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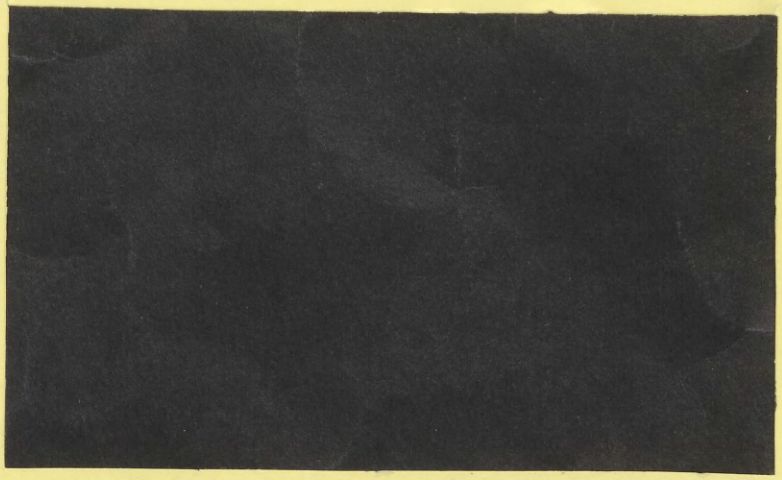

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POLICY IMPLICATIONS OF USDA FOOD PLANS

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ABSTRACT

Current U.S. Department of Agriculture (USDA) food plans are designed to indicate food choices that meet specified nutritional requirements at four cost levels. The plans serve as guidelines for household food budgeting and as benchmarks for determining the distribution of program benefits. The cost of the Thrifty Food Plan (TFP), used as the basis for determining food stamp allotments, is predetermined. The TFP interprets this expenditure level into food consumption, by food group. Three areas of criticism of the food plans are: the determination of nutritional adequacy, the analysis of food consumption patterns, and the updating of costs of the plans. Suggested possible changes in the construction of food plans range from minor modifications in data analysis to restructuring of the plans. The construction of the plans involves issues of policy, nutrition, and economics.

Key Words: Food Policy, Food Plans, Benchmarks, Thrifty Food Plan, Food Stamp Program, Nutrition.

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POLICY IMPLICATIONS OF USDA FOOD PLANS

Christine J. Hager[1]

INTRODUCTION

The formulation of food and nutrition policy requires examination of the statistical bases of our food programs. This paper reviews the procedures used in constructing the USDA family food plans and indicates some alternative approaches to the design of the food plans. The Thrifty Food Plan (TFP) received particular attention in this paper because changes in the prices of foods included in the TFP affect the benefit levels of the Food Stamp Program (FSP).

The first section of this paper summarizes the development of the food plans. The second section outlines the methods used to construct the food plans, including an analysis of the assumptions behind the plans and a discussion of problems associated with the development of the food plans. The third section addresses uses of the plans, and the fourth section evaluates alternative data collection and analysis procedures.

HISTORICAL DEVELOPMENT OF FOOD PLANS

USDA planners have designed food plans using information about nutritional requirements and food consumption patterns of households at various levels of food expenditure. Food plans are constructed diets which meet certain nutritional standards given certain constraints. The plans currently in use suggest kinds and amounts of foods at four cost levels--Thrifty, Low-Cost, Moderate, and Liberal.

[[ ]]

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The techniques used to develop the current food plans are more sophisticated than when the plans were originally established, but the purposes remain unchanged. Diet planners consider the following in constructing food plans:

1) Nutritional adequacy
2) Relative economy of nutrients from different food sources.
3) Suitability of food plans in relation to meal patterns common to U.S. families ([[2]]: p. 1)

The USDA revises food plans occasionally to take into account new information about nutritional needs, values of foods, food consumption patterns, and relative food prices.

The USDA first published food plans in 1909 ([[2]], p. 1). Caroline Hunt translated nutritive information into practical publications for household use and described a balanced diet in terms of five food groups. The suggested diets for families were expressed in terms of calories, but Hunt also indicated the nutritional merits of important foods in each group. An economical food plan was constructed, intended for emergency use by households with very low purchasing power. This plan included more cereals, fewer protein foods, and the less expensive foods in each food group.

Stiebeling ([[2]], p. 1) continued the publication of food plans and constructed budgets for three cost levels--minimum, moderate, and liberal --and a diet for emergency use. She specified foods for individuals at different ages and activity levels and suggested possible meal combinations for each cost level. Both Hunt and Stiebeling expressed dietary needs in terms of calories and suggested manipulations of the food dollar to provide nutritious meals for families ([[2]], p. 4).

