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CPHN ISSUES BRIEF

Can All Americans Afford a Healthy Diet?

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Some key issues

Food security is defined as having dependable access to safe, sufficient, and nutritious food to meet dietary needs. One in seven American households is food insecure. Food insecurity affects children, the elderly, people with disabilities, and the working poor.

By supplementing food budgets, the Supplemental Nutrition Assistance Program (SNAP) helps to reduce food insecurity, alleviate hunger, and improve diet quality. Most people receiving SNAP benefits have very low incomes. Most SNAP benefits go to families with children. Among SNAP households with children, most are wage earners. SNAP-Education, a complementary program, helps families make healthier food choices when faced with a limited food budget.

Inadequate food budgets pose a significant barrier to the adoption of more nutrient-rich diets (Darmon & Drewnowski 2015). Compliance with the Dietary Guidelines for Americans is very much influenced by purchasing power (Rehm et al. 2015). That may be because empty calories from added sugars and fats cost far less than do meat, poultry or fish, dairy products, or vegetables and fruit, fresh, frozen, or canned (Aggarwal et al 2012). When food budgets shrink, food choices first shift toward cheaper, less nutritious, and more energy-dense foods. As food budgets are reduced further, hunger is the outcome.

The White House Council of Economic Advisors has raised the issue whether SNAP benefits are adequate to prevent hunger and meet dietary needs among vulnerable groups (CoEA, 2105). SNAP benefits are calculated based on the minimum cost of a healthy diet, as estimated by the USDA Thrifty Food Plan (TFP). However, as documented previously, the TFP departs from US eating habits, requires long food preparation times, and does not fully account for variations in food price.

Modestly higher benefit levels would allow low-income families to put more nutrient-rich food on the table. Nutrient-adequate diets are a critical component of child health and wellbeing. Good child nutrition in the absence of hunger, in turn, lead to multiple educational, health, and long-term economic benefits.

Some research questions

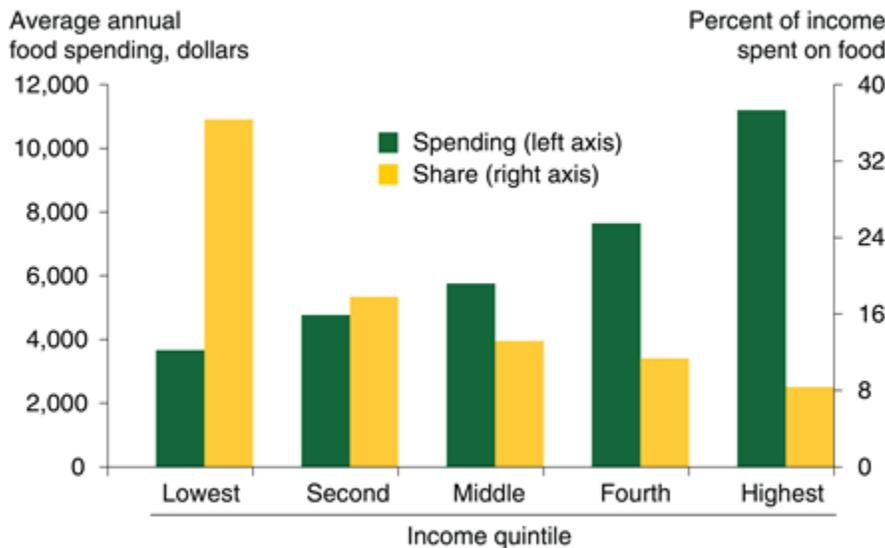
The overarching research questions are these. First, can low-income American families afford a healthy diet for their children? Second, is it true that nutrient-rich foods and nutrient-dense diets cost more? (see Drewnowski & Specter 2004). Third, are there any metrics to identify

foods that provide good nutrition at an affordable cost? Finally, what is the estimated cost of following the government’s dietary advice?

Can low-income Americans afford a healthy diet for their children?

