

## Modernizing SNAP Benefits

James P. Ziliak



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Our strategy calls for combining public investment, a secure social safety net, and fiscal discipline. In that framework, the Project puts forward innovative proposals from leading economic thinkers — based on credible evidence and experience, not ideology or doctrine — to introduce new and effective policy options into the national debate.

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This policy proposal is a proposal from the author. As emphasized in The Hamilton Project's original strategy paper, the Project was designed in part to provide a forum for leading thinkers across the nation to put forward innovative and potentially important economic policy ideas that share the Project's broad goals of promoting economic growth, broad-based participation in growth, and economic security. The author(s) are invited to express their own ideas in policy papers, whether or not the Project's staff or advisory council agrees with the specific proposals. This policy paper is offered in that spirit.

**BROOKINGS**

# Abstract

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, is the largest food assistance program in the United States. The goal of SNAP is to alleviate food insecurity and improve nutrition by helping low-income households purchase food to prepare at home. SNAP benefits are provided monthly to eligible households, based on a maximum benefit determined by the cost of a food budget known as the Thrifty Food Plan (TFP). However, the TFP assumes that low-income households can spend an unlimited amount of time preparing food from scratch and has consequently shifted toward the food items that are lowest cost but most time-intensive.

I propose a three-stage approach to improving the adequacy of SNAP benefits by modernizing the TFP. In the first stage, the estimated cost of the TFP would be immediately increased by twenty percent to partially account for the cost of time spent on food preparation. Next, the USDA would further reform the TFP to address features that distort the composition of the grocery cart, including geographic variation in food prices, the 1970s-set cap on the inflation-adjusted value of SNAP benefits, the TFP's excessively narrow focus on low-income households, and the lack of consideration for the dietary needs of teenagers. Finally, I propose a specific research agenda to support the first two stages. The proposal would bring the assumptions underlying SNAP benefit levels in line with current norms of food consumption and time use, thus strengthening the effectiveness of SNAP in addressing food insecurity and other health and nutrition outcomes.

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# Chapter 1. Introduction

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The Supplemental Nutrition Assistance Program (SNAP; formerly the Food Stamp Program, or simply food stamps) is the cornerstone of food assistance in the United States, serving one in seven Americans in FY2015 at a cost of \$74 billion (U.S. Department of Agriculture [USDA] n.d.a). SNAP benefits are provided monthly to eligible households, and are redeemable for purchases of foods to be prepared in the home. SNAP is unique among means-tested transfer programs in the United States in that, subject to meeting certain income and asset limits, it offers near-universal access regardless of age, family structure, employment status, or disability status, though the recipients are primarily families with children and the elderly. The SNAP rolls increased sharply with the Great Recession, though they have declined since 2013, and an increasing share of participants both receive benefits and are employed.

SNAP is a remarkably effective program. It has been shown to alleviate food insecurity among adults and children (Collins et al. 2014; Kreider et al. 2012; Mabli et al. 2013; Nord and Prell 2011; Schmidt, Shore-Sheppard, and Watson forthcoming), lift families out of poverty and especially out of deep poverty, those households with gross income below 50 percent of the federal poverty level (Tiehen, Jolliffe, and Smeeding 2015; Ziliak 2008), and smooth household consumption and income changes in response to business cycles and other economic shocks to the household (Blundell and Pistaferri 2003; Ganong and Leibman 2013; Gundersen and Ziliak 2003; Ziliak 2015). In addition, SNAP has been shown to improve health outcomes across the life course, including reducing diabetes and obesity among adults exposed to food stamps during childhood (Almond, Hoynes, and Schanzenbach 2011; Hoynes, Schanzenbach, and Almond 2016). At the same time, there is little evidence that SNAP has substantive negative effects on other domains such as on work effort (Fraker and Moffitt 1988; Hagstrom 1996; Hoynes and Schanzenbach 2012).

The basic structure of the SNAP benefit formula has changed little since passage of the Food and Agriculture Act of 1977. SNAP benefits are allocated as the difference between the cost of a minimal-cost, nutritionally adequate diet and the amount of cash resources that a family can provide to the purchase of that diet. In particular, the monthly SNAP benefit allotment for a household is based on three main parameters: (1) the maximum benefit guarantee, (2) the benefit reduction rate, and (3) net income:

$$\text{SNAP benefit} = \text{maximum benefit} - 0.3 * \text{net income.}$$

As seen from the formula, households without any net income—that is, income after certain deductions such as child-care costs and a portion of earnings—qualify for the maximum benefit.

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Those with positive net income have their benefit reduced \$0.30 for each \$1 of net income, reflecting the assumption that households are able to contribute 30 percent of net income toward food purchases. When a household has some income, but not enough on its own to purchase an adequate amount of food, the program's benefits supplement its food purchases.

BOX 1.

## SNAP Income Eligibility

Household eligibility for SNAP is determined by two income tests. The gross income test requires that household income, inclusive of all sources of income (e.g., wages, retirement income, and gifts), fall below 130 percent of the federal poverty level for each household size. For example, a household of four in 2016 must receive a gross income of less than \$2,628 per month to meet this test. However, households with members aged 60 or over and those receiving certain disability benefits do not have to meet the gross income test due to categorical eligibility; they may qualify for SNAP through only the net income test.

The net income test requires that a household's net income—gross income minus a portion of labor market earnings and applicable deductions—fall below 100 percent of the federal poverty level. Deductions compensate for expenses such as dependent care, child support payments, excess shelter costs, and out-of-pocket medical expenses. Today a household of four must have a net income below \$2,021 per month to meet the net income test.

The maximum benefit is determined by the Thrifty Food Plan (TFP), which is the lowest cost plan that the USDA designed to outline the types and quantities of foods—and the attendant costs—that people can purchase and consume at home in order to obtain a nutritious diet; the process for determining the market basket that forms the basis for this plan was last updated in 2006. The TFP-established maximum allowable monthly benefit varies by household size but is the same across the contiguous 48 states and the District of Columbia.



# Chapter 2. The Challenge

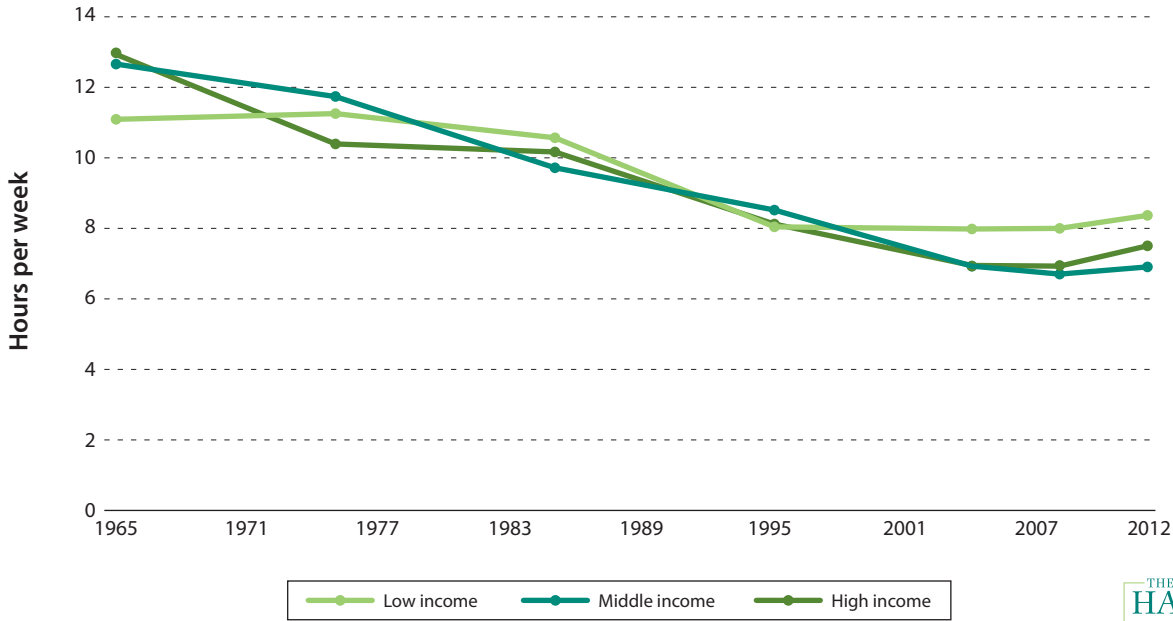
Despite the success of SNAP, millions of Americans remain food insecure; some of these individuals also face the double jeopardy of food insecurity and poverty. Even those who are able to attain food security may not be able to afford a diet that is appropriately nutritionally adequate. A key reason for this shortfall is that the SNAP benefit is insufficient; this is because the maximum benefit amount is based on an increasingly unrealistic market basket of food.