USDA researchers relied on the Recommended Dietary Allowances ([[6]]) for nutrients (RDAs) and food consumption data to develop the predecessors of current food plans. Nutritionists examined the existing diets of individuals in four different expenditure groups and adjusted these diets to meet the RDA's. The costs of the four recommended diets were then calculated. The Economy Plan, developed originally for emergency use, became the diet standard for low-income families and for food stamp benefit levels. The households with the lowest levels of food expenditures were predominantly one and two person households, and their food preparation and eating habits were different than the eating habits of each member of a family of four. For this reason, in 1967 the cost of the Economy plan was set arbitrarily at 80% of the cost of the Low-cost plan. Given this amount, a diet was developed that was as palatable as possible. In 1974, new information became available on household food consumption, and the Economy Food Plan was replaced by the Thrifty Food Plan (TFP), which is constructed using linear programming techniques. The TFP makes allowances for household size and consumption; that is, economies of scale in food preparation and use are considered.

CONSTRUCTION OF THE FOOD PLANS

This section outlines the procedures USDA used to develop the Thrifty Food Plan and identifies how these procedures differ from those used to construct the other plans. The procedures for designing the TFP receive the most attention because they affect adjustments of food stamp benefits.

[[Criteria for the Thrifty Food Plan]]

The TFP suggests food combinations for various age and sex groups that meet nutritional requirements with the least deviation from average food

consumption patterns. The TFP must meet the following criteria:

1) It must be a diet that costs a specified amount.

2) It must be nutritionally adequate.

3) It must deviate as little as possible from existing food consumption patterns of low-income households.

After 1974 diet planners limited the cost of the TFP to the cost of the Economy Plan. Nutritionists accepted the Recommended Daily Allowances (RDAs) as liberal estimates of required nutrient levels. Diet planners used computer techniques to minimize deviations from average food consumption patterns of households with relatively low food costs. The intent of the TFP was to indicate nutritional diets that households could obtain at relatively low cost ([[8]]).

[[Definitions and Procedures]]

The construction of the TFP required a reference group of households and a procedure for converting nutritional goals into amounts of foods that households might consume. Researchers ranked households in the 1965-66 Household Food Consumption Survey (HFCS) by the money value of food consumed. To meet the requirement that the TFP be representative of foods purchased by households spending a relatively low amount on food, researchers selected households that consumed food valued at $5.00 to $6.99 per person for 21 meals eaten at home during a week from the 1965-66 HFCS. These households represented approximately the 10th to 25th percentiles of household food expenditures.

To convert nutritional goals into amounts of foods, diet planners estimated nutritive values for 15 food groups in terms of amounts of food energy and 12 nutrients supplied by foods in the groups (RDA plus 5 percent). Each of the food groups was to provide amounts of certain specified

nutrients, but planners did not expect each group to be a good source for every nutrient.

Researchers adjusted reference households' average food consumption patterns as reported in the HFCS to meet nutritional goals (RDAs). Computer techniques were developed (a quadratic programming model) to determine combinations of food groups that would compare nutritionally and would be as close as possible to average food consumption patterns of the reference group.

Upper and lower limits on the quantities of foods allowed in the food plan restricted the combinations selected. The method treated percentage deviations from average patterns equitably among food groups. That is, if the nutritional goals required an increase of 5% in calories, the increase would be spread across several food groups rather than being concentrated in one food group.

Numerous arbitrary restrictions affected the amounts of foods included in the plan. The most important of these were the following:

- Consumption of fat could fulfill no more than 40 percent of food energy needs.
- Each person could consume no more than 4 eggs per week.
- Fat and sugar consumption could not exceed the average amount consumed by the age and sex category.
- Households could waste or discard no more than 5 percent of edible food.
- Food energy allowances for any person could not exceed 110 percent of the RDA.
- 80 percent of the RDA for magnesium and Vitamin B_6 could provide sufficient amounts of these nutrients.

([[8]]: pp. 16-18).