For low-income households, food expenditures account for a very large proportion of income. In 2013, middle-income households spent an average of \$5,728 on food (13.1% of income). By contrast, the poorest households in the lowest income quintile spent \$3,655 on food, as much as 36.2% of income. By Engel’s law, the proportion of income spent on food drops as incomes rise. This is illustrated in **Exhibit 1**, based on data from the Economic Research Service, USDA.

Food spending and share of income spent on food across U.S. households, 2013



Source: USDA, Economic Research Service using data from U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2013

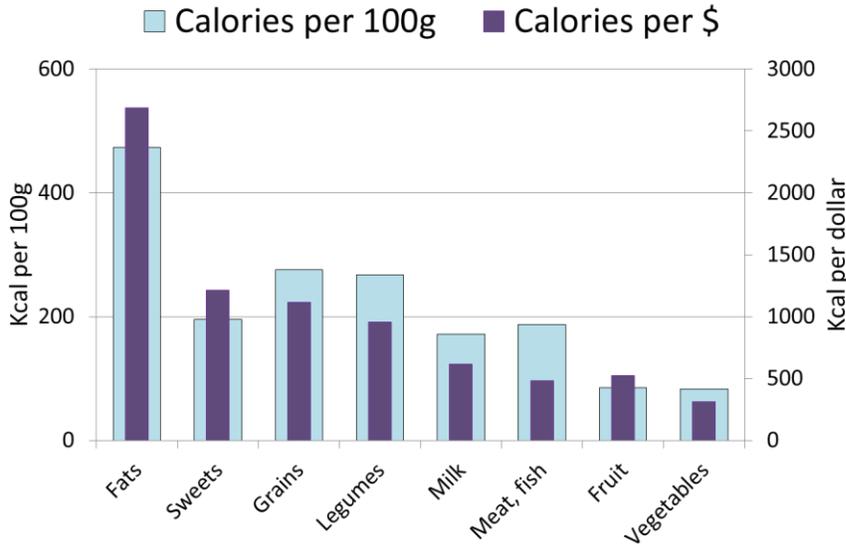
By providing a supplement to income, SNAP augments food budgets of the poor. SNAP eligibility rules require that recipients be at or below 130% of Federal Poverty Level. In total, 76% of SNAP benefits go to households with children; 49% of SNAP participants are children. For a household of 4, maximum benefits are \$511 per month, or about \$5.60 per person per day. The average recipient gets far less.

Is there a price differential between empty calories and nutrient rich foods?

The average daily caloric needs are estimated at 2,000 kcal/day, but can vary widely by age, gender, and activity level. The data in **Exhibit 2** are based on the nutrient composition of >1,300 foods eaten by participants in the What We Eat in America surveys. Food prices per calorie, edible portion, are from the CNPP/USDA national food prices database.

Fats, sweets, grains, and legumes provided the most calories per 100g. Those same food groups also provided most dietary calories per dollar. However, many of the calories from added sugars and fats were nutrient poor, providing minimal nutritional value.

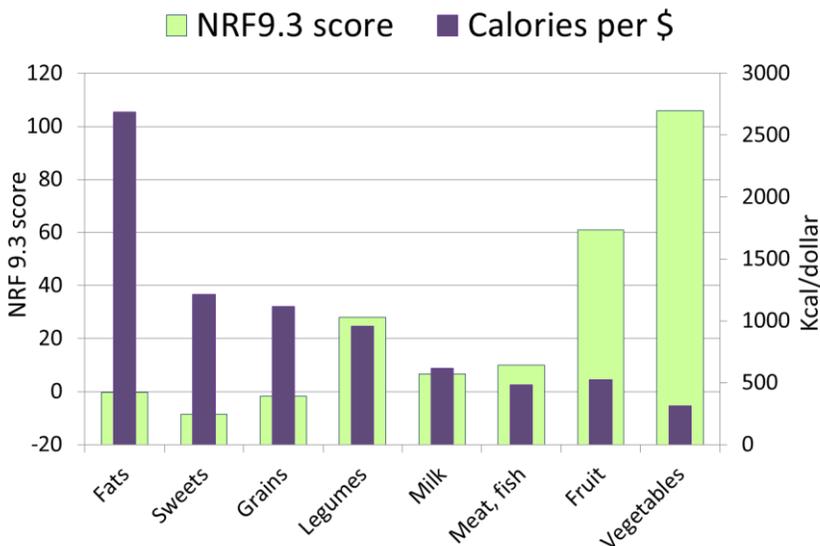
Exhibit 2. Relation between energy density of foods in the US food supply (Kcal per 100g) and energy cost, measured in kcal per dollar (Drewnowski 2010).



