APPROACHES TO HEALTHY SHOPPING AND EATING

A Meta-Analysis of Intervention Strategies

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Contents

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INTRODUCTION

Strategies to address nutrition-related health challenges have generated debate over which intervention is optimal in improving community well-being. The medical literature suggests that diabetes, obesity, and cardiovascular diseases (high blood pressure, heart disease and strokes, among others) are frequent correlates of poor nutrition.

As TRF Policy Solutions has found, research that demonstrates effective practices in improving nutrition across a community can be difficult to identify. Further, the relevant research findings describe a variety of approaches, ranging from access to healthier food options to behavioral changes in the selection and consumption of more nutritious food.

This report examines programs that aim to influence individual food choices, provides context to understand the related issues and presents a summary of evidence-based strategies that encourage healthy shopping and eating habits in populations for whom the issue of access has been resolved. Through a review of the relevant literature this document summarizes research findings, offers recommendations for further research—with particular focus on intervention strategies within the **personal food environment**—and highlights programs that, based on the literature, we think have promise.

This research was funded by the Annie E. Casey Foundation under its Civic Sites initiative, which is committed specifically to supporting revitalization in East Baltimore, Maryland, and Atlanta, Georgia, and to "transforming the neighborhood into a healthier, thriving community for families and children" (Casey, 2013).

In East Baltimore, the Casey Foundation and other public and private partners continue to work to attract supermarkets to the neighborhood and support that neighborhood in becoming a more livable and attractive community. As that work proceeds in Baltimore and nationally, this research can help community residents and leaders to have informed discussions on promising intervention strategies focusing on food.

WHAT IS "HEALTHY EATING?"

The U.S. Department of Agriculture (USDA) 2010 Dietary Guidelines for Americans suggests a commonly understood framework of those choices that lead to "healthy eating." These recommendations encompass two overarching concepts:

USDA Guidelines

1. Balance of calorie intake with the level of personal physical activity.

Consuming more calories than is recommended for a particular height, weight and level of daily physical activity results in weight gain, while consuming fewer calories than recommended results in weight loss. Maintaining calorie balance over time is the key to achieving and sustaining a healthy weight. "To curb the obesity epidemic and improve their health, Americans need to make significant efforts to decrease the total number of calories they consume from foods and beverages and increase calorie expenditure through physical activity" (USDA & DHHS, 2011, 8–9).

2. Focus on consuming nutrient-dense foods and beverages.

Individuals should identify and assess the foods they consume and focus on those that have a relatively high ratio of nutrients to calories. "A healthy eating pattern limits intake of sodium, solid fats, added sugars and refined grains and emphasizes nutrient-dense foods and beverages—vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, lean meats and poultry, eggs, beans and peas, and nuts and seeds" (USDA & DHHS, 2011, IX).

When examining how individuals abide by the 2010 USDA Dietary Guidelines, it is important to consider behavior in the grocery store environment, because during a shopping trip, individuals make countless decisions directly related to these guidelines. To support good decisions, consumers need information on the nutrient content of the food and a means to assess products relative to their own behaviors and goals.

Consumers obtain some information through the new labeling system developed by the Grocery Manufacturers Association (GMA) and the Food Marketing Institute (FMI), to meet the labeling regulations recently established by the U.S. Food and Drug Administration (FDA). The food industry developed new icons and made label changes to ensure that consumers receive consistent and reliable information on the nutritional content of food (GMA & FMI, 2011). The icons inform consumers about the nutrients and calories in each product and how they fit into a balanced and healthy diet, as defined by the FDA daily dietary guidelines. The basic icon includes information about calories, saturated fat, sodium and sugar. The guidelines also allow for up to two additional icons, representing the item's content of a specific list of other nutrients. All products feature the icons together in a

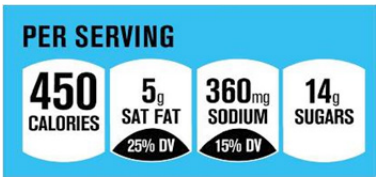

Figure 1

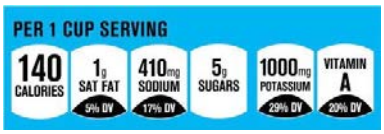

Figure 2

Find more information about these nutrition icons and guidelines at: http://www.gmaonline.org/issues-policy/health-nutrition/facts-up-front-front-of-pack-labeling-initiative/

specific format. (See Figures 1 and 2 for examples.) This information is useful and readily accessible to all consumers, but an understanding of how to apply this knowledge is necessary to change behavior and stem the growing rate of diet-related diseases in the United States.

THE FOOD ENVIRONMENT

Before looking at specific intervention strategies, TRF sought to provide context on the changes that researchers have observed in the food environment and categorize the types of intervention strategies. Researchers have noted that messages come to individuals from both the **population** and the **personal food environments**. Eating habits are complex behaviors—a result of how the brain responds to the availability of food, combined with one's emotional needs and societal cues on what, how often and when we should eat. Factors such as motivation to lose weight and the eating habits of family and friends influence an individual's behavior. The cues to eat in one's physical environment (home, school, workplace and community) and the macro-environment (media, society and cultural norms as well as political structures, policies and programs) are powerful influences that lead many individuals to ignore readily available healthy options (Story et al., 2008).

Studies show that Americans are overeating, and thereby consuming more calories, while also reducing their level of physical activity. "From 1985 to 2000, caloric supply in the United States rose by approximately 12%, or by 300 calories per day" (Bleich et al., 2008, 15). Bleich's study concludes that "increased caloric intake is the driving force behind the growing obesity epidemic. However, we do not want to diminish the importance of energy expenditure to weight management and overall health" (21).

D. A. Cohen meanwhile writes, "The past 30 years have seen dramatic changes in the food and physical activity environments, both of which contribute to the changes in human behavior that could explain obesity" (Cohen, "Obesity and the built environment," S137). Cohen goes on to argue that the decline in individual physical activity (i.e., caloric expenditures) has occurred in a food environment where "The most important environmental changes have been increases in food accessibility, food salience and decreases in the cost of food. The increases in food marketing and advertising create food cues that artificially stimulate people to feel hungry."

Each day people are bombarded with messages on "what to eat" and "what not to eat." These messages influence our behavior and come from advertisements, TV shows and video games, as well as from others within our work, school and home environments. Researchers group these influences into two categories: those that relate to the **personal food environment** and those that relate to the **population food environment** (Lowe, 2003). Nutritional programs and food consumption intervention strategies seek to intervene and effect change in one or both of these environments. Lowe (2003) defines the **personal food environment** as "the sum total of all the food-related situations individuals encounter, create or seek out in the course of their daily lives" (53S). For example, providing low-income

seniors with vouchers to purchase fresh vegetables is designed to change their **personal food environment**. Alternatively, interventions that address the **population food environment** improve access to nutritious food options for an entire community. The opening of a full-service supermarket in an area with limited access to fresh fruits and vegetables is an example of an intervention focusing on changing the **population food environment**, because it changes the food options for all residents of the area. Research shows there is need for changes in both food environments.

...a supermarket in an area with limited access to fresh fruits and vegetables... changes the food options for all residents of the area.