[[Adjustments in Costs]]

Individuals in different age and sex groups consume different quantities of foods. The cost of food for a household may vary with the amounts of foods consumed by each household member. Researchers calculated costs for each of 12 age-sex categories and for pregnant and nursing women to show approximate levels for varying household composition. 1/

1/ First, the cost of a diet that would meet nutritional goals at the least possible cost was computed. Then the cost of a diet that would meet nutritional goals, but allow preferences to determine costs was estimated. A computer model calculated the differences between the two costs and weighted the difference by a constant proportion. This proportion adjusted for relative differences in amounts of foods consumed by the age-sex categories. The result was an estimate of the share of food used by reference households in preparing meals for each household member, such that the average per capita cost of the TFP did not exceed the per capita cost of the Economy plan ([[8]], pp. 15-17).

The TFP is calculated for a standard household of four: including an adult male, an adult female and two school aged children. The TFP cost for a household of different composition (four adult males, for example, or two adults and two infants) can be calculated by adding the adjusted costs for the age-sex group of each individual in the household.

The cost of the TFP can also be adjusted for differences in household size. These adjustments are based on the observation that larger households have an advantage in average cost of food purchase and preparation. (One household of four can eat more cheaply than two households of two). For example, the TFP cost for a family of 3 can be calculated by adding together the age-sex adjusted costs for the three members and increasing this total by 5 percent to account for the smaller than standard household size.

These adjustments can be useful in estimating food budgets and amounts of food to purchase for households and institutions. Food stamp benefits

are equal to the cost of the TFP minus an amount equal to 30 percent of a household's net monthly income. As noted, the cost of the TFP is adjusted for different household sizes.

[[Updating the Cost of the TFP]]

The cost of the TFP in 1974 and the changes in costs since 1974 depend on assumptions about changes in prices and quantities through time. The average prices paid by households that spent $5.00 to $6.99 per person for food in 1965-66 determined the costs of foods. Researchers assumed that the kinds and amounts of foods selected in 1965-66 would not differ through time. Changes in food groups purchased could not be accurately estimated for an age-sex group without extensive survey. Therefore, the quantity weights on foods in the plan remained constant between surveys.

The only changes to be calculated between surveys were price changes. Prices paid for food were reported in the 1965-66 HFCS. The prices are updated monthly by using the retail price indices for selected foods.

[[Procedures for the Other Food Plans]]

The construction of the other food plans--Low-, Moderate-, and Liberal-cost--relied on similar procedures. Mathematical models adjust diets of reference groups to make them conform with RDAs. The reference groups for the various food plans are defined as follows:

[[Food Plan]]	[[Percentile Range]]	Money Value of Food Consumed [[Per Person Per Week, 1965-66]]
Thrifty	10 to 25	$5.00 to $6.99
Low-Cost	26 to 49	7.00 to 8.99
Moderate-Cost	50 to 76	9.00 to 11.99
Liberal-Cost	77 to 92	12.00 to 15.99

The money value of food consumed per 21 meals approximates the costs of each of the food plans. Costs are updated using the same procedures as the TFP.

The TFP differs from the other food plans in the following ways:

- The average consumption patterns for the three more costly plans provide adequate amounts of all essential nutrients.
- The three more expensive plans are mainly used as dietary guides while the TFP serves as the basis for food stamp benefit levels. The original 1974 cost level of the TFP was set, whereas the costs of the other plans are calculated as the cost of nutritional diets which conform closely to average household consumption.
- The TFP includes larger proportions of lower-cost sources of nutrients (in terms of 1965-66 prices).
- The more expensive plans include foods eaten away from home.
- The moderate- and liberal-cost plans include larger allowances for food discard.

The more expensive plans allow for greater flexibility in selecting foods of various price levels. Larger quantities of some food groups are included in the more expensive plans, while the TFP assumes larger quantities of the less expensive items in some food groups are consumed. The more expensive plans include items that provide less nutrition per dollar spent than the items in the TFP. Therefore, households and institutions assumed to follow the TFP must use more care in selecting foods that meet nutritional goals at low cost. 2/

2/ Additional information about the food plans is available from the Consumer and Food Economics Institute, USDA-SEA, Hyattsville, MD.

[[Analysis of the Food Plans]]

USDA planners and scientists are continually updating the plans. Information from the 1977-78 Nationwide Food Consumption Survey (NFCS) and

the 1979 version of the Recommended Dietary Allowances are currently being used to revise the food plans. During this revision, planners are considering the strengths and weaknesses of the current procedure for constructing food plans and evaluating their costs.

The plans do fulfill the basic purpose of specifying nutritious diets for men, women, and children of various ages. Critics raise questions about the nutritional quality of the plans, particularly the TFP, the analyses of food consumption patterns, and the procedures for updating costs. By exploring these issues, planners can develop new methods for constructing plans, and policy makers can evaluate the appropriateness of food plans as program tools.