Today the ways that we prepare food and the types of foods we eat have changed dramatically since SNAP was introduced in the 1960s. Figure 1 shows how women’s time on meal preparation and cleanup has changed. As described below in this chapter, studies estimate that 13 to 16 hours per week are required to prepare meals in accordance with the 1999 TFP. Even at the

advent of the Economy Food Plan in the 1960s, women spent less time than this in meal preparation. By 1995 the gap between time required and time used rose to 5 to 8 hours.

This evolution has been enabled in part by rapid changes in food production technology, allowing consumers to purchase more foods that have been processed or prepared, and in turn requiring less of the individual’s time to prepare meals. This trend was nicely illustrated recently in a *Wall Street Journal* article by Edward Glaeser: “[Since the 1970s] basic food prices have stayed constant, but technological changes have wrought a revolution in the availability of high-quality, pre-prepared food. In 1970, I couldn’t enjoy Madras lentils, purchased pre-cooked at Costco. Pre-washed, plastic-bagged salad wasn’t around back then. Mass preparation has caused the time cost of food to

**FIGURE 1.**  
Time Spent Cooking per Week, by Income Level (Females Only), 1965-2012



Source: American Heritage Time Use Survey n.d.

Note: Restricted to females who report more than zero minutes on food preparation. Cooking includes food preparation and related cleaning activities. This survey aggregates a variety of national nutrition and time use surveys, including the American Time Use Survey (ATUS), America’s Use of Time Project (AUTP) of 1975–76 and 1985–86, the Multinational Comparative Time-Budget Research Project (MCTRP) of 1965–66, and the National Time Diary Study (NTDS) of 1994–95. Low income is defined as the lowest 25 percent of respondent income; middle income is defined as the middle 50 percent of respondent income, and high income is defined as the highest 25 percent of respondent income.

plummet, and that is far more important than the cash cost” (Glaeser 2016). This revolution in food technology over the past several decades has helped drive a transition from time spent preparing food to time spent in other activities, ranging from quality time nurturing children to time in paid market work, especially among women (Aguilar and Hurst 2007a, 2007b, 2013; Guryan, Hurst, and Kearney 2008).

The TFP, however, has not been updated to reflect these changing norms in food production—nor, for that matter, for changes in family demographics and work expectations of recipients. As a result, there is a fundamental disconnect between the food-preparation time demands of the TFP to obtain a nutritious diet and the time available to both nonworking and working households that receive SNAP benefits to prepare food. A central assumption of the current TFP formula for calculating the maximum SNAP benefit—one that is increasingly out of date—is that households are able to allocate the substantial time required to prepare foods from scratch. In particular, food-preparation time that is required to achieve a nutritious diet at the cost determined by the TFP is between 13 and 16 hours per week for a household of four persons (Davis and You 2011; Rose 2007; USDA 2000b)—almost two hours per day. This is well outside the bounds of the time spent in food preparation of nearly all households in modern American society; the typical nonworking household spends less than one hour per day in food preparation, and working households, including households that receive SNAP benefits, spend about 30 minutes per day (Davis and You 2010a, 2010b, 2011; Rose 2007; Schanzenbach et al. 2014; USDA 2000b).

How did the TFP become so far out of alignment with food preparation norms? The answer lies in the process through which the TFP—and thus the maximum level of SNAP benefits—is determined. Since 1975 the USDA’s Center for Nutrition Policy and Promotion (CNPP) has constructed four official food plans—the Thrifty Food Plan, the Low-Cost Plan, the Moderate-Cost Plan, and the Liberal Plan.<sup>1</sup> The methodology for calculating these plans was first established in 1975, and was revised in 1983, 1999, and, most recently, in 2006. With each revision the composition of the market basket gets updated based on changes to dietary guidelines. Importantly, however, the updates are done subject to the binding constraint that the total cost of the basket remain constant in inflation-adjusted terms, at \$649 per month in today’s dollars for the reference family of two adults and two children (USDA 2016).

The TFP specifies a market basket including types and quantities of foods that households can purchase, cook (essentially from scratch), and consume at home in order to obtain a nutritious diet at a minimal cost. The TFP consists of a set of market baskets of six major food groups of grains,

vegetables, fruits, milk products, meat and beans, oils, and other foods comprising 29 different food categories. Separate market baskets are designed for 15 separate age and gender groups, reflecting different dietary guidelines for each group.

In the first step toward constructing the 2006 TFP, the CNPP used data on food intake from low-income participants in the 2001–02 National Health and Nutrition Examination Survey (NHANES). In particular, NHANES survey participants report the foods they consume in a given day both at home and away from home. Across the sample, there were more than 4,000 separate items recorded, along with the associated ingredients, nutrient content, and amount consumed. CNPP aggregates these items into 58 food categories which are then used as inputs in a mathematical optimization model that is solved for each of the 15 separate age and gender groups to produce the TFP.

The model has four data inputs—(1) the average daily consumption from the 58 food categories among low-income households, (2) the nutrient profile of each of the food categories per 100 grams, (3) the 2005 MyPyramid profile for each food category (choosemyplate.gov), and (4) the national average price per 100 grams paid by low-income households for each of the 58 food categories (from the Nielsen Homescan data [homescan.com]). These four inputs into the TFP are used to calculate quantities of each of the 58 food groups—staying as close as possible to actual consumption among the poor—after satisfying three constraints: (1) the diet must meet the 1997–2005 recommended dietary allowances (RDAs) and the 2005 *Dietary Guidelines for Americans* (U.S. Department of Health and Human Services [DHHS] and USDA 2005); (2) the diet must also meet the MyPyramid food intake recommendations; and (3) the cost of purchasing the food bundle must be no more expensive than the prior TFP (1999) after adjusting for cost inflation. Note that there is no constraint on the amount of time required to prepare the foods. To the extent that there is a trade-off between food price and time needed to prepare the food, the TFP calculation puts all the weight on the price and none on the time required. As described below in this chapter, the requirement that TFP updates meet the same price limits skews the model to minimize the monetary cost of food without constraints to the time cost of preparation.

The solution to the model produces 58 consumption profiles, which are then further aggregated to 29 categories of food intake in pounds per week. Thus the TFP recommends quantities of food intake per week for each of the 29 categories at a constant cost in inflation-adjusted terms for 15 age and gender profiles.