A systematic review of the literature on food deserts by Walker, Keane and Burke (2010) finds that, despite differences in research methods, studies of food access claim strong evidence of significant disparities in access throughout the United States. Studies including the USDA Food Desert study, published by the Economic Research Service (ERS/USDA) as part of a 2009 report to Congress (Ver Ploeg et al., 2009), and TRF's own 2012 Limited Supermarket Access (LSA) study (Califano et al., 2012) document the need for new supermarkets or **population food environment** programs. The LSA study finds that the problem is acute for residents living in low-income communities, where households are 1.38 times more likely to have limited access to full-service supermarkets than residents of non-low-income communities (Califano et al., 2012, 2–3). Bringing supermarkets to neighborhoods does more than provide residents with access to better food options; it also provides the communities with job opportunities and other economic and social benefits (Goldstein et al., 2008).

While the presence (or absence) of a supermarket is not enough to change an individual's diet or reduce obesity rates, it can influence the **population food environment**. A new store can generally offer significant improvements in the variety of products, brands and low-cost options, particularly compared to those of small food stores (Kaufman et al., 1997). The addition of a supermarket to a community may make it more cost effective for household members to purchase healthy food, either by reducing the cost of travel to supermarkets outside the community, or by offering lower prices than those in existing small food stores nearby. In terms of the **population food environment**, "the primary prevention of obesity will require widespread structural changes in the availability, nature and cost of foods" (Lowe, 2003, 53S). Interventions that address the **population food environment** are long-term strategies and structural in nature.

> Most policies to reduce the impact of food access limitations have focused on increasing or improving supply of healthy foods. This could be an important investment in underserved areas for economic, social and cultural reasons and it may make it easier for residents of the area to access healthy food. But it is unlikely that these policies will make much of a dent in improving diets, reducing obesity and improving dietary health unless consumers change their eating habits (Ver Ploeg, 2010, 3).

Changing dietary health is also dependent on changes in the **personal food environment**. Individuals may need to learn to be cognizant of, and filter out, messages that encourage unhealthy portions or poor food choices and to focus instead on messages that support eating healthier foods and moderation. "Understanding behavioral influences within the context of psychosocial influences is critical to the development of dietary recommendations, nutrition programs and education messages that will assist consumers in constructing healthful diets and promote dietary change" (Nestle et al., 1998, S50).

Intervention strategies that are complementary, addressing both the **population** and the **personal food environments**, are most likely to reduce the occurrence of diet-related diseases in the United States. The literature suggests that encouraging someone to change his or her diet is difficult; without access to healthy and affordable foods regularly, it is even harder. Once behavior changes, maintaining a new healthier behavior is hard to sustain over time, especially when living in environments where there is an excessive availability of high-calorie foods and an overabundance of cues to eat.

CHALLENGES TO HEALTHY EATING

Even well-intentioned consumers make decisions based on influences they experience within the store context. The five common factors that impact purchasing decisions are cost, information, choice, time and biology.

Cost: Price plays an important role in individuals' decisions of which foods to purchase. Unfortunately, nutrient-poor foods tend to be cheaper. "The relatively low cost of energy-dense and nutrient-poor foods such as those high in refined sugars and saturated fats . . . is an important [factor] in the relationship between socioeconomic status and nutrition-related health" (Wall et al., 2006, 518).

Information: Supermarket shoppers face an overwhelming variety of choices. Not only must they decide between different types of food, but within the same food type they must decide among brands. Many intervention campaigns have focused on encouraging people to eat healthier, but assume that shoppers know what is healthiest and choose wisely based on that information. Research by D. A. Cohen and Just & Payne note that intervention strategies should consider the other influences on shoppers. Attributes of food products including the taste, smell, price and packaging (including images and messages) are designed to attract shoppers. As one would expect, manufacturers invest enormous resources, through both direct marketing and market research, to influence shoppers' behavior.

> Manufacturers control the economic factors that govern decisions—prices and product information. They also control many of the attributes of the food item (packaging, content, etc.) that can predictably impact consumer decisions regarding

> what to purchase and how much to consume . . . Ultimately, the individual chooses what to purchase and how much to consume based on the interaction of these other competing variables (Just & Payne, 2009, S51).

The food industry has increased in-store marketing activities, further reducing the time between when the consumer hears the message about what to buy and the point of sale. While overall food marketing budgets are growing at 2% compound annual growth rate (CAGR), in-store marketing budgets are growing at much higher rates: 21% and 26% CAGR for manufacturers and retailers, respectively (Deloitte, 2007, 1).

Choice: Even when we have information defining what is healthy and what is not, we sometimes still choose poorly. In "Pathways to Obesity: Are People 'Hardwired' to Overeat?", RAND Corporation highlights the findings of research conducted by D. A. Cohen, which show that "when faced with an overload of information . . . [individuals] typically fall back on impulsive behaviors that make them more likely to choose nutrient-poor foods" (RAND Corporation, 2008). Individuals often go to the store with the intention of purchasing healthy food, but the presence of multiple choices and their prior experiences can hinder this goal.

> There is a limit to how many demands any person can meet in a given time period. Our resources for decision making and self-regulation (also called executive functioning) and our ability to engage in complex thinking tasks . . . can be depleted by a variety of factors, including too much information. . . . When our executive functioning resources are depleted, we typically choose the default option that requires no processing demands. When it comes to food, the default options are items high in sugar and fat. We typically lack insight into this process and instead identify other causes for loss of self-regulation ("Neurophysiological pathways," 1772).

Time: As consumers feel more time constraints, they purchase more prepared and prepackaged foods. "Today's parents have longer work hours, and many families consist of only one parent or of two parents who are both working outside the home. Thus, parents increasingly rely on convenience foods" (Patrick & Niklas, 2005, 86). As a result, marketing efforts emphasize convenient, ready-to-eat foods. Barkema, Drabenstott and Welch (1991) anticipated this market shift: "most households have cut back sharply on the time spent preparing food, choosing instead to eat out or buy foods that are at least partially prepared. The shift to convenience could increase the demand for pre-processed foods, with the potential that food companies will process foods more fully and package them differently before they reach the consumer" (27).

Biology: Recent research supports the hypothesis that people have innate preferences for fat and sugar and therefore have a tendency to choose foods that are high in those features (Kessler, 2009; Grucza et al., 2010). Research also found a similar tendency for people to select on impulse products that are high in sugar and fat (RAND Corporation, 2008). Kessler explores individuals' responses to food combinations in The End of Overeating: Taking Control of the Insatiable American Appetite (2009). In an interview with New York Times journalist Tara Parker-Pope, Kessler said,

> When it comes to stimulating our brains . . . individual ingredients aren't particularly potent. But by combining fats, sugar and salt in innumerable ways, food makers have essentially tapped into the brain's reward system, creating a feedback loop that stimulates our desire to eat and leaves us wanting more and more even when we're full (Parker-Pope, 2009, para. 7).

Intervention strategies seek to address some or all of these barriers with specific programmatic activities. Given that some populations are facing multiple barriers, the following literature review notes how specific programs systematically try to address the barriers and whether there is evidence of success.