[[Nutritional Adequacy]]

Controversy about the nutritional adequacy of the Economy Plan prompted the replacement of the plan by the TFP. Although the TFP maintained the same cost level as the old Economy Plan, it met the 1974 RDAs and provided adjustments for household size and composition. Nutritionists continue to disagree about the nutritional goals that the TFP and other food plans should meet. These concerns are directed mainly to the TFP because other plans provide more generous allowances. In general, "nutritional adequacy" means the diet provides 100 percent of the RDAs of energy and 12 essential nutrients. There are some additional standards and limits based on fixed assumptions.

The law requires that the TFP provide nutritionally adequate diets in order to be used as the basis for the Food Stamp Program benefit levels. The nutritional standards and limits on the quantities of some foods are set by administrative decision. The limit of 4 eggs per person per week, the limitation that fat provide no more than 40 percent of food energy

needs, and the restrictions on waste allowance were guidelines to control costs and force the programming model to select a variety of foods. The reason for setting magnesium and Vitamin B_6 intake at 80 percent of the RDA is that foods which contain magnesium and Vitamin B_6 are expensive, and in this case analysts did not consider the value of meeting 100 percent of these RDAs as important as controlling costs.

The RDAs used are average nutrient requirements for specific age-sex groups. Individual preferences and differences in activity levels, height, weight, health status, and methods of food preparation affect the selection of foods and the nutritional adequacy of foods consumed. Catering food plans to individual needs would not be feasible.

Other guidelines such as the Dietary Goals designed by the Senate Select Committee on Nutrition and Human Needs call for restricting the amounts of fat, sugar, sodium, cholesterol, and calories ([[13]]). These guidelines refer to aggregate levels of U.S. consumption and may not apply to individual and household diets. Constraining the food plans so they meet these guidelines could result in the plans deviating from existing food consumption patterns.

Some critics would rearrange food groups and calculate different quantity weights. Disaggregating food groups would make the computations more complex. Foods can be grouped in a number of different ways--by calories, proteins, source (animal, vegetable, roots, fruits), fat content, and so forth. Some changes might be appropriate to take into account new nutritive information, changes in nutritional goals, and changes in fortification and processing practices, but additional constraints reduce variety in the diet.

Practical considerations also affect the definition of "nutritionally adequate food purchases". For example, the knowledge of the homemaker about nutrition could influence the quality of the meals provided. The expense of constructing and administering a valid test of nutritional knowledge would likely outweigh its usefulness to diet planning. Adjustments for the knowledge and skill of the homemaker would contradict the purposes of the food plans as education tools. Increasing food stamp allotments to take into account inefficiencies in purchases and practices of low-income homemakers would reward inefficient households and increase program costs.

[[Food Consumption Patterns]]

Nutritional adequacy is not the only goal of food plans. They also attempt to integrate nutrition and food consumption patterns. In contrast to other minimum cost diets, the TFP is considered a "reasonable" diet because it approximates current consumption. Stigler and others calculated minimum cost diets that emphasized nutritional return per dollar spent. Differing from other minimum cost diets, Stigler's diet consisted of wheat flour, cabbage, evaporated milk, spinach, and navy beans. This diet demonstrated the problem with ignoring factors other than nutrition and costs. This diet proved that a nutritious diet can be calculated at extremely low cost, but such a diet would be unrealistic ([[11]], p. 314). A major question is whether the food plans reflect the ways households allocate their food budgets. If they do not, then researchers must justify the procedures used for constructing the plans. That is, what would be a more manageable set of procedures that would account for differences in tastes and preferences as well as meet nutritional goals at a given cost level.

Within a set of households with similar levels of per capita food expenditure, there may be a wide variety of consumption patterns. At the extreme, researchers could design a food plan for every individual that would conform to that individual's tastes and preferences. However, a plan with that much attention to the individual would not be cost effective.

Currently, planners base food plans on average consumption patterns. The lack of data by age and sex category for each level of food costs forced planners to develop the weighting procedure described previously. The methods used to construct food plans and the weighting procedures to adjust for age-sex differences ignore other factors; family size, income, race, and region being the most apparent.