Ranking foods by their nutritional value allows us to distinguish between foods that are energy-dense and those that are nutrient-rich. The Nutrient Rich Foods index (NutriScore) rates foods based on their content of desirable nutrients, protein, fiber, vitamins and minerals in relation to calories. The foods' content of fat, sugar, and sodium is also taken into account.

Exhibit 3 shows that the most nutrient-rich foods were vegetables and fruit followed by legumes and beans. By contrast, most sweets had little nutritional value. While meat, milk, vegetables and fruit were the major sources of some essential nutrients, the most nutrient-rich foods were also more expensive, at least on a per calorie basis.

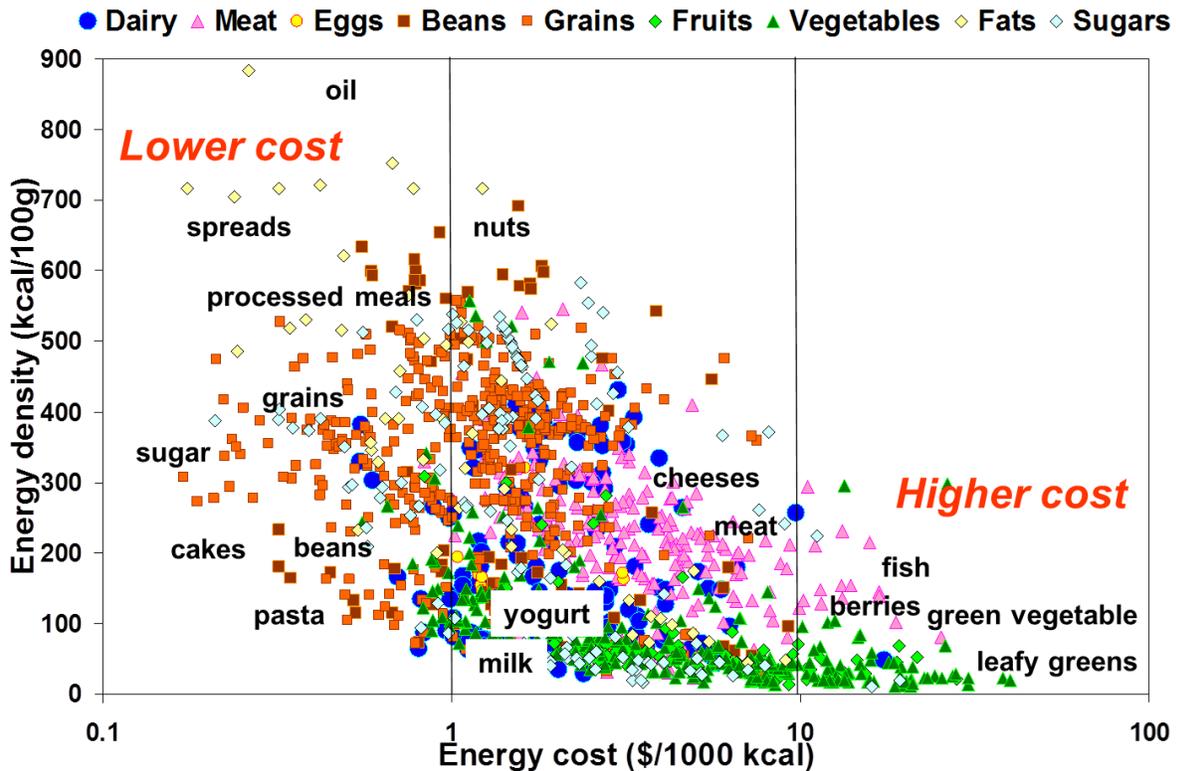
Exhibit 3. Relation between nutrient density of foods in the US food supply (NRF score) and energy cost, measured in kcal per dollar (Drewnowski 2010).