LITERATURE REVIEW

Our review identifies studies assessing programs that educate, encourage or incentivize consumers to make healthier purchasing decisions when grocery shopping. We limited the review to studies conducted in the United States with results published in peer-reviewed journals. We further narrowed our review to only those studies with randomized[1] or quasi-experimental[2] study designs. Our review is limited in this way to ensure that the results we reported have been rigorously researched and are evidence-based. The review notes the type of barrier(s) to a shopper's ability to follow the USDA guidelines that the specific intervention category seeks to address. Additionally, it categorizes studies as demonstrating short-term or long-term impacts of the strategies and notes whether the intervention focuses on the **population** or **personal food environment**. Finally, we grouped studies into the following thematic categories:[3]

- Church-Based
- Point of Purchase
- Pricing
- Community-Wide
- Health Care Provider
- Peer-Led Education

We reviewed the research for both short- and long-term evidence of change, because long-term behavioral change can be difficult to sustain. TRF provides one rating for short-term outcomes and another for long-term outcomes. We note evidence of long-term outcomes if a study evaluated eating behavior for at least one year post-program delivery. The evidence rating represents the collective effectiveness of all programs studied within each intervention category.

In the summaries below, the first column under "Evidence" represents the **short-term rating (S)**, and the second column represents the **long-term rating (L)** of the program type. The following key explains the symbols used in those two columns. We gave "Evidence" one of these ratings based on the author's findings:

++	Evidence of a positive effect with no overriding contrary evidence
+ -	Evidence of inconsistent effects
-	No affirmative evidence of effects
Ø	Not studied

1. *The key distinguishing feature of randomized study design is that, after recruitment and assessment of eligibility but before the intervention begins, study subjects are randomly allocated to receive one or other of the alternative treatments under study.*

2. *Quasi-experimental designs share many similarities with the randomized design, but they lack the element of random assignment to treatment or control. Instead, quasi-experimental designs typically allow the researcher to control the assignment of subjects to the treatment condition using some criterion other than random. In some cases, the quasi-experimental design is necessary because the researcher may have no control over assignment to treatment condition.*

3. *The review focused on programs that influence the grocery store purchasing behavior. School-based healthy eating programs were not reviewed, since children are not considered the primary food purchasers.*

Intervention Type: **Church-Based Programs**

			S	L
Barriers	Biology and Information	**Evidence**	++	++
Food Environment	Personal			
Research	Campbell et al., 1999; Resnicow et al., 2001; Winett et al., 2007			
Programs	Eat for Life; North Carolina Black Churches United for Better Health; Guide to Health (GTH)			

Church-based programs are geared toward changing the **personal food environment** of a specific, religiously affiliated subgroup within a community. We found three studies of this type of intervention, two of which successfully engaged congregations of black churches: Eat for Life in Atlanta, North Carolina Black Churches United for Better Health in eastern North Carolina and Guide to Health (GTH) in counties surrounding Blacksburg, Virginia.

These church-based programs build upon the regular interactions and shared values of churchgoers to encourage positive health behavioral changes. The theory is that, because churchgoers have already chosen to be a part of a community, they respect and heed advice from the church leadership, share some common beliefs, and interact regularly in social settings. These programs incorporate health education and infuse their messages to change eating habits through multiple means of communication, including culturally sensitive materials developed prior to the program's launch, in response to focus groups that researchers conducted with church members.

All three studies showed positive results, and two programs included counseling services. Eat for Life worked with 14 black churches in Atlanta, while North Carolina Black Churches United for Better Health worked with 50 churches in 10 rural counties in that state. Both programs focused on increasing the consumption of fresh fruits and vegetables and provided various levels of health education, increased access to fresh foods at church events and counseling (either motivational interviews or group facilitated discussions). In Black Churches United for Better Health, congregants were selected by their pastors to serve on Nutrient Action Teams (NAT). NATs received training and then in turn trained their peers (Campbell et al., 1999, 1391). In Eat for Life, registered dietitians or dietetic interns provided counseling to participants (Resnicow et al., 2001, 1688).

Researchers noted that these programs also provided congregations with fun, social ways to engage in healthy behaviors. Churches started victory gardens and compiled locally adapted recipes into cookbooks to highlight new, healthier ways to cook traditional meals. Resnicow et al. (2001) compared the two programs and stated that "together, [they] suggest a role for both environmental and individual-level intervention in churches" (1690).

The third study, by Winett et al. (2007), built upon the successful findings of the prior studies. "The 14 churches in the GTH trial were located within a 50-mile radius of the research site in the south Atlantic region of the Unites States and represented the area's largest denominations (i.e., Baptist and United Methodist); three were predominantly African American Baptist churches" (Winett et al., 252). This web-based program collected data on participants and delivered dietary and exercise messages through narrator-guided modules. The study compared three groups of participants: the GTH program, GTH Plus (the same program delivered with a series of church-based supports) and a control group. Participants in the GTH Plus group received additional exposure to the program's message through posters, church bulletins and preacher messages, even if they did not log in to the system to view the modules online. Participation rates, changes in diet and physical activity levels were higher in the GTH Plus group than the GTH program or control group. The findings suggest that GTH was most successful with participants who also received engagement in the **personal food environment** through the church support system.

4. *A food frequency questionnaire (FFQ) is a tool that researchers use to gather data on the types of food and frequency of foods eaten during a period of time. FFQs may gather information on specific types of foods or food groups and may (or may not) assess the individual's whole diet.*

SPOTLIGHT

Eat for Life (*Church-Based Program*) | (Resnicow et al., 2001)

Summary: Participants received culturally sensitive education materials to promote the consumption of fruits, vegetables and low-fat foods. They also received calls from counselors based on motivational interviewing. This program had a general education component, but the use of motivational interviewing allowed counselors to address individual needs. Motivational interviewing is a directive, client-centered counseling style for eliciting behavioral change by helping clients to explore and resolve ambivalence toward the barrier to change. For example, interviewers ask open-ended questions to explore participants' feelings of ambivalence, support their optimism regarding change, and direct conversations toward the desired behavioral goals.

Outcomes of this program were based on participants' self-reported intake of fruits and vegetables. Participants completed food frequency questionnaires[4] pre- and post-intervention. The study concluded that motivational interviewing appears to be a promising strategy for modifying diet and that black churches are excellent settings in which to implement and evaluate health promotion programs. All three of the church-based programs showed success, but Eat for Life focused both on the individual barriers to changing behavior and the broader **personal food environment** to reinforce the message of adopting new behavior.

Intervention Type: **Point of Purchase Programs**

			S	L
Barriers	Choice and Information	**Evidence**	+ -	+ -

Food Environment	Population
Research	Hunt et al., 1990; Schucker et al., 1992; Rodgers et al., 1994; Lang et al., 2000; E. S. Anderson et al., 2001; Drewnowski, 2010; Lupton et al., 2010; Katz et al., 2010; Sutherland, Kaley & Fischer, 2010
Reviews	Townsend, 2010
Programs/ Systems	Guiding Stars; Nutrient Rich Foods (NRF); NuVal; Smart Choice; M-Fit; Eat for Health

Point of purchase interventions seek to influence the **population food environment** from inside a store by providing information regarding the food's nutrient content. Most of the point of purchase studies we reviewed highlighted the outcomes of different nutrient-profiling systems used for shelf labeling. These systems rank or categorize foods on the basis of the nutritional composition. Within the nutrient-profiling systems (or indexes) studied, we reviewed two that involve the food industry: (a) manufacturer involved, i.e., the Smart Choice Program (Lupton et al., 2010), and (b) store led, i.e., Hannaford's Guiding Stars (Sutherland, Kaley & Fischer, 2010). Two additional academically led studies, Nutrient Rich Foods (NRF) (Drewnowski, 2010) and NuVal (Katz et al., 2010), focused on a national standard system, and one (Lang et al., 2000) focused on shelf labeling for minority populations. Lastly, the Eat for Health study by Rodgers et al. (1994) used multiple means to increase consumer awareness, including shelf labels, food guides, produce signs and monthly bulletins.