Although the TFP market basket implies different costs by gender and age, SNAP does not differentiate the maximum benefit by the composition of a family (beyond the number

of family members). Maximum SNAP benefits are assigned based on a four-person reference family consisting of a male and a female between the ages of 19 and 50, one child between the ages of 6 and 8, and one child between the ages of 9 and 11. The maximum benefit is then adjusted downward for smaller households and upward for larger households using an economies-of-scale adjustment. Each October the maximum benefit is updated based on the Consumer Price Index (CPI) for the 29 food categories in the TFP (Carlson, Lino, and Fungwe 2007). In 2016 the maximum monthly benefit for a family of four was \$649.

The adequacy of the TFP rests on the assumption that recipient households can purchase and prepare the TFP basket of goods. This means that participants must have both the skills and the time necessary to prepare the TFP, and that they are able to purchase foods at the prices assumed in the model.

As the formula for calculating SNAP benefits makes clear through its omission, the process by which the TFP is calculated assumes the implicit cost of time to be zero—in other words, the TFP neither accounts for the cost of time nor puts a cap on the amount of time required to prepare foods. As a result, in order to create a market basket that is both nutritionally adequate and meets the constant-cost requirement, the optimization process ends up substituting more labor (which is costless in the model, but not so in reality) for more-costly foods that are prepared. As a result, the TFP is adequate for families who can prepare food primarily from scratch. The problem, of course, is that the cost of time is not zero as is assumed in the creation of the TFP, but instead includes an opportunity cost.

Although Benjamin Franklin is widely credited with coining the phrase “Time is money,” it was economist Gary Becker (1965), a Nobel laureate, who first formalized the cost of time within an economic model of household decision making. In his framework, the consumption of food requires not only cash outlays for the purchase of foods, but also outlays of time in the form of transportation to and from the grocery store, doing the shopping, preparing the food, consuming the food, and cleaning up after meals. What is termed the “full price” of food thus entails both the direct purchase price and the opportunity cost of time.

As demonstrated in Aguiar and Hurst (2005, 2007a), most forms of so-called household production offer a considerable amount of substitutability between market goods and time, especially food. In other words, when the cost of time use increases, households spend more money on food, presumably

substituting more intermediate and prepared foods for fewer raw ingredients. Aguiar and Hurst (2007a) demonstrate that a 10 percent increase in the price of time leads to an 18 percent increase in the use of money expenditures in food production. For example, as alluded to in the quote from Professor Glaeser, when the price of time rises one can order more-expensive take-away or prepared foods instead of preparing less-expensive foods from scratch to save on time costs. The TFP essentially closes down this market channel, forcing households to substitute time.

How much time are SNAP participants expected to spend in food preparation under the TFP? Unfortunately, this is yet to be calculated for the current TFP (2006), but estimates for time spent on food preparation have been calculated for the 1999 TFP. In 2000 the USDA released the publication “Recipes and Tips for Healthy, Thrifty Meals” (USDA 2000b) that provides recipes and preparation times based on the 1999 TFP for two

## The TFP neither accounts for the cost of time nor puts a cap on the amount of time required to prepare foods.

weeks of meals. Rose (2007) estimated that for the reference four-person household the time involved in food preparation alone (not including transportation, shopping, or cleanup) for these recipes is 16.1 hours per week, or 2.3 hours per day. Davis and You (2011) conducted a similar exercise and estimated an average weekly preparation time of 13.1 hours. This time demand of 13 to 16 hours a week in meal preparation is well in excess of the time historically and contemporaneously allocated by households according to reports on time use surveys, as shown for women in figure 1.<sup>2</sup>

A series of papers by Davis and You (2010a, 2010b, 2011) provide the most compelling evidence to date on the financial consequences of ignoring the time cost of the TFP for low-income households. Using a dataset with both time allocation and food expenditures, they estimate for single female-headed households how actual time in home food production compares to that required by the TFP, and then how those households make trade-offs between time use and monetary

inputs, so they can calculate how much extra money such a household would need to reach the level of food expenditures consistent with the TFP if it cannot allocate the full 13.1 hours assumed under the plan.

To address the first issue, Davis and You (2011) assemble a sample of female-headed households and determine that the average time spent in food production is 4.4 hours per week, well below the average 13.1 hours required by the TFP. Even when they take into account the statistical variation in their estimates, there is no overlap between the TFP's time requirement and households' actual time use.

Given this large difference between actual time spent in food preparation and that required to meet nutritional guidelines in the TFP under the cost restriction, Davis and You (2011) next estimate how much combined time and money households actually spend on food relative to TFP expectations. They compute the total cost of the TFP, combining money spending plus the cost of time in food preparation. In determining the value of time, they adopt what is known as a market substitute approach, whereby an hour is valued at the typical market wage of a worker employed in the household sector, such as a household cook or a maid—that is, it values an hour of time in home production based on the cost someone would incur if she purchased the equivalent labor in the market. Davis and You (2011) estimate that the average hourly wage of a private household cook is \$10.48 per hour (which is about \$3.50 per hour lower than the alternative opportunity cost approach to valuing time).

They find that the vast majority of low-income households do not have adequate resources to meet the total monetary plus time cost of the TFP. In particular, if the cost of time is ignored—as is currently done in TFP calculations—then 38 percent of families do not spend enough money to reach TFP goals. However, when Davis and You incorporate the time costs required to meet the TFP, they find that families are much more constrained—87 percent of families do not have the combination of time and money resources required. They calculate that the average household would need to be provided 40 percent higher benefits to meet the TFP due to the unaccounted-for cost of time. By ignoring the value of time, the total cost of food for low-income households is critically understated.

The production of food involves outlays of money in terms of the costs for raw ingredients, transportation, and utilities (gas, electric, water), as well as outlays of time for shopping, preparing, and cleaning up. Each of these inputs has a price that the consumer pays either directly (e.g., raw ingredients) or indirectly (e.g., opportunity cost of time). As the price of time goes up, the consumer will typically substitute away from food production that is more time intensive and toward prepared or partially prepared foods that require money outlays, and

vice versa. Because neither the formula underlying the TFP nor the SNAP benefit formula accounts for the value of time appropriately, the effectiveness of SNAP benefits is severely limited.

Since the TFP does not permit recipients to trade off time with money, the SNAP benefit formula ignores the time dimension. This is contrary to both economic intuition and empirical evidence backing up that intuition (Aguilar and Hurst 2005, 2007a). It is also inconsistent with estimates that show that time costs account for nearly two-thirds of total food cost among SNAP households (Davis and You 2010a). This significant shortcoming of the TFP was exacerbated by the 1996 welfare reform that introduced new work requirements for adult recipients of cash welfare (mostly single mothers who also receive SNAP) as well as able-bodied adults without dependents, or ABAWDS. Compared to the past, more households are combining SNAP with work, leading to a heightened time crunch for low-income households (Hoynes and Schanzenbach 2016). In effect, the TFP imposes an additional work requirement on SNAP households, but with no corresponding wage compensation.

#### ADDITIONAL LIMITATIONS OF THE TFP

Although I believe that the failure to account for the value of time is the greatest shortcoming of the TFP, there are several additional factors leading to the inadequacy of the SNAP benefit, including the requirement of constant cost across TFP revisions, the lack of geographic adjustment of the TFP for higher-cost areas, and the selection of the sample for measuring consumption and prices for input into TFP construction. Some, but not all, of these issues were raised in a recent Institute of Medicine (IOM) report (Caswell and Yaktine 2013), and collectively they have resulted in a TFP that—by formula—no longer meets the needs of SNAP households.

