FOOD POLICY TO PREVENT HARM OR IMPROVE HEALTH

by

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ABSTRACT

Obesity is a risk factor for major chronic diseases, making reduction of obesity a major public health goal. With approximately two-thirds of adult Americans classified as overweight, addressing the problem as an individual failing seems overwhelming and likely unproductive by itself, putting policy interventions to change the food environment at the center of public health efforts. This study examines one major government initiative—*Communities Putting Prevention to Work* (CPPW)—to better understand community food policy choices and their implications. Using prospect theory, community policy choices and their implications were examined according to community characteristics, community policy frame choices, community response, and policy passage. Prospect theory predicts that communities with less favorable health status and food environments will favor policy choices that emphasize harm reduction (loss frames) rather than health improvements (gain frames), and that these frames will affect community response. Prospect theory also predicts different effects for mandatory policies with outcomes that are certain, rather than voluntary policies whose outcomes are uncertain (certainty frame). These frames are hypothesized to have implications for community responses to policy change efforts, and ultimately to policy passage.

This study used multiple regression to analyze secondary data from a variety of sources, including US Census data, the *Behavioral Risk Factor Surveillance System* (BRFSS), the US Department of Agriculture (USDA) Food Atlas, and Centers for Disease Control and Prevention (CDC) program monitoring data. The study examined the combination of policies chosen by communities to help guide real world decisions that involve a suite of interventions.

While community characteristics did not predict loss framing, they did predict certainty frames. The percentage of mandatory policies in communities varied directly with CPPW tobacco funding (funded or not funded), rates of high blood pressure, and soda prices. These variables represent three constructs that were hypothesized to affect certainty scores: community characteristics, health status, and food environment. In addition, certainty scores predicted changes in news coverage, with higher certainty scores associated with larger increases in newspaper hits on obesity policy topics. Several non-significant findings are consistent with the hypotheses of this study, and should be examined in a larger sample with more power to detect statistically significant effects.

INDEX WORDS: Food policy, Food environment, Obesity control, Chronic disease prevention, Nutrition, Nutrition policy, Prospect theory, Framing effects

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DEDICATION

This work, and all that I do, is dedicated to my children, Noah and Lilah Lightsey, who teach me every day. Because of you, I am stretched, challenged, and overcome with joy, all of it making apparent the truth: learning is lifelong. I also dedicate this to my husband, Joseph Aczel, a giver of new beginnings and endless possibilities; and to my parents, Jeff and Barbara Lubar, who made all things possible my whole life. Endless learning and endless possibilities brought me to this place, and will take me to destinations I've not yet imagined. I'm glad I'll go there with all of you, with dad always in my heart.

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INTRODUCTION

Statement of the Problem

The obesity epidemic is becoming a permanent fixture of our nation's public health. Obesity is a risk factor for major chronic diseases such as heart disease, stroke, cancer, diabetes and arthritis, making reduction of obesity a major goal of public health (CDC, 2011a). Other dietary risk factors, such as excessive sodium intake and trans fat consumption, also have earned public health attention for their association with heart disease and stroke (CDC, 2011a). Poor diet and lack of physical activity have been blamed for 365,000 deaths per year, making obesity the second leading "actual" cause of death, second only to tobacco use (Mokdad, Marks, Stroup, & Gerberding, 2005).

A heated debate about appropriate responses to obesity has ensued, particularly as it pertains to food policy. While some traditional views (and much of the food industry) have held obesity to be an individual problem of willpower, increasingly food and physical activity environments have been at the center of efforts to improve health (Brownell et al., 2010). With approximately seven in ten adult Americans classified as overweight (NCHS, 2013), addressing the problem as an individual failing seems overwhelming and likely unproductive by itself. The prevalence of obesity for adults aged 20 to 74 years increased by 19.7% percentage points for men and by 19.1% percentage points for women between 1976 and 2008 (Flegal et al., 2010), a time during which the food environment changed radically (Larson & Story, 2009). This has led many in public health to examine food environments as a population-based strategy to promote

healthy weight. Supporting the argument for policy interventions, *The Australian Assessing Cost Effectiveness (ACE) in Obesity* (Haby et al., 2006) and *ACE in Prevention* strategies (Vos, Carter et al., 2010) found that the most cost effective interventions in obesity are policies: unhealthy food and beverage taxes, front of pack nutrition labeling, and reduction of junk food advertising to children.

Public health approaches to chronic disease prevention and control are increasingly embracing policy change tools (Frieden, 2010). CDC furthered this movement in 2010 by initiating *Communities Putting Prevention to Work* (CPPW), a community-based chronic disease prevention program relying extensively on evidence-based policy implementation, funded by the *America Recovery and Reinvestment Act* (Bunnell et al., 2012; CDC, 2011b). CPPW sites were funded for two years to implement evidence-based MAPPS strategies (Media, Access, Point of decision information, Price, and Social support services) that were "expected to have lasting healthful effects in the years following the end of the two-year funding period" (CDC, 2011b). While the policies themselves are considered evidence based, there has been little examination of the effects of the policy change process on the communities and individuals involved, or the combination of multiple policies. The core action of these policies is well defined, but core actions can be framed either as preventing harms to health (e.g., reducing access to unhealthy foods) or improving health (e.g., increasing access to healthy foods). The choice of frame has not been studied, nor have the effects of those choices. This unprecedented investment in policy change holds much promise, and should be studied to examine the processes and outcomes that unfold. Understanding the pathways that lead to successful policy implementation has potential to better target these crucial public health efforts in the future.

Policy can be defined in various ways, and for purposes of this study, "policy" will rely on the definition offered in De Leeuw (2007), often cited in health promotion research: "the expressed intent of government to allocate resources and capacities to resolve [an] expressly identified issue within a certain timeframe." This definition encompasses the interventions used in the CPPW program to change food environment and behaviors. In the language of the CDC program, local governments were directed to pursue policy, systems, and environmental change (PSE) (Bunnell et al., 2012), all of which would fall under this policy definition when pursued by governmental public health entities, as was the case in funded communities. The strategies recommended fall within the definition of policy instruments found in Bemelmans-Videc, Rist, & Vedung (1998): "a set of techniques by which governmental authorities wield their power in attempting to ensure support and effect social change" (Bemelmans-Videc et al., 1998, p.3).

While CPPW is a public health program, it is consistent with the fundamentals of macro practice social work, defined as "professionally guided intervention(s) designed to bring about change in organizational, community, and/or policy arenas" (Netting, Kettner, McMurtry & Thomas, 2012, p. 2). Food policy change takes a person-in-environment approach, and this study extends that to include the interplay between community health and economic status, policy efforts and public discourse, incorporating core to social work values of social justice, empowerment and self-determination.

Communities addressing obesity chose, framed, and sought to pass and implement food policy changes that affect eating choices among individuals. While these efforts are local, the food environments they seek to change are largely the product of federal agricultural, production, and nutrition policies, making local action a necessary piece of the public health response to the current US food system. Initially aimed at increasing production to feed a growing and hungry

population, US food policy has shaped the American diet, with broad implications for public health and government action. In order to provide a context for this study, the chapter briefly reviews the history of food policy in the United States before turning to the specific aims and research hypotheses of this study.

Evolution of Food Policy in the US

To examine the path food policy has taken in the US necessitates two histories: production policy and nutrition policy. To be sure, these histories are intertwined, but the fact there are two paths is precisely the reason that policy tools are needed to change America's food environment. For much of American history, agricultural and nutritional goals were aligned: increase production to increase consumption. During these times, there was little question of the proper role of government. Today, however, our nutritional diseases are the products of too much rather than too little food, and too much of the wrong foods. Yet our agricultural policies are entrenched for the goals of the last century: produce as much food as cheaply as possible. With changes in agricultural production that led to many fewer Americans involved in agriculture, the food industry defines what is desirable to eat, paving the way to a diet focused on energy-dense products that would not have been recognizable as "food" in the 1800s (Harris, Pomeranz, Lobstein, & Brownell, 2009). While these production policies continue, abetted by powerful industrial interests, efforts to improve the American diet focus on trying to convince citizens to eat less of the very products that production policy makes most affordable, appealing and convenient. Government efforts at changing the diet, while dwarfed by the massive system of federal agricultural supports, have engendered heated debates about the role of government in food choices.

The role of government in agriculture and food systems is deeply embedded, with federal policies largely determining what is grown, processed, and eaten. Agricultural policies also have enormous implications for the health of the environment, but this review will focus on diet-related health impacts of the American food system. These federal actions currently maintain a power structure developed from goals of maximum production and minimum pricing, with a firm basis in classical economics. While local policy can't overcome these national forces alone, public health efforts are underway at all levels of government.

American farm policy—shaping the food supply. The history of the United States is bound to the history of food production. It was the search for cheaper spices that led European explorers to the New World, and the first fruits of this discovery were not actually fruits, but sugar, molasses and rum. Agricultural policies were a major cause of the American Revolution, and policies that supported farming the land of the American frontier solidified the American Expansion (Rasmussen & Bowers, 1992).

Because farming carries inherent risks from unpredictable weather and market conditions, there has long been a consensus that government policies should ameliorate these risks (Tillotson, 2004). In his 1796 Annual Message to Congress, George Washington expressed this sentiment: "It would not be doubted that with reference either to individual or national welfare, agriculture is of primary importance…Institutions for promoting it grow up, supported by the public purse; and to what object can it be dedicated with greater propriety?" (as cited in Tillotson, 2004, p. 627). Dedication to support agriculture was due in large part to the role of food surpluses in building an industrial economy. Food surplus was essential to the growing United States, and the goal of early agricultural policy—indeed the continuing goal of the US food system—is the most efficient production of the maximum amount of food.

The foundational work of economist Adam Smith puts agricultural productivity at the root of building national wealth, and therefore at the root of the capitalist economic system. The ability to produce a food surplus was needed to create the division of labor that produced all other goods and services in the economy. The capacity to sell a surplus was needed to allow farmers to also be consumers. Smith argued that agricultural growth led to economy-wide growth of total and per-capita output (Brewer, 2005). In the *Wealth of Nations,* published the same year the United States was established, Smith stated "when by the improvement and cultivation of land the labour of one family can provide food for two, the labour of half the society becomes sufficient to provide food for the whole. The other half…can be employed…in satisfying the other wants and fancies of mankind" (as referenced in James, 2006, p. 430).

In tracing how the US government executed support for agriculture, three overlapping movements were critical to setting government obligations. From 1785-1890, policy focused on land distribution and expansion of settlement through private farms, favoring the agrarian ideal and establishing the obligation of the federal government to support an independent family farm system, which continues to be a goal of public policy (Effland, 2000). The second policy movement formed to expand productivity, with the advent of federal support for agricultural education and scientific research to support commodity crops, paving the way for a food supply that could be produced on a large scale, stored easily, and shipped over long distances, also increasing availability of animal-sourced food (Effland, 2000). The policies of this period established a federal obligation to support increases in agricultural productivity. The third movement focused on price assurances for producers. Beginning with the New Deal, the federal government instituted price supports through supply controls (Effland, 2000).

While the agrarian ideal still holds sway in American culture and policies, since World War I, farming has moved toward consolidation and industrialization, making agriculture more like other economic sectors (Effland, 2000). Yet federal policy still provides extensive support for this new era of farming. Subsidies once meant to support family farms now end up increasing the profits of agribusiness (Popkin, 2011). In addition to direct agricultural supports, the federal government's trade policies, tax policies, and investment in transportation and other infrastructure made modern agriculture possible and profitable (Tillotson, 2004). American agriculture is the biggest industry in the world (Kessler, 1995), and often seen as the most politically powerful business sector in the US (Tillotson, 2004).

The goal of supporting the small, independent farmer may not have been achieved, but the production goals of US agricultural policy have been wildly successful. These policies led to constantly increasing the amount and efficiency of commodity production (Tillotson, 2004). These goals persist, despite market saturation and changing dietary needs of Americans.

The historical path of American agricultural policy set for the following government obligations:

1. To support the development of wealth by growing the economy through abundant and affordable food supplies;
2. To protect farming from inherent risks due to weather and markets;
3. To support an independent farm system, based on the agrarian ideal;
4. To increase agricultural productivity.

So, since the Civil War, US government policy has shaped our food system, leading to what is now often called the "Western Diet" (Popkin, 2011). The history of government telling us what to eat explicitly is somewhat shorter, beginning with protection from fraud and

continuing through today's policy approaches to the obesity epidemic. In the modern era, powerful commercial interests buffet this system.

Nutrition policy—influencing demand. Unlike the complex policy structure that governs the food system, efforts to combat the negative effects of the western diet (health, environmental, ethical, labor) have been less successful and highly controversial. As nutritional science was changing, a century of policies supporting cheap and abundant animal products and basic cash crops, abetted by the growing food manufacturing and marketing industries, had shifted Americans dietary preferences to animal-sourced food and refined carbohydrates (Popkin, 2011), a combination that nutrition science now shows is costly and deadly.

While the American food system was being firmly established in national agricultural production policy, nutrition science was just beginning. Since its establishment in 1862, the US Department of Agriculture (USDA) had been charged with a dual mission: to ensure a safe and reliable food supply, and to diffuse information on subjects connected with agriculture, which was interpreted to include providing dietary advice (Nestle, 2007). Research-based nutrition advice has gone through several phases since the 1800s. From the 1890s through the 1960s, nutrition advice was to eat *more*, first, of macronutrients, such as protein, and later of micronutrients. With the discovery of vitamins, nutrition advice emphasized eating a variety of foods, which, along with fortification of grains, led to the virtual elimination of micronutrient deficiency diseases in the US. Beginning in the 1950s, the advice to eat more began to be questioned, as science pointed to excess saturated fats as a major cause of heart disease. In the era beginning in 1969, modern nutritional advice to "eat less," has become a carefully negotiated political process, balancing interest of science, health and industry. Often, what is lost is clarity.

Both through elimination of nutrition deficiency diseases and through prevention and control of infectious diseases, American life expectancy increased by 62% over the twentieth century, from 47.3 years in 1900 to 76.8 years in 2000 (*CDC-DPHAT*, 2011). With this increase, public health attention turned to other causes of morbidity and mortality, as more and more Americans were suffering from chronic diseases such as heart disease, diabetes, and cancer. By the 1950s, scientists began to find links between dietary excess and these diseases (Schaffer, 2002). These links were first seen in soldiers in the Korean War, "piqu[ing] the interest of nutrition scientists, who began seriously to consider the potential negative health effects of foods previously endorsed unequivocally for their abundance of micronutrients" (Schaeffer, 2002, p. 384). These discoveries were bolstered by the historical observation that the rich succumbed to heart disease more frequently than the poor, perhaps based on their high-fat diets. Evidence mounted of the links between saturated fat and heart disease, leading to calls to reduce dietary fat, beginning in 1958 with the statement of the National Health Education Committee. Meanwhile, researchers were also finding a link between cancer and dietary fat (Schaffer, 2002).

A national outcry following investigations into hunger in the US led to establishment of *US Senate Select Committee on Nutrition and Human Needs* in 1967. While supporting the "eat more" message needed to address hunger through increased government food assistance, under the leadership of Senator George McGovern, the committee began attending to the problems of excess, shifting the public policy debate from preventing deficiencies to clarifying implications of diet for health and chronic disease (Kessler, 1995). President Nixon's 1969 White House Conference on Food, Nutrition, and Health included a panel on the "health problems of adults in an affluent society" (Nestle, 2007). A series of reports and hearings led to the committee's 1977 report, *Dietary Goals for the United States*, which for the first time issued nutrition

recommendations that were anathema to the food industry: *eat less* fat, cholesterol, sugar and salt. And the report named names: this meant reducing the intake of meat, eggs, and high-fat dairy (Nestle, 2007).

These deliberations marked the turning point from a national nutrition policy to combat undernutrition to one concerned with overnutrition: the science moved from "eat more" to "eat less." By the late 1970s, the government role in the food system was a house divided. Guidelines to eat less animal-sourced food were issued at the same time that Congress passed laws to aid marketing these exact same products to consumers. The history of the dietary guidelines is well documented (cf., Nestle, 2007; Davis & Saltos, 1999; Watts, Hager, Toner, & Weber, 2011), and for purposes of this review, the important point is that "eat less" appeared in a federal document only one time after the initial 1977 Senate report: in the *Healthy People* goals issued by the Department of Health, Education, and Welfare (DHEW) in 1979. As the National Cattlemen's Association spokesman told Senator Bob Dole in the hearings that followed the 1977 report (hearings that lead to the revised, second edition), "decrease is a bad word, Senator." (W. Finney, as cited in Nestle, 2007, p. 41).