The general consensus is that providing information at point of purchase (e.g., shelf labeling or food labeling) is useful to people who are already committed to change, but probably not as beneficial to those who lack motivation. Studies of nutrient-profiling systems gathered data on shoppers' awareness of the system (Lang et al., 2000) and behavior change (Hunt et al., 1990;) and/or tracked the sale of goods to assess the effectiveness of the intervention (Sutherland, Kaley & Fischer, 2010; Katz et al., 2010; and Rodgers et al., 1994). When these systems are implemented effectively, shoppers switched to buying healthier items (those with a higher nutrient value) and reported that they continued to purchase these items after one and two years (Hunt et al., 1990). Most studies tracking sales also showed a corresponding decrease in the sale of unhealthy items, such as high-sugar, low-fiber cereals (Schucker et al., 1992; Sutherland, Kaley & Fischer, 2010); while Eat for Health, implemented exclusively in Washington, D.C., showed no change (Rodgers et al., 1994).

Townsend (2010) notes that it is challenging to compare and adopt a single national nutrient-profiling system because the systems define the nutrient value of foods differently.

Furthermore, research has not assessed how various subpopulations respond to those systems[5] and whether some are apt to respond more than others. Townsend compared four systems[6] and notes the difficulty in selecting one:

> The use of consistent standards to assess the accuracy and usefulness of multiple profiling systems is imperative to successfully identify a nutrient profiling intervention that will have the potential to lead to improved diet quality and eventually to an improved health status in U.S. consumers (Townsend, 2010, 1109S).

The M-Fit program Lang et al. (2000) studied sought to tailor messaging and test health awareness for African Americans living in Detroit, MI. The study found positive awareness with targeting messaging (by surveying shoppers leaving the store), but the study represents only three days of testing in stores; it did not track actual sales or behavior changes in short- or long-term purchasing habits.

E. S. Anderson et al. conducted a study (2001) that also sought to understand the influence of nutritional information in the store environment on consumers' purchasing habits. This study placed computer kiosks in five supermarkets and recruited participants to use the kiosks to track their shopping and eating habits. The kiosk offered self-administered assessments of the participants' behavior, habits and willingness to change. It also offered short segments each week, for 15 weeks, on increasing consumption of fruits, vegetables and high-fiber and low-fat products. The study gathered data using multiple methods, such as food frequency questionnaires, sales receipts and surveys, to assess and recommend personal goals for behavioral change. This study also found positive results from the various indicators.

5. *While researchers have looked at how both men and women respond to the systems, Townsend notes that the studies have not examined how populations with different diets respond. "More research is necessary before selecting and implementing any national system particularly when considering the variations in demographic characteristics and cultures of American consumers" (Townsend, 2010, 1115S).*

6. *NuVal, NRF, Smart Choice and Guiding Stars*

SPOTLIGHT

NuVal (*Point of Purchase Program*) | (Katz et al., 2010; Townsend, 2010) http://www.nuval.com/

Summary: More research is necessary to understand the effectiveness of profiling systems. Among the existing systems reviewed by researchers, NuVal seems to show the most promise. NuVal was developed independent of the food industry. The Katz et al. (2010) study showed it was effective at encouraging positive consumer behavior as measured by changes in product sales. High scoring items showed increased sales activity, while low or non-scored corresponding items showed decreased sales.

Behind NuVal is an index of food and food categories, the Overall Nutritional Quality Index (ONQI™), devised as a means to convert "complex nutritional information into a single, easy-to-use score" (NuVal, LLC, 2013). It ranks foods on a scale of 1 to 100; 100 represents the highest possible score. According to NuVal's website, it is currently used in over 28 grocery store chains around the country and has been adopted by several school systems. The system continues to add new foods and food products to the ONQI™. Among various nutrient-profiling systems in a recent review (Townsend, 2010, 1114S), NuVal was highly rated for the evidence of validity of its measures.

Intervention Type: **Pricing Interventions**

			S	L
Barriers	Cost/Information	**Evidence**	++	Ø

Food Environment	Population and Personal
Research	Paine-Andrews et al., 1997; J. V. Anderson et al., 2001; French, 2003; Leibtag & Lynch, 2007; Epstein et al., 2010
Reviews	Glanz et al., 2005; Wall et al., 2006; Waterlander et al., 2009
Programs	Michigan's Farm Resources Encouraging and Supporting Health (FRESH), Kansas LEAN

The cost of food is the second most important factor in food purchasing decisions; taste is the first. Researchers have hypothesized that changing the price of healthier items could impact consumers' decision making (Glanz et al., 2005; Wall et al., 2006; Waterlander et al., 2009). The research discusses intervention strategies within both the **population food environment** and the **personal food environment**. Price-intervention strategies that focus on the **population food environment** include: (a) offering lower prices to increase the sales or consumption of specific foods for all consumers, such as subsidizing the price of vegetables; or (b) increasing the price (possibly through taxation) of unhealthy foods, thereby decreasing the sales or consumption of energy-dense foods. Alternatively, offering discount coupons for healthy food to targeted populations seeks to impact the **personal food environment**. An example of such a program is Michigan's FRESH (Farm Resources Encouraging and Supporting Health), which J. V. Anderson et al. (2001) highlight. (For program details, see Spotlight on Michigan's FRESH program.)

Experiments in controlled settings have shown that price reductions are effective in changing food purchases (French, 2003). However, few applied research studies look at the effects of price changes in the supermarket setting. The main challenge to this type of intervention is determining whether the government, store owners or manufacturers should incur the cost of the discount (Waterlander et al., 2009). It is also unclear whether pricing strategy programs have the same impact for consumers at all income levels. Leibtag & Lynch (2007) found that low-income consumers are less likely to use coupons to reduce food costs. They found that, for cost savings, low-income consumers look for more consistent opportunities to save on food purchases, such as by switching to private label brands or purchasing cheaper brands of meat, fruits and vegetables.

The J. V. Anderson et al. (2001) study of Michigan's FRESH program found that coupons impacted consumption patterns but not consumers' attitudes toward food. However, the program's education component did yield changes in consumers' attitudes and better understanding of nutrition. This study concludes that the combination of both decreasing the price and educating the participant achieves the maximum impact. The 2010 experimental purchasing study by Epstein et al. found that consumers of all income levels purchased healthier food items when the cost of unhealthy items increased due to taxes.

Paine-Andrews et al. (1997) reviewed Kansas LEAN—the earliest study in the category—which encouraged supermarket consumers to taste low-fat foods and provided coupons for the same low-fat items. The study did not measure the coupon's impact alone and did not measure change after the first purchase; it was designed to test whether the strategy of reducing the risk of experimenting with new foods merits further testing. It showed the greatest increase in sales for low-calorie desserts and salad dressings—items that consumers were more apt to sample in the store.