Procedures adjust the cost of the food plan for economies of size, but not for the effects of family size on food choices. Money value of food consumed per person did not explicitly account for differences in incomes or for family size. On the average, incomes increased as the money value of food consumed increased in the HFCS, but households could have very high or low incomes and spend the same amounts for food. For example, an elderly couple may spend all their income on food, housing, and medical care. According to the assumption of the food plans, this couple would be living at the same level as a young family spending their income on food, housing, transportation, education, and clothes, if each family spent the same per person amount for food.

Average food patterns also mask racial and regional differences. If Blacks consume a different bundle of foods than Whites, or Southern families behave differently than Northeasterners, the food plans treat these as differences in money value spent on food and as price differences. Researchers analyzed food consumption patterns by race and region, but

these findings are not incorporated into the food plans ([[5]]). Food plans could take these factors into account but the criteria for selecting groups and the use of results pose problems for researchers. Many different racial, cultural, ethnic, and regional groups could be defined. Intraregional differences could also be considered given that some urban areas in low-cost regions have similar food prices as urban areas in high-cost regions. Similarly, standard procedures do not take into account religious dietary rules, and other diet regulations or habits.

There may be differences in household consumption patterns because of nonmarket factors; but these are difficult to separate from price and income effects. Labor force participation of women, the number of single-person households, the behavior of elderly persons, and preferences for time spent in food-related activities have changed since 1965-66. Economists are aware that nonmarket factors such as employment of wives and availability of food storage facilities affect the kinds and amounts of foods purchased, but it would be costly to design food plans to adjust for differences in these factors. Anticipating the effects of nonmarket factors on consumption patterns and separating them from changes in relative prices and incomes is difficult.

A food plan that is used mainly to teach elderly persons how to budget their fixed incomes would take into account factors specific to the elderly (age, health status, special needs), while a food plan that is used as a program tool for allotting food stamp benefits would put more emphasis on administrative simplicity and less on differences between many subgroups. Researchers might focus their attention on explaining the variance among food consumption patterns.

Aggregation of data on food consumption is a serious concern of researchers and program administrators. Disaggregating household

consumption patterns to conform to tastes, preferences, and relative prices for particular groups would increase the precision of the food plans as well as the complexity of the procedures.

[[Prices and Quantities]]

In updating the cost of food plans, the composition and quantity consumed of each food group are held constant. If relative prices change and households buy different combinations of foods and food groups, food plans will not reflect these changes. Without current data on household response to recent changes in relative prices the cost of the food plans might be inflated.

The TFP assumes households use a constant number of units (pounds, quarts, or dozens) of certain foods. The prices of specific foods or close substitutes are updated by the Consumer Price Index (CPI) for those foods. That is, if the price of ground beef rises by 50 percent, the prices of ground beef and other low-priced beef cuts in the TFP are increased by 50 percent. These new prices are multiplied by a constant number of units and added to the weighted prices of other foods in the food group. Because the Bureau of Labor Statistics (BLS) food list does not include all foods consumed by households, increases in ground beef prices affect the prices of other low-priced beef cuts. Although this procedure approximates the effects of inflation on foods with similar characteristics, it ignores relative price changes, and seasonal sales on particular beef cuts.

When the ground beef price increases relative to other prices, the prices of all low-priced cuts may change accordingly, but consumers might reduce their demand for all low-priced cuts of beef and increase their purchases of other foods within the food group or in other food groups, or even shift to nonfood commodities. Consumers could choose to reduce total

at home food consumption and allocate more to housing, clothing, medical care, vitamins, or eating away from home. These effects are not considered when updating the costs of the food plans. They do pose questions about the actual cost of diets, and the relationship between the food plans and actual food consumption patterns.

Households can alter food plans to adjust food budgets when prices rise. For example, if bakery prices go up relative to meat prices, a household could follow a consumption pattern similar to the Liberal-cost plan for meat, poultry and fish, but spend more in accordance with the Moderate- or Low-cost plan for bakery products, sweets, and accessories. While households and institutions can use this approach, food stamp benefit levels do not consider such adjustments, largely because the TFP is the lowest cost of the food plans available.

Although the procedures for updating the TFP and other food plans ignore many changes households may make in adjusting to changes in relative prices, production technology, and tastes and preferences, researchers have not developed other methods of updating costs. Therefore, policymakers, scientists, and diet planners still regard the current food plans as manageable, reasonable benchmarks for nutritious diets at different costs.

USES OF THE PLAN

The major use of the food plans is to provide dietary guidance and estimates of food costs for individual families. Dietitians develop menu suggestions based on the costs of the four food plans. USDA estimates the costs of raising a child, BLS develops "standard budgets," and the Food Stamp Program establishes benefit levels, all based in part on the cost of

food plans. Indirectly, the food plans may influence the level of child support payments, and collective bargaining settlements. ([[8]], p. 47).