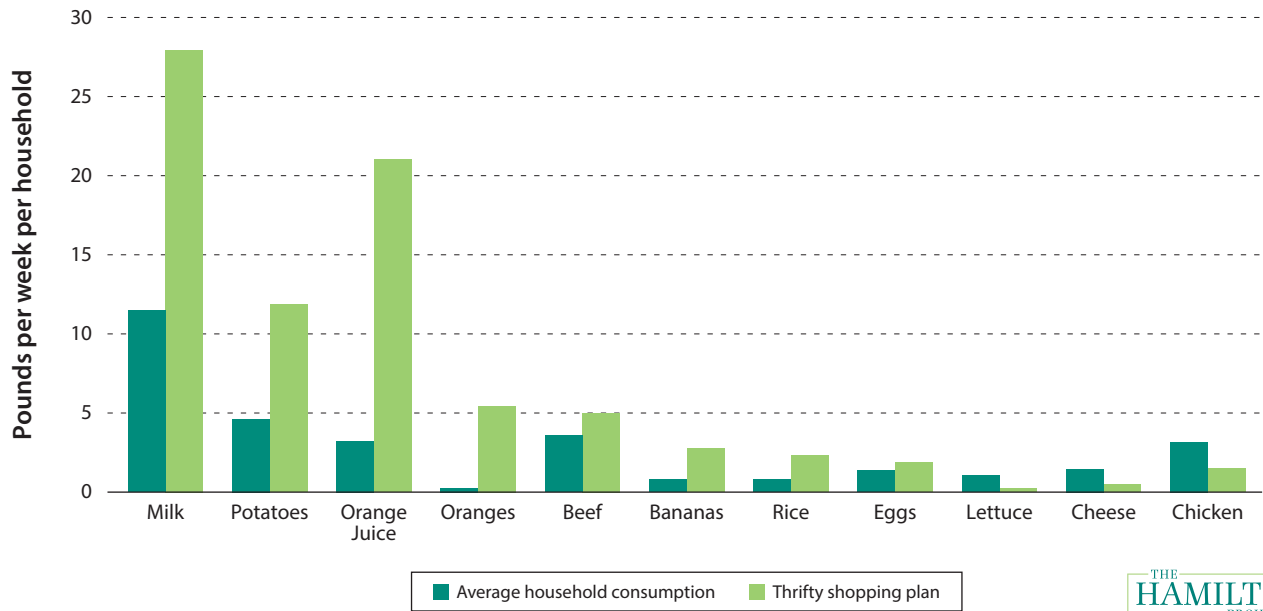
##### *Constant Cost across Plan Revisions*

The requirement that the TFP meet dietary guidelines at constant cost over time implies that, once food-price inflation is accounted for, the real benefit today is the same as it was 40 years ago when the TFP was introduced. In fact, though, it is the same in real terms since program inception because the TFP was designed at constant cost to the original Economy Plan that was intended for emergency use.

The imposition of the constant-cost constraint creates some glaring discrepancies between food intake recommendations from the TFP and actual consumption, and across TFPs over time. Some of the discrepancies across time surely emanate from changes in dietary guidelines over time, but the constant-cost assumption is also binding, forcing the plan allocation into food items that cost less by weight.

FIGURE 2.

## Average Household Consumption vs. Thrifty Shopping Plan



Sources: USDA 2000a, 2000b.

Note: All estimates are based on a household of four with two children. Average household consumption is based on the loss-adjusted food availability data series, which is derived from food availability data from USDA's Economic Research Service by adjusting for food spoilage, plate waste, and other losses, to more closely approximate actual intake. The Thrifty Shopping Plan represents Week 1 of the USDA's recipes for the 1999 Thrifty Food Plan. One gallon of milk equals 8.6 pounds and one gallon of orange juice equals 8 pounds.



Figure 2 presents the recommended consumption in pounds in the Thrifty shopping plan for the reference household of four persons compared to what a family of four actually consumed in the same year, according to the USDA. The TFP recommends consumption of more than twice as much milk, potatoes, fruits, and rice, and less consumption of chicken, cheese, and leaf lettuce than average. While data for this direct comparison are only possible using recipes based on the 1999 TFP, note that the 2006 TFP revision recommends consuming an additional 50 percent of milk products.

Numerous studies document that most middle-income households, and not just lower-income SNAP-eligible households, underspend on fruits, vegetables, and whole grains relative to dietary guidelines (Frazao et al. 2007; Gregory 2013; Guthrie et al. 2013; Stewart and Blisard 2008), suggesting that the allocation across food categories in the TFP is akin to trying to fit a square peg into a round hole—the constant-cost requirement combined with the dietary guidelines generates a significant misallocation both within a given TFP and when comparing TFP revisions across time. Indeed, the IOM panel concluded, “the expectations of program participants imposed by this approach were not always realistic given constraints on access to low-priced foods, the lack of cooking skills for the “from-scratch” preparation often assumed in the TFP, the lack of variety in meals using the ingredients assumed in the plan, and other considerations” (Caswell and Yaktine 2013, 40).

### National Average Prices

The TFP is developed under the assumption that food prices do not vary across the country, with the exceptions of Alaska and Hawaii. CNPP uses the CPI to determine national average food prices paid by low-income households for the items in the food basket. Challenging the assumption of constant cost across geographic space has been difficult historically because the Bureau of Labor Statistics (BLS) does not release an official subnational CPI. The standard CPI for urban consumers (CPI-U), from which the TFP price index is drawn, spans just under 90 percent of the population; although BLS does release CPIs for 26 metropolitan statistical areas (MSAs) at varying frequencies, those CPIs do not cover all MSAs or any nonmetro or rural areas.

Emerging evidence suggests that there are strong regional and metropolitan differences in food prices (see box 2). A recent report from Feeding America found that more than 26 million food-insecure people reside in areas where food costs are above average based on Nielsen price data (Gundersen et al. 2015). Another example is provided by the audit studies conducted by researchers at Children's Health Watch in Boston and Philadelphia (Thayer et al. 2008). The authors collected information on prices for 107 items from the TFP for the reference SNAP household of two adults and two children. They found that families receiving the maximum SNAP