7. *"The 1996 Michigan Behavior Risk Factor Survey indicated that only 26.4% of women with income less than $10,000 eat fruit and vegetables 5 or more times a day" (J. V. Anderson et al., 2001, 195).*

SPOTLIGHT

Michigan's FRESH (Farm Resources Encouraging and Supporting Health) program (*Pricing Intervention*) | (J. V. Anderson et al., 2001)

Summary: The FRESH program provided coupons to a targeted population of selected participants: 564 low-income women who were part of the USDA's Special Supplemental Nutrition Program for Women, Infants and Children (WIC) or received Community Action Agency Commodity Supplemental Food benefits in Genesee County, Michigan. Prior research documented the population as having a diet with limited fresh fruits and vegetables.[7] The FRESH program recruited participants at the Community Action Agency offices during the benefit recertification process. Participants received either: (a) $20 in coupons they could exchange for eligible foods at farmers' markets; (b) a 20-minute education session; or (c) both. Participants were pre-tested and tested again two months later. The study found positive results: "Maximum impact on the combined attitudinal and consumption behavior outcomes was achieved through the combination of both components—education and coupons." (J. V. Anderson et al., 2001, 201). The study did not track participants after the initial two months. Anderson et al. recommended further testing of the model on a broader basis. A study currently underway of the 2010 Healthy Incentives Pilot (HIP) program in Hampden County, MA, may provide that opportunity.

Intervention Type: **Community-Wide Interventions**

			S	L
Barrier	Information	**Evidence**	+ -	Ø

Food Environment: Population

Research Farquhar et al., 1990; Luepker et al., 1994; Croft et al., 1994; Carleton et al., 1995; Reger, Wootan & Booth-Butterfield, 1999; Reger, Wootan & Booth-Butterfield, 2000;Weaver, Poehlitz & Hutchison, 1999; Stables et al., 2002; Hinkle et al., 2008

Programs The Stanford Five-City Project; Minnesota Heart Health Program; South Carolina Cardiovascular Disease Prevention Project; 5 A Day for Better Health; "1% or Less"; Adelante Con Leche Semi-descremada 1% (an adaptation of the "1% or Less" campaign)

Community-wide intervention programs focus on educating and informing the general population through public service announcements (PSAs), billboards, educational materials or other forms of media. The notion is that, to counteract the many unhealthy marketing messages in both the consumers' **personal** and the **population food environments**, community-wide intervention strategies promote an alternative message. The strategy provides healthy lifestyle messages and encourages the public to purchase healthier food items and make a wide range of behavioral and dietary changes, often through the same forms of media that carry the unhealthy messages. The strategy often requires that the recipient distinguishes the healthy behavior message and interprets how to apply the data.

Most of the research in this area was supported by grants awarded by the National Heart, Lung and Blood Institute between 1978 and 1980, and most entail longitudinal studies of behavior change.[8] These studies found that public information campaigns done in tandem with targeted program strategies may be useful in supporting behavioral change in some individuals, but the results have not shown significant change in the health of the overall community (Farquhar et al., 1990; Luepker et al., 1994; Croft et al., 1994; Weaver, Poehlitz & Hutchison, 1999; Stables et al., 2002).

Community-wide strategies do not necessarily focus on a message to a specific subgroup, and therefore they tend not to culturally adjust to the dietary habits of various populations. When communities are blanketed with general messages to change their dietary and shopping behavior, the research showed no evidence of impact. The "1% or Less" (milk) campaign that Reger, Wootan and Booth-Butterfield (1999, 2000) and Wootan (2005) studied

8. *The Luepker et al. (1994) study was a 13-year research and demonstration project.*

is an exception, as it showed significant change in behavior. However, Hinkle et al. (2008) later found that the campaign did not achieve sustained change for Latino/Hispanic communities.

SPOTLIGHT

"1% or Less" Campaign (*Community-Wide Intervention*) | (Reger, Wootan & Booth-Butterfield, 1999 and 2000; Wootan et al., 2005; Hinkle et al., 2008)

Summary: While most community-wide interventions include multiple healthy eating messages, this program focused on a single message: reducing calories and saturated fat consumed via milk. The campaign focused on milk since "high-fat milk contributes significant amounts of excess calories and saturated fat to the American diet" (Wootan et al., 2005, 1). The message is also consistent with the 2010 USDA Dietary Guidelines, which specifically recommend switching to fat-free or low-fat (1%) milk as a key calorie-reduction strategy for adults (USDA & DHHS, 2011).

The program was tested in various cities (Wheeling, WV; East Los Angeles; and New York City). The primary methods of communication included combinations of public advertising, public relations and/or community-based educational activities. The study found that the campaign was most effective when the strategy combined paid public advertising and public relations activities. In these three locations, the increase in the sale of low-fat milk was significant, and the program continued to impact purchasing habits two years after the paid public relations activities had ended.

Intervention Type: **Health Care Provider Interventions**

			S	L
Barriers	Biology and Information	**Evidence**	+ -	Ø

Food Environment	Personal
Research	Campbell et al., 1994; Delichatsios et al., 2001; O'Halloran et al., 2001; Calfas et al., 2002; Appel et al., 2011
Reviews	Kreuter & Strecher, 1996; Ferguson et al., 2010; Waring et al., 2009; Rimer & Kreuter, 2006
Assessment Tools	Health Risk Assessment; Tailored Health Communication; Computer-Based Assessment; Patient-centered Assessment and Counseling for Exercise plus Nutrition (PACE+)

Surprisingly, health care providers do not typically diagnose obesity and rarely offer nutritional counseling. Waring et al. (2009) found that, even with patients with documented obesity, physicians made referrals for nutritional counseling only 24% of the time. Physicians cite several reasons for lack of intervention, including lack of confidence in their ability to counsel patients on how to lose weight, lack of reimbursement for these services, lack of effective treatments and concern that weight cycles (repeated gaining and losing of weight) can be futile or more dangerous to the patient than no action at all (Foster et al., 2003). Other barriers include: (a) the limited time available for doctors to assess and discuss eating habits; (b) concerns doctors expressed about a lack of knowledge on what specifically to recommend to patients; and (c) the attitude that obesity is more a behavioral problem than a medical issue that is appropriate for physician-prescribed action (Foster et al., 2003, 1176; Ferguson et al., 2010, 7).

Some studies have tried to assess ways that primary care practice settings can be a means for delivering direct or indirect intervention services (by those other than the primary care provider). These programs used different means to engage and educate patients on how to improve or adopt new lifestyles: (a) providing information prior to and during visits to the doctor's office (Delichatsios et al., 2001; O'Halloran et al., 2001), (b) using a form of self-assessment such as Health Risk Assessment, or (c) using questionnaires or tailored health communication (THC) (Campbell et al., 1994; Calfas et al., 2002; Kreuter & Strecher, 1996; Rimer & Kreuter, 2006). These stage-of-change assessment tools help to identify psychosocial barriers to behavioral change—barriers that are significant in healthy eating interventions.

An HRA is also known as a Health Risk Appraisal. THCs are also referred to as enhanced HRA programs or Computer-Based Assessment (CBA) programs.