[[Cost of Raising a Child]]

The Family Economics Research Group of the USDA estimates the cost of raising a child at four cost levels, using the most recent available data on food consumption from the NFCS and on other consumption items from the Consumer Expenditure Survey (CES) and the Farm Family Living Expenditure Survey. The food plans define costs for food for children of different ages and sexes. The cost of Raising a Child Budgets reflect allocations made by households with similar food costs and characteristics.

[[Standard Budgets]]

The Bureau of Labor Statistics also published budgets for 39 urban areas. These budgets indicate how much it costs to purchase a bundle of foods and services at low, moderate, and liberal levels of consumption. They differ from the Cost of Raising A Child Budgets because Standard Budgets are market baskets of goods and services for a precisely specified urban family group rather than cost budgets for expenditure categories by age and sex of children in urban, rural farm, and rural nonfarm families. The urban family of four that BLS specifies consists of a male, age 38; a female, unemployed, age 38; a girl, age 8, and a boy, age 13 ([[3]], p. 8; [[1]], p. 3).

The BLS food budgets are cost estimates for the foods listed in USDA food plans. The total food component included food away from home as well as food at home expenses. Weights for the food at home components reflect regional variations in food consumption patterns from the USDA food plans.

Differences in food costs within each region reflect price differences. Equivalence scales adjust for differences in family size and composition ([[1]], p. 1).

The Standard Budgets serve as bases for State public assistance program allotments, court-ordered child support, ability to pay scales, and adequacy of earnings. The BLS reprices the budgets at intervals to estimate changes in costs. BLS also translates these cost budgets into indexes that measure differences in living costs between areas ([[7]], p. 11). The Standard Budgets emphasize the costs of consuming a specific bundle of goods and how those costs change with changing prices.

Although most quantity estimates were based on choices made by households in income classes as revealed by the Consumer Expenditure Survey (CES), the food-at-home component reflected nutritional requirements and food consumption patterns of households by money value of food consumed --using data from the HFCS. These two expenditures surveys cover different time periods and there may be slight inconsistencies in combining estimates of food costs from one survey with estimates of non-food costs from another. Especially in calculating the low-cost budget, in which food expenditures are a substantial part, it might be preferable to estimate food costs using data and procedures similar to those used for non-food cost estimation. The food budget could be based on CES data and need not be constrained to meet nutritional goals.

[[Poverty Level]]

The basis used to define poverty also derives from the food plans, specifically the Thrifty Food Plan. Orshansky developed the poverty threshold in 1965 as an estimate of the cost of a low-income budget that would meet minimum nutritional requirements. The cost of the Economy plan

defined the level at which low-income households could live and maintain basic needs. For low-income households, food expenditures average about one-third of family income. Hence, Orshansky calculated the poverty level for a family by tripling the cost of the Economy plan for that family ([[7]], p. 37).

Until 1969, the Social Security Administration updated the poverty levels by inflating the previous year's levels by the increase in the CPI for the foods in the Economy plan. In 1969 it became apparent that the cost of the Economy plan had not increased as much as the overall price index because of price increases for non-food. Since 1969, the poverty level has been updated by inflating the previous level by the increase in the overall CPI ([[16]], p. 9).

The cost of the Economy plan, now the Thrifty Food Plan, was used to establish the original poverty level. Therefore, using the poverty level to define food costs would be circular reasoning. Secondly, the CPI may be a poor choice as an index of inflation. The CPI is based on a middle income market basket, but the poor often consume a different mix of goods than middle income households. Low-income households may have different characteristics that would affect the prices they pay (household size, geographic location, access to shopping centers). Therefore, the CPI may be an inappropriate measure for inflating the poverty level and low-income food costs since product weights in the adjuster would not be representative of actual purchases.

[[Food Stamp Benefit Levels]]

The major use of the TFP is as a basis for food stamp benefits. The maximum allowable benefits are set by law--the difference between the cost

of the Thrifty Food Plan and 30 percent of the net income of the household. Net income takes into account deductions for child and dependent care, housing costs, certain household expenses, and other adjustments to income. The level of the TFP is the same for the 48 contiguous states and the District of Columbia ([[14]]).