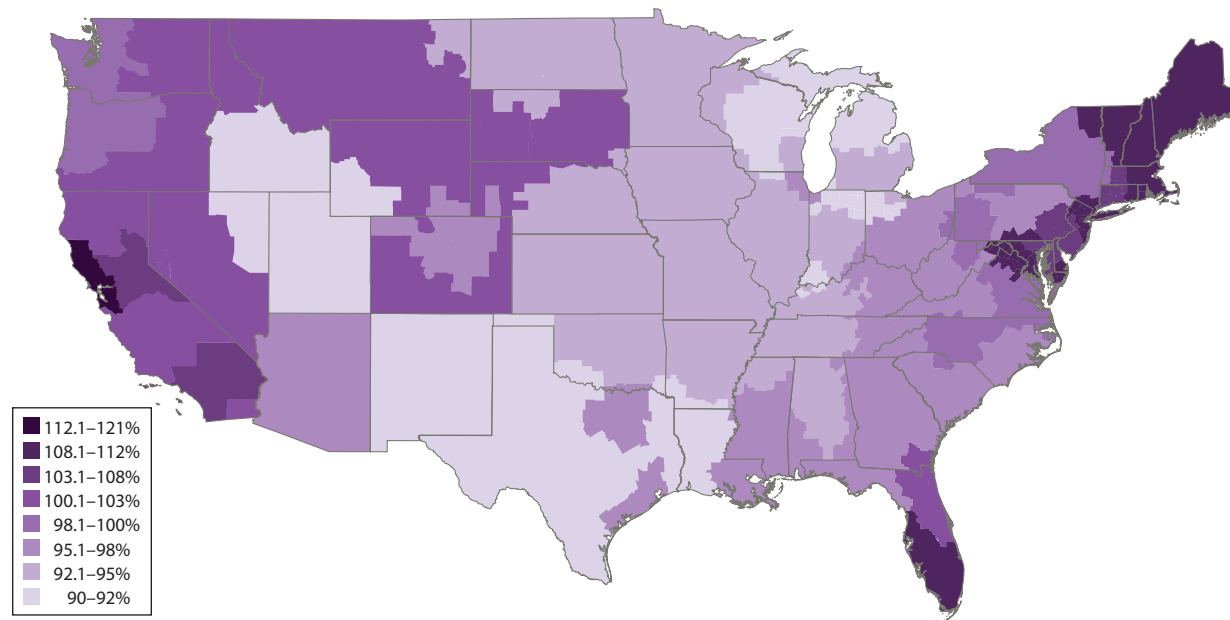
BOX 2.

## New Evidence of Geographic Variation in Food Prices

The recent advent of the Quarterly Food-at-Home Price Database (QFAHPD) based on Nielsen Homescan panels has enabled researchers to systematically document substantive regional differences in food prices (Gregory and Coleman-Jensen 2012; Leibtag 2007; Nord and Hopwood 2007; Todd, Leibtag, and Penberthy 2011). Consider figure 3, which calculates the weighted average price of the TFP across 35 market areas (26 metro and 9 nonmetro Census Bureau divisions) relative to the national average in 2010. To construct the average price of a TFP basket, the QFAHPD regional price data by food group are matched with the 2006 TFP consumption patterns for the reference family. The cost of the reference family's shopping basket is totaled for each region based on the quantity in the TFP patterns and the regional price. Then, an index comparing the price of this basket in each region to the national average is constructed. The figure shows a substantial degree of variation across the country, with some of the highest prices (12–21 percent above average) found in some of the most population-dense communities (e.g., San Francisco and New York City), as well as higher-than-average prices in many areas including the West and Northeast. Although specific items are more expensive in other areas, such as milk in the South, aggregating the full TFP basket allows comparison of prices that represents how price variations balance out for a family shopping for groceries.

FIGURE 3.

### Cost of TFP Basket Relative to National Average, 2010



Source: USDA n.d.b.

The price of the TFP basket for each region is calculated using the portions of food groups reported in the 2006 TFP Report.

This is consistent with Leibtag (2007), who shows that food prices in the QFAHPD are above average in the West and Northeast, and below average in the South and Midwest, suggesting that the SNAP dollar can go farther in the South and Midwest than it does in the West and Northeast. Importantly, he also finds that differences in prices across regions exceed differences in prices paid across income groups—that is, what you pay depends more on where you live than on what you earn.

Todd, Leibtag, and Penberthy (2011) provide additional evidence that geographic price variation in healthy-to-unhealthy foods is substantial—whole grains, which are also an important component of the TFP, were more expensive than refined grains by anywhere from 23 percent (San Francisco) to 60 percent (nonmetro Pennsylvania and New York), and fresh and frozen dark-green vegetables (another important food in the TFP basket) were 20–80 percent more expensive than starchy vegetables in all markets.

Gregory and Coleman-Jensen (2013) merge the QFAHPD to the CPS Food Security Supplement (USDA n.d.c) and find that this regional price variation substantively affects food insecurity—a one standard deviation increase in the cost of a TFP-type basket of goods results in a 5.1 percent increase in adult food insecurity and a 12.4 percent increase in child food insecurity.

benefit needed to spend an additional \$2,520 in Boston and \$3,165 in Philadelphia each year to purchase foods that meet the TFP guidelines, or roughly 40 to 50 percent more than the maximum benefit amount. They also found that 16 percent of the 107 items were not available in the Boston stores, and 38 percent of items were absent in Philadelphia, suggesting that many families lack both financial and physical access to healthy foods as prescribed in the TFP.

### *Age of Children in Reference Family*

Another source of consequential variation that impacts how far SNAP benefits go is the composition of the family. While the USDA calculates the TFP market basket for individuals by age and gender, these estimates do not set the maximum benefit for a household based on its characteristics. Instead, a reference family is constructed that consists of a family of two adults and two children under the age of twelve. The maximum benefit for all households is based on the TFP market basket for this particular family and is inflated or deflated based only on the number of people in the household. This is particularly problematic for households with teenagers: teenagers should consume as much food as adults, according to the *2015–2020 Dietary Guidelines for Americans*, but the reference family treats them like children (DHHS and USDA 2015). Consequently, the benefit level based on a household without a teenager is insufficient to feed a family with a teenager by USDA's own calculation.

### *Consumption and Prices of Low-Income Households*

Finally, the TFP consumption profile is calculated based on items consumed in a sample of low-income individuals with incomes less than 130 percent of the federal poverty level. Presumably, the purpose of selecting a sample of low-income households is to anchor the recommended consumption profiles to actual choices of those consumers who are SNAP-eligible based on gross income. The problem with this is that the consumption choices of the poor are an endogenous

response to their low-income status. That is, they are selecting a consumption basket that fits within their limited budgets, but then the TFP process essentially restricts them to continue to consume these products. Gundersen and Ziliak (2014) recently reviewed research that documented strategies that families use to cope with food insecurity, such as using food banks and pantries and eating food that is past its sell-by date, in addition to participating in formal federal and state food assistance programs. These various coping strategies engaged in by the poor end up biasing the TFP calculations toward low cost or even charity foods. Another concern with restricting the sample to households with gross incomes less than 130 percent of the poverty line is that it misses some families—such as seniors and the disabled—who are still eligible for SNAP even if their income levels are somewhat higher than the cutoff.

A case in point is seen by comparing the TFP to the next-highest-cost plan put out by USDA, the Low-Cost Plan (Carlson, Lino, and Fungwe 2007; Carlson et al. 2007). The same data source and analytical methods are employed in constructing the two plans; the key difference between them is that the Low-Cost Plan uses actual consumption and prices faced by households in the second quartile (25th percentile to the median) of the food consumption distribution instead of those with gross incomes below 130 of the poverty line. When USDA calculates the recommended consumption patterns for this group, subject to the dietary guidelines, additional higher-price food items are included. For example, comparing recommendations for a male aged 19 to 50, the Low-Cost Plan recommends about one pound less per week of grains, about a half pound less each of fruits and milk products, about a half pound more of more-expensive meats (e.g., beef and pork), and three and a half pounds more of other foods, compared to the TFP. The result is that the cost of feeding the reference four-person household is 31.6 percent higher in the Low-Cost Plan than in the TFP (\$854 vs. \$649 in FY2016).