An HRA questionnaire gathers data about each individual's behavior (smoking, alcohol and food consumption patterns) as well as age, weight and overall health. Based on these responses the HRA tool calculates the person's risk of being diagnosed with certain health conditions and an estimated lifespan. Commonly, HRAs include an extended questionnaire, a risk calculation score and some form of feedback (i.e., either a face-to-face meeting with a health advisor or a computer-generated report). Originally administered by health care providers, HRA questionnaires can now be found on hospital websites, in wellness centers or in doctor's offices.[9] HRAs typically lack direction on the specific actions the person should take in relation to the risk calculation score. Kreuter and Strecher (1996) cite research showing that, while HRAs were widely used throughout the 1980s in many different environments, they proved largely ineffective, noting that "one explanation for this apparent failure has been that HRA does not provide individuals with sufficient information about how to make the behavior changes it recommends" (97).

THC programs attempt to provide respondents with the individualized feedback based on their current diet and willingness to change. They seek to mimic the process of "person-to-person" counseling and recognize that individuals vary in their motivation. Researchers have hypothesized that this approach is more effective than general nutritional education, because messages are tailored to each individual's behavior, needs and beliefs (Aldridge, 2006; Rimer & Kreuter, 2006). Whereas the first two approaches communicate information at a single point in time, THCs attempt to engage the participant at various intervals and provide additional direction based upon the individual's adoption of past recommendations. Kreuter & Stretcher's (1996) study of a CBA program documented behavioral change for up to six months and found that 18% of participants sustained a behavioral change related to physical activity and fat consumption (102).

Thus, collective research has shown inconsistent results on whether nutritional counseling in primary care practices can be an effective first step to behavioral change. Delichatsios et al. (2001) showed that the combination of health provider endorsement and motivational counseling could, in the short term, increase patients' intake of fruit and vegetables. O'Halloran et al. (2001) showed small results for patients already living a healthy lifestyle, but no changes for most patients, while Campbell et al. (1994) found little change in patients' overall behavior but some reduction in the consumption of fatty foods. The study by Appel et al. (2011) focused on the influence of counseling on overall lifestyle changes, such as healthy eating and increased exercise, in individuals with a BMI over 36.6 (p. 1959). Appel et al. showed positive results after two years for both treatment groups: those receiving in-person case management and those receiving coaching services via the web and telephone. Lastly, the Calfas et al. (2002) study showed positive results for all participants, with the most significant change in those who had defined clear, specific personal goals.

9. *See http://cvdrisk.nhlbi.nih.gov/calculator.asp for an example.*

SPOTLIGHT

Patient-centered Assessment and Counseling on Exercise Plus Nutrition (PACE+)
(*Health Care Provider Intervention***) | (Calfas et al., 2002)**

Summary: The PACE+ program began with patients completing an assessment of their physical health and willingness to change via a computerized kiosk at one of four primary care practices in San Diego: two serving primarily white, high-income patients and two serving individuals of varied racial and socioeconomic backgrounds. The program collected data on patients' eating habits and readiness to act on new information. The computer generated tailored responses and then guided patients to a point of action and into the mode of maintaining healthier eating habits and levels of exercise.

The assessments took place in a physician's office, on the day of, and prior to, a scheduled visit. The survey asked patients to identify one physical activity and one nutritional behavior they could change to improve their health. Patients then reviewed the results of the assessment during the visit and discussed them with their health care providers. Prior to the beginning of the program, health care providers received 30 to 60 minutes of training on how to counsel patients.

After the visit, patients received varying levels of ongoing counseling to encourage them to increase their goals or to sustain the activities. Some received communication via the mail alone, others received infrequent mail and phone calls, and still others received frequent phone calls. Designed as a pilot, the program lasted four months. This study measured short-term outcomes and is one of the first evaluations of computerized assessment tools in a health care setting. The model addresses some concerns doctors expressed in prior studies about barriers to interventions delivered in health care settings. While patients and doctors reported high levels of satisfaction with the experience and positive behavioral change, those who were most specific in defining their actions at the outset were also those who sustained the changes over time.

Intervention Type: **Peer-Led Education Programs**

			S	L
Barriers	Biology and Information	**Evidence**	+ -	Ø
Food Environment	Personal			
Research	Cox et al., 1996; Marshak, De Silva & Silberstein, 1998; Buller et al., 1999; Haire-Joshu et al., 2003			
Programs	NC Expanded Food and Nutrition Education Program; Head Start/ Parents As Teachers (PAT); High 5, Low Fat (H5LF)			

Peer-led education programs seek to engage people through existing social networks and to increase the collective adoption of healthy behavioral changes. Programs are designed to impact the **personal food environment** by providing social support, helping individuals overcome barriers to healthy behaviors and reinforcing decisions to change existing habits. As with church-based programs, at the heart of peer-led programs is the assumption that engaging people through their own social networks increases their likelihood of adopting behavioral change. Buller et al. (1999) hypothesize that being educated by peers adds a level of social support that "helps individuals to overcome barriers to healthy behaviors and reinforces their decisions to adopt healthy behaviors" (1492). The Cox et al. (1996) study offered a retrospective review of participants recruited from the NC Expanded Food and Nutrition Education Program,[10] who participated in an 18-lesson, 6-month educational series focused on reducing the risk of cancer. Cox et al. showed some self-reported changes during the series in intake and consumption patterns of certain foods. No data was collected after the end of the series.

Both Marshak, De Silva & Silberstein (1998) and Haire-Joshu et al. (2003) studied nutrition education programs with families enrolled in the Head Start and/or Parents As Teachers (PAT) programs; the studies occurred in San Bernardino, CA, and St. Louis, MO, respectively. In the Marshak, De Silva & Silberstein study, the program focused on increasing the knowledge and skills related to low-cost eating and showed modest improvements in knowledge of both low-cost and low-fat methods. Haire-Joshu et al. studied the High 5, Low Fat (H5LF) program—which taught parents how to model healthy behaviors for their children—and assessed behavioral changes for subsets of the participants. They demonstrated that, within the intervention group, the program was most successful at reaching families whose members had a high body mass index and poor diet at baseline. While some of the programs showed promising behavioral changes, the short-term results are inconclusive and the studies did not follow participants for an extended period to assess long-term changes.

10. *"EFNEP's mission is to improve the health of limited resource youth and families with young children through practical lessons on: basic nutrition and healthy lifestyles, resource management and food safety." See http://www.ces.ncsu.edu/EFNEP/about.html#what_is_efnep*

SPOTLIGHT

High 5, Low Fat (H5LF) Program (*Peer-Led Education*) (Haire-Joshu et al., 2003)

Summary: The H5LF program for African American parents was developed in partnership with Parents As Teachers (PAT) and designed to test a dietary intervention that could then be adopted nationally. The curriculum sought to teach parents how to adopt healthier eating habits (when shopping and preparing food) and model positive dietary behaviors for their children. The program encouraged participating parents to increase their own consumption of fruits and vegetables. Parents received 10 bimonthly newsletters with information on the topic and tips for role modeling good eating behaviors and how to interpret nutrient labels on foods. The partnership with PAT ensured that the workshop sessions and the materials were culturally relevant and appropriate.