Are there foods that are both affordable and nutrient rich?

The cost of purchasing 2,000 kcal/day is used by the World Bank to estimate food poverty. **Exhibit 4**, based on individual foods from the 9 USDA food groups, shows which foods can provide 1,000 calories for one dollar or less. Not all low cost foods were nutrient poor: potatoes, beans, milk, and nuts provided high amounts of valuable nutrients per penny. On the other hand, seafood and fresh produce, including salad greens, were more nutrient-rich but were also more expensive (Drewnowski 2013; Drewnowski & Rehm, 2013).

Exhibit 4. Refined grains, fats, and sweets cost less; nutrient rich foods cost more. Energy cost measured in dollars per 1,000 kcal.



A diet quality gap separates the rich from the poor. Lower-income households purchase more cereals, pasta, potatoes, legumes, and fatty meats. Their vegetables and fruits are often limited to iceberg lettuce, potatoes, canned corn, bananas, and frozen orange juice. Higher-income households buy whole grains, seafood, lean meats, low-fat milk, and fresh vegetables and fruit.

As food budgets shrink, the healthier items purchased by the poor are no longer on the menu. Our novel cost metrics have attempted to identify healthy, affordable foods that provide most nutrients per calorie and per penny (Drewnowski & Rehm, 2013). The Affordable Nutrition Index (ANI) helped us to identify foods that were both affordable and nutrient rich. ANI values were obtained by dividing nutrient density by purchase cost per serving. The most nutritious foods at least cost were white and sweet potatoes, beans, broccoli, carrots, oranges and orange juice, and milk and milk products.

The Thrifty Food Plan (TFP).

The USDA Thrifty, Low-Cost, Moderate-Cost, and Liberal Food Plans were designed to illustrate how nutritious diets can be obtained at different levels of food spending. The Thrifty Food Plan (TFP), used to calculate benefits, is a market basket of foods that provide adequate nutrition at minimum cost. However, not all nutrient criteria could be met: designing diets low in sodium but high in potassium proved especially difficult. In addition, the lowest-cost eating patterns departed from the mainstream eating habits. Not all lowest cost foods are culturally or socially acceptable.

The TFP achieved its cost objectives by using inexpensive foods with high nutritional value. In the 1999 TFP, most of the dietary energy came from oil, shortening and mayonnaise, white bread, sugar, potatoes and beans. Protein was provided by ground beef and turkey. The only fresh fruit choices were low cost oranges, apples, bananas, and grapes. Although vegetable servings technically met the guidelines, the amounts of fresh tomatoes or lettuce in the TFP were very small.

Foods for the updated TFP are currently listed in the Recipes and Tips for Healthy, Thrifty Means brochure published by the USDA Center for Nutrition Policy and Promotion. The weekly shopping list for a family of 4 (Week 1) is built around white potatoes, whole and low fat milk, ground beef and turkey, chuck steak, chicken fryers, eggs, and beans, and frozen orange juice. Inexpensive calories were provided by vegetable oil, mayonnaise, lemonade and granulated sugar. Frozen and canned vegetables and fruit added to the overall affordability; however, the amount of fresh produce, other than onions and carrots, was very small. Whereas recipes called for twelve pounds of potatoes, the amount of green peppers was limited to 3 oz. per week for a family of 4. Dairy products were limited to whole and reduced fat milk, evaporated milk, and cheddar cheese.

Given the severe cost constraints, those were the most nutritious foods that could be obtained for the price. The same low cost vegetables and fruit, fresh, frozen and canned, had been identified by our cost metrics, including the Affordable Nutrition Index (Drewnowski 2013). However, the TFP goes further by setting overly high consumption targets that do not reflect the current American shopping and eating habits. Some of the foods in the TFP were rarely consumed by anyone in the National Health and Nutrition Examination Survey, let alone by young children.