Eligibility for the FSP is based on assets while the definition of households for the TFP considers money value of food consumed. The definition of household size in the FSP is the number of household members. The definition of "person" for the TFP is a 21 meal-equivalent. These discrepancies in definitions mean that the calculations of the TFP may not match the assumptions of the FSP benefits.

Food stamp recipients may have food consumption patterns different from those of reference households used in formulating TFP. If food budget size corresponds closely to income size, there is no difficulty with definitions. But, if FSP-eligible households and the reference group for the TFP are not similar in food consumption habits, the TFP may be a poor benchmark for determining food stamp benefit levels.

Other concerns about the use of TFP to determine FSP benefit levels have been mentioned previously--nutritional adequacy, determination of food consumption patterns, calculations of economies of size, and relative price changes. Regional differences in food patterns and prices could have major effects on the benefits allowed to households. Designing the TFP in terms of a four person household, and disregarding influences of age-sex composition, race, ethnic background, region, and employment, is not ideal, but does provide a manageable framework for allocating food stamp benefits.

Questions of equity challenge this disregard of distinguishing factors such as region, race, and age, but no clear alternative satisfactorily

resolves the equity issue. The TFP provides estimates of budget allocations among age-sex categories, but this procedure has been challenged whenever implementation is attempted because it would reduce allotments for the elderly and households with small children ([[12]], p. 60).

The TFP is a guideline that households can use to achieve nutritionally adequate diets. The FSP uses the plan as a benchmark cost estimate to reallocate food purchasing power to households and to encourage increased consumption of food. Nutrition education is expected to help households allocate their purchasing power to achieve nutritionally adequate diets.

Unfortunately, the TFP has been neither a program tool designed explicitly as a benchmark for the FSP nor a nutrition education tool designed for household use. As a well-suited program tool, the selections of households and definitions of income and person would parallel the FSP. Planners would consider alternative procedures for estimating economies of size and for inflating costs. For use as an educational tool, food consumption patterns constrained to meet nutritional goals would set the cost level of the TFP. The TFP might specify nutrients that are typically under- or over-consumed and the plan could indicate how households might reallocate resources to meet those goals. The basic concern of the current design of the TFP is that it attempts to be both a program benchmark for the FSP and a guidance tool for educating households with low food costs. A food plan cannot be both specific enough to accomplish narrow goals and broad enough to do so in several different uses. As the number of uses increases, additional food plans may need to be constructed.

ALTERNATIVES

Researchers and policymakers are aware of the difficulties in design and use of food plans. The TFP received particular attention because it

serves as a basis for setting FSP benefit levels. In redesigning the food plans, several options could be pursued:

- Altering data collection procedures.
- Consideration of additional factors.
- Retaining the plans as they are, but changing procedures for updating costs.
- Disregarding the plans as program tools and restructuring the plans as nutritional education tools.

[[Data Collection Procedures]]

The first of these suggested approaches appears to be the simplest, but might well be the most costly. Households may allocate different proportions of their incomes to different consumption items, particularly over time. Because food consumption surveys are conducted and analyzed infrequently and food plans revised sometime after the surveys, food plans do not take into account adjustments in budget allocations. Households may adjust allocations within and between consumption categories in response to relative prices, changes in employment, and changes in family activities.

More frequent surveys, even if they were less extensive than the NFCS, would be expensive. The question is whether improvements in accuracy of the food plans would be sufficient to warrant the expense. Alternatives are to survey a low-income group of households only in order to adjust the TFP, to maintain a panel of households that are followed through time, and to adjust expenditure weights using the most recent survey results available even if the purposes of the surveys differ (i.e., use the CES, Farm Family Living Survey, HFCS, and other interim surveys). The obvious problems are expense and comparability of results.

The value of more complete and recent data is worth considering. The assumption behind many uses of the food plans is that all families with a given level of food expenditure share an equivalent standard of living, and that this standard of living and level of food expenditures do not change with time. This assumption warrants at least careful examination and testing. The results of such studies can improve the quality of information for determining policy, but would not necessarily resolve debate on what policies to pursue. Therefore, the expense of additional, extensive surveying would outweigh the benefits. A possible compromise is the last survey approach mentioned--calculating expenditure weights from the most recent information available and using that to adjust quantity weights on costs in the food plans.

[[Inclusion of Additional Demographic Factors]]

Food plans could also be improved by making use of information about differences in quantities of foods consumed by various subgroups of the population. Variables that influence food consumption patterns and nutritional needs included age, sex, region, race, urbanization, and work status of household members. The inclusion of these factors would complicate the planning process and might well increase the costs of the resulting food plans. Programs based on the plans would be more difficult and costly to administer.