By now, the obesity epidemic and the rise in related chronic disease are well documented, although not entirely undisputed. Obesity is a risk factor for major chronic diseases such as heart disease, stroke, cancer, diabetes and arthritis, making reduction of obesity a major goal of public health (CDC, 2011a). Other dietary risk factors, such as excessive sodium intake and trans fat consumption, also have earned public health attention for their association with heart disease and stroke (CDC, 2011a).

The history presented illustrates how the dietary roots of obesity epidemic came to be. Currently, while the US public health system invests in promoting fruit and vegetable

consumption (cf., More Matters, http://www.fruitsandveggiesmatter.gov/), these are precisely the foods most likely to be underfunded in relation to their economic benefit (Alston, cited in Popkin, 2011). Fruits and vegetables are largely unsubsidized, with prices substantially increasing while the cost of meat has gone down. Junk foods are cheaper than healthy foods, due to subsidies for corn, soy, and sugar production (Popkin, 2011). Both the political power of the food industry and the dietary preferences they encourage continue to promote exactly the wrong foods for promoting health.

Government Role in Food System Change

Increased public health attention to obesity and related chronic diseases has led to a heated debate about appropriate responses, particularly as it pertains to food policy. The history presented here paints a very different picture of the forces that produce the US food system and the American diet than those who see obesity as a problem of individual will power—and there are implications for potential remedies. Viewed through this lens, it is impossible to see government intervention as novel. US policy has, in fact, created our food environment since the inception of the nation. During the era of alignment between agricultural and nutritional policy, the role of government in the food system went unquestioned. Now, with the powers of the food industry often kept behind closed doors, the main debate about food policy is whether the government can "tell us what to eat." As stated by Marion Nestle, "[t]he US government has been telling people what to eat for more than a century, and the history of such advice reflects changes in agriculture, food product development, and international trade, as well as in science and medicine" (Nestle, 2007, p. 31).

Whether the historic role of the US government in the food system is proper may be a matter of philosophical debate. Yet, as this review describes, the government has obliged itself

to a primary role in the food system. Government intervention can be justified for a number of reasons, including social and distributive justice goals. Perhaps the most compelling argument for government intervention based on the role of classical economics in this history is correction of market failures. Putting aside the environmental damage created in the food production chain, the health and economic damage are still considerable. The costs of obesity, poor nutrition, and related chronic diseases can be quantified in terms of longevity, health, employment, and productivity. McCormick, Stone, et al. (2007) relate these costs to the four main categories of market failure that justify government intervention: externalities, imperfect information, vulnerable individuals and demerit goods, and time-inconsistent preferences (McCormick & Stone, 2007).

1. Externalities. While people may be free to choose diets that make them unhealthy, there are implications for all of society. Costs to the health care system are in part born by those who pay insurance premiums and through taxpayer support for medical costs and public health programs. Reduced worker productivity also has implications for the US economy.
2. Imperfect information. Smith, Chouinard & Wandschneider (2011) argue that the food industry makes quality verification impossible for the American consumer, furthering an observation that led to creation of the US food safety system. They argue that the food market outcome "is the product of an asymmetric information problem that has been exacerbated historically by the strategic actions of food producers" (Smith et al., 2011, p. 240).
3. Vulnerable individuals and demerit goods. Smith et al. (2011) further identify the "lemons equilibrium," in the food market, based on three factors: low quality foods

being less costly or more profitable to produce and sell; consumer interest in quality; and quality being largely unobservable to the consumer.

4. Time-inconsistent preferences. This argument holds well for children's diets, where children are not likely to think in terms of long-term consequences and have less control over their food choices. However, behavioral economists acknowledge the irrational food preferences of adults and seek policy solutions to improve the quality of individual choices (Brownell et al., 2010; Just & Payne, 2009).

National public health advocacy efforts are directed at the food supply policies that created our national food environment. On the local level, communities are creating healthier local food environments, sometimes with the support of federal funding. A prominent example is the Center for Disease Control and Prevention (CDC) *Communities Putting Prevention to Work* (CPPW) program, a community-based chronic disease prevention program relying extensively on evidence-based policy implementation, funded by the *America Recovery and Reinvestment Act* (2011b). CPPW sites were funded for two years to implement evidence-based MAPPS strategies (Media, Access, Point of decision information, Price, and Social support services) that were "expected to have lasting healthful effects in the years following the end of the two-year funding period" (CDC, 2011b). This kind of federal investment helps to correct the distorted food system that currently drives American dietary patterns and serves to create a movement for policy change at the local, state, and federal levels. Combating entrenched political interests of the food industry will take a formidable force, and engaging communities in making change will be necessary, if not sufficient, for reform.

Since its very inception, the US government has been telling Americans how to eat. There is no disentangling that impact from today's debates about food policy. Americans

cannot, through will power and personal responsibility, combat 200 years of government intervention. Policy change must be part of the solution.

Importance of the Topic

Given the government role in creating the American diet, it is reasonable that the government now seeks to play a role in improving health through food policy. Questions of the appropriate role of government are addressed above, but if a role for government is justified, what should government do? A number of studies examine the effectiveness of policy tools to improve nutrition and reduce obesity, with a growing evidence base for population-based nutrition strategies (Brownell & Frieden, 2009; Faith, Fontaine, Baskin, & Allison, 2007; Milstein, Homer, Briss, Burton, & Pechacek, 2011; Miner, 2006; Pomeranz, 2012).

Evidence for nutrition interventions included in the CPPW MAPPS strategies vary from randomized trials of specific policies (cf., Perry et al., 2004) to qualitative reviews of the literature (cf., Glanz & Hoelscher, 2004), to correlational evidence for environmental influences (cf., Moore, Diez Roux, Nettleton, & Jacobs, 2008), to extrapolation of individual interventions to a population (cf., Sacks et al., 2001). While a full update and review of evidence for these strategies is beyond the scope of this study, the evidence supporting these strategies varies in terms of validity and generalizability. Still, a growing body of evidence for each intervention waxes.

Furthering the argument for policy interventions, The *Australian Assessing Cost Effectiveness (ACE) in Obesity* and *ACE –Prevention* studies found that the most cost effective interventions in obesity are policies: unhealthy food and beverage taxes, front of pack nutrition labeling, and reduction of junk food advertising to children (Haby et al., 2006; Vos et al., 2010).

Evaluating each potential environmental change separately is a necessary first step, and well suited to traditional evaluation research methods. However, the CPPW program requires communities to undertake two endeavors not guided by the existing literature:

1. Tailor evidence-based actions to the policy environment of an entire jurisdiction. Most experimental evidence is limited to certain organizations or study populations, and evidence based on jurisdiction-wide action is difficult to generalize to other localities. For example, New York City's food policies have been closely watched and studied, but most localities are not comparable to the nation's largest city.
2. Pursue a number of environmental and policy changes simultaneously, in a limited time period. Few studies examine this element of implementation.

This investment of over $250 million in community policies to prevent obesity can shed light on how jurisdiction-wide, multi-faceted food policy interventions are designed, evolve, and ultimately succeed or fail in communities. In designing the CPPW Initiative, CDC had little evidence to justify frames for environmental interventions that engendered controversy; for example, while price sensitivity has been established, taxation as a method for increasing price has less evidence, leading to conflict over whether evidence supports increased taxes. In tobacco control efforts, such policy options have been carefully studied and supported by evidence, driving great advances in public health (CDC, 2007). Examining framing of food policy could contribute to similar advances in nutrition.

Aims of the Study

Given the unique investment and research opportunity, this study aims to answer questions about comprehensive food policy change efforts. The existing evidence for each stand-alone intervention is often devoid of contextual factors, including whether the policy is

framed as preventing harm or promoting health, and whether the policy delivers certainty of benefit through mandated actions. This study will expand the literature to guide food policy efforts in communities.

By focusing on the community as the unit of analysis, this study uses a macro-practice social work lens, designed to examine the interplay of individuals in their environment. The study seeks to understand how communities as a whole experience their relative advantages and disadvantages, and how this influences policies aimed at all citizens. The study also recognizes the key role of public discourse, a key to individual and community empowerment in the macro practice model.

In order to systematically identify factors associated with community policy choice and the consequences of those choices, this study relies on prospect theory, a foundational theory of behavioral economics, which is described in detail in the next chapter. This formulation, relying on prospect theory, helps answer questions that were fundamental to development of the public health approach to food policy in communities. As part of the program development team for the CPPW initiative, the researcher was struck by a tension: the belief that bold action was needed, tempered by the desire to avoid controversy. Public health often seeks to deal with this tension by referencing the scientific literature, yet in these cases, the scientific literature suggested effective actions, but was unclear on the paths to take those actions. These paths include the choice of policy tools—carrots, sticks, or sermons—to make systems and environmental changes. Paths also include the frames for these tools: either avoiding losses or promoting gains. As an example, tensions about the "pricing" strategies centered on whether science supported taxing certain products, making unhealthy products more expensive by other means, or making healthy products cheaper. Studies tell us that pricing matters, but not whether

the means to changes in relative price matter (French et al., 2001; Glanz & Hoelscher, 2004). Could CDC safely say taxes were an evidence-based strategy? CDC did not; rather, the agency recommended "changing relative prices of healthy vs. unhealthy items" (CDC, 2009). Still, those implementing had to determine *how* to change relative prices, and some chose taxes, a traditional policy tool for many public goals.

Although the initial guidance to communities sought to present the evidence neutrally, those implementing had to choose a policy instrument and a frame. These choices by communities form the basis of this inquiry—what influences those choices and are they associated with outputs and outcomes? How can research guide these choices? What can the CPPW initiative teach us about effective pathways?

Local choices also have led to no small amount of political controversy as communities pursued their real-world, non-neutral frames. For example, those communities that chose taxation with a loss-frame of reducing consumption of sugar-sweetened beverages found themselves highlighted in a George Will column in the Washington Post, where he stated:

> Because nothing is as immortal as a temporary government program, *Communities Putting Prevention to Work* (CPPW), a creature of the stimulus, was folded into the *Patient Protection and Affordable Care Act* of 2010, a.k.a. Obamacare. And the Centers for Disease Control and Prevention (CDC), working through the CPPW, disbursed money to 25 states to fight, among other things, the scourge of soda pop. In Cook County, Ill., according to an official report, recipients using some of a $16 million CDC grant "educated policymakers on link between SSBs [sugar-sweetened beverages] and obesity, economic impact of an SSB tax, and importance of investing revenue into prevention." According to a

> Philadelphia city Web site, a $15 million CDC grant funded efforts to "campaign" for a "two-cent per ounce excise tax" on SSBs. In California, an official report says that a $2.2 million CDC grant for obesity prevention funded "training for grantees on media advocacy" against SSBs. A New York report says that a $3 million grant was used to "educate leaders and decision-makers about, and promote the effective implementation of … a tax to substantially increase the price of beverages containing caloric sweetener." The Rhode Island Department of Health used a $3 million grant for "educating key decision-makers to serve as champions of specific ... pricing and procurement strategies to reduce consumption of" SSBs. In government-speak, "educating" is synonymous with "lobbying." Clearly some of the $230 million in CDC/CPPW anti-obesity grants was spent in violation of the law, which prohibits the use of federal funds "to influence in any manner ... an official of any government, to favor, adopt, or oppose, by vote or otherwise, any legislation, law, ratification, policy, or appropriation. (Will, 2012)

With this level of attention (and opposition), communities might rightly ask "is it worthwhile to choose these tools and this frame?" This study will attempt to answer their question. Part of the answer may lie in the mix of frames communities choose, since no community implemented only one food policy. Are communities that were mostly gain framed or loss framed more successful? Is a mix better? These questions have not been addressed in the public health literature, which mostly relies on reductionist models to isolate effective actions and prove causation.

A prospect theory analysis of public health policy is a novel application that could expand its use from health communications to other parts of public health. Prospect theory has been called "the most influential behavioral theory of choice in the social sciences" (Mercer, 2005, p. 17) and forms the foundation of behavioral economics. Bringing this powerful theory to bear on public health policy illuminates these problems in new ways, establishing a multi-disciplinary basis for research and intervention. Behavioral economics is already touted as an innovative approach to the obesity epidemic (Brownell et al., 2010; Just & Payne, 2009), making prospect theory applications timely for the topic.

As a descriptive theory, prospect theory is well suited for understanding public policy choices, outputs and outcomes. Contrary to expected utility theory, a normative theory that is foundational to classical economics, prospect theory finds that people do not necessarily make choices that maximize utility, a finding that is consistent with public health behavior change research findings. Instead, using a number of psychology experiments, Kahneman & Tversky (1979) developed a theory that defined systematic departures from utility maximization. Given systematic biases in decision-making, prospect theory predicts that the way a problem is framed, either as a loss or a gain, and as certain or probable, greatly influences the outcome, as does the subjective reference point from which a decision maker assesses changes in utility. These findings have been applied to some public policy research, particularly in the area of international affairs, and several authors have called for expanded theoretical applications in political science (Mercer, 2005; Vis, 2011).

Despite its dominance in many fields of social science, prospect theory has several identified weaknesses. These weaknesses include difficulty applying the theory to mixed prospects, the lack of a formal theory of framing, difficulty determining reference points, and a

lack of certainty about how the theory applies to group decisions. However, application of prospect theory to public health policy frames provides a clear conceptual definition to categorize what has been a slippery topic: how to distinguish between policies with the same core actions, but which differ in their presentation. Public health officials discuss this distinction in a number of fuzzy ways: policies with a "big P," hard-hitting policies, "real" policies. Regardless of the findings of this study, the addition of framing language to these discussions will contribute clarity.

The food policy evidence employed by public health has focused on the core action of the policy. Prospect theory provides a framework for examining differing effects of the same core actions achieved through loss or gain framed policies, and through mandatory (or certain) vs. voluntary actions. Understanding these effects will augment efforts to improve community food environments, allowing public health policymakers to carefully frame their evidence-based actions in terms of gains and losses and positive and negative externalities. The CPPW communities have focused extensive resources on policy change efforts, each using a combination of frames. This initiative can provide a rich source of data with which to test prospect theory's predictions, and if the theory's predictions are upheld, provide a new theoretical tool for conducting research, program planning, and interventions.

This study will test four hypotheses related to policy frames, each with implications for social work and public health practice. Taken together, these findings could have far reaching implications for a number of stakeholders, from federal public health to local food sellers.

Hypothesis A: Communities That Have Less Supportive Food Environments and/or Poorer Health Status Prior to Policy Establishment Will Favor Loss-Framed and Certain Policies

In a 2008 federal conference entitled *Study Designs and Analytic Strategies for Environment and Policy Research on Obesity, Physical Activity and Diet*, experts ranked "understanding how local communities can be mobilized to initiate policy change" as a top five research priority (Sallis, Story, & Lou, 2009, p. 575). This goal could be partly achieved through this study of the CPPW program, which aims to determine what factors are associated with community choices regarding gain/loss framing.

Understanding how communities chose policies based on these frames has implications for CDC and other organizations promoting state and local policy change. If this hypothesis is supported, and negative frames are preferred by communities in more distress, CDC and other national organizations wishing to target areas with greatest need would be advised to frame activities as harm-reducing, and would be able to make a strong case for using loss frames and mandates even when political pressures may encourage gain-framed messages. On the other hand, when seeking to engage communities with relatively better circumstances, a health promotion frame could be employed. If, however, the study finds an advantage for gain-framed policies in communities with more challenges, the opposite action could be taken. A finding of no difference would mean that the selected community characteristics did not affect policy choices, and would reinforce the current practice of providing several frames for similar actions.

Hypothesis B: Communities with More Loss-Framed Policies and More Certain Policies Will Have Higher Levels of Community Response

Another research priority identified by the 2008 federal conference was "develop[ing] measures of community support for policy change" (Sallis et al., 2009, p 576). Regardless of findings, this study will further methods for understanding community response to policy change efforts. Substantive findings have the potential to shape how communities frame policy

interventions. Knowing that different frames will lead to different levels of community response, communities could strategically identify policy interventions. Currently, many public health agencies see minimizing conflict as desirable, although there are a few exceptions (cf., Hortcollis, 2010). If this hypothesis is supported, some agencies that currently seek to reduce conflict by focusing on positive externalities and voluntary actions may choose instead to focus on negative externalities, and therefore loss frames. On the other hand, if gain-framed policies generate more community response, current trends will be reinforced, and those currently focused on harm reduction frames might change course. If there is no difference found in the study, communities would likely continue to use their own judgment to design policy strategies.

