum ratio}}{\text{Col. 9-Col. 2}} = \frac{\text{1972 ratio}}{\text{Col. 8}}$$

7/ Estimates of upper range of demand expansion for food derived through bonus food stamps include locked-in effectiveness (footnote 6) plus treatment of "unlocked" bonus stamps as cash income supplements. See footnote 8, page 14, for limitations to this approach. Ratios were computed as follows:

High ratio = minimum ratio + MPE (1 - minimum ratio)
 1969 high ratio = Col. 10 + Col. 3 (1-Col. 10). 1972 high ratio = Col. 12 + Col. 3 (1-Col. 12)

8/ Average "locked-in" effectiveness is less than income effect.

Note: In the above equations: FE = reported monthly food expenditures; I = reported monthly household income; F = household size (persons); PR = 1969 food stamp purchase requirements; VBS = 1969 value of bonus food stamps; MPE = marginal propensities for food expenditures; ICS = food expenditure impact of cash supplement; T = total food stamps; () = T-values.

Changes in the average amount of bonus food stamps spent for supplemental food result from shifts in the composition of the participating population relative to household size and income. Prior to 1970, relatively high percentages of the larger eligible households, and those with very low incomes, were receiving food stamps. These households were participating in sectors of the food stamp issuance schedule where the largest increases in demand expansion for food would have been anticipated under the liberalized program. Households joining the program since 1970 have tended to be smaller and to have higher incomes than those participating previously. Numbers of families reporting little or no income have been reduced substantially. The newcomers, therefore, have shown greater tendencies toward participating in the portions of the food stamp issuance schedule where ratios of demand expansion are comparatively low.

Also, about 6 percent of the food stamp recipients are now participating under variable stamp purchase plans made available under the liberalized program. Bonus stamps issued under these variable plans are estimated to be less effective, on the average, in expanding demand for food than those issued to households participating fully in the Food Stamp Program.

Currently, program statistics provide measures of annual shifts in the participating population by income and household size. Comparable data are not available for the pre-1970 program. Information on shifts during the past several years indicate the direction of the economic responses cited above. These data do not provide, however, the basis for estimating the scope of changes since 1970 in the average effectiveness of bonus stamps in expanding demand for food.

Since this study is concerned primarily with impacts of the Food Stamp Program on demand for food, analysis was limited to a single phase of program cost benefits--the average unit effectiveness of Federal contributions, in the form of bonus stamp dollars, in expanding demand for food. Overall program performance is evaluated in broader terms such as effectiveness in reaching low-income households, food and income benefits accruing to participants, and cost effectiveness relative to available alternatives.

The limited reductions during 1970-73 in the average unit efficiency of bonus stamps in expanding demand for food do not reflect lower effectiveness of the Food Stamp Program, but rather a trade-off in achieving higher levels of participation by qualifying families and the delivery of larger aggregative amounts of food and income benefits to these recipients. The liberalized schedule of food stamp issuance has facilitated the shift from a program serving a 3-million-person segment of the poverty population to one assisting over 12 million persons. This transformation was accomplished with minimal changes in average unit effectiveness of bonus stamp dollars in expanding demand for food from pre-1970 levels.

In summary, data are imprecise regarding levels of demand expansion for food generated through bonus food stamps. Pending further research findings, however, it is estimated that under both programs, bonus food stamps have been at least 50 percent effective in increasing food expenditures. If recipients treat "unlocked" bonus food stamps as cash income supplements and voluntarily spend 20 to 30 cents out of each "unlocked" dollar for additional food, program-wide average effectiveness of bonus food stamps could approach 60 to 65 percent.

Although estimates regarding levels of demand expansion for food obtained through bonus food stamps may not be developed with precision, two related findings are conclusive:

- (1) Increased participation and benefits to recipients under the liberalized program have been achieved without loss in the average effectiveness of bonus stamps in expanding demand for food between 1969 and 1973.
- (2) Bonus stamps continue to be approximately twice as effective as comparable cash income supplements in expanding food expenditures of low-income families.

Families Expanding Their Demand for Food

Indicators were sought regarding demand expansion generated through bonus food stamps in terms of types of participating families spending more for food. Findings, although imprecise, shed light on the workings of the Food Stamp Program.