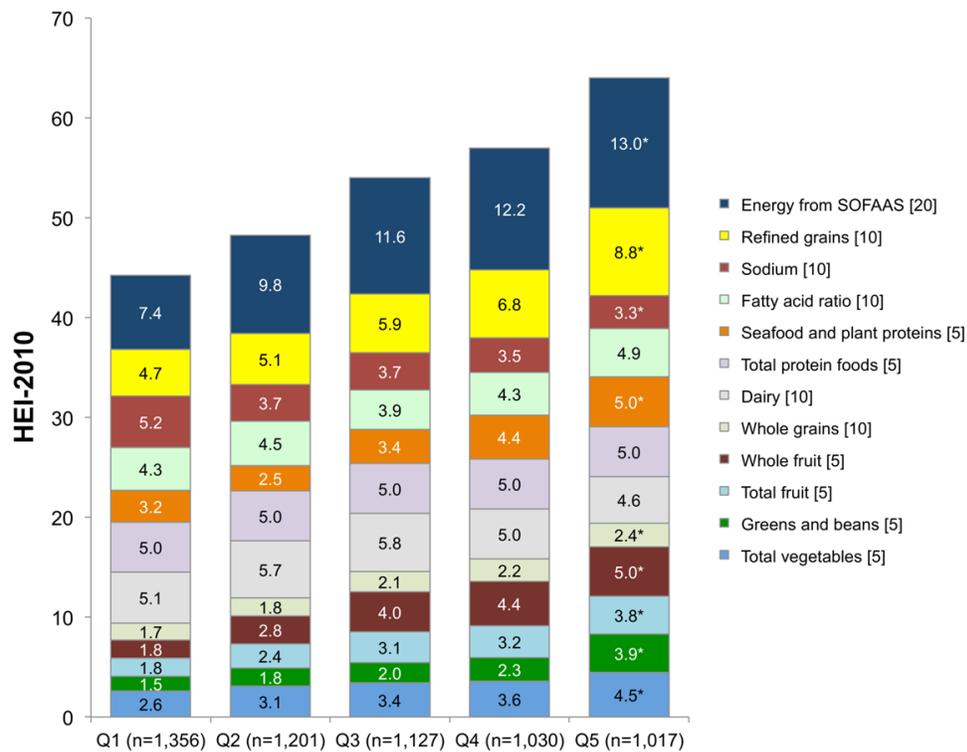
Food choices are a profound expression of social and cultural identity. Being restricted to the lowest-cost calories excludes the poor from civil society and frays the social fabric .

What is the estimated cost of following the government's dietary advice?

By Congressional mandate, Dietary Guidelines for Americans are released every 5 y. The 2010 Guidelines identified both shortfall nutrients (potassium, dietary fiber, vitamin D, and calcium) as well as the nutrients to limit (fat, sugar, salt). We examined the economic impact of meeting these guidelines for adults in King County, Washington. We found that increasing the consumption of potassium—the most expensive of the shortfall nutrients—would increase diet costs by more than a dollar per day. By contrast, diets became cheaper with each additional percent in energy intakes from added sugars and fats.

The Healthy Eating Index 2010, a 100-point diet quality scale, was designed to measure compliance with the 2010 Dietary Guidelines. **Exhibit 5** shows the relation between diet quality measures and estimated diet costs for participants in the National Health and Nutrition Examination Survey (NHANES). There was a clear link between diet quality and diet cost. Moving from the least expensive diets toward the right, there was an increase in total vegetables, greens and beans, total and whole fruit and whole grains. By contrast, the consumption of refined grains and empty calories (solid fats and added sugars) declined.

Exhibit 5: Relation between quintiles of diet cost and diet quality for men in the US, as measured by the Healthy Eating Index 2010 (HEI 2010). (Rehm et al. 2015)



Conclusion

As indicated in **Exhibit 5**, modest increases in estimated diet costs were associated with higher quality diets. Novel metrics of nutrient density and affordable nutrition can help identify foods that are affordable, nutrient rich, culturally appropriate, and appealing. Access to healthy foods depends not so much on store proximity but on food price (Drewnowski et al. 2012). A modest increase in SNAP benefits can help make healthier diets more accessible to the lowest-income groups.

Further reading

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