In the Haire-Joshu et al. (2003) study, PAT parent educators recruited African American parents from the 12 school districts in the St. Louis area; 98% were women and 55% were single. This program proved effective in helping all participants to increase consumption of fruits and vegetables and reduce caloric intake from high-fat foods.
This research is particularly important because it measured the effectiveness of the intervention for participants with different characteristics at baseline. Participants with a high BMI and poor diets at baseline were significantly more likely to report changes in behavior than were participants with a lower BMI and more balanced diets. This study did not follow participants past seven months, so it is unknown whether they maintained long-term behavioral changes. However, it focused on the valuable skills of economic choices, healthy food selection and food preparation and succeeded in educating parents to serve as effective role models. The Research-tested Intervention Program website of the National Cancer Institute highlights the program as a model.

SUMMARY OF FINDINGS

This literature review highlights a variety of program models that seek to change purchasing behavior and encourage healthier food choices—some through the use of technology and others through the influence of peers and environment. There are a number of findings based on the research in the field:

- **Church-based programs can be effective at engaging participants and demonstrating short- and long-term change.** They seek to influence the **personal food environment**, and although the materials are secular, these programs communicate information within a social context that already promotes self-regulation and personal growth. When the programs communicate the message to adopt new behavior through many activities and forums (church events, sermons, bulletins and posters), the group affirms and operationalizes the primary message, making it easier for the individual to conform to the new behavior. All of the studies and additional summary reviews demonstrate and affirm positive findings for church-based programs.

- **Programs that promote a single message or single action have demonstrated positive results.** The "1% or Less" campaign was a population-wide intervention that focused on one message: switch to 1% fat or skim milk. The PACE+ program worked to influence the **personal food environment** by encouraging people to change one physical behavior and one nutritional behavior at a time. These studies demonstrate that, the more tangible the action, the greater the commitment from the individual and the more likely the participants are to follow through.

- **Programs that assess a person's state of change—either through interviews, computer-based assessments or written questionnaires—are useful for directing action over time.** Intervention strategies can effectively use questionnaires to understand an individual's current health, dietary behavior and ability to accept and use new information. Based on personal data, a participant can receive specific recommendations (which the program generates automatically) on what dietary or physical activity needs to change. Studies show that recommending actions based on an individual's state of change leads to a greater willingness to adopt new behavior.

- **Counseling programs show varying results. Researchers concluded that PACE+ was effective because it provided a single message, but they found no differences in outcomes between those who did and did not participate in counseling programs.** Alternatively, the H5LF and Eat for Life research studies both concluded that there is a connection between counseling and positive outcomes. An individual's state of change, the forum for delivering counseling services and an individual's current health condition may impact his or her ability to respond to counseling services.

- **Point of Purchase interventions show potential. These programs, such as shelf labeling and package labeling, affect the population food environment by engaging and informing consumers in a store during the shopping process.** Shoppers seem to trust that the health information the programs provide is accurate. The results of the NuVal study and the Hannaford's Guiding Stars found that sales of highly rated (i.e. healthy) items increased and remained strong one and two years after the launch of the program. There was also a corresponding decrease in the sale of unhealthy items, such as high-sugar, low-fiber cereal. However, there is no evidence to suggest that this strategy is more (or less) impactful for any particular population.

- **Isolated experiments show that cost reduction has the potential to impact food decisions. Several studies hypothesize that increasing or decreasing the price of certain food can change consumer behavior, but few programs looked specifically at the issue of price.** With respect to the Michigan's FRESH program, studies by J. V. Anderson et al. (2001) showed positive results, but the program addressed both cost and education. The USDA is funding and studying several pilot programs to incentivize shoppers to purchase healthier items. At this early stage, it is important to watch and assess systematically the impact of these programs, as they may lead to new models.

- **Technology can be an effective tool for health care providers, churches and communities to access nutritional information and receive customized personal recommendations.** Computer-based assessment programs combine questions about dietary habits with psychosocial questions (about the state of change) to suggest advice that is appropriate and culturally sensitive. This technology allows a larger number of people to access services, but it has proven most effective when the program adopts and utilizes the tool in tandem with other programs. Research suggests that the programs that focus on better eating habits and increased attention to nutrition would most likely benefit from an increased use of technology.

CONCLUSION

Given the growth of diet-related diseases as a public health risk in the United States, particularly among poor and minority populations as well as children, recent research has focused not only on slowing these rates but also on reversing the trend. Support for population-wide intervention strategies is growing in the United States, but these strategies need to be complemented with interventions that seek to also influence the **personal food environment**. Changes to the **personal food environment** require individual behavior changes and there remains some debate as to which kinds of programs bring about this change most readily. Awareness of what doesn't work and the barriers to change are also important to consider in designing new strategies.

This report is designed to help foundations, community-based organizations and policy practitioners to understand the multiple factors that influence consumer shopping habits and the multiple barriers to shopping for and eating healthy food. A number of initiatives have proven successful, and several seek to replicate and apply effective elements of programs in new contexts. New approaches are constantly emerging, and additional research is necessary to further identify what approaches are (and are not) most effective, as well as which programs have the potential to meet the needs of the diverse communities in the United States. Efforts to combine components of successful programs in new ways may also show promise.

APPENDIX

Healthy Shopping Initiatives: Not Yet Tested

Public awareness of diet-related diseases has led to a wide range of new initiatives seeking to build upon and apply components of what researchers have shown to work and not work. TRF found industry trends and programs led by community-based organizations, advocacy groups and government that demonstrate how communities are working to improve access and increase the consumption of healthy food items using elements of successful programs. This review identifies several new initiatives that have not yet been evaluated.

1. Supermarket marketing campaigns

Much of the supermarket industry has marketed itself as a "whole health" destination for many years. Some stores are marketing themselves as "healthy choice stores" by creating an environment where consumers can be educated about and have ready access to healthy food products. Examples of these programs include:

- Hannaford, a supermarket chain with stores across New England, which offers free nutrition demonstrations and classes in all stores. Topics include eating for healthy blood sugar, weight management, a healthy heart and improved prenatal nutrition.

- Blue Zones® checkout lanes, which seek to make healthy choices more convenient for shoppers. Featured in the Hy-Vee supermarket chains, the lanes include granola bars, fresh or dried fruits, nuts and water. Since the launch in 2009, Hy-Vee has expanded the program into additional stores. As of July 2013, three stores in Sioux City, IA, had new Blue Zones® checkout lanes. According to Hy-Vee:

  > The Blue Zones Project is based on Blue Zones® principles developed by Dan Buettner, National Geographic explorer and author of *The Blue Zones: Lessons for Living Longer From the People Who've Lived the Longest*. Blue Zones employs evidence-based ways to help people live longer, better lives by taking a systematic, environmental approach to well-being, which focuses on optimizing policy, social networks and the built environments where people spend their time. Brought to Iowa through an innovative sponsorship between Wellmark Blue Cross and Blue Shield and Healthways, the initiative encourages all Iowa communities to change their built environments to make the healthy choice, the easy choice.[i]

- Supermarkets—such as ShopRite, Hy-Vee and Hannaford—employ registered dietitians in some of their stores to provide private nutrition consultations to customers.