Results from the Allegheny County study indicate that demand expansion from bonus food stamps may be strongly associated with increases in food expenditures by families which otherwise would be spending at or near marginal levels--in terms of capabilities for attaining nutritionally adequate diets.

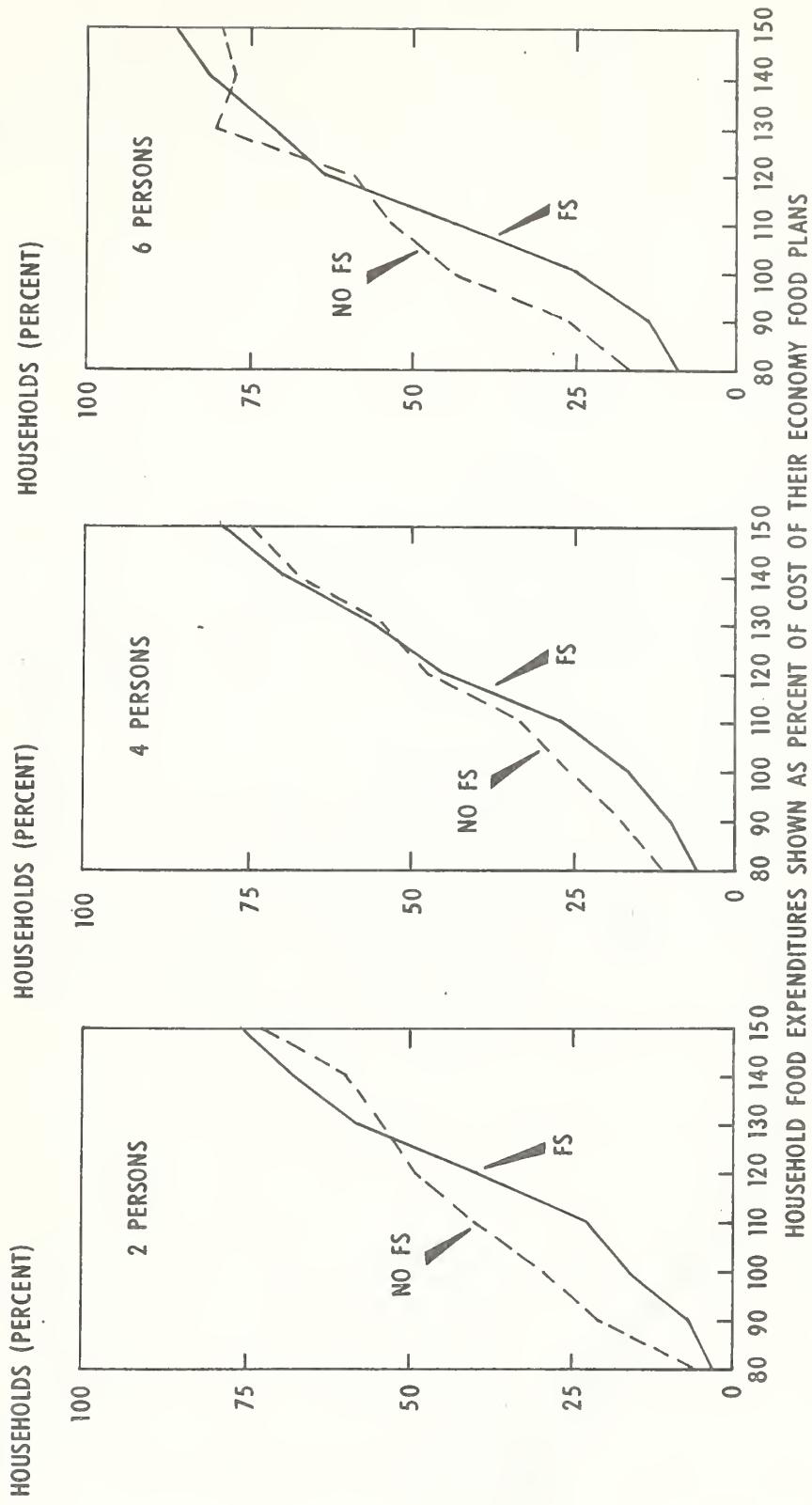
Differences in food expenditures of participating families were found primarily among those spending amounts less than about 125 percent of the cost of their Economy Food Plans (fig. 4). Similar relationships were found among two-, four-, and six-member households.