Hypothesis C: The Relationship between Community Characteristics and Response Will Be Mediated by Policy Frames

This hypothesis seeks to disentangle confounding relationship between community characteristics and policy frames. It is possible that differences in community response due to policy frames, if found, may actually reflect differences in community characteristics. If this were the case, community policy framing would not affect responses, meaning that decisions about policy frames are not important determinants. This negative finding, again, would mean that communities would continue to rely on judgment rather than research to make policy choices. If, however, the relationship is mediated, this study will be able to identify the distinct effects of community characteristics and policy framing on community response, allowing agencies to customize their frames to their particular community characteristics.

Hypothesis D: Communities with More Loss-Framed Policies and More Certain Policies Will Have More Favorable Outputs, Which Will Be Mediated by Community Response

By examining this pathway, the study will extend work on framing of health behavior change messages to the health policy change process. Inherent in community response to policy change efforts will be media messages about improving health behaviors, and the amount and framing of these messages is likely to affect individual food choices. Similarly, community response levels should impact the food environment through consumer demand, also related to individual reactions to the policy change process.

This hypothesis seeks to tie intermediate outputs to health behavior change and food environment outcomes. With these results, CDC and other national organizations can make well-informed choices about which interventions to support, and how framing and community response effects can be anticipated, monitored, and managed. If this hypothesis is supported, loss framing and mandatory actions would be encouraged, and community response would become a key intermediate outcome of intervention. If there is no relationship, the study would conclude either that it was too soon after the intervention to detect some outputs, or that framing effects could be ignored in program development. With a null finding, future follow-up study could clarify the program effects.

Research Approach

This study analyzed secondary data from a variety of sources, creating a database of information on each community directly funded to address obesity through CPPW. Data were stored in a single database that housed program area estimates (typically by county) on a number of variables. Data sources vary from publicly available sources (e.g., US Census Bureau) to CDC program monitoring data. This study has been reviewed by the UGA Institutional Review Board and found to be exempt as non-human subjects research; CDC has also designated it as non-human subjects research. Using a correlational design, the study analyzed secondary survey

and programmatic data. The sample consisted of local communities funded to implement obesity-related policies as part of CDC's CPPW program, which comprises 17 counties. This is a non-probability sample that is both purposive and convenient (Holosko & Thyer, 2011).

The preferred method for data analysis is a path model in Mplus, but given the available sample, the study ultimately relied on separate multiple regression analyses for each output. The initial model is depicted in Figure 1. Multiple regression allowed for examination of direct effects, but not indirect effects.

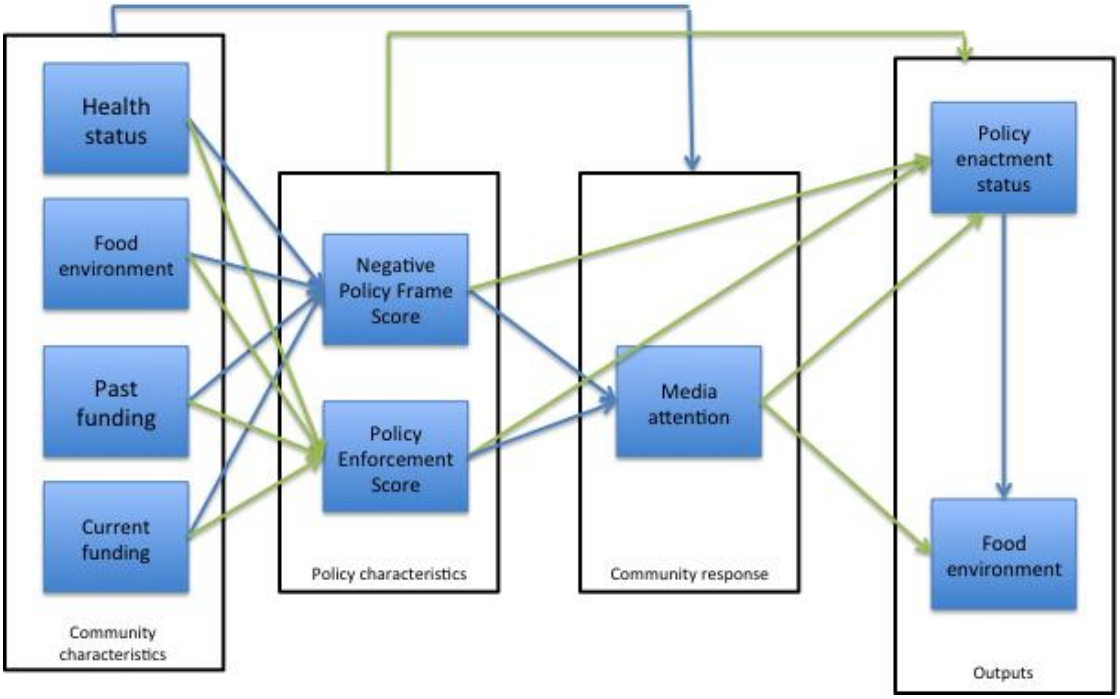

Figure 1. Preliminary path model

Findings from this analysis help illuminate the effects of community characteristics and policy choices on community responses, policy enactment, and food environments, answering important questions about efforts to implement multiple evidence-based policies jurisdiction-wide.

Chapter Summary

This chapter demonstrates the importance of food policy, the historical context of current policy efforts, and the specific aims of the study. This chapter contends that effective population-based food interventions have been studied in isolation, and the comprehensive approaches employed in the CPPW program provide a fertile ground for examining robust community food policy implementation. The next chapter discusses at length the theoretical framework for the study, as well as the existing literature and its gaps.

CHAPTER 2

LITERATURE REVIEW

This chapter will review the literature to establish the theoretical basis of the study, and to synthesize existing knowledge about each hypothesis. In so doing, the knowledge gaps that motivate the study will be identified leading to formulation of four hypotheses for empirical testing.

Theoretical Foundation for Study

Behavioral Economics

Behavioral economics has been applied to food policy, most notably by Just (2007 & 2009) and Brownell et al. (2010). Both invoke libertarian paternalism as a workable approach, in terms of politics and effectiveness. Libertarian paternalism is defined as "an approach that preserves freedom of choice but that authorizes both private and public institutions to steer people in directions that will promote their welfare" (Thaler & Sunstein, 2003, p. 179). This involves influencing individual choice through environmental cues and default choices designed by institutions and policy makers.

When looking at policy options that derive from these analyses, both Just and Brownell et al. take an individual agency approach to food decisions. For example, Just examines extensively the role that federal nutrition assistance programs can play in encouraging better individual decisions by their clients (Just & Payne, 2009). These include changing default choices (e.g., making certain healthier foods the default package allowable under food stamps), while preserving the individual's ability to make other choices (e.g., allowing food stamp

recipients to opt out of the new package). At the local level, behavioral economics justifies changes to food offerings and cues in food outlets, schools, workplaces, and public spaces.

Prospect Theory

The food policy evidence employed by public health has focused on the core action of the policy. Prospect theory provides a framework for examining differing effects of the same core actions achieved through loss or gain framed policies. Understanding these effects would support efforts to improve community food environments, allowing public health policymakers to carefully frame their evidence-based actions in terms of gains and losses and positive and negative externalities. The CPPW communities have focused extensive resources on policy change efforts, each using a combination of frames. This initiative can provide a rich source of data with which to test prospect theory's predictions.

Prospect theory has been called "the most influential behavioral theory of choice in the social sciences" (Mercer, 2005, p. 17) and forms the foundation of behavioral economics. Contrary to expected utility theory, a normative theory that is foundational to classical economics, prospect theory finds that people do not necessarily make choices that maximize utility. Instead, using a number of psychology experiments, Kahneman & Tversky (1979) developed a theory that better predicted people's decisions under risk. The descriptive theory, for which Kahneman won the Nobel Prize in Economics in 2002, found that people systematically depart from maximizing utility in decisions.

Expected utility theory is the assumption that all rational actors in decision making with uncertainty are motivated to maximize the expected utility of their decisions. Each potential outcome is multiplied by its probability of occurring, and the choice with the highest value is selected. Prospect theory identified systematic deviations from this predicted behavior.

For this analysis, three elements of prospect theory are particularly relevant:

1. Decisions under risk focus on changes in utility, rather than total utility. That is, people make decisions based on losses and gains, not the end state of wealth (or health or happiness or some other utility). In order to do this, people make use of a subjective "reference point," which usually represents the status quo, but may also represent an expected level of utility (e.g., if one expected raise of 5%, a 2% raise may be experienced as a loss).
2. Kahneman & Tversky developed a new value function based on their finding that decision makers treat losses and gains differently. Like expected utility theory, the curve is convex for gains, but unlike expected utility theory, it is concave for losses, and about twice as steep. This led Kahneman & Tversky to state that "losses loom larger than gains," (Kahneman & Tversky, 1979, p. 279) with a ratio of about two to one. A representation of prospect theory's value curve is depicted in Figure 2. Said plainly, people hate losing more than they like winning. This phenomenon is referred to as "loss aversion," and means that people are much more willing to take risks to avoid losses than they are to achieve gains.
3. Prospect theory states that people will place much more weight on outcomes that are certain or near-certain (e.g., 98% probability) relative to outcomes that are only probable.

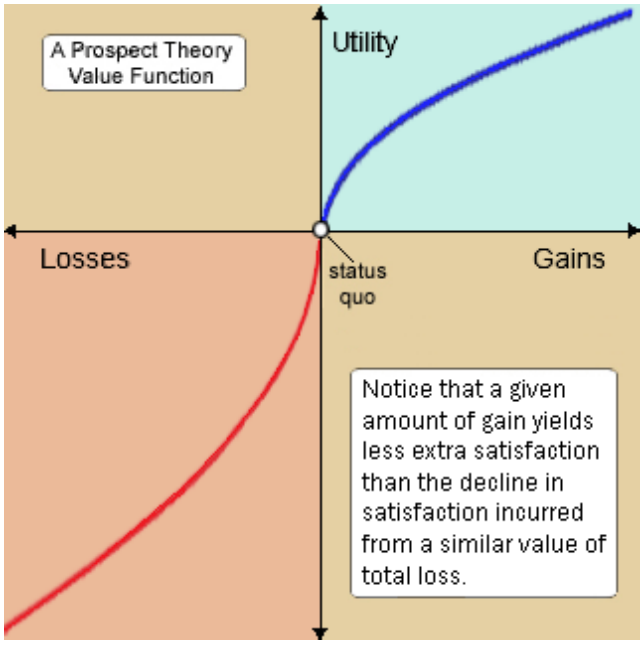

Figure 2. A prospect theory value function.
Source: http://www.unc.edu/depts/econ/byrns_web/Economicae/Figures/Prospect.htm

Given these systematic biases in decision-making, prospect theory predicts that the way a problem is framed, either as a loss or a gain, greatly influences the outcome. Through experiments, Tversky and Kahneman show that these framing effects lead to deviations from rational choice's rules, particularly invariance and dominance (Tversky & Kahneman, 1986). Invariance states that different representations of the same problem should lead to the same preferences. Dominance states that the best option—the choice with the highest expected value—should be chosen. However, in their experiments, these rules did not hold. A prominent example is the Asian disease problem (Tversky & Kahneman, 1981). It is reproduced in Figure 3.

Imagine that the USA is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

Scientific estimates	Frame type	Participants' preference
• If Program A is adopted, 200 people will be saved. • If Program B is adopted, there is a 1/3 probability that 600 people will be saved and a 2/3 probability that no people will be saved.	Positive	A: 72%
• If Program C is adopted, 400 people will die. • If Program D is adopted, there is a 1/3 probability that nobody will die and a 2/3 probability that 600 people will die.	Negative	D: 78%

Figure 3. The Asian Disease Problem (adapted from Tversky & Kahneman, 1981)

The choice problems are identical: A and B state the outcomes in terms of survivors (gains), and C and D state the outcomes in terms of deaths (losses), and the expected utility of all four choices is identical. These results show that invariance does not hold. When the negative frame is presented, people are willing to take a risk to avoid certain losses. When the positive frame is presented, the majority of people are risk averse: they choose the certain gain.

Understanding whether a choice problem is viewed as a loss or a gain also requires understanding the decision maker's reference point. While the reference point is often considered to be the status quo, Kahneman and Tversky also see situations where gains and losses are measured relative to an expected or aspirational level that is different from the status quo; for example, an unexpected tax withdrawal from a pay check is seen as a loss, not a smaller

gain (Kahneman & Tversky, 1979). This also means that a change in the status quo leads to a change in the reference point, which can alter preferences.

Lastly, certain and impossible events are treated differently than merely possible events in prospect theory. Unlike expected utility theory, where the value of an outcome is multiplied by its probability, in prospect theory the multiplier is a decision weight, which is not a probability, but a monotonic function of the probability (Kahneman & Tversky, 1979). Impossible events are weighted as zero, and certain events are weighted as one, but "the function is not well-behaved near the end points" (Tversky & Kahneman, 1981, p. S263). This leads to overweighting of outcomes that are certain relative to probable outcomes, which can also lead to violations of dominance—a choice with a lower expected value is preferred. An example is presented as Figure 4.

Problems administered to the same subjects in series	**Type**	**Participants' preference**
Problem 1: Which of the following do you prefer? A. a sure gain of $30 B. 80% chance to win $45 and 20% chance to win nothing	Certain, expected utility of A=$30 B=$36	A: 78%
Problem 2: Which of the following do you prefer? C. 25% chance to win $30 and 75% chance to win nothing D. 20% chance to win $45 and 80% chance to win nothing	Probable, expected utility of C=$7.50, D=$9	D: 58%

Figure 4. Certainty effect (Adapted from Tversky & Kahneman, 1981)

Since problem 2 is the same as problem 1, except with probabilities divided by four, expected utility theory would predict identical choices, but the majority preference switched to the higher prize when the probability of winning was lower. This phenomenon is termed the "certainty effect."

Critiques of prospect theory. Despite its dominance in many fields of social science, prospect theory has several identified weaknesses. The weaknesses include difficulty applying the theory to mixed prospects, the lack of a formal theory of framing, difficulty determining reference points, and a lack of certainty about how the theory applies to group decisions.

Mixed prospects. Several researchers have found that other value functions may better characterize decision under risk when prospects are mixed, that is, both gains and losses are possible. In 2002, Levy & Levy (2002) found that the Markowitz utility function better described investment preferences in their study. Similarly, Brandstatter, Gigerenzer & Hertwig (2006) argued that the priority heuristic more accurately captures decision making by accounting for all the same effects as prospect theory. However, given its broad applicability, powerful explanatory power, and continued prominence in social sciences, particularly economics, prospect theory continues to be preferred to these other formulations of choice.

Theory of framing. Noted by Tversky and Kahneman (1981) themselves, prospect theory contains no formal theory of framing. Absent this theory, the mechanisms and mediators of framing are left undefined. This ambiguity has led to wide and disparate uses of the term "framing," some of which stretch the concept of gains and losses, and some of which discard the gain and loss concept for looser constructions of issue frames (Keren, 2011). Loose construing of frames has led to substantial confusion in research and field applications, sometimes described as two major types of framing applications: emphasis and equivalency (Borah, 2011; Chong &

Druckman, 2007). Emphasis framing demonstrates that focusing an audience on different aspects or elements of a message influences their response. In food policy, for example, this might equate to emphasizing personal will power, as opposed to emphasizing the unavailability of healthy food. While this subject is treated extensively in the health communications and policy literature (Jenkin, Signal, & Thomson, 2011; Kwan, 2009; Saguy & Riley, 2005; Shugart, 2011), emphasis framing is not explored in this analysis. Equivalency framing traces is roots directly from prospect theory, focusing on frames that convey the same core information presented with a differing valence (Keren, 2011).

The lack of a theory of framing, even when focusing on equivalence frames, can lead to problems in determining whether people in natural settings see themselves in a gain or loss frame (Mercer, 2005; Vis, 2011). Experimental evidence for prospect theory directly manipulates the frames, but this is not possible in real world situations (Laibson & Zeckhauser, 1998). Identical choice frames may be experienced as a loss by one person and a gain by another. Since the predictions of the theory rest on the domain of the frame, uncertain frame determination can lead to erroneous applications and conclusions.