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# Chapter 3. The Proposal

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I propose a three-stage approach to reforming the TFP. The first stage is to introduce an immediate adjustment for the value of time. Ignoring the cost of time artificially reduces the price of the TFP, and as a result the TFP is inadequate to purchase and prepare its market basket for all but a small fraction of recipients. The second stage is to recalculate a more reasonable TFP by relaxing the constant-cost constraint, introducing geographic price adjustments, replacing one child under age 12 with a male child over age 13 in the reference family, expanding the reference consumption sample underpinning the TFP, and as per Stage 1, formally incorporating the cost of time. The third stage is to conduct research on key measurement and survey instruments that support the reforms of the first two stages. The USDA, in conjunction with the DHHS, recently released the dietary guidelines for Americans for 2015–2020, which provides an opportunity to revisit the TFP market basket (DHHS and USDA 2015).

## STAGE 1: TIME ADJUSTMENT

To address the unreasonable assumptions about time available for food preparation among SNAP households, I propose implementation of a simple and transparent time-inflation adjustment to the TFP. Specifically, in the short run, before the TFP is comprehensively redesigned as I propose, I recommend making an immediate change to modernize SNAP by adding a 20 percent inflation factor to the TFP—that is, multiplying the TFP by 1.20 from current levels such that the new benefit formula is as follows:

$$\text{SNAP benefit} = 1.2 * \text{maximum benefit} - 0.3 * \text{net income.}$$

This would result in a maximum benefit for a four-person household in FY2016 of \$779 per month instead of the current \$649 per month.

Where does the 20 percent multiplier come from? Using the TFP expected time input of 13 hours per week, Davis and You (2011) estimate that SNAP households need to be compensated anywhere from 17 percent to 55 percent more. Although my proposed 20 percent adjustment is close to the lower bound of the Davis-You confidence interval and thus is conservative, there are several reasons for favoring this more-modest level of adjustment. First, the Davis-You calculations were done on the prior TFP (1999), but in the latest revision of

the TFP (2006), more convenience foods were introduced into the household shopping cart (Carlson et al. 2007). Although rigorous calculations have not been done mapping the time requirement of the 2006 TFP, the presumption is that less time is necessary than under former standards. Second, as Davis and You demonstrate, if we arbitrarily cut the time requirement in half from 16 hours to 8 hours per week, then the TFP would still be undervalued by 10 percent. This level of adjustment, however, places households too far below the recommended guidelines for a nutritional diet, and thus my proposal of a 20 percent time-inflation factor brings SNAP households closer to meeting the TFP dietary guidelines. Note that the proposed 20 percent adjustment still places the maximum benefit for a four-person household just below the next-lowest cost plan by about 10 percent (USDA 2015).

The evidence to increase the TFP to account for the time deficit facing families is compelling. When the price of time increases, people substitute away from time-intensive production toward higher food expenditure. Because of multiple demands on household time, or other barriers such as transportation or disabilities that limit activities of daily living, very few families in America at any income level allocate the amount of time to cook from scratch that is assumed by the TFP. SNAP households are no different, and arguably the time constraint is more acute for them because, relative to the population as a whole, they are more likely to be raising children in households with one adult, they are less likely to have access to personal transportation, and they are more likely to face physical and mental disabilities.

## STAGE 2: MODERNIZING THE TFP CALCULATION

The second stage of my proposed reform is to reform the TFP more comprehensively by relaxing the constant-cost constraint, introducing geographic price adjustments, and changing the reference consumption sample underpinning the TFP in addition to incorporating time costs.

The constant-cost requirement is an administrative rule that arbitrarily misaligns consumption patterns toward low-cost alternatives. The dietary guidelines direct consumers toward consumption of fruits and vegetables, whole grains, and lean meats and fish. Often these food items are more expensive compared to more-refined and more-processed foods, and



in more limited supply for households residing in rural or nonmetro locations. The constant-cost assumption works at cross-purposes to the general notion of updating the TFP using more-recent spending patterns and dietary recommendations.

The point of using more-recent data is to capture food spending and diet recommendations that align with current practice and knowledge. Imposing constant cost puts a straightjacket on the whole process of calculating the TFP and forces the plan to be more of an absolute food standard.

The use of geographic price adjustment offers the opportunity to more accurately align benefits to the cost of food at the local level. As discussed in detail in the IOM report, the SNAP benefit formula contains a number of implicit adjustments for geographic differences in cost of living for the computation of net income (Caswell and Yaktine 2013)—including the earnings disregard (earnings tend to be higher in high-cost areas and thus the disregard is higher), the dependent care deduction, the excess shelter deduction, and the child support deduction. However, a more direct approach would be to link the TFP to a regional price index instead of to the national CPI-U. These regional price adjustments could be implemented with the use of data in the QFAHPD, with Nielsen scanner data as employed by Feeding America for the *Map the Meal Gap* (Gundersen et al. 2015), or with regional price indices in development by the Bureau of Economic Analysis in the U.S. Department of Commerce (Aten, Figueroa, and Martin 2011). Because the development and use of regional price indices is still relatively new, I recommend that USDA conduct research on these alternative price indices prior to pursuing a reform related to regional prices.

SNAP legislation prohibits the value of the benefits from falling below the level in October 1, 1996, setting a floor on any benefit reduction that would come from using a regional price index. The IOM panel also highlighted the potentially deleterious effect of reducing SNAP benefits based on this reform and recommended that the TFP be adjusted upward only for those participants residing in communities with above-average costs of food.

The TFP should also be revised to reflect the higher food consumption of teenagers. Replacing one of the current children in the reference family with a teenage boy would help to reduce food insecurity and very low food security among recipient households. The USDA already collects data on the consumption profile for males aged 14 to 18, and so replacing one of the current children's consumption profiles with a teenage boy over the age of 14 would require no new data collection or calculations.

Finally, in reforming the TFP a broader sample than low-income households with before-tax incomes less than 130 percent of the poverty line should be used. This choice results in a sample that is poorer and increasingly less representative of the SNAP caseload, and limits the scope for participants to improve their dietary intake. Indeed, when the TFP was

originally developed, USDA used the consumption patterns of households whose food spending placed them in the 10th to 25th percentiles of the food spending distribution (Peterkin, Chassy, and Kerr 1975), which today would reflect higher spending than the sample of households at less than 130 percent of the federal poverty level. The original plan eschewed the use of spending below the 10th percentile to avoid the undue influence of extreme low values skewing the estimates. The 2006 plan contains some of those extreme values. At a minimum, a revised TFP should be based on a sample with family incomes above the deep poverty threshold (50 percent of the poverty line) and up to 200 percent of the poverty line, or preferably food spending above the 10th percentile and below the median.

### STAGE 3: RESEARCH

In addition to recommending that USDA conduct research on these alternative regional price indices, I also recommend that the USDA conduct comparability research on the national surveys that are used in creating some of the TFP inputs—in particular, comparing a TFP developed by the current data sources of NHANES and Nielsen with that obtained by the recently released National Household Food Acquisition and Purchase Survey (FoodAPS).

In the current TFP, CNPP combines data from both NHANES and Nielsen because while the ultimate aim is to devise a food plan in dollars, NHANES collects only intake data and not price data. The sample frames of NHANES and Nielsen are vastly different, and little is known about whether the lack of comparability of samples may impart a bias to the TFP.

FoodAPS, which was jointly sponsored by the Economic Research Service and the Food and Nutrition Service in USDA, is a nationally representative sample of 4,826 households containing information on quantities, prices, and expenditures for food at home and away from home over a seven-day period in the period between April 2012 and January 2013. To use these data, it would be necessary to make assumptions about whether the food acquired was actually consumed (recall NHANES is about food intake); crucially, they have mapped nutrient information about the purchased food and the prices paid for those foods. This information is sufficient to construct an alternative TFP, and, arguably, has the potential to produce a more robust plan because of a common sample frame and the fact that food acquisitions more naturally map into a food spending plan.