"Lock-in" features of the Food Stamp Program may have enabled numerous ADC families to increase their food expenditures from unsatisfactory levels to amounts which, if used wisely, should provide them with nutritionally adequate diets. Demand expansion for food, measured in terms of achievement of food and nutritional objectives, is greater than program-wide average ratios would indicate.

Large families spent at levels approaching their minimum food needs more frequently than smaller ones (fig. 4). Among families of the same size, low spending was associated inversely with the size of food budgets needed to provide nutritionally adequate diets (fig. 5). Families with "lighter" eaters (infants, aging persons) were more likely to be spending at satisfactory levels than those with "heavier" eaters (teenagers, young adults).

The above findings raise questions regarding possible interrelationships between the Food Stamp and Child Nutrition Programs. Families with heavy eaters were more likely than others to include children receiving free or reduced price school lunches, which could have provided up to 20 percent of the school pupil's monthly food requirements. Program interactions should be further examined.

CUMULATIVE DISTRIBUTIONS OF ADC HOUSEHOLD FOOD EXPENDITURES EXPRESSED IN TERMS OF THEIR FOOD NEEDS,
BY FOOD STAMP PROGRAM STATUS, ALLEGHENY COUNTY, PA., WINTER 1970*



* EXPENDITURES RANGED FROM 80 TO 150 PERCENT OF COSTS OF ECONOMY FOOD PLANS. UNIFORM FOOD STAMP ISSUANCE SCHEDULES WERE BASED ON COSTS OF AN ECONOMY FOOD PLAN BY A TYPICAL HOUSEHOLD. FOR OTHER FAMILIES, FOOD STAMPS RECEIVED WERE SLIGHTLY MORE OR LESS THAN THE COSTS OF THEIR ECONOMY FOOD PLANS.

Figure 4

Since 1969, Food Stamp Program capabilities for influencing the national food market have increased from "minimal" to "small but measurable." The value of bonus food stamps issued increased eightfold, from \$264 million in 1969 (table 4) to nearly \$2.2 billion (annual rate) in early 1973. In terms of total U.S. food expenditures, the share represented by bonus stamps increased from 0.25 percent to about 1.6 percent.

If 50 percent of bonus stamps result in food expenditures which otherwise would not be made, demand expansion attributable to the program as of March 1973 would have constituted about 0.8 percent of the total U.S. annual food expenditures or over \$1 billion. With 60 percent effectiveness, food impacts would be equivalent to nearly 1 percent of total food expenditures.

During 1970 and 1971, there were major year-to-year increases in the value of bonus stamps issued. During 1970, for example, the peak expansion year, the value of bonus stamps increased by \$839 million (table 4). The expansion pace slowed during 1972 and 1973.

During the 1970-71 period of rapid program expansion, substantial new food buying power was created, causing an increased total demand for the relatively fixed supplies of food available at the time. These were short-term marketing impacts. Over time, the new food buying power became a part of the continuing

9/ Marketing impacts are those occurring between 1969 and mid-1973. During this period, increases in Food Stamp Program participation took place primarily within existing local programs rather than through shifts from donated commodities to food stamps. The major expansion in the issuance of bonus stamps during the early 1970's generally reflected increases in benefits accruing to participants when the liberalized food stamp issuance schedule was initiated or new benefits received by households subsequently joining the program. Increased income in-kind in the form of bonus stamps provided low-income families with the capability for expanding their food purchases.

The major expansion in issuance of bonus food stamps occurring during 1974, in contrast, may be traced primarily to (1) increased participation by persons shifting from donated commodities to food stamps in a near-total phasing out of the Commodity Distribution Program for low-income families and (2) increases in food costs under the Economy Food Plan during 1973 and early 1974, the basis for food stamp issuance. As a result, most of the expansion in bonus stamp issuance has served to maintain food buying capability of recipients or to replace foods previously donated. In effect, the additional bonus stamp dollars generally have helped low-income families maintain demand for food at a higher level than would have been attained without these in-kind income benefits rather than creating new and expanded demand for food. Several groups of participants, however, may increase their demand for food. These are newcomers to the food programs and very low income transferees from the Commodity Distribution Program who are receiving bonus stamps with a greater dollar value than the food donations formerly received.