Reference point determination. A closely related critique is the lack of clarity about the reference point, which challenges application just as much as the lack of clarity about the frame. This fuzziness can lead to researchers reasoning backward, or justifying a choice by determining the reference point post hoc. Mercer suggests several methods for determining the reference point for a state actor. Two that are relevant to this analysis are status quo and aspiration, which lead to similar conclusions (Mercer, 2005):

- Status quo—when the status quo is satisfactory, a state tends to be in a gain domain. When it is unsatisfactory, the state will be in a loss domain

- Aspiration—if a state's relative position is good, then the status quo is the reference, but if the relative position is bad, then their future aspiration serves as the reference, and their current state is experienced as a loss.

Aggregation problem. Prospect theory was developed to explain individual decisions; does it apply to collective decision-making? Vis (2011) tackles this question in relation to political decisions. She notes that some investigators have avoided this problem by focusing on an individual, for example the President or the individual voter. However, experimental evidence supports use of prospect theory for group decisions, as demonstrated in a 1998 meta analysis (Kühberger, 1998). While aggregation was seen as a problem previously, Vis concludes that "[w]ith respect to collective decision making, prospect theory is usable because experiments, meta-analyses and real-world data indicate that groups display the same pattern of risk attitudes as do individuals and are in line with prospect theory" (Vis, 2011, p. 338).

Prospect Theory and Health Behaviors

Framing effects have been studied extensively in the health communications literature. While researchers have examined all manner of framing effects, Alexander Rothman has led the field in applying prospect theory, and in particular gain and loss framing, to health messages. A psychologist with a focus on how people respond to health information, Rothman first published experimental studies of gain and loss framing in health messages in 1997 (Rothman & Salovey, 1997). Rothman defines messages as gain-framed when they encourage an action (e.g., condom use) and emphasize the gains and non-losses that will occur if the action is taken. Loss-framed messages are those that discourage an action (e.g., unprotected sex) and emphasize losses and non-gains (Rothman, Bartels, Wlaschin, & Salovey, 2006; Rothman & Salovey, 1997). This taxonomy has been widely adopted in the health communications field. His theory, which he

and others have supported with experimental evidence, predicts that gain frames are most persuasive for performing preventive behaviors (e.g., wearing sunscreen) and that loss frames are most persuasive for disease detection behaviors (e.g., mammography). Rothman rests this theory on two elements of prospect theory:

1. Disease detection behaviors are inherently risky because they could lead to an unpleasant outcome, i.e., the diagnosis of a disease; therefore people will be more persuaded by loss frames for this risk-seeking behavior.
2. Preventive behaviors are less risky and promise certain or near certain gains, e.g., prevention of sunburn and lowered risk for skin cancer; therefore people will be more persuaded by gain-framed messages for these risk-averse behaviors.

While this theory has held up to many empirical tests, there have also been some empirical challenges. In a 2009 meta-analysis, O'Keefe & Jensen found very small effect sizes for loss-framed messages encouraging disease detection, and this effect was only statistically significant for breast cancer screening. O'Keefe & Jensen conclude, "using loss-framed rather than gain-framed appeals is unlikely to substantially improve persuasiveness" (O'Keefe & Jensen, 2009, p. 296). However, Rothman contends that no study has shown a gain-framed message to perform better than a loss-framed message for disease detection, and that studies focused on preventive behaviors tend to support a gain-framed advantage (Rothman & Updegraff, 2011).

However, in examining gain frames for prevention behaviors, several recent studies find the opposite: an advantage for loss-framed messages. In their study of responses to equivalence-framed messages promoting the measles, mumps, and rubella (MMR) vaccination, Abhyankar, O'Connor & Lawton (2008) find loss-framed message are more persuasive. The authors posit

that the MMR vaccine may not be seen as a risk-free action, given extensive media discussion of erroneous links between the vaccine and autism, and thus the option of vaccinating a child is seen as risky, leading to an advantage for loss-framed messages (Abhyankar, O'Connor, & Lawton, 2008). This position is reinforced by an experimental study that manipulated vaccine efficacy in messages and found a significant difference between near-certain protection (90% — gain-framed advantage) and merely probable protection (60%—loss framed advantage) (Bartels, Kelly, & Rothman, 2010), supporting the idea that the evaluation of risk is more influential than whether the behavior is classified as health promoting or disease detecting.

Although Rothman's theory predicts that gain-framed messages would be more persuasive in promoting healthy food choices, several studies challenge this prediction. Gerend & Maner (2011) found that loss-framed messages led to increased fruit and vegetable consumption (a preventive behavior) when a fear condition was induced, where a marginal increase was seen for a gain framed message when an anger condition was induced. Similarly, Dijkstra, Rothman and Pietersma (2011) found that loss and gain frames equally promoted higher consumption of fruits and vegetables unless the message was personalized to increase self-relevance, another finding supporting the idea of personal moderators of framing effects, such as regulatory focus or emotional state. These two studies are part of the trend toward examining personal moderators and mediators of the effects of gain/loss framing on health messages, moving away from prospect theory and toward a more process-oriented theory of individual framing effects (Latimer et al., 2008; Rothman & Updegraff, 2011).

Taken as a whole, the application of prospect theory to health decisions has been helpful in explaining the relative influence of messages. While the original taxonomy of disease detecting vs. health promoting behaviors may be eroding, framing effects based on the level of

risk inherent in the behavior, as well as the certainty of outcomes, continue to be confirmed. When applying these concepts to food choices, researchers tend to find an advantage to loss framed messages (Gerend & Maner, 2011; Major, 2009) or no advantage for either loss or gain framed messages (Dijkstra et al., 2011), perhaps because changing dietary behaviors involves some losses, and because health benefits of these changes are murky at best, given the wide and conflicting array of dietary advice Americans encounter.

Prospect Theory and Public Policy

Since its first introduction, prospect theory's application to public policy was touted: "the theory is readily applicable to choices involving other attributes [than monetary outcomes], e.g., quality of life or the number of lives that could be lost or saved as a consequence of a policy decision." (Kahneman & Tversky, 1979, p. 288). Indeed, the Asian disease problem is a public health policy problem. Given this rooting in public policy, prospect theory's application to political choices was inevitable. However, several authors find that the theory's full potential has not been realized in political science, except perhaps in the area of international relations (Mercer, 2005; Vis, 2011). In promoting further uptake of prospect theory in political science, McDermott cites a number of advantages over traditional political science theory:

- The theory has strong empirical support.
- The theory explains dynamic change, because it predicts that positions will shift in response to changes in the environment. "As the domain shifts from one of gains to one of losses, prospect theory would predict that individual risk propensity would become more risk-taking" (McDermott, 2004, p. 292).
- The theory emphasizes situational factors that influence individuals and leaders, rather than relying on personal traits.

- Loss aversion is a powerful explanation for political behavior and can help in political strategy.
- The theory allows for the political context to be incorporated into analyses (McDermott, 2004).

As discussed earlier, applying prospect theory in policy contexts poses challenges in terms of understanding which frame is experienced by decision makers and understanding group behavior (McDermott, 2004; Mercer, 2005; Vis, 2011). While the aggregation problem seems to be no problem at all when examining group decisions (Kühberger, 1998; Vis, 2011), determining the reference point and frames of a large group of citizens or leaders remains a challenge. However, many examples of prospect theory's predictive and explanatory power are found in the literature, including explaining when governments will undertake unpopular welfare reforms, when party positions are most likely to shift, and when power sharing is most likely to occur (Vis, 2011). One approach to determining frames of policy actions is to connect frames to externalities. Steinacker (2006, 2008) uses prospect theory to predict which externality problems will generate the most political attention. Externalities are costs or benefits to those who are not parties to an economic exchange, and therefore are not charged or paid for these effects.

Just as in equivalency framing of gains and losses, the same policy objective can be expressed as either decreasing negative externalities or increasing positive externalities. When responding to negative externalities, government interventions seek to impose the costs of these externalities on those who generate them. The underlying assumption is that the right to the good belongs to the public, and the economic actor is using it without paying the cost. Pollution is an oft-cited example: a company may reap economic rewards from polluting the air, but the public bears the cost of that pollution. If the public has the right to clean air, this pollution is a

negative externality to the public, and government can intervene to prevent the loss by imposing costs on the producer of pollution. However, the same problem can be conceived as a positive externality problem. If companies have the right to pollute, then they can choose to use production processes that protect clean air, but they do not claim all of the benefit—the public does. When framed this way, government intervention is aimed at subsidizing companies to create more of the positive externality, in this case, clean air (Steinacker, 2008). In this model, negative externalities are framed as losses and positive externalities are framed as gains.

Using prospect theory, Steinacker predicts that negative externalities generate more political attention and action, while "there will be lower saliency and lower visibility when a problem is defined as a positive externality…" (2008, p. 468). In part, this is due to resistance from those who have previously enjoyed rights to a good fighting back when these rights may be assigned to the public (e.g., companies wish to maintain their right to pollute and will take risks to avoid losing that right). Another reason is the loss aversion response to loss framing by the public (e.g., pollution is harming health). When the public experiences a loss-frame, they will be more likely to take risks in order to reduce the chance of those losses. Because of higher saliency and visibility, negative externality frames should create more community response, debate and dialogue through media coverage, formal policy debate, and constituency actions. This theoretical framework is informative, but is not empirically verified.

Applying Prospect Theory to Community Food Policy

Based on these health and public policy applications in the literature, prospect theory can provide a useful theoretical framework for considering food policy changes. Few researchers have applied prospect theory to public health policy in general or food policy in particular. Major (2009) examined news frames in lung cancer and obesity coverage, and found that a

combination of loss frames with thematic coverage—defined as news that emphasized broad trends with loss frames—was highly effective in emphasizing the role of environmental factors, and therefore could lead to more public support for policy changes. This empirical research lends some support the theoretical framework in Steinacker's work.

While loss-framed policies are relatively new to public health food policy, they are well established in the field of tobacco control (CDC, 2007). Loss-framed tobacco policies were strategically employed not only to restrict tobacco use, but also to change social norms around tobacco that led to further declines in use. For example, the American Legacy Foundation's Truth campaign famously pitted youth against tobacco companies, changing the view of smoking as an act of rebellion—a gain in self-efficacy—to an act of compliance with corporate America—a loss in self-efficacy (American Legacy Foundation, 2012). This loss framing, and the controversy it engendered, was a critical part of the intervention. Food policy has not been examined in this way; efforts to change policy focus on changing the food supply or changing the food environment so that consumers make better choices (or so unhealthy choices are not available). When loss-framed policies have been pursued, considerable controversy has resulted (cf. New York City's efforts with sugar-sweetened beverages in Hortcollis, 2011).

In CDC's CPPW program, funded communities employ a number of evidence-based strategies. Many of these policies have the same core action of changing the food environment, but are framed either as promoting gains (increases in positive externalities) or reducing losses (reduction of negative externalities). Gain framed policies are those that promote health through making healthy food more available and attractive. These policies encourage choices that will improve health and/or not hurt health. Loss-framed policies are those that prevent unhealthy choices that will either hurt health or do not provide health benefits. This classification follows

both Rothman's and Steinacker's methods for identifying message frames (Rothman et al., 2006; Steinacker, 2008), thus mitigating the difficulty in defining frames.

Determining whether certain actions create negative or positive externalities for the food environment is a matter of framing. Depending on who has the right to control the food environment—the public or food providers—the same policy goals can be framed in opposite ways. In fact, the recommended policies can be categorized along these lines, as seen in Figure 5.

Gains/Promoting Positive Externalities	**Core Action**	**Loss/Reducing Negative Externalities**
Media to promote healthy food/drink choices	Improve media environment	Media and advertising restrictions on unhealthy choices
		Counter-advertising for unhealthy choices
Make healthy food/drink more available	Improve retail food environment	Limit unhealthy food/drink availability
		Reduce density of fast food establishments
		Eliminate transfat through purchasing actions, labeling initiatives, restaurant standards
		Reduce sodium through purchasing actions, labeling initiatives, restaurant standards
Signage for healthy items	Improve decision prompts	Signage for less healthy items
		Menu labeling
Maximize healthy items' attractiveness		Minimize unhealthy items' attractiveness
Lower prices for healthy items	Changing relative price	Increase prices for unhealthy items

Figure 5. CDC's MAPPS food strategies by frame

Prospect theory can help understand food policy actions at a number of points along the policy process at both the community and individual level. Figure 6 depicts a model that poses four empirically testable hypotheses (marked A, B, C & D).

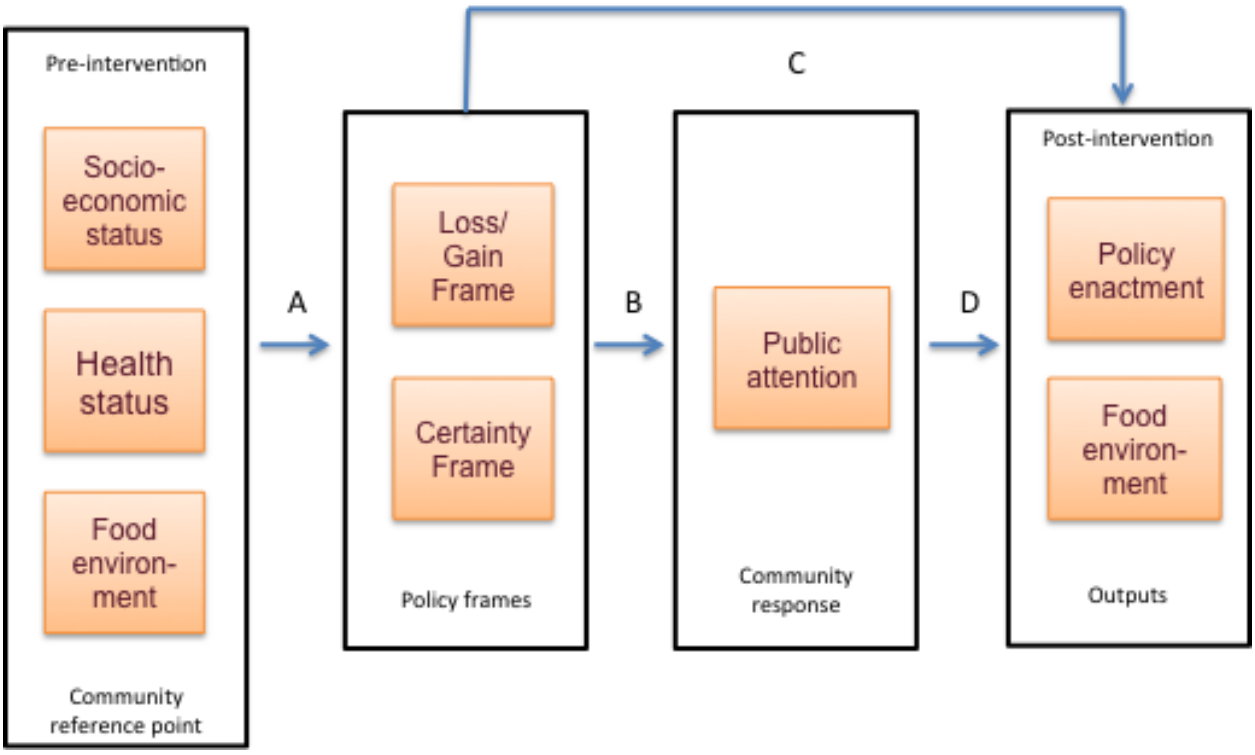

Figure 6. Prospect theory in community food policy change

Prospect theory can be used to hypothesize both how community public health agencies will frame their policy choices and how the public will respond, as discussed below for each hypothesis depicted in Figure 6. In addition, the next section reviews available evidence and the gaps that motivate testing each hypothesis.

Hypothesis A: Communities That Have Less Supportive Food Environments and/or Poorer Health Status Prior To Policy Establishment Will Favor Loss-Framed and Certain Policies

In Figure 6, two factors from the theoretical foundations are likely to determine how a community will frame their policy choices: assignment of rights (Steinacker, 2006) and community reference point, as seen at arrow A (Mercer, 2005). If a community decides, implicitly or explicitly, that the food environment belongs to the public, policy choices will emphasize reducing negative externalities, a loss frame. Policies will likely focus on regulating or penalizing some actions by retailers, suppliers, and institutions in order to reduce the public health losses due to the food environment. If, however, the community views the food environment as belonging to the actors who provide food products, public policy will emphasize support for the positive externality of a healthy food environment in the form of subsidies, rewards, and promotions. A mixture of these approaches is likely to exist in most communities. However, the strength of the public and political response would likely correspond to the amount of regulatory actions. While this framework is useful for understanding the policy process, measuring the beliefs of policy actors is beyond the scope of this study. Externality definition can be deduced by the type of policy chosen, as opposed to predicting the externality orientation from the actors' prior beliefs.

