Introduction

USDA and other public health agencies have a long history of disseminating information about why and how to make food choices that promote health and prevent disease. Since 1980, recommendations on attaining adequate nutrition also include information about the benefits of maintaining a healthy body weight and limiting consumption of nutrients linked to chronic diseases. On the other side of the table, food manufacturers and marketers have discovered that certain psychological cues, such as packaging and presentation, are efficient ways to increase consumption of their products. These approaches have not been widely used in public health efforts aimed at improving diet quality and reducing body weight.

There are several behavioral and cognitive biases affecting food consumption decisions. The food psychology literature has found that external cues can drastically alter not only consumption volume, but also individual perceptions of how much they should and actually do eat. Wansink (1996) finds that larger packages lead to greater consumption and Diliberti et al. (2004) find that by increasing restaurant portion sizes from 248 grams to 377 grams of pasta, individuals increase caloric intake by an average of 43 percent. Also, more standard elements that are thought to be the main drivers of food choices, such as price, will sometimes prove to have little influence over consumption volume. For example, individuals appear to consume much larger quantities of food when it is stockpiled regardless of the initial cost (Wansink and Deshpande, 1994).

As obesity has come to the forefront of public health concerns, there is growing interest in finding ways to guide consumers' food choices to be more beneficial for their long-term health. One frequently mentioned option, the "snack tax," would raise the relative price of less healthful foods. However, taxes on food would disproportionately burden low-income individuals who spend a greater share of their income on food than wealthier consumers. Also, such measures would impose an additional cost for everyone, not just consumers who need incentives to better balance their own long-term health preferences with current food choices. Thus, a major challenge is to find incentives that can improve the food choices among individuals who behave contrary to their own intentions without limiting the choices of individuals who make optimal choices.

A benefit of incorporating findings from food psychology and behavioral economics into this discussion is that it broadens the policy options. Food psychology research shows that subtle incentives, such as product placement, package size, and fixed-cost pricing (e.g., "all you can eat" buffets) used to increase consumption should be just as effective at reducing consumption. Moreover, review of the literature suggests that these tools may be at least as powerful as the more traditional economics tools used to guide consumers' decisions, such as taxes and credits. And, unlike taxes or credits, behavioral cues can provide benefits to society without imposing a cost to those who currently behave optimally for their own long-term benefit, nor will they necessarily impose additional costs to those who are food insecure or living at the margins. However, a thorough analysis of costs, benefits, and potential impacts—a task outside the scope of this

discussion—would be needed before any strategy proposed in this report could be considered a viable option.

Standard economic analysis relies primarily on large-scale survey data. By contrast, the field of behavioral economics typically tests hypotheses through the use of experiments that isolate behaviors—for example, the effect of larger portion sizes on a person's food consumption. Typically the behavior of a group receiving the treatment of interest is compared with the behavior of a control group not receiving the treatment. In this case, consumption volume would be compared between those who were given the larger portions and those who were not. By randomly assigning individuals to either control or treatment groups, researchers can account for many confounding factors, such as selection biases. In this example, a selection bias may arise if hungry individuals choose both to give themselves larger portions and eat more as well. Without randomly assigning portion sizes, researchers would overestimate the effect of portion size on consumption. These methods can reveal more nuanced information than standard techniques, while also reducing the potential for confounding effects to mislead researchers.

This study's objective is to incorporate the findings from behavioral economics, food marketing, and psychology into a framework that can be used to explore new methods of improving individuals' diets and health. Beyond nutrition guidance and food labeling, few policies influence the food choices of the general population. However, there are mechanisms that directly influence the diets of those Americans who receive nutrition assistance. USDA's domestic nutrition assistance programs affect the daily lives of millions of people. About one in five Americans participates in at least one nutrition assistance program at some point during the year. Many of these programs include nutrition education components and are designed to support healthy food choices. However, these individuals are more at risk than others from changes in the economy or other social conditions, including increased risk of diet-related illness (Fox and Cole, 2004). Finding additional ways to improve the healthfulness of food choices among this population without imposing additional costs or restricting their right to choose the foods they like as part of their nutrition assistance program participation could have broad societal benefits.

In 2005, more than half of the people who participated in either the Food Stamp Program or the Special Supplemental Nutrition Program for Women, Infants, and Children were children (Barrett, 2006; Oliveira, 2006). On average, over 29 million children participated in the National School Lunch Program each day (USDA, Food and Nutrition Service, 2006). Many of the notions about what is good or acceptable to eat are determined in the first few years of life (Smith, 2004), and people form their diets based on what foods are more familiar (Smith, 2004; Smith and Tasnadi, 2007). Thus, finding ways to improve diet quality among those participating in nutrition assistance programs is also important because these programs have the potential to guide food choices at a critical time—when a child's dietary preferences are being defined.

This study focuses on four of the largest nutrition assistance programs: the Food Stamp Program; the Special Supplemental Nutrition Program for Women, Infants, and Children; and the National School Lunch and Break-

fast Programs, referred to collectively as USDA school meals programs (see the ERS *Food Assistance Landscape* series for details of each program; the most recent *Landscape* is available at http://www.ers.usda.gov/publications/eib6-4). The potential for impact on food choices within the food stamp, WIC, and USDA school meals programs differs significantly depending on the nutrition assistance delivery mechanism. WIC and the FSP provide assistance for individuals to purchase food to be prepared and eaten within the home. The school meals programs offer prepared meals to be eaten within a school-controlled cafeteria. WIC provides for a very narrow set of products, while the FSP performs much like a direct money transfer, barring only nonfood items and prepared foods that are not intended for home consumption.

While the potential to exploit certain idiosyncratic behaviors to encourage healthier diets exists in all of these programs, the potential instruments differ substantially. Which interventions are viable will depend largely on whether a program distributes benefits by providing purchasing power or preparing meals. Bestowing benefits through prepared meals offers a great degree of control over both how the food is presented and the environment where the food is chosen. Manipulation of food to be prepared and eaten at home may be much more invasive or costly and may therefore require exploiting a very different set of behaviors.