2. Financial incentives

As noted earlier, researchers have hypothesized that changing the price of certain foods may influence the foods that consumers buy. Various federal agencies continue to fund

i. *From an online press release dated 8/30/2012, retrieved from http://www.hy-vee.com/company/press-room/press-releases/spencer-certified-blue-zones-store.aspx*

pilot programs and change program guidelines to test price-based intervention strategies for both food and services. Two examples are highlighted below:

- USDA pilot program

  2010 Healthy Incentives Pilot (HIP) is managed by the Massachusetts Department of Transitional Assistance and is part of a $20 million initiative outlined in the USDA's 2008 Food, Nutrition and Conservation Act. The Economic Research Service at the USDA found that small subsidies could encourage low-income Americans to increase their consumption of fruits and vegetables. The Massachusetts program began in November 2011 and extended through April 2013. USDA is funding Abt Associates, Inc., to study whether price incentives result in short- or long-term behavioral change in the purchasing habits of low-income households. The HIP Early Implementation Report is now available on the USDA website.[ii] This preliminary report focuses on the program design, administration and operations. The HIP program was available to Supplemental Nutrition Assistance Program (SNAP) recipients and sought to incentivize recipients to purchase fresh, frozen, canned or dried fruits and vegetables. Participants received 30 cents off each dollar they spent on these items, up to a total savings of $60. Eligible participants could purchase goods at select stores.[iii] The program attempted to recruit both large grocery operators and small stores, so that the SNAP recipients had a variety of shopping options. Since SNAP is an existing targeted food subsidy program, the approach HIP uses could be beneficial if it shows results in terms of behavioral change.

- Medicaid reimbursement for obesity counseling

  In December 2011, the government announced that Medicare would pay primary-care providers to counsel obese patients on losing weight and maintaining weight loss. Adult patients whose BMI is 30 or higher are eligible for up to a year of counseling services, which include face-to-face counseling, beginning with weekly sessions and moving to bi-weekly and then monthly sessions. Those who have lost at least three kilograms (6.6 pounds) at the end of six months are eligible for six more monthly counseling sessions.[iv] Prior research studies found that one of the reasons medical professionals did not address weight issues with patients was the lack of reimbursement for their time and services (Waring et al., 2009). Within this literature review we found inconclusive findings on the effectiveness of counseling services; thus more studies on the specific format of counseling is required to examine the outcomes associated with different approaches.

3. Small-store initiatives

These programs create initiatives for existing small-scale stores to improve the quality of and expand the selection of healthy food items. Small-store strategies may be a way to support residents living with limited access to full-service supermarkets. Few studies look at the impact of healthy eating interventions conducted at small corner stores, but there are two types of interventions that target this retail channel. The first is food-industry led, in which suppliers work with store owners to improve the variety and freshness of fruits

ii. *U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis, "Healthy Incentives Pilot (HIP) Interim Report," by Susan Bartlett et al. Project Officer: Danielle Berman, Alexandria, VA: July 2013.*

iii. *For program information and guidelines, see the Massachusetts Executive Office of Health and Human Services (EOHHS) website at http://www.mass.gov/eohhs/*

iv. *Neighmond (2011). Medicare to cover weight loss counseling. [Radio transcript]. In S. Inskeep (host), Morning Edition, posted December 1, 2011. Retrieved from http://www.npr.* org/2011/12/01/142987445/medicare-to-cover-weight-loss-counseling

and vegetables. The second is nonprofit-led, which incentivizes storeowners to carry healthier foods and capture the unmet demand of shoppers. Examples include:

- Chiquita developed a natural packaging technology to keep bananas ripe seven days longer, resulting in higher margins for convenience stores. The Chiquita To-Go platform includes merchandising and handling training programs for convenience store personnel (Abelson, 2007).

- The Food Trust (TFT) Healthy Corner Store Initiative in Philadelphia partners with corner store owners to increase the availability of fresh fruits and vegetables. The effort also supports Snackin' Fresh, a social marketing campaign created by and for youth to encourage healthy snacking (The Food Trust, 2012).

- Government funded programs in San Francisco (Literacy for Environmental Justice, 2013) and Hartford, Connecticut (Hartford Food System, 2013) exemplify different models that encourage businesses to make physical improvements to focus on expanding the selection or changing the placement of healthy food items. Several of these programs also fill an important communication and marketing role, by collecting and sharing data with existing stores. The stores enrolled in the San Francisco Good Neighbor Program showed increased sales of nutrient rich, fresh foods and measured community engagement in the process (Minkler, 2010).

4. Building connections with farmers markets

Some organizations are seeking to build a stronger connection between healthy eating and the production of regional foods. Examples include:

- The Fruit and Vegetable Prescription™ (FVRx™) program, operated by Wholesome Wave, works with primary care providers, nutritionists, local farmers and low-income families with "overweight and obese children who are at risk of developing diet-related diseases, such as type 2 diabetes and heart disease" (Wholesome Wave, 2013). The program seeks to improve eating habits by looking at the current family diet and prescribing positive behavior changes. It directs families to local farmers markets where they can fill their "prescription" for fruits and vegetables. Participants and the family members are encouraged to meet with a nutritionist monthly to adjust and modify behaviors based upon monitored activity. Currently the program is available for select communities in eight states operating out of physicians' offices, health centers and hospitals.

- Organizations including Fair Food Network, Market Umbrella and Roots of Change provide additional subsidies to SNAP recipients who shop at farmers markets by matching their SNAP food dollars with an additional subsidy for eligible healthy food products. A 2013 report highlights the collective group findings, available on the Fair Food Network website.[v]

v. *Community Science, "Healthy Food Incentives Cluster Evaluation, Final Report," December 2013. Retrieved from http://www.fairfoodnetwork.org/sites/default/files/2013%20Cluster%20Evaluation%20Final%20Report_%20final_10.4.13_Dec2013.pdf*

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Catherine Califano, Associate Director

Bill Schrecker, Research Analyst

Initial research led by Dr. Ken Gross

Layout and Illustrations:

The Reinvestment Fund

April 2014

TRF has published a range of reports about food access. TRF's research publications can be found online at:

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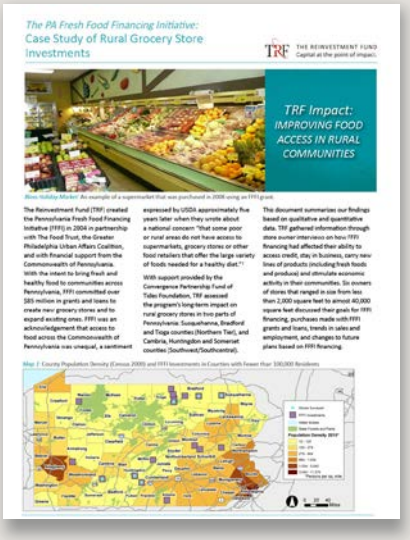
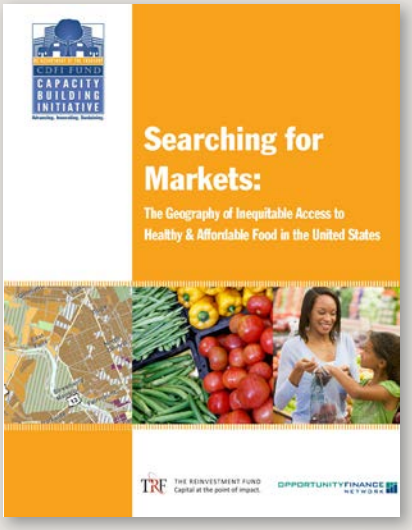


The PA Fresh Food Financing Initiative: Case Study of Rural Grocery Store Investments (2012)

The Supply Chain Matrix (2013)



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