Table 4--Food Stamp Program: Participation and value of bonus food stamps issued, 1965-73 1/

		Bonus food stamps issued			
Calendar year	Average monthly participation	Average per recipient	Total	Increase over previous year	
	Million persons	Dollars	-----	Million dollars-----	
1965 . . .	0.6	6.36	45	17	
1966 . . .	1.1	6.12	84	39	
1967 . . .	1.8	6.28	139	55	
1968 . . .	2.5	6.57	198	59	
1969 . . .	3.3	6.71	264	66	
1970 . . .	6.8	13.49	1,103	839	
1971 . . .	10.5	13.40	1,695	592	
1972 . . .	11.7	14.04	1,977	282	
1973 . . .	12.4	14.88	2,209	232	
1974 . . .	13.3	19.80	3,164	million	

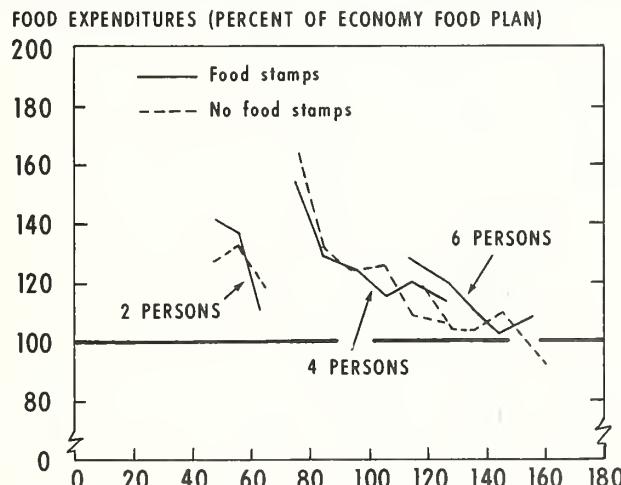
1/ First 3 months of 1974:

Average monthly participation 13.3 million persons

Average monthly issue of free food stamps per recipient \$ 19.80

Total free stamp issuance (annual rate) \$ 3,164 million

HOUSEHOLD FOOD EXPENDITURES VERSUS FOOD NEEDS, ADC HOUSEHOLDS,
BY FOOD STAMP PROGRAM STATUS, ALLEGHENY COUNTY, PA., WINTER 1970*



* MEAN FOOD EXPENDITURES (SHOWN AS PERCENT OF EFP COSTS) BY INTERVALS OF FOOD NEEDS BASED UPON HOUSEHOLD SIZE, SEX AND AGE OF MEMBERS (COST OF ECONOMY FOOD PLAN). RESULTS INDICATE ADEQUACY OF FOOD EXPENDITURES BY HOUSEHOLDS WITH VARYING LEVELS OF FOOD REQUIREMENTS.

Figure 5

demand for food. Also, supply and demand moved into a new equilibrium position. With the slowing rate of issuance of bonus food stamps during 1972 and 1973 short-term impacts on the national food market should have been limited in scope.

During the same period, food expenditures by low-income families may have been augmented through higher cash incomes as well as through food stamps. Welfare grants levels have been increased in many localities. Total payments to recipients of Public Assistance and General Assistance, for example, increased from \$6.6 billion in 1969 to over \$11 billion in 1973 (table 5). Social Security (OASDI) and other transfer payments have risen, as have minimum wage rates. Non-cash income benefits from housing, medical, and other programs have released otherwise unavailable family funds for the purchase of food and for other purposes.

Table 5--Public and General Assistance Programs: Money payments to recipients, 1965-73

Calendar year	:	Money payments to recipients		
		Total	Increase over	
			previous year	
<u>Million dollars</u>				
1965	.	3,996		--
1966	.	4,306		310
1967	.	4,932		626
1968	.	5,660		728
1969	.	6,633		973
	.			
1970	.	8,432		1,799
1971	.	10,142		1,710
1972	.	11,200		1,058
1973 1/	.	11,392		192
	.			