In terms of reference point, Mercer's aspiration method can be employed and measured to predict policy choice (Mercer, 2005). While all communities engaged in food policy change are likely to see the status quo as less than ideal, some communities may be in better stead relative to other communities. Therefore, the theory predicts that communities with less supportive food environments or poorer health status will aspire to a healthier state, and therefore will approach policies from a loss frame.

While the literature is silent on this application of prospect theory to community food policy, the foreign policy literature has examined policy actors' frames as it relates to their

perceptions of relative position (Mercer, 2005; Vis, 2011). The literature contains many examples of prospect theory's predictive and explanatory power, showing that risk-taking and loss framing are more likely when policy actors feel disadvantaged, and gain frames are employed when policy actors feel a relative advantage. This approach has explained when governments will undertake unpopular welfare reforms, when party positions are most likely to shift, and when power sharing is most likely to occur (Vis, 2011). As examples from political science, Mercer offers a number of studies of international policy decisions when leaders found their political positions deteriorating and operated from loss frames, including the Japanese before Pearl Harbor and President Kennedy in the Cuban Missile Crisis, both situations where leaders took big risks to avoid further losses. These applications of prospect theory suggest this hypothesis for empirical testing. As described earlier, both status quo and aspiration frames would mean that those communities with more favorable relative health and food environments would be in a gain frame, and those with less favorable relative positions would operate from a loss frame (Mercer, 2005).

There is an extensive literature examining policy instrument choice, often categorized as carrots, sticks, and sermons. In their near-universally referenced book on the subject, Bemelmans-Videc, Rist, & Vedung (1998) define public policy instruments as "a set of techniques by which governmental authorities wield their power in attempting to ensure support and effect social change" (1998, p.3). Carrots are defined as subsidies that give incentives to encourage desired behaviors. Sticks are regulations that punish activities the government wishes to discourage, and sermons are information campaigns designed to drive change. These instruments are not inherently gain or loss framed, but can be further subdivided, as in Figure 7.

While not explicitly employing prospect theory, this taxonomy closely mirrors the gain and loss frame categories this research employs.

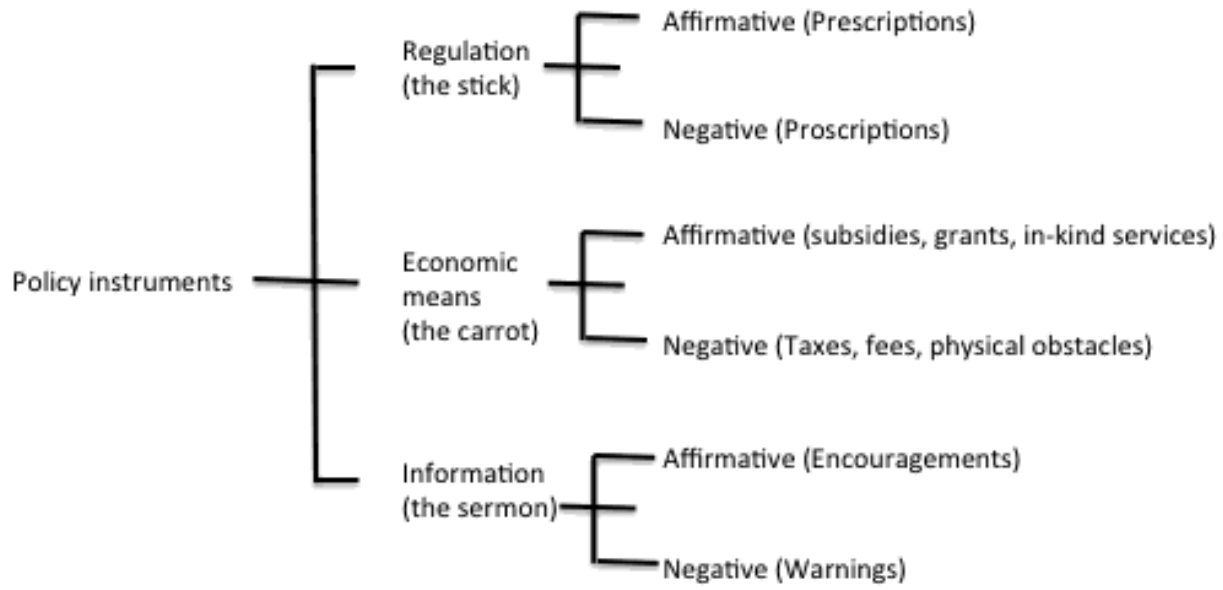

Figure 7. Three archetypes of policy instruments with affirmative and negative variants (Bememans-Videc et al., 1998, p. 250)

How policy actors choose among the instruments has been an object of both theory and study, although policy design is still considered understudied, complex, and often inaccessible to public scrutiny (Howlett, 2009). Researchers have noted that government preferences tend to be stable over time and used across a range of policy topics and contexts, resulting in "governance modes" that cut across policy topics (Howlett, 2009). This research focuses on state modes of governance, but also supports the idea that smaller governmental entities (such as cities and counties) may approach policy problems from a particular frame, or, as Howlett describes it, an implementation style. Most policy-making theories involve problem identification, context analysis, choice of targets, and selection of instruments.

While many theories exist, political scientists acknowledge that real-life decisions are not linear, rational decisions based on maximum utility (Rist, 1998). This argues for a descriptive theory, like prospect theory, rather than a normative public policy process analysis. Public health policy research has been especially focused on normative theories, using a liner model that "glosses over major dimensions and implications of policies, in particular the process of actually making or implementing policies" (Bernier & Clavier, 2011, p. 111). Similarly, Breton & DeLeeuw (2011) decry the traditional "stages heuristic" of clearly distinguishable steps as failing to address the dynamic, iterative, and incremental nature of policy action. Their quantification of the number of health promotion research articles that use appropriate policy theories finds that political science models have had little influence on health promotion policy research. The authors recommend researchers "abandon the models that served them well for conceptualizing behavior change at the micro-level and embrace the complexity of the policy change process…" (Benton & De Leeuw, 2011, p. 88). This study embraces that challenge.

Specifically for food policy, one study examined local factors influencing the policy development process. Yeatman (2003) used case study methods to examine factors influencing four communities' policy efforts. Like much of the literature on policymaking, this qualitative study finds that decision-making is highly context and issue specific, a finding that has little to offer to those implementing large-scale, multi-site policies.

There is limited literature on implementation differences in multi-site programs where communities have flexibility in implementation. One study examined a healthy environment program in eight local cases in Quebec (Clavier, Gendron, Lamontagne, & Potvin, 2012). Despite their expectation that the variable contexts would lead to many program adaptations, their case study design found strong similarities were the rule. This study sheds some light on

the role of policy instrument selection and local networks, but leaves the question of what impacts community policy frames unanswered. In another study of Australian localities, Yeatman (2009) found that community food policy activity was related to several factors, including availability of resources, mandates by state government, and attitudes of program managers. These factors were not as relevant for CPPW, where resources were made available and program managers were likely selected for their experience with food and nutrition interventions.

Given the lack of available research on community choice of food policy instruments and frames, the relationships between measurable community factors and related policy choices will expand knowledge in the field to drive practice decisions.

Hypothesis B: Communities with More Loss-Framed Policies and More Certain Policies Will Have Higher Levels of Community Response

Similarly, in determining how the community will respond to these policy efforts, prospect theory predicts a stronger, more active response with a loss frame (as seen at arrow B in Figure 6). The public will be more likely to risk changes from the status quo to avoid public health losses than to attain public health gains. Organizations whose options would be curtailed by regulation are likely to see these policies as a potential loss, and will be more likely to risk public action to stop them, engendering debate and public discourse.

Prospect theory also would suggest that policies with certain outcomes will be more salient than those with only possible or probably outcomes. Community food policies are often implemented either with a requirement to comply (mandatory) or an incentive to comply (voluntary). Prospect theory predicts that policies that are mandatory will lead to more public response than those that are only voluntary, because compliance is certain. This occurs because

the certain loss to those regulated will be resisted more actively, and because the public will judge the avoidance of health losses to be near certain if a mandatory policy is passed, rather than a merely possible gain if a voluntary policy is enacted.

Measuring public awareness is an accepted proxy for public awareness and engagement, as demonstrated in the Institute of Medicine's 2012 Report *Accelerating progress in obesity prevention.* IOM uses counts of media reports to demonstrate changes in public awareness, and sees the increase as evidence of an encouraging trend toward action.

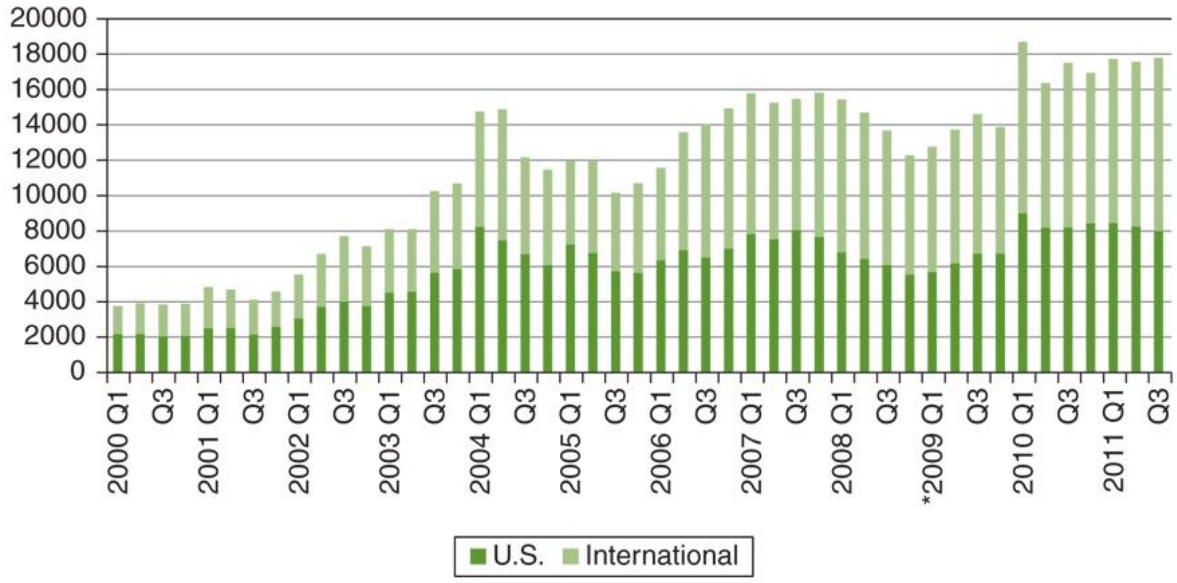

Figure 8. Global trends in obesity-related media coverage (IOM, 2012)

Communities monitor media as an indication of successful communication efforts, but these data were seldom connected to intended effects of interventions. CDC's own analysis of media generated by CPPW examines the levels of attention to various issues on the national stage, but does not examine differential responses among communities (A. Dudley, personal communication, September, 2012) Using prospect theory, Steinacker (2008) predicted that

negative externalities generate more attention and action, in part due to resistance from those who have previously enjoyed rights to a good fighting back when these rights may be assigned to the public. For example, companies that wish to maintain their right to pollute and will take risks to avoid losing that right. Another reason is the loss aversion response to loss framing by the public.

Research has indicated that negative frames can promote public support for public health policy interventions. Major (2009) examined news frames in lung cancer and obesity coverage, and found that a combination of loss frames with thematic coverage—defined as news that emphasized broad trends with loss frames—was highly effective in emphasizing the role of environmental factors, and therefore could lead to more public support for policy changes. This empirical research lends some support the theoretical framework in Steinacker's work on negative externalities, but further studies are needed to confirm this relationship.

Hypothesis C: The Relationship between Community Characteristics and Response Will Be Mediated by Policy Frames & Hypothesis D: Communities with More Loss-Framed Policies and More Certain Policies Will Have More Favorable Outputs, Which Will Be Mediated by Community Response

Recommendations to prevent and control obesity often point to comprehensive, systems approaches. As IOM stated, "(a)n impressive body of evidence confirms that the drivers of the epidemic involve interactions among several complex, ever-changing systems, including the food system, transportation systems, community infrastructure, school systems, health care systems, and the intricate behavioral and psychological systems that influence individual physical activity and eating behaviors and body weight" (IOM, 2012, p. 21). However, little research examines combinations of interventions, perhaps due to the difficulty of isolating

causation with multiple, simultaneous interventions. Some complex modeling experiments with different hypothetical combinations of evidence-based interventions have been conducted. Most prominently, the *ACE Prevention* study (Vos et al., 2012) examined combinations of obesity interventions to maximize cost effectiveness, finding that a combination of a 10% tax on unhealthy foods combined with lap banding for very obese people was cost effective, and adding a diet and exercise program for overweight people, while cost effective, contributes only a small additional gain (Vos et al., 2012). This study used advanced modeling techniques to assess cost effectiveness of interventions, but neglects the issues raised by policy maker choice and framing. Again, a focus on the linear, causal relationship between intervention and health effects is emphasized, while the real-life policy decision process is left out of the analysis.

An intriguing theory put forth by van der Doelen (1998) states that successful packaging of policy instruments requires optimizing legitimacy and effectiveness. That is, instruments that are framed as stimulative—or giving—enhance legitimacy of the government's power, allowing for instruments that are framed as repressive—or taking—to be implemented to effective ends. As the author states, "the central thesis…is that government should in a balanced way simultaneously give and take: the giving contributes to the legitimacy, the taking to the effectiveness." (van der Doelen, 1998, p 130). Several examples support his point, including the "two-edged" sword of levies and subsidies to introduce catalytic converters in the Netherlands. The government provided subsidies to buyers of clean cars, financed by an overall increase to taxes on new cars. This combination of policies surpassed the government's goals, resulting in 70% clean cars in three years, rather than the 45% predicted. His work builds on earlier work that arrays policy instruments along a coercion continuum, and predicts that policies will shift over time from less to more coercive (Doern & Wilson, cited in Schneider & Ingram, 1990)

The question of policy combinations is particularly relevant to CPPW, where communities implemented multiple policies aimed at the same goals. Frame choices are likely to affect the outputs studied here, as well as long-term outcomes that are beyond the scope of the study. This study examined whether the mix of frames is associated with more public attention, higher policy passage rates, and improved food environments as key outputs leading to desired changes in health behavior and health status.

CDC has initiated several previous efforts at community interventions, although none with the same level of funding or the same focus on obesity. CDC established the National Center for Chronic Disease Prevention and Health Promotion in 1988, and for most of its history the Center has mainly funded state-level public health intervention. Beginning with the *Racial and Ethnic Approaches to Community Health* (REACH) program in 1999, CDC's chronic disease efforts began to enter the realm of community intervention. Even today, a minority of county health departments receives funding for chronic disease activities. Prior to the CPPW initiative funded in 2010, the major funding sources for counties were the REACH program and the Healthy Communities Program, which began as Steps to a Healthier US (Collins, Marks, & Koplan, 2009).

The REACH program has evolved since its launch in 1999 from a program primarily concerned with locally-driven demonstration projects to evidence-based programs focused on systems changes that reduce health disparities (CDC, 2012c). The original REACH communities, about which the most literature is available, chose to address public health issues from an approved list that included obesity-related efforts, but also included cancer prevention and control, infant mortality prevention, and HIV prevention. Obesity was not among those issues, but REACH communities tackling heart disease or diabetes often took on nutrition as part

of their intervention strategy. Evaluation studies of REACH food efforts, like much of the literature cited by CDC to support MAPPS strategies, tends to examine one intervention at a time in a limited geographic area (Collie-Akers, Schultz, Carson, Fawcett, & Ronan, 2009; Smith & Ryan, 2006; Woodson, Braxton-Calhoun, & Benedict, 2005). Studies of program development and policy process are qualitative in nature, leaving open the question of how to choose and frame food policies (Golub, Charlop, Groisman-Perelstein, Ruddock, & Calman, 2011; Lewis et al., 2011). While other efforts have been more explicitly focused on obesity (Steps to a Healthier US and its progeny, Healthy Communities), evaluations similarly focus on individual interventions or report on process (Davis et al., 2009; Drummond et al., 2009; Hanni, et al., 2009a; Hanni et al., 2009b; Johnston, Denniston, Morgan, & Bordeau, 2009).

No evaluation of these programs found in the published literature has analyzed cross-site program data to determine what affected community intervention choice and frames, and what implications those choices had for program progress. The evaluation plan for CPPW follows a similar path. Given the struggles communities face in making these choices, this research will fill a critical gap in existing literature.