Finally, up-to-date information on food preparation time (including shopping and cleanup) from the American Time Use Survey, along with labor-market wage data from the Current Population Survey, should be a part of the research agenda in order to properly account for the cost of time in a revised TFP.

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# Chapter 4. Benefits and Costs to Modernizing the TFP

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As detailed in several recent surveys, over its first five decades SNAP has been shown to improve the health and economic well-being of Americans (Bartfeld et al. 2015; Caswell and Yaktine 2013; Furman, Munoz, and Black 2015; Hoynes and Schanzenbach 2016; USDA 2012). Modernizing the TFP—first by adding a time-cost multiplier, and then by fixing the method through which the TFP is designed—will further strengthen these benefits.

## BENEFITS

First, the proposal will alleviate food insecurity. As background, note that simple correlations reveal a positive relationship between SNAP participation and food insecurity—that is, SNAP participants are more likely than nonparticipants to be food insecure. This arises because of reverse causation: those households experiencing food insecurity are more likely to sign up for SNAP. Once researchers address this issue to isolate the impact of SNAP on food insecurity, studies show that SNAP participation reduces food insecurity by 5–20 percent depending on the population under study and the measure of food insecurity.

Many studies examine the effect of participation in SNAP on food insecurity, not the impact of a change in the benefit amount. However, some recent studies can offer guidance on what effect a 20 percent increase in the maximum benefit might translate into in terms of reduced food insecurity. Nord and Prell (2011) showed that when SNAP benefits were temporarily increased by an average of 13 percent during the Great Recession, food insecurity among low-income households fell by 9 percent, and the more-severe measure of very low food security declined by 19 percent. Using a different research design, Schmidt, Shore-Sheppard, and Watson (forthcoming) find similar results.

The USDA also commissioned a randomized control trial that provided nutrition benefits to households with children over the summer and found that increases in benefits resulted in reductions in food insecurity and especially very low food security. The Summer Electronic Benefits Transfer for Children (SEBTC) demonstration was a randomized control trial that provided either a \$30 per child per month increase or \$60 per child per month increase for the summer months (Collins et al. 2014). Both benefit amounts showed comparable

reductions on very low food security among children, while those treated households with the \$60 benefit increase realized greater reductions in overall household food insecurity.

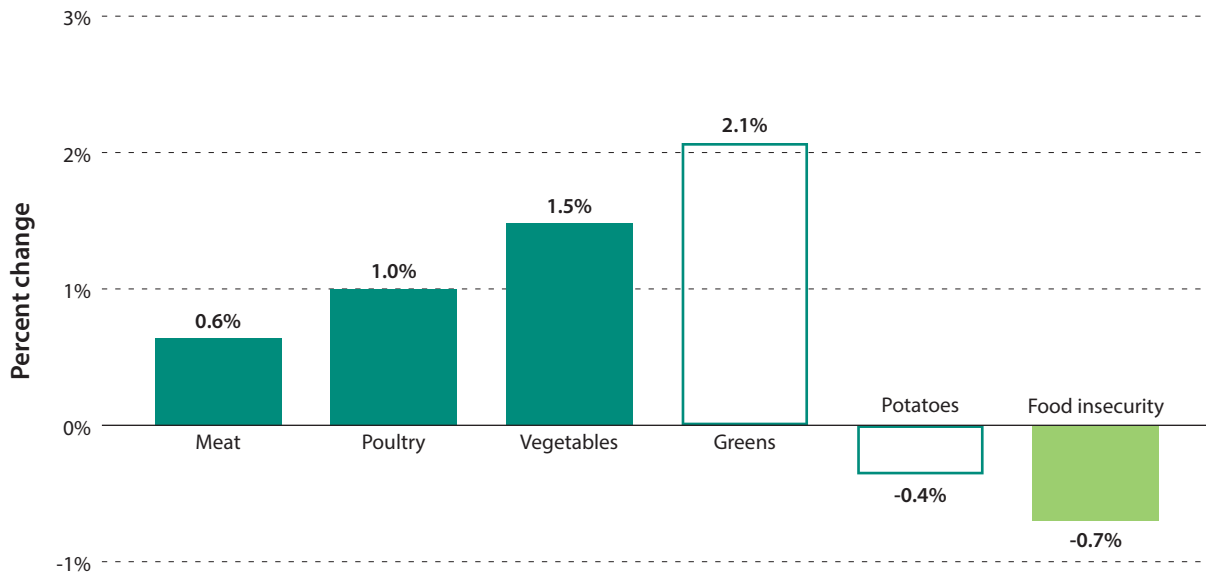
The proposed 20 percent increase for time costs is expected to have larger effects not only because the percentage increase is larger, but also because the reform is intended to be permanent and not temporary as in the American Recovery and Reinvestment Act of 2009 boost or the SEBTC.

Second, the proposal will reduce income and consumption volatility, and poverty more generally, especially for those with the lowest incomes. Blundell and Pistaferri (2003) and Gundersen and Ziliak (2003) demonstrate that when incomes fall, SNAP steps in to stabilize the income shortfall and enables households to stabilize their food consumption. More recently, Tiehen, Jolliffe, and Smeeding (2015) estimated that once one adjusts for underreporting of SNAP participation in the Current Population Survey, the program lowered the poverty rate by 16 percent, and deep poverty by over 50 percent. SNAP is the most effective antipoverty program among non-elderly households.

Third, the proposed increase in benefits will lead to more spending on food at home, and better diets and health. For example, using the temporary benefit increase during the Great Recession, Beatty and Tuttle (2015) find that for every \$1 increase in SNAP benefits, households increased their food-at-home spending by \$0.48. Likewise, the results from the SEBTC demonstration showed that recipients increased food spending by \$0.65 for each additional \$1 of benefits. Anderson and Butcher (2016) simulate the potential impact of an increase in SNAP benefit levels, and estimate that each additional \$1 in benefits will increase food spending by \$0.77. Furthermore, as shown in figure 4, they predict that an additional \$30 in benefits would reduce food insecurity by 0.7 percent, and translate into an increase in consumption of healthy foods, including increases in meat, poultry, greens, and vegetables (excluding potatoes), a decrease in consumption of fast food, and an increase in the Healthy Eating Index dietary summary measure.

FIGURE 4.

## Estimated Impact of a \$30 Increase in Monthly Per Capita SNAP Benefits



Source: Anderson and Butcher 2016.

Note: Percentages for the dark green bars represent change in consumption. Food insecurity is defined as having difficulty at some time during the year providing enough food for all household members due to a lack of resources. The hollowed bars are not statistically significant.



### COSTS

Projecting the potential cost of the 20 percent time-adjustment to the TFP is a complex interaction involving a number of factors, including the composition of the caseload in terms of household size and income levels. When I simulate the impact of a 20 percent increase in maximum benefits using data on SNAP participants from FY2014, which is the most recent available (Gray and Kochhar 2015), I find that average benefits increase by 23 percent on average. This occurs because, due to

aspects of the benefit formula, households receiving less than the maximum benefit amount receive an increase greater than 20 percent. Holding all else the same, the total cost of benefits would increase from \$67.7 billion to \$83.6 billion. The CBO projects SNAP outlays to fall over the next ten years, so the projected cost of the increase falls from 0.08 percent of GDP in 2016 to 0.05 percent of GDP in 2026. These projections ignore potential increases in take-up rates in response to higher benefit levels, which would increase the cost.