1/ Preliminary.

Source: Social Security Bulletin, May 1974--table M-26, p. 55.

Estimates of net income changes among low-income households were not derived. The magnitude of the aggregate income base, however, is such that a relatively small percentage change in average income could generate an aggregate demand expansion for food approaching that associated with the Food Stamp Program.

Indicators of the above market impacts were derived relative to food groups, particularly red meats. Results, while imprecise, indicate the general direction and scope of changes in demand for food generated both through bonus stamps and cash income supplements.

Impacts by Food Group

Findings from earlier surveys indicated that new participants in the Food Stamp Program used substantial portions of their expanded buying power in increasing purchases of red meats, particularly ground beef and lower cost beef cuts. To a lesser degree, bakery products, fruits, and vegetables claimed additional food dollars.

Other substantial changes reflected termination of the Commodity Distribution Program. Examples included shifts from nonfat dry milk to fresh fluid milk and from baking ingredients such as flour and dried eggs to prepared bakery products.

Results were generally compatible with differences in food consumption patterns observed in the 1965 Household Food Consumption Survey at varying levels of income in the lower and middle range. The HFCS findings appear to provide a reasonable proxy for evaluating consumption responses associated both with bonus stamps and cash income supplements.

At the lower and lower-middle income levels, total household food expenditures rose with income, but the proportions allocated among the major food groups changed little. Shares approximated the following:

<u>Food group</u>	<u>Share of food dollar</u>
Meat group (meat, poultry, fish, eggs, dry beans and peas, nuts, and mixtures--primarily of meat)	\$0.38
Milk group (milk, cream, cheese, and ice cream and other frozen desserts)13
Vegetable and fruit group20
Bread-cereal group12
Other food (fats, oils, sweets, and other)17
Total	1.00

As incomes increased, there were internal shifts within each food sector, especially within the meat group. For this group, red meats represented about 80 percent of the increased expenditures associated with rising incomes. Beef accounted for 50 to 60 percent of the expanded expenditures within the overall meat group.

Red Meats

Information was sought regarding impacts of the Food Stamp Program on demand for red meats, particularly beef. Indicators were derived through the following assumptions:

- (1) Fifty cents of each bonus stamp dollar resulted in food expenditures which otherwise would not have been made;

- (2) Thirty-eight cents of each supplemental food dollar was spent for meat group items; and
- (3) Eighty cents of each additional meat group dollar was spent for red meats. Most of this, 50 to 60 cents, was spent for beef.

From the above relationships, it was estimated that roughly 15 cents of each dollar's worth of bonus food stamps resulted in supplemental expenditures for red meats during the period under study. Beef accounted for more than 9 cents of this and other red meats, mostly pork, for less than 5 cents. 10/

Bonus food stamps accounted for a small but increasing share of total U.S. consumer expenditures for beef and other red meats (table 6). In 1969, program impacts were nominal, roughly 0.15 percent of total expenditures. By 1971, bonus stamps accounted for around 0.8 percent. Limited increases, at most, would be anticipated during the period since that time.

Table 6--Estimated demand expansion for total red meats and beef generated through bonus food stamps, 1969-72

Product and calendar year	U.S. consumer expenditures		Demand expansion from bonus stamps 1/			
	:		: As a percent of U.S.			
	Total	Gain from: past year:	Total	Gain from: consumer expenditures past year:		
	:	:	:	Gain from: Total	Gain from: past year	
:						
		<u>-Billion dollars-</u>		<u>-Million dollars-</u>		----- <u>Percent</u> -----
Total red meats:						
1969	:	28.5	1.8	40.1	10.0	0.14
1970	:	30.9	2.4	167.6	127.5	0.54
1971	:	32.0	1.1	257.7	90.1	0.81
1972	:	35.3	3.3	300.6	42.9	0.85
Beef:						
1969	:	17.1	1.4	25.1	6.3	0.15
1970	:	18.2	1.1	104.8	79.7	0.58
1971	:	19.2	1.0	161.1	56.3	0.84
1972	:	22.0	2.8	187.9	26.8	0.85

1/ Demand expansion estimated in cents per dollar of bonus stamps issued:

Red meats 15.2 cents

Beef 9.5 cents

10/ Demand expansion per dollar of supplemental cash income was estimated at one-half the above rates.