Existing Research Gaps

This study will contribute to theoretical, methodological, and programmatic knowledge. A prospect theory analysis of public health policy is a novel application of the theory that could expand its use from health communications to other parts of the field. Bringing this powerful theory to bear on public health policy would illuminate these questions in new ways, establishing a multi-disciplinary basis for research and intervention. Behavioral economics is already touted as an innovative approach to the obesity epidemic (Brownell et al., 2010; Just & Payne, 2009), making prospect theory applications timely for the topic.

CDC program evaluation commonly focuses on health status and behavior outcomes. For chronic disease programs, these outcomes can take many years to occur. By examining intermediate outputs of policy change, this study could offer an alternative—a way to study the change process that portends future health improvements. Process evaluations of public health policy are often assumed to be qualitative by definition (Brownson, Chriqui, & Stamatakis, 2009). This methodology will incorporate quantitative analysis by examining how process variables statistically influence each other, allowing for more generalizable conclusions. In addition, as identified by the 2008 federal conference, there is a need to "develop measures of community support for policy change" (Sallis et al., 2009, p. 576). Regardless of findings, this study will further methods for understanding community response to policy change efforts and how to employ secondary sources for media monitoring. In addition to these enhancements, joining media data with programmatic data is not common practice at CDC, and could enhance efforts to understand the role of communications and discourse in public health interventions.

Lastly, this study will further programmatic knowledge. Findings will have evaluative value, but the study itself aims to test hypotheses and build knowledge, making it social science research rather than program evaluation (Holosko, 1996). Understanding how framing effects may operate in food policy choices and outputs will allow those designing, implementing, monitoring and evaluating programs to incorporate research-based knowledge into their efforts. This contribution helps fill gaps in evidence-based public health policy (Brownson et al., 2009). A solid evidence base, especially for negative frames and for certainty in policies, will bolster public health efforts to incorporate the most effective interventions and enable advocates for healthy food environments to support calls for the most effective policy choices and frames.

In a recent call to action to "change the future of obesity," Gortamaker et al. (2011) call for studies like this one to fill important gaps in the literature. The authors call for evaluation beyond randomized control trials of specific interventions, to encompass research on natural experiments and policy changes. Those interested in joining political science and public health have similarly called for research that reaches beyond the traditional, linear, maximum-utility model of policy choice and evaluation (Bernier & Clavier, 2011; Breton & De Leeuw, 2011). Researchers striving to build an evidence-base for specific public health actions use experimental designs that require isolating actions, when policy actions are complex and interwoven in practice.

Chapter Summary

Using the CPPW initiative and the lens of prospect theory, this study isolates issues of framing to understand interacting policies through a quantitative analysis approach. The hypotheses address important questions about the policy process using cross-site analysis that supports the generalizability often missing in qualitative policy studies. Both the methods and the findings of this study will fill important gaps in the literature and further public health's response to obesity.

CHAPTER 3

METHODOLOGY

This chapter describes the planned study methodology in detail, including the study design, sample, data collection and validation procedures, and data analysis plan.

Research Questions

Based on application of prospect theory and gaps in the existing literature, this study asks four research questions (also stated as hypotheses A-D):

- Question A: To what extent do communities that have less supportive food environments and/or poorer health status prior to policy establishment favor loss-framed and/or certain policies?
- Question B: To what extent do communities with more loss-framed policies and more certain policies have higher levels of community response?
- Question C: To what extent is the relationship between community characteristics and response mediated by policy frames?
- Question D: To what extent do communities with more loss-framed policies and more certain policies have more favorable outputs (media attention, policy passage, food environment improvements)? Does media attention moderate these relationships?

Study Design & Justification

This study used a correlational design using secondary survey and programmatic data. The use of quantitative methods to analyze these questions is in contrast to the vast majority of policy process studies that rely on qualitative methods (Brownson, Chriqui, & Stamatakis, 2009).

CPPW provides an opportunity to quantify community characteristics, policy choices, and community responses across a variety of localities. The localities are relatively comparable in their resource availability, their access to technical assistance, and the requirements of their program design. With some standardization of programs, the variability in examined elements of the program provided a unique opportunity for statistical analysis, allowing for a study that is generalizable to other similarly positioned communities.

By focusing on the community as the unit of analysis, this study uses a macro-practice social work lens, designed to examine the interplay of individuals in their environment. The study seeks to understand how communities as a whole experience their relative advantages and disadvantages, and how this influences policies aimed at all citizens. The study also recognizes the key role of public discourse, a key to individual and community empowerment in the macro practice model.

Using secondary cross-sectional data allowed for data from a variety of sources to come together in a time series. Baseline community characteristics data were drawn from 2009, community response data spanned the program's 30-month period from March 2010 – September 2012, and outputs were measured at the end of the 30 months. Use of secondary data supported standardization across localities. This design, while not adequate to prove causality, allowed the trajectory of the programs to be examined.

While the desired goals of CPPW were to affect health behaviors and health status, these variables will not be examined for several reasons. First, health behaviors and especially health status take a number of years to demonstrate change, and this study examined only the period where communities were funded to instigate such change. The program was designed to promote changes that would have long-term outcomes, not to change behavior in the short term.

Second, comparable data for examining health behaviors and status at the end of the project period are not available. BRFSS 2011 data were now available, but due to changes in methodology, do not represent a trend from previous surveys (CDC, 2012d).

Study Sample

This study examined a subset of communities engaged in food policy change. Given the public health concern about obesity, coupled with environmental and economic concerns, local food policy activity is ubiquitous, and the size of the total populations of communities engaged in such change is unknown. The study subjects are counties, and the total population of counties in the US is 3,143 counties or county equivalents defined as of July 2009 by the US Census Bureau (http://censtats.census.gov/usa/usainfo.shtml).

Applications for CPPW funding were invited in four geographic categories: local health departments serving a large city (population of 1 million or above), local health departments serving an urban area (population of 500,000 to 1 million), tribal governments serving tribal communities, and state health departments on behalf of small city and rural communities (population of 50,000 to 500,000). Applicants submitted proposals for addressing obesity issues and tobacco issues separately. Applications were objectively scored in each category and awarded competitively.

Of the obesity awards, 17 were made directly to local governments serving large cities or urban areas. Five additional awards were made in September 2010 using funding from the *Affordable Care Act* (ACA). This study sample comprises the 17 originally-awarded, directly funded local governments for several reasons. First, comparing local government action to state action presents a confounding variable that could challenge conclusions. State and local government have differing jurisdictions over food policy, making their policy choices non-

comparable. For example, states cannot change local tax policies. Secondly, funding levels both for state-coordinated communities and for ACA-funded communities were substantially smaller, meaning that support for chosen objectives was not comparable. The average award for ARRA-funded communities was $11.4 million, compared to $4.1 million for ACA-funded communities (CDC, 2010). Lastly, the timing lag of the ACA-funded communities introduces confounders in terms of secular trends and other time-dependent variables that would complicate analysis.

This sample of 17 communities is considered small (Holosko, 2006), but because the entities are communities, having comparable interventions and data on this number is adequate for correlational study, and also represents a census of the CPPW locally-controlled food policy interventions. Often, policy studies have limited sample sizes because of the unit being studied and the variability in policy interventions implemented (Abadie, Diamond & Hainmueller, 2010). CPPW is a rare opportunity to examine a group of communities with similar resources and intervention parameters.

Funded entities were required to be city or county governments or their bona fide agents. Given this directive, there is some variability in the entity funded. Some grantees are municipal governments, others are county governments, and some fund an agent of either a city or county government. In order to gather comparable data for these communities, geographically-based variables are measured at the county level. This may not perfectly reflect the intervention boundaries, but in every case the county contains such boundaries. Using county level data allowed aggregation of multiple data sources that are standardized and weighted at the county level, as described in the data collection section.

While the study uses several indicators of variability in communities, a number of differences among these communities are undetermined. Differences of region, culture,

language, customs, and other sociological patterns were not quantified in this study. No community can be adequately described through statistics of any sort, making qualitative considerations important to interpreting results of this research.

One complication in the city/county overlap is Cook County, Illinois. Cook County received $15.9 million for obesity interventions as part of the first phase of funding. Subsequently, the City of Chicago also was granted obesity funding of $5.8 million, beginning six months later. When examining county-level data, the effects of these two separate awards are impossible to disentangle. Cook County is a special case because it was dually funded through the CPPW program, but it may not be entirely unique. The CPPW funds do not represent the full resources available to communities to do this work. Funding from other federal and state agencies, private foundations, and other private entities are available for community intervention, and likely the CPPW funds are only a portion of the investment made in any of these communities. For purposes of this analysis, funding and programmatic data for Cook County will be limited to the county award made in March 2010.

The time period studied in these 17 counties is the 30 months beginning March 2010. CPPW grants were designed to support 24 months of activity, but many communities required longer time periods to complete their activities and expend their budgets. A number of communities requested no-cost extensions to complete obesity-related objectives, some for as long as 12 months. However, in order to compare outcomes, a standard time period is needed, and those communities that needed the maximum extensions, by definition, had different outputs than communities that completed their activities within a shorter time period. Activities completed by September 30, 2012 were reported by December 2012, providing a complete picture of the intended project period.

Data Collection and Verification Procedures

This study analyzed secondary data from a variety of sources, as depicted in Figure 9. Data were stored in a single database that housed program area estimates by county on a number of variables. The data sources are discussed below, noting data availability and quality limitations and steps taken to ensure data quality. At the end of this section, results of pilot data collection are discussed.

Community Characteristics Data

Demographic information. The study used US Census Bureau data to identify estimates of key community demographic characteristics. These data were drawn from tables in the 2006-2010 *American Community Survey* (ACS), which provided a five-year average of

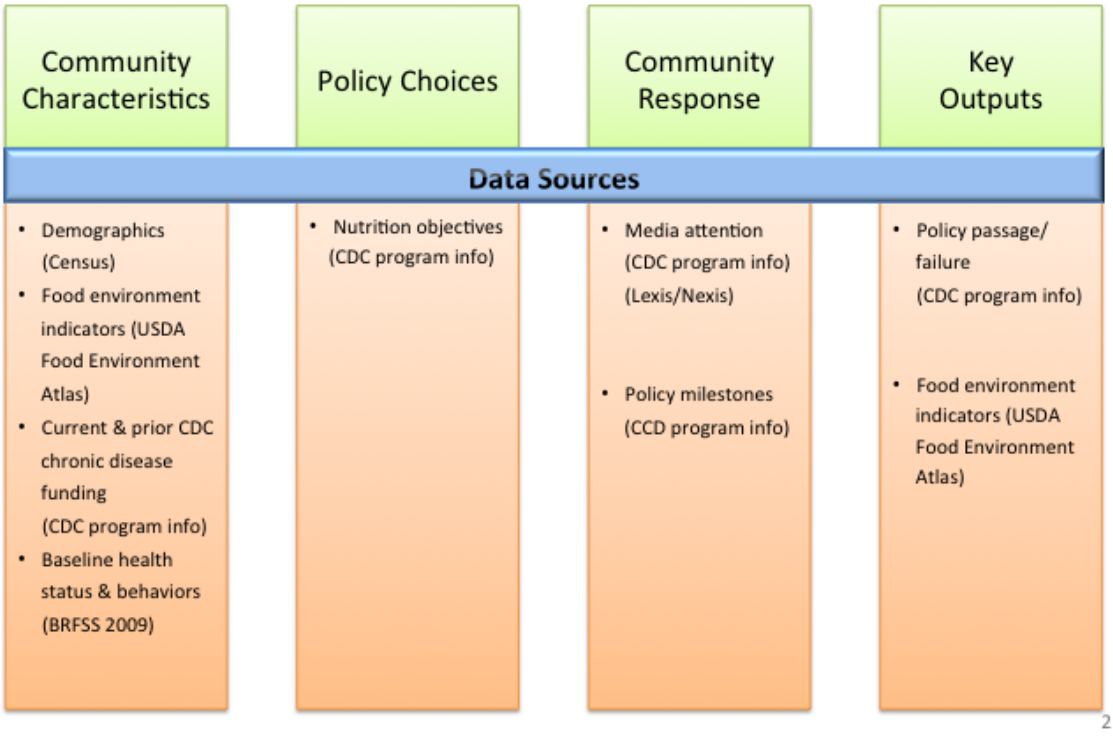

Figure 9. Data sources

sampled data for the years preceding CPPW program implementation (funds were awarded in March 2010). This five-year estimate supported analysis that related policy choices to established, extant conditions experienced in each community, using data that the Census Bureau recommends as the most stable estimates for most geographic areas (US Census Bureau, 2008). This data set also provides national comparison figures. While a wealth of information could be incorporated into the study, the study used basic demographic characteristics: population size, race, age, poverty rate, unemployment rates and median income for each program area. Because these data were based on sampling procedures and not the decennial census, they do not represent the same level of certainty as other census data. However, the 2010 census data was obtained concurrent with the start of the CPPW program, while the ACS data describe the communities as they existed for the prior five-year period. Census data is generally considered reliable and valid for social science research purposes, although demographic and income data are self-reported and likely include some bias.

Tables for the following geographic areas were consulted:

1. Jefferson Co, KY
2. Douglas Co, NE
3. Jefferson Co, AL
4. Suffolk Co, MA
5. Hamilton Co, OH
6. Multnomah Co, OR
7. Davidson Co, TN
8. Adams County, CO
9. Arapaho County, CO
10. Douglas County, CO
11. Miami-Dade Co, FL
12. Philadelphia Co, PA

13. New York City, NY
14. King Co, WA
15. Bexar Co, TX
16. Pima Co, AZ
17. Los Angeles Co, CA
18. San Diego Co, CA
19. Cook Co, IL

ACS estimates for the three counties in Colorado were combined into weighted averages for the tri-county area covered by the CPPW project there. Where cities and counties overlapped, county estimates were preferred, unless the geographic area differed significantly. Using counties provided more consistent data from secondary sources. Philadelphia County, PA was consistent with City of Philadelphia Health Department's jurisdiction. Both Bexar County (San Antonio, TX) and Suffok County (Boston, MA) were generally consistent with the city health departments' jurisdictions (with a few additional areas included in the county borders). New York City estimates were used because the city comprises five counties, corresponding to each borough (New York, Bronx, Kings, Queens & Richmond Counties).

Food environment data. For both baseline and outcome food environment information, the study relied on the *USDA Food Environment Atlas* (http://ers.usda.gov/FoodAtlas/). The atlas assembles county-level data on food choices, health and well-being, and community characteristics. This resource contains many indicators for potential baseline measures, but fewer indicators for 2010 and later, limiting the ability to examine changes over time. For example, data on proximity to grocery stores was last updated in 2006 as part of a special data collection effort for a report to Congress (USDA, 2012).

A recent literature review by Kelly, Flood, & Yeatman (2011) suggests that food environment constructs that impact food behaviors fall into three categories: "(i) the *community*

nutrition environment, including the number, type, location and accessibility of food outlets…; (ii) the *organizational nutrition environment* relating to food outlets within settings, such as schools and workplaces; (iii) the *consumer nutrition environment*, including availability, cost and quality of food and beverage products" (Kelly, Flood, & Yeatman, 2011, p. 1285, emphasis in original). The goal was to select a parsimonious number of indicators (3-5), at least one from each category that are relevant, informative, reliable, valid, and available. Because these data were compiled from a variety of sources with a variety of methods, the study will need to select carefully and examine the data collection procedures and limitations for each variable included in the analysis. Final selection of indicators depended on two factors: variables found to be most meaningful through expert consultation and review of the literature, and data availability for the time period and geographic areas in the study. As a result, the variables represented in Table 1 were selected for the study.

Table 1

Food Environment Variables

Selected Variable	Definition	Source
Community Nutrition Environment		
Fast food restaurants per 1,000	The number of limited-service restaurants in the county per 1,000 county residents. Limited-service restaurants include establishments primarily engaged in providing food services (except snack and nonalcoholic beverage bars) where patrons generally order or select items and pay before eating. Food and drink may be consumed on premises, taken out, or delivered to the customer's location. Some establishments in this industry may provide these food services in combination with alcoholic beverage sales.	Restaurant data were from the US Census Bureau, County Business Patterns, http://www.census.gov/econ/cbp/index.html.
Farmers markets per 1,000	Number of farmers' markets in the county. A farmer's market is a retail outlet in which two or more vendors sell agricultural products directly to customers through a common marketing channel. At least 51 percent of retail sales are direct to consumers.	County-level data for farmers' markets were compiled by USDA's Agricultural Marketing Service, Marketing Services Division, http://apps.ams.usda.gov/FarmersMarkets/.