Salathe and Buse estimated food expenditures by age-sex groups in terms of adult-equivalents. The method estimated discrepancies in food expenditures across geographical locations and age-sex compositions. The procedure that Salathe and Buse developed would allow age-sex composition differences to affect the costs of food plans as well as household size

([[10]], p. 68). This approach is a more sophisticated way of estimating economies of size in food costs. There are no explicit nutritional requirements in this approach, but sex-age differences in food expenditures may implicitly account for differences in utilization of nutrients.

Models that adjust for socioeconomic and demographic differences may enable program administrators to determine an equitable distribution of benefits. Equivalent scales for food commodities and other budget items also provide alternatives for comparing incomes and budget costs of households with different characteristics rather than using the proportion of income spent on food as a measure of standard of living.

[[Procedures for Updating Costs]]

A third way to improve food plans is to change the method of updating costs. The current system uses the CPI to adjust for changing prices. This approach is limited because the specific items in the food plans do not match exactly the items in the CPI.

An alternative approach would estimate an index comparable to the CPI that measures changes in prices paid by a particular demographic group. This approach is similar to the modeling efforts of Salathe and Buse ([[9]], 10). The proposed change would be as follows:

- Estimate the percentage amount of the food dollar to be spent under each food plan for each food group. Estimates for a variety of household sizes and compositions could be developed.
- Multiply these percentage amounts by the percentage change in the regional or city CPIs for the food group.
- Calculate a weighted average national cost of the food plan, using regional measures of the cost of each food plan and

data on the number of residents in each region that have characteristics of the food plan reference group.

In essence, this approach calculates a new index for households with specific characteristics. Similar indexes could be used to update the Cost of Raising a Child Budget or the Poverty Level. However, the key is in calculating the expenditure weights. Weights could be developed for a number of classifications of households--race, age, sex of household head, household size, region. The way in which foods were grouped would also influence weights. But, there does appear to be merit in estimating an index that is specific to the food plans.

[[Restructuring the Plans]]

A more radical approach disregards the food plans as program tools. Food plans could be constructed purely for use in education. Refinements for age-sex, special needs, health status, and other individual differences would be appropriate. Nutritional goals would take a more central role in the design of the plans.

If food plans were designed for use solely in nutrition education, some other method would need to be devised to serve as a basis for setting FSP benefit levels. The problem for program administrators is to determine a level of "basic need" ([[4]]). Policymakers could specify a dollar amount that will be transferred to households for food. This dollar amount could represent 80 percent of the Low-cost food plan or some percent of average food expenditures of a certain group of households. The nutritional aspects would be underplayed. Allocations to households could vary by any specified factors--size, age-sex composition, region, urbanization, work status. These factors would be specified by political decision.

The major change from the present system is that such a transfer for food would not imply adequacy, ability of households to eat the foods they prefer, or even equity. Identified target areas could receive special allotments. Groups could also be targeted for special allotments based on political decisions, but justified as well on the basis of greatest marginal return (in health, productivity, or other measure) per dollar spent. The determination of these targeted areas and groups would be difficult.

SUMMARY

Despite the numerous criticisms, challenges and alternatives offered, USDA food plans do serve as valuable benchmarks for numerous political, social, legal, and educational functions. A main criticism of the plans is the use of the food plans as both nutritional education and program tools. Their use by households in adjusting food consumption patterns to meet nutritional needs is less problematic than their use by government in defining the income necessary to live at a certain level. If the food plans, and especially the Thrifty Food Plan, are used to define a level of living, deficiencies in food consumption, and budget needs of individual households, then the objectives and assumptions used to construct the plans may be inappropriate.

More sophisticated methods of data collection and analysis contribute to the understanding of food consumption patterns and ultimately, to the effectiveness and efficiency of the food delivery system in satisfying consumer needs and preferences. The data on which studies are based should be timely and reflect changes in household budget allocations from one food group or consumption category to another. The total budget, relative prices

of foods and other consumption items, nutrition needs, tastes, habits, and other socioeconomic, cultural, psychological, and political factors have impacts on food costs and consumption patterns. The food plans, in turn, through their effects on child support payments, food stamp benefit levels, and budgeting decisions of households, have an impact on social, food, nutrition and family policy. Therefore, their construction and application should be evaluated carefully to improve their representativeness, reasonableness, and effectiveness.

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