Although red meat purchased with bonus food stamps accounted for less than 1 percent of the total market, it appears to have represented a proportionately higher share of the new demand entering the market during 1970 and 1971. Year-to-year expansion in demand for beef and total red meats through food stamps was compared with annual changes in total consumer expenditures (table 6). Bonus stamps may have accounted for over 5 percent of the total expansion in expenditures for beef and red meats during 1970 and 1971.

Since 1971, the rate of Food Stamp Program expansion expansion has been slowing (table 4). By early 1973, short-term market impacts of the type described above may have been relatively minor.

Higher cash income, as well as bonus stamps, may have increased demands of low-income families for red meats. During 1970-71, welfare payments were increasing at the rate of over \$1.7 billion each year (table 5). It is not known to what extent these higher outlays represented higher incomes to recipients. Cash income expansion of this magnitude, however, would be anticipated to have raised red meat expenditures by \$125 to \$135 million per year--amounts comparable with or higher than short-term demand expansion achieved through the Food Stamp Program during the same periods (table 6).

The above estimates relating to demand for beef and total red meats were based on income-food expenditure relationships only. Higher meat prices could result in shifts by these low-income families from red meats to lower priced items in the meat group. Past price-expenditure relationships showed that price increases of 1 percent resulted in a comparable reduction in quantities of beef purchased, and a drop of about 0.75 percent for pork. Meat price increases, particularly for beef, may thus have reduced impacts of bonus stamps (and cash income supplements) on demand for red meats below the levels cited.

During 1965-72, per capita consumption of beef increased steadily from under 100 pounds to nearly 116 pounds (table 7). Per capita consumption of pork and other red meats, while subject to yearly fluctuations, expanded at a slower rate. Consumer expenditures for red meats, particularly beef, increased faster than quantities consumed, reflecting a combination of strong demand, higher marketing costs, and increased consumption of red meats away from home (where expenditures include preparation costs).

Since 1969, the expanded issuance of bonus food stamps has enabled low-income families to spend more than they would otherwise spend for red meats. Bonus stamps, however, do not account for any major portion of the total increase in total consumer expenditures for meat. Generally rising incomes and inflation are the primary sources of pressure on meat prices.

FUTURE INFORMATION SOURCES

Information regarding food expenditure and consumption responses to bonus food stamps and cash income supplements is based primarily on research conducted before liberalization of the Food Stamp Program (and the welfare system in many localities). Important new information may be anticipated over the next several years from research now underway.

Table 7-Meat: Consumption, prices, and expenditures, 1965-72

Year	Consumption per capita			Retail prices			Total consumer expenditures			Increase in beef expenditures due to:		
	Other	Beef	Total meats	Beef	Pork	Beef	Other	red	Total meat	Population	per capita	Price
1965---	99.5	67.6	167.1	80.1	65.8	12,653	9,147	21,800	--	--	--	--
1966---	104.2	66.7	170.9	82.4	74.0	14,219	10,281	24,500	8.6	48.0	56.6	43.4
1967---	106.5	71.8	178.3	82.6	67.2	14,615	10,485	25,100	44.8	32.5	77.3	22.7
1968---	109.7	73.5	183.2	86.6	67.4	15,681	11,019	26,700	14.4	45.4	59.8	40.2
1969---	110.8	71.7	182.5	96.2	74.3	17,096	11,404	28,500	11.5	8.3	19.8	80.2
1970---	113.7	72.7	186.3	98.6	78.0	18,222	12,678	30,900	7.1	22.7	29.8	70.2
1971---	113.1	78.7	191.8	104.3	70.3	19,222	12,778	32,000	25.8	-0.1	25.7	74.3
1972---	115.9	73.0	188.9	113.8	83.2	22,026	13,230	35,256	7.1	19.9	27.0	73.0

-- Data excluded.

1/ Carcass weight basis, NFS-140.

2/ Beef: Choice grade; pork: retail cuts and sausage.