Organizational nutrition environment		
Farm to school program	Counties with one or more farm to school programs where 1=one or more "farm-to-school" programs and 0=no such participation within the county. These programs include: direct sourcing from local producers, local sourcing through the Department of Defense procurement system (known as "DOD Fresh"), school gardens, farm tours, farm-related nutrition education or other classroom activities, and school menus and snacks highlighting locally sourced or locally available foods.	The National Farm to School Network conducted surveys in 2004 and 2005-06, and compiled the data from these surveys as well as a self-reporting registry maintained by the Network since 2007 at http://www.farmtoschool.org/
Consumer nutrition environment		
Price of sodas/national average	Regional average price of sodas relative to the national average price. Sodas include carbonated diet and caloric-sweetened beverages.	ERS estimates using the Quarterly Food-at-Home Price Database, QFAHPD-2, http://www.ers.usda.gov/data-products/quarterly-food-at-home-price-database.aspx.

Note. From http://ers.usda.gov/data-products/food- environment-atlas/

Some limitations of these data included the timing and availability issues previously mentioned, as well as the challenges of measuring food environments. The major challenges included the lack of psychometric standards for food environment measurement, questions about how to quantify the diet-related disease risk of food environments, and difficulty in connecting the food environment to the broader socioecologic context (Lytle, 2009). While this study will surely not resolve these limitations, it incorporated indicators that have a solid base in the literature and that rely on directly observed variables, as opposed to data that relies on scales.

Current and prior CDC chronic disease funding. The Centers for Disease Control and Prevention (CDC) established the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) in 1988, and for most of its history the Center has mainly funded state public health intervention. Beginning with the *Racial and Ethnic Approaches to Community Health* (REACH) program in 1999, CDC's chronic disease efforts began to enter the realm of community intervention. Even today, a minority of county health departments receives funding

for chronic disease activities. Prior to the CPPW initiative funded in 2009, the major funding sources for counties were the REACH program, the Steps to a Healthier US Program (now ended), and the Healthy Communities Program (Collins, Marks, & Koplan, 2009).

Current funding level for each CPPW grantee was obtained from CDC's website. Data on historic chronic disease funding for CPPW counties were available from annual reports compiling all NCCDPHP extramural funding. By reviewing each annual report beginning in 1998, the funding amount to each local government was extracted. Data collected focused on funding to further chronic disease prevention and control only, and excluded other local funding from NCCDHPH for HIV prevention in schools, maternal and child health, and surveillance purposes. The reports presented information on new funding awarded each year, ensuring that carryover funding is not double-counted. These data were adequate for purposes of identifying relative investments in communities, and the researcher has extensive experience using CDC budget information. Understanding the contribution of previous CDC investments in local chronic disease prevention efforts will contribute to understanding the benefits of federal funding.

Baseline health status and behaviors. A wealth of health-related data are available through CDC's *Behavioral Risk Factor Surveillance System* (BRFSS). As described in thousands of studies using the data, "the *Behavioral Risk Factor Surveillance System* (BRFSS) is an ongoing state-based random-digit–dialed telephone survey of non-institutionalized adults aged ≥ 18 years residing in the United States. BRFSS collects data on health risk behaviors and conditions, chronic diseases and conditions, access to health care, and use of preventative health services and practices related to the leading causes of death and disabilities in the United States" (Li et al., 2011, p. 1). Data are collected from over 400,000 adults each year. While data on

youth are available through the *Youth Risk Behavior Survey* (YRBS), these data are not consistently available at the county level (CDC, 2012b).

This study used several calculated variables provided by CDC: Body Mass Index (BMI) and fruit and vegetable consumption. It also incorporated information about obesity-related chronic disease rates (diabetes and high blood pressure).

In order to utilize BRFSS 2009 county-level data, the researcher downloaded the full county file from CDC at http://www.cdc.gov/brfss/smart/2009.htm, and compared the available counties in the data set to counties funded to address obesity in the CPPW program. Matches were found matches for all local grantees of interest.

In the most recent BFFSS surveillance summary (Li et al., 2011), researchers cite five limitations:

1. BRFSS excludes people living in institutions, affecting generalizability.
2. Cell-phone-only households and phone number portability likely affect response rates. In some states, BRFSS has begun using multimode administration, but this is not available nationally.
3. BRFSS conducts the survey in multiple languages, but not all languages are available, and therefore some potential respondents are excluded.
4. Some indicators were not available for all MMSAs and counties, affecting rankings (this limitation is not relevant for this study).
5. Data were self-reported and subject to recall bias and social desirability effects.

The fifth limitation may be particularly important for this study, since food choice, height and weight information are subject to social desirability bias, and food choice is also subject to recall bias. BRFSS calculated Body Mass Index (BMI), based on self-reported height and

weight, includes demonstrated bias, underestimating the prevalence of obesity and overweight by 9.5 and 5.7 percent, respectively (Yun, Zhu, Black, & Brownson, 2006). Some researchers use adjustment factors to correct for this bias (cf., Ezzati et al., 2006). Self-reported food choices, too, are affected by social desirability and also recall bias. More comprehensive diet surveys are typically more accurate than short food surveys like the questions in the BRFSS survey, but longer surveys are not as useful in broad, population-based surveillance efforts where brevity is crucial. Brief surveys are able to rank individuals according to intake, and are often used to monitor local and national trends in fruit and vegetable consumption (Kim & Holowaty, 2003). While all of these limitations are important, BRFSS remains the only data source for most chronic diseases and their risk factors, particularly for county-level data (Remington & Brownson, 2011), and it is the only source that provides comparable data for many counties, all states, and the US as a whole.

Policy Choice Data

CDC collected each community's stated objectives as part of a project management database. These objectives are categorized into the recommended media, access, pricing and policy strategies. Data collection further categorized the objectives based on the research questions about framing and certainty. Because programs are held accountable for these objectives, limited self-report bias is expected. In piloting the coding schemes, the researcher identified the need for a brief codebook to establish definitions for gain and loss framing, certain and uncertain policies, and to standardize counting of the number of policies pursued when objectives may have some overlap. The researcher enlisted a second coder to employ this codebook to code objectives and check for inter-rater reliability.

Community Response Data

Media attention. In Fall 2011, the researcher pilot-tested use of passive surveillance of news media to identify levels of media attention in CPPW communities at two different time periods. Using a standard set of terms, LexisNexis database searches were conducted to identify newspaper hits when possible, using local newspaper archive searches when LexisNexis did not provide access to newspapers in a particular locality. Use of LexisNexis as a method to capture level of media interest has been used in a number of studies, most recently in the Institute of Medicine report, *Accelerating Progress in Obesity Prevention* (IOM, 2012). LexisNexis *Academic* is available through UGA's Galileo system, providing fully searchable access to full-text news, business, and legal publications. A similar set of standard search terms was employed in the Google News Archives, allowing for a consistent set of search terms across geographic areas and adding news hits not found in major newspapers. The Google News Archive search includes major newspapers and magazines, news and legal archives, and allows the user to choose dates and locations to be included. Combined, the LexisNexis and Google News Archive searches performed adequately for detecting differences in amount of media coverage, according to scale construction statistical analysis done as a pilot. However, the pilot test indicated that raw scores varied substantially and were not normally distributed. To account for this variability among media markets, the study relied on percentage change from one time period to another.

This type of passive surveillance has some limitations. First, these search strategies are sure to be imprecise, identifying stories that are not relevant to the study. Another limitation is that different communities have differing media environments, making comparison difficult. In the pilot study, the irregularity of the data distribution led to creation of a Likert-type scale, which adequately captured the variability in media coverage without skewing the data to the

larger media markets. Lastly, a limitation of the LexisNexis database is that it does not include major media outlets for all communities in the study. During the pilot testing phase, the researcher was able to find suitable newspaper archives for all communities; however, while their search engines appeared to be comparable, there may be differences based on indexing practices.

Policy milestones and passage. CDC collected extensive programmatic information on all CPPW programs. Data were collected in three systems: a Management Information System (MIS) used for accountability for all American Recovery & Reinvestment (ARRA)-funded programs, an ACCESS database containing self-reported programmatic data that categorizes a number of program activities and captures estimated population reach of activities (somewhat redundant with the ARRA MIS), and project-officer completed reference sheets. The reference sheets are cumulative and record milestones for each objective of each program. Using the reference sheets, the study identified and coded objective frames and passage.

Limitations of this data source include inconsistency in project officers' data collection and recording practices and self-report bias. Approximately six different project officers work with CPPW sites, and while data consistency was enhanced by standardized reporting formats and timelines, some variability is unavoidable. This may be minimized by the management team's review of reference sheets and requests for amendments or additions. Although these data were initially self-reported, project officers conducted some verification activities, including site visits and document review. Therefore, self-report bias may be somewhat ameliorated, but not necessarily eliminated. Project officers have an interest in the success of their programs and may be inclined to report successes and not setbacks, resulting in biased reports. To address these limitations, CDC's evaluation team compared the multiple databases along with case study

reports, and corrected reference sheets to reflect accurate information. Coding of these data also required reliability checks. The researcher enlisted a second coder with extensive program evaluation experience to double-code policy passage data and check for inter-rater reliability.

Pilot Test Results

To ensure data availability and check coding plans, the research database was piloted with one community—Jefferson County, KY. All variables had available data, except for 2011 food environment data. Jefferson County was chosen because the data were available and complete, as the community had completed all of their food objective activities.

Two reliability issues were identified. In one case, Jefferson County changed its objective in the middle of the project period from being a mandatory policy to a voluntary policy. This objective was coded as "not passed," since the original intent of the objective was not met. Also, some objectives were redundant, such as having a number of separate objectives also part of a "wellness policy" objective. In this case, the summary policy was not coded, since it was a mix of gain and loss frames, and a mix of certain and uncertain policies. This pilot informed development of a brief codebook to establish data coding consistency, and to enlist another coder to establish inter-rater reliability.

Relying on a number of secondary sources has benefits and drawbacks. Because these data were being collected for other purposes, they are readily available for analysis. CDC and other government agencies routinely collect programmatic, technical assistance, and accountability data during program management, and these data can be more actively used to understand and improve program performance. By joining this information with other readily available data sources, this research aimed to enhance knowledge about public investments in health promotion.

Data Analysis

This research was designed to inform a path model in Mplus, but given the size of the available sample, separate multiple regression analyses for each research question were employed. While path analysis would allow exploration of the effects themselves, their relative sizes, and which variables best explain changes in endogenous variables using inferential statistics, models would not converge, and therefore separate regression analysis was performed for each hypothesis.

The multiple regression models included four exogenous constructs represented by multiple variables: socioeconomic status, health status, and food environment, each equation examining a different set of relationships to a dependent variable.

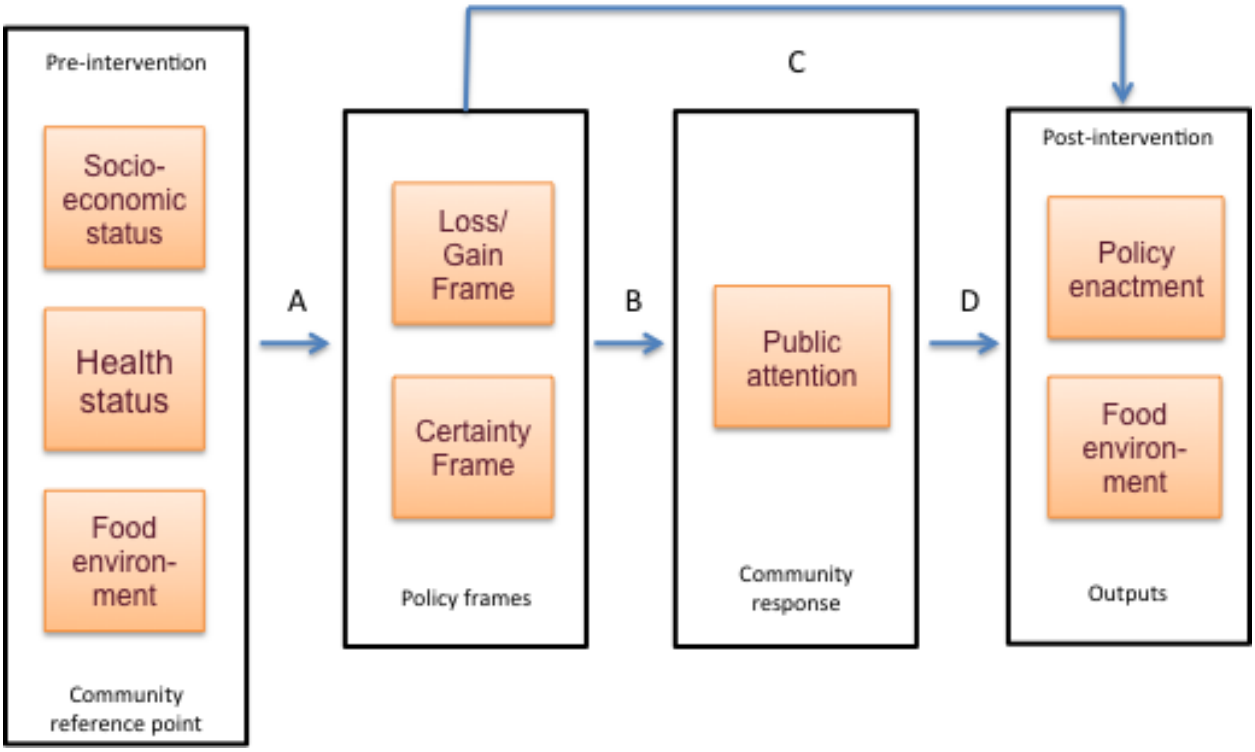

Figure 10. Multiple regression models

The following multiple regression equations for each hypothesis were run in SPSS version 19.

- Hypothesis A:

Loss frame score/certainty score = $\alpha + b_1$SES + b_2Health status + $b_3$food environment

- Hypothesis B & C:

News hits = $\alpha + b_1$SES + b_2Health status + $b_3$food environment + b_4 loss frame score + b_5 certainty score

- Hypothesis D:

Passage rate/Food Environment = $\alpha + b_1$SES + b_2Health status + $b_3$food environment + b_4 loss frame score + b_5 certainty score + b_6 news hits

Chapter Summary

This chapter described planned study methods, including the design, sample, data collection and verification, and data analysis. The next chapter presents results of conducting these methods.

CHAPTER 4

FINDINGS

Using a correlational design, the study analyzed secondary survey and programmatic data. The sample consisted of local communities funded to implement obesity-related policies as part of CDC's *Communities Putting Prevention to Work* (CPPW) program, which comprises 17 local areas. This is a non-probability sample that is both purposive and convenient (Holosko & Thyer, 2011). This chapter presents quantitative findings about the baseline characteristics of the selected *Communities Putting Prevention to Work* (CPPW) communities, descriptive statistics regarding programmatic data, and the results of data analysis to test Hypotheses A-D. These hypotheses use prospect theory to frame research questions about the factors that influenced community objective selection, community response to program actions, and whether program objectives were completed.

Baseline Characteristics of Selected Communities

Community Characteristics Data

Demographic information. Community characteristics data were collected to assess the baseline state of each community, helping to identify the reference point communities experienced as they chose their policy approaches. Table 2 is based on US Census Bureau data from tables in the 2006-2010 *American Community Survey* (ACS), which provided a five-year average of sampled data for the years preceding CPPW program implementation (funds were awarded in March 2010). This five-year estimate supported analysis that related policy choices to established, extant conditions experienced in each community, using data that the Census

Bureau recommends as the most stable estimates for most geographic areas (US Census Bureau, 2008).