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## Chapter 5. Questions and Concerns

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### *How will this proposed time-inflation adjustment help people who do not get the maximum benefit?*

The 20 percent adjustment to the TFP to account for the cost of time for the requirement that recipients prepare foods from scratch at home will benefit all SNAP households—both those receiving the maximum and those receiving less than the maximum. The proposed reform will not change the calculation of net income, only the maximum. For example, since a household’s SNAP benefit is calculated as the maximum benefit less 0.3 times their net income, a four-person household with net income of \$900 per month would normally receive a SNAP benefit of \$379 per month (or the \$649 maximum benefit less \$270). Under the proposal, the new benefit would be \$509 per month (i.e.,  $1.2 * \$649 - \$270$ )—a 34 percent benefit increase, holding all else equal. This means the benefit increase is larger for households with higher net incomes.

### *Why revise the TFP in lieu of adopting the Low-Cost Plan?*

Since the program’s inception, many have argued that tying the maximum benefit to first the Economy Food Plan and subsequently to the TFP—which were originally designed for restricted and emergency use—resulted in benefits that were too low for regular household food needs. Instead, it is argued that a more effective program would utilize the Low-Cost Plan to set the maximum benefit (Hartline-Grafton and Weill 2012). Although this argument is compelling, a reasonable alternative is to reform the TFP to be more realistic. The proposal herein is consistent with the recommendations of the independent IOM panel to revise the TFP to include a time-adjustment factor and to explore geographic adjustment of benefits. It also remains consistent with current legislation governing SNAP, which requires that the benefit be based on the TFP, but that the TFP itself be established by the Secretary of Agriculture (Workforce Innovation and Opportunity Act 2014).

### *Should the time-inflation factor apply only to working SNAP households?*

The evidence from national time-use surveys is clear that the time expectations for fulfilling the TFP are well outside the norms of virtually all households in the United States today—working or nonworking, young or old, headed by one or two parents. As such, the proposed time inflation adjustment should apply to all families. Undoubtedly the time crunch is more acute for working households, and especially for single-headed households with dependent children. Using the same methods as their earlier work, You and Davis (2016) recently estimated that the time-inflation adjustment for single mothers to reach the average 13 hours for the TFP is three and that of a married couple where both spouses contribute to food preparation is 1.24. The latter is in line with the proposal here, whereas the former is clearly not; this underscores the fact that the demands on household time do vary by household structure. This suggests that a more nuanced time-inflation adjustment could vary by household structure and employment status, but at a cost of less transparency and greater uncertainty in setting the parameters; as such, a single adjustment factor is preferred, at least in the short run.

### *Don’t SNAP recipients have more time available to prepare food?*

The time deficit for food preparation is not restricted to high-wage women; it also affects the SNAP-eligible population. For example, Mancino and Newman (2007), using the 2003–04 American Time Use Survey, report that women in households who work full time at 130 percent or less of the poverty level spent only 5.4 hours per week in food preparation and cleanup; this increased to only 8.2 hours when they were out of the labor force.

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## Chapter 6. Conclusion

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Over its first fifty years SNAP has evolved to be one of the most important programs in the U.S. social safety net in terms of its program reach and effectiveness—as measured both through its impact on participants and on its stimulus effect on the economy. To modernize the program and strengthen it for its next fifty years, I have proposed a three-stage approach to reform that will bring the assumptions underlying the benefit levels into line with current norms of consumption and time use.

As it is currently structured, the TFP—which serves as the basis for SNAP benefits—requires households to invest an unreasonable amount of time in food preparation. Under the TFP, SNAP recipients must prepare foods at home at very minimal costs; in order to obtain the recommended diet, and prepare healthy foods from scratch, they would need to spend a prohibitive amount of time. Under normal circumstances, households trade off time and money, but by design the TFP shuts down this trade-off—substituting spending for additional time input. The result is that benefit allotments under SNAP are currently too low. I propose replacing some of the (unattainable) time cost with additional money resources for households.

Fixing the structural problem with the TFP will take time, requiring additional research and process reform. But the problem needs to be addressed more urgently. Because of this urgency, I first propose the immediate introduction of a time-

cost inflation factor that will add a 20 percent increase to TFP to account for the unreasonable cost of time assumed in the plan today. This 20 percent increase to the maximum benefit, while modest in magnitude, is a first step toward bringing the program’s assumptions into line with modern norms.

The second stage of the proposed reform is a more-comprehensive overhaul of the TFP to coincide with the recent release of the 2015–2020 Dietary Guidelines for Americans (DHHS and USDA 2015). In updating the TFP to conform with the new diet recommendations, I propose that, in addition to incorporating the cost of time in the TFP, the rule requiring the cost of the TFP to be no greater in real terms across plan years should be eliminated. In addition, I recommend a geographic adjustment for differences in cost of living, a change in the composition of the reference family, and expansion of the target sample of households used to construct the TFP so that consumption profiles are not unduly constrained. The reforms to the TFP should come after the third stage of my proposed reform whereby additional research is conducted into how to incorporate rapidly changing developments in cost-of-living indices and the availability of new and expanded data sources.

Modernizing SNAP by adopting these reforms will enhance participants’ ability to attain food security and to acquire a more nutritious and healthy diet for themselves and their families, and will strengthen the economic foundations and target effectiveness of SNAP.

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# Endnotes

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1. The higher-cost alternatives are used for a variety of purposes, such as courts of law to establish food expenses as part of bankruptcy and divorce proceedings, and by the U.S. Department of Defense to establish subsistence rates for service members (Carlson, Lino, and Fungwe 2007).
2. Indeed, in a report reviewing the TFP prepared for the U.S. House Committee on Agriculture, Greger (1985) noted that in a small survey conducted to test out menus representative of the TFP, the plan required on average 3.5 hours daily.

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## Highlights

James Ziliak of the University of Kentucky proposes a series of reforms to SNAP benefits to bring them in line with modern food consumption patterns. Benefits are based on the USDA's Thrifty Food Plan, which currently fails to properly incorporate constraints on time available to prepare food as well as regional food price differences. Ziliak's three-stage proposal includes a short-term option to adjust the Thrifty Food Plan to account for the cost of time spent preparing meals, a more-comprehensive option that systematically addresses other SNAP limitations, and a call for further research to support the first two stages.

## The Proposal

**Introduce a Time Adjustment.** The estimated cost of the Thrifty Food Plan would be increased by 20 percent to account for the time inputs it currently expects households to make. This would increase the maximum benefit that households receive, allowing recipients to substitute away from the most time-intensive foods.

**Reform the Thrifty Food Plan.** A comprehensive reform of the Thrifty Food Plan would be implemented. The reform would include introducing geographic price adjustments, relaxing the requirement that the Thrifty Food Plan maintain a constant cost, fixing the overly narrow focus on aligning the market basket to the consumption pattern of very poor households, and including a teenager in the reference family.

**Pursue Further Research.** The USDA would conduct research to support its ability to implement the first two stages of the proposal. In particular, the USDA would evaluate available regional price indices to determine how to introduce geographic price adjustments, and would assess the comparability of current data sources used to create the Thrifty Food Plan.

## Benefits

This proposal would reduce food insecurity and improve dietary health for SNAP recipients. The adjustments to the Thrifty Food Plan would increase the maximum benefit so that families can maintain adequate consumption of food in the face of economic shocks. The reforms would help SNAP meet the needs of the modern American family, bringing the program into the 21st century.



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