3/ Average for all grades. Includes meats purchased and eaten away from home in establishments such as restaurants.

4/ Over 90 percent pork products.

Food Program Studies

A national survey is being conducted by the Food and Nutrition Service, USDA, for a subcommittee of the Joint Economic Committee. Information from this study relating to characteristics, incomes, and food expenditures (cash and in-kind) of households certified to receive food stamps should become available during 1974. Of the roughly 3,600 households which will be surveyed, most should have received food stamps during the previous month. The balance would consist primarily of short-term drop-outs who failed to purchase food stamps during the survey month.

Results from this study should indicate the scope and nature of interrelationships between the Food Stamp and Child Nutrition Programs and other assistance programs providing cash or in-kind income supplements. A comparable study of the Commodity Distribution Program is being carried out by the Food and Nutrition Service, USDA.

Also, data from university studies of local food stamp programs in Missouri, California, and Alabama should become available over the next several years. Results should provide new information on income-food consumption and expenditure responses by members of major racial and ethnic groups participating in the Food Stamp Program.

Other Federal Studies

Information pertaining to income and food expenditures has been collected as a part of the Office of Economic Opportunity income maintenance projects. It includes responses primarily from families with incomes approaching or slightly above poverty thresholds and responses reflecting longer-term income outlooks. Families regularly receiving welfare assistance were excluded from the study.

The 1972-73 Consumer Expenditure Survey of the Bureau of Labor Statistics will yield income-food expenditure relationships for participants and eligible non-participants in food assistance programs and detailed food information. Published material will not be available before mid-1976.

This study is being conducted in two phases, each involving a national sample of around 17,000 households. Numbers of observations in each category will be limited for program evaluation purposes, since the poverty population is a relatively small sector of the total population. Also, poverty income households must be further divided into recipients of food stamps and donated commodities, and eligible nonrecipients.

The methodology used in deriving detailed food information in the 1972-73 Consumer Expenditure Survey differs from methodologies previously used in benchmark surveys such as the HFCS studies. Respective subsamples of respondents are maintaining 2-week diaries of food purchases throughout the survey period.

The National Survey Experiment, funded by the National Science Foundation and conducted by the National Opinion Research Center (NORC), will be providing information on recipients of food stamps and family members participating in child nutrition programs during 1973-74. A nationwide sample of households currently is providing information requested by USDA and other Federal agencies.

Limitations and Alternatives

Current and projected studies will not provide full answers regarding impacts of bonus stamps and cash income supplements on food expenditures by low-income families. Information on responses of economically disadvantaged families to changes in food prices is still lacking.

Such information could be obtained through:

- (1) A new household food consumption survey, with oversampling of the poor; or
- (2) A national food survey among low-income households, with an oversampling of eligible nonparticipants in the USDA food programs.

Data from the alternatives suggested, or other cross-sectional studies, have a common limitation in evaluating Food Stamp Program impacts on food consumption and expenditures. Differences between food usage patterns of otherwise comparable groups of program participants and nonparticipants would be associated with their program status. With rapid program expansion, however, it is anticipated that most eligible households with strong needs or desires for more or better food have joined the program. Food usage patterns of non-participants will be less than fully representative of those for the total low-income population in the absence of food stamps.

For Food Stamp Program evaluation, a preferable alternative would be to obtain information from a large national sample of low-income households during time spans before and after they join the program. Limited studies of this type have been conducted. A study now underway in California may provide an important contribution to knowledge regarding the program. If a fully definitive basis for measuring food impacts of the Food Stamp Program is to be derived, however, information must be obtained from a combination of localities which adequately reflect the diverse elements of the low-income population. The applicability of this study approach is restricted since (1) with few exceptions, all localities have food assistance programs, and (2) inter-program shifts have occurred infrequently during recent years.

The first alternative may be the most feasible. Information from the 1965 Household Food Consumption Survey currently being used in deriving price and income elasticity coefficients for the entire food market is becoming increasingly obsolete. The needs for information specifically relating to the poor, while important, may be overshadowed by an increasing need for data relating to the entire population, and may best be obtained through oversampling of the low-income group.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101
FIRST CLASS