Table 2

Demographic Data by Community (n=17)

County	Population	% White	% Poverty	% Unemployed
US		74.1	10.5	8.7
Bexar Co, TX	1,650,052	71.9	16.9	6.9
Cook Co, IL	5,172,848	54.1	15.3	9.9
Davidson Co, TN	612,884	64.1	17.3	7.5
Douglas Co, NE	505,545	78.7	13.1	6.2
Hamilton Co, OH	802,194	69.7	15.4	8.8
Jefferson Co, AL	656,912	54.5	15.5	8.7
Jefferson Co, KY	729,452	74.1	15.5	8.7
King Co, WA	1,879,189	70.8	10.2	6.2
Los Angeles Co, CA	9,758,256	50.8	15.7	8.7
Miami-Dade Co, FL	2,445,374	73.4	17.2	8.5
Multnomah Co, OR	712,036	78.5	16.0	8.8
New York City, NY	8,078,471	44.2	19.1	8.8
Philadelphia Co, PA	1,504,950	41.4	25.1	12.6
Pima Co, AZ	964,462	75.6	16.4	8.0
San Diego Co, CA	3,022,468	71.1	12.3	7.8
Suffolk Co, MA	704,460	56.0	20.6	9.2
Tri-County, CO	1,251,630	79.5	10.5	6.7

Summary Statistics				
	Population	**% White**	**% Poverty**	**% Unemployed**
Mean	2,379,481	65.2	16.0	8.4
Std. Error of Mean	665,216	3.0	0.9	0.4
Median	1,251,630	70.8	15.7	8.7
Std. Deviation	2,742,754	12.5	3.6	1.5
Minimum	505,545	41.4	10.2	6.2
Maximum	9,758,256	89.5	25.1	12.6

Note. Source: US Census Bureau ACS 2006-2010

To obtain estimates for the communities in this study, some county data were combined and weighted. New York City comprised five counties (New York, Kings, Queens, Bronx, and Richmond) and Tri-County, CO comprised three counties (Adams, Arapaho, and Douglas). Census population estimates were used throughout this study to weight individual county estimates in order to aggregate estimates for these project areas. To do this, the census populations for each county were added together for a total project area population. A proportion of the population living in each county was calculated, and that proportion was used to weight estimates of all other characteristics. For example, for the Tri-County area of Colorado, census estimates of the unemployment rate in each county were multiplied by the proportion of the tri-county population that resides in that county. The three weighted rates were then added together to form a weighted unemployment rate for the Tri-county area.

Population size varied from just over 500,000 people for Douglas County, NE to 9,758,256 for Los Angeles County, CA, with a median population for the communities studied of 1,251,630. Population size is used as a control variable in this study, and because it is skewed,

this variable was transformed into quartiles, with breaks at 708,248 for the 25th percentile, and the median for the 50th percentile, and at 2,733,921 for the 75th percentile. The result was four communities in the first, third and fourth quartile, and five communities in the second.

Percent white was selected as a measure of racial diversity in the communities, which could help identify communities' reference points using the "status quo" model. Problems associated with obesity and poor nutrition are more prevalent in populations of color (Freedman, 2011). The mean percent white in these communities was 65% (SD=12.5%), with a range from 41.4% in Philadelphia County, PA to 79.5% in Tri-County, CO. The estimated percent of white residents in the US during this period was 74.1%.

The average median age in these communities was 35.2 (SD=1.83), with a range of 31.6 in Suffolk County, MA to 37.7 in Miami, FL. Median age in the US for this period was 37.0. Because there is little variability in these data, this variable was not used in the analysis.

Percent of residents living in poverty and unemployment rate were selected to identify differences in socioeconomic status that may affect a community's reference point. In the US during this period, the percent living in poverty was 10.5%, and the unemployment rate was 8.7%. For these communities, the median poverty rate was 16% (SD=3.6%), with a range from 10.2% in King County, WA to 25.1% in Philadelphia, PA. For unemployment, the community median was closer to the US overall, at 8.4% (SD=1.5%), but ranged widely from 6.2% in Douglas County, NE to 12.6% in Philadelphia, PA. The variability in these socioeconomic indicators provides differentiation, identifying communities for whom the status quo could be experienced as a loss. Median income was considered as a measure of socioeconomic status, but differences in cost of living made this variable difficult to interpret, and it was not included in the analysis.

Each of these variables was examined for normality and found to be acceptable (that is, the skewness measure falls within the range of -2 times the SE of skewness to 2 times the SE of skewness (University of New England, 2013) except for population size, which was converted to a four-category variable by quartile.

Food environment data. For both baseline and outcome food environment information, the study relied on the *USDA Food Environment Atlas* (http://ers.usda.gov/FoodAtlas/). The atlas assembles county-level data on food choices, health and well-being, and community characteristics.

To assess the community nutrition environment, data for grocery stores, fast food restaurants and farmers markets per 1,000 residents were selected. Fast food and grocery store measures were only available for baseline year (2009), while farmers market data were available for both 2009 and 2012. Increasing availability of farmers' markets was an explicit objective of many communities. Table 3 displays these data for each community and summary statistics.

Table 3

Community Nutrition Environment Data (n=17) (per thousand except where noted)

County	Grocery Stores 2009	Fast Food 2009	Farmers Market 2009	Farmers Market 2012	% Change Farmers Market
Bexar Co, TX	0.10	0.73	0.01	0.02	19.68
Cook Co, IL	0.27	0.75	0.02	0.02	23.59
Davidson Co, TN	0.21	0.90	0.01	0.01	16.71
Douglas Co, NE	0.17	0.74	0.01	0.02	94.41
Hamilton Co, OH	0.19	0.71	0.01	0.02	273.92
Jefferson Co, AL	0.16	0.87	0.01	0.02	101.85

Jefferson Co, KY	0.19	0.85	0.03	0.04	8.69
King Co, WA	0.25	0.88	0.02	0.02	28.57
Los Angeles Co, CA	0.21	0.72	0.01	0.01	34.55
Miami-Dade Co, FL	0.23	0.57	0.00	0.01	319.49
Multnomah Co, OR	0.17	0.89	0.03	0.03	5.62
New York City, NY	0.65	0.78	0.01	0.02	106.31
Philadelphia Co, PA	0.32	0.79	0.01	0.03	194.37
Pima Co, AZ	0.13	0.58	0.02	0.02	37.46
San Diego Co, CA	0.20	0.76	0.02	0.02	-14.69
Suffolk Co, MA	0.27	0.86	0.03	0.03	17.16
Tri-County, CO	0.12	0.68	0.01	0.01	0.53

Summary Statistics

	Grocery Stores 2009	**Fast Food 2009**	**Farmers Market 2009**	**Farmers Market 2012**	**% Change Farmers Market**
Mean	0.23	0.77	0.015	0.02	74.60
Median	0.20	0.76	0.013	0.02	28.57
Std. Deviation	0.13	0.10	0.009	0.01	98.78
Minimum	0.10	0.57	0.003	0.01	-14.69
Maximum	0.65	0.90	0.033	0.02	319.49

Number of grocery stores prior to CPPW application and implementation can help determine baseline characteristics that influence reference point. Fewer grocery stores per thousand are associated with less access to healthy and fresh foods, and increasing grocery availability is an intervention used by CPPW and other efforts to improve the community food environment. The median number of grocery stores per thousand was .204, with a mean of .225

per thousand (*SD*=.125), ranging from .097 per thousand in Bexar County, TX to .651 per thousand in New York City, NY. While this distribution is skewed, New York is an outlier, with other values approximating a normal distribution.

A high per capita rate of fast food outlets is thought to be an indicator of a less healthy community food environment. For this sample, the mean number was .769 (SD=.10), meaning these communities on average had about three times as many fast food outlets per thousand as they had grocery stores, with a range of .572 per thousand in Miami-Dade County, FL to .903 in Davidson County, TN.

Farmers markets per thousand data were available both at baseline and as output data. In 2009, these communities had a mean of .015 farmers markets per thousand (SD=.009), with a range of .003 in Miami-Dade County, FL to .033 in Jefferson County, KY. By 2012, the average was .020 per thousand (SD=.008) with a range of .011 in Davidson County, TN to .035 in Jefferson County, KY. On average, these communities experienced a 75% increase in farmers markets per thousand residents, with Miami Dade County, FL increasing by 319%. Only one community—San Diego County, CA—had a decrease in markets, at a level of 14.7%.

To examine the organizational nutrition environment, data on the presence of a Farm to School program were used. These data were only available during the baseline period, for 2009. Eight of the 17 communities had such programs in place: Cook County, Davidson County, Hamilton County, King County, Los Angeles County, Miami-Dade County, Multnomah County, and Philadelphia County. In terms of the consumer nutrition environment, the pricing data available at the county level for a baseline year (2010) was the price of sodas versus the national average. Relative pricing was a strategy recommended by CPPW as a way to make less healthy foods—like sugar-sweetened beverage—less attractive to consumers. As seen in Table 4 the

mean was not far off the US average, with a proportion of 1.022 (*SD*=.096). However, the range showed variability, with a low of .930 in Suffolk County, MA and a high of 1.241 in Multnomah County, Oregon.

Table 4

Soda Price as Proportion of US Average, 2010 (n=17)

County	Soda Price
Bexar Co, TX	0.983
Cook Co, IL	0.943
Davidson Co, TN	0.972
Douglas Co, NE	0.979
Hamilton Co, OH	0.960
Jefferson Co, AL	0.972
Jefferson Co, KY	0.972
King Co, WA	1.241
Los Angeles Co, CA	1.103
Miami-Dade Co, FL	0.974
Multnomah Co, OR	1.241
New York City, NY	1.066
Philadelphia Co, PA	0.956
Pima Co, AZ	0.995
San Diego Co, CA	1.089
Suffolk Co, MA	0.930
Tri-County, CO	0.995

Current and prior CDC chronic disease funding. CPPW applicants proposed budgets of up to $20 million, and could apply separately for obesity and tobacco funding. In addition, data were gathered on prior local-level funding for chronic disease programs to examine whether prior capacity related to other outcomes of interest in this study.

Table 5

Prior and CPPW funding (n=17)

County	Prior funding (in millions)	CPPW funding (in millions)
Bexar Co, TX	$6.1	$15.6
Cook Co, IL	$7.9	$15.9
Davidson Co, TN	0	$7.5
Douglas Co, NE	0	$5.7
Hamilton Co, OH	$0.2	$6.7
Jefferson Co, AL	0	$6.3
Jefferson Co, KY	0	$7.9
King Co, WA	$16.9	$15.5
Los Angeles Co, CA	0	$15.9
Miami-Dade Co, FL	0	$14.7
Multnomah Co, OR	0	$7.5
New York City, NY	0	$15.5
Philadelphia Co, PA	$8.7	$15
Pima Co, AZ	0	$15.8
San Diego Co, CA	0	$16.1

Suffolk Co, MA	$18.2	$6.4
Tri-County, CO	0	$10.5

Prior funding data was obtained by reviewing extramural funding reports produced for internal use at CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) from 1998—the year CDC launched REACH 2000—through the 2009, the year prior to CPPW funding. As displayed in Table 5, six of the 17 local areas received funding directly from CDC, with a range of $200,000 to $18 million cumulatively for the eleven-year period. This method does not capture CDC funding provided to localities through intermediaries, such as state governments or nonprofit organizations. An interesting policy question is whether prior investment led to better performance. This variable is therefore included in the analysis as a binary variable.

CPPW funding ranged from $5.7 million in Douglas County, NE to $16.1 million in San Diego, CA, for an average of $11.7 million (SD=4.4 million). While this distribution is skewed, it is sufficiently normal for analysis. Of the communities funded for obesity, seven were also funded for tobacco control efforts (Cook County, IL; Jefferson Count, AL; King County, WA; Los Angeles, CA; New York City; Philadelphia, PA; Suffolk County, MA). It is possible that tobacco funding could either bolster obesity efforts or distract from them. This variable is therefore used as a binary variable.

Baseline health status and behaviors. This study used several calculated variables provided by CDC's *Behavioral Risk Factor Surveillance System* (BRFSS): Body Mass Index (BMI) and fruit and vegetable consumption. It also incorporated information about obesity-related chronic disease rates (diabetes and cardiovascular disease). While the 2011 survey allowed states to include questions about sugar sweetened beverages and menu labeling, these

data were not available for all communities. Also, the methodology for BRFSS changed between the 2009 and 2011 administration, making prior years non-comparable (CDC, 2012d). For this reason, BRFSS health status was used as a baseline measure to identify reference points for communities, rather than to compare pre- and post-intervention health status. The lack of trend data should not hamper this analysis, however, since changes in obesity and related diseases are not expected in the 30-month time period of these efforts.

Data were drawn from the BRFSS SMART data set, which provided weighted individual response data for all counties in this study, except for two smaller counties within New York City: Bronx and Richmond Counties. Three counties were combined to produce both the Tri-County, CO estimate (Douglas, Adams and Arapaho counties) and the New York City estimate (Kings, Queens, and New York counties). Because individual respondent data were used, no weights were necessary when combining these counties. Each county included was deemed by CDC to have adequate sample size to make accurate estimates. Samples size for each area is presented in Table 6.

Table 6

BRFSS Sample Size by County (n=17)

County	Sample size
Bexar Co, TX	676
Cook Co, IL	1,895
Davidson Co, TN	437
Douglas Co, NE	935
Hamilton Co, OH	697
Jefferson Co, AL	606

Jefferson Co, KY	1,801
King Co, WA	3,203
Los Angeles Co, CA	2,170
Miami-Dade Co, FL	282
Multnomah Co, OR	651
New York City, NY	1,462
Philadelphia Co, PA	492
Pima Co, AZ	690
San Diego Co, CA	1,707
Suffolk Co, MA	1,800
Tri-County, CO	2,345
TOTAL	**21,849**

This study did rely on BRFSS's weighting of county data, assuring that estimates are adjusted appropriately on the basis of age, race and sex categories. Weights were applied in SPSS in order to generate county-level estimates for all health status indicators.

Table 7

Baseline Health Status Data (2009)

County	% Overweight	% Obese	% Low Fruit/Veg	% Diabetes	% High Blood Pressure
United States	*37.0*	*27.5*	*76.6*	*8.7*	*28.7*
Bexar Co, TX	37.8	26.7	74.2	7.7	26.2

Cook Co, IL	35.0	27.8	72.6	8.0	29.7
Davidson Co, TN	34.6	26.4	66.4	6.1	23.8
Douglas Co, NE	33.2	25.8	77.4	6.9	26.1
Hamilton Co, OH	35.2	24.6	72.5	8.3	28.6
Jefferson Co, AL	33.5	30.0	74.4	10.5	38.4
Jefferson Co, KY	29.8	32.6	73.5	13.0	39.2
King Co, WA	32.6	21.2	70.5	6.4	24.2
Los Angeles Co, CA	32.6	24.5	64.1	10.4	25.7
Miami-Dade Co, FL	41.9	19.3	66.7	11.3	37.7
Multnomah Co, OR	31.2	19.9	66.9	6.0	25.1
New York City, NY	29.3	18.5	69.0	8.7	24.9
Philadelphia Co, PA	35.5	28.1	69.2	10.7	34.3
Pima Co, AZ	30.2	27.4	72.4	8.6	27.3
San Diego Co, CA	35.3	20.3	61.8	8.2	23.5
Suffolk Co, MA	30.5	21.1	69.4	6.9	25.9
Tri-County, CO	36.6	17.7	70.5	5.5	23.0

Summary Statistics

	% Overweight	**% Obese**	**% Low Fruit/Veg**	**% Diabetes**	**% High Blood Pressure**
Mean	33.8	24.2	69.9	8.4	28.5
Median	33.5	24.6	67.0	8.2	26.1
Std. Deviation	3.3	4.4	4.1	2.1	5.5
Minimum	29.3	17.7	61.8	5.5	23.0
Maximum	41.9	32.6	77.4	13.0	39.2

For this study, both overweight and obesity percentages are included. This calculated variable uses self-reported height and weight to calculate BMI, calculated with weight in kilograms divided by height in meters squared (kg/ m2). A BMI of between 25.0 and 29.9 is considered overweight, while BMI over 29.9 is considered obese.

As seen in Table 7, the mean overweight percentage for the sample communities was 33.81% (SD=3.25%), ranging from 29.3% in New York City to 41.9% in Miami-Dade. Obesity rates averaged 24.23% (SD=4.38), ranging from 17.7% (Tri-County, CO) to 32.6% (Jefferson County, KY). Clearly, some communities had a more significant overweight and obesity problem than others, although the rates are close to normally distributed among the communities. Interestingly, both mean rates were lower than the overall US rate.

To identify baseline nutrition characteristics, BRFSS offered a calculated measure of fruit and vegetable consumption. Recommendations have called for five or more servings of produce a day, although they vary by subpopulation. For this study, under five servings of produce (fruits or vegetables) a day was chosen as a measure of suboptimal nutrition. BRFSS asks numerous questions about dietary intake, and calculates this variable based on those self-reported dietary recall questions. In these communities, the average percentage of residents eating fewer than five servings was 69.93% (SD=4.11), ranging from 61.8% in San Diego, CA to 77.4% in Douglas County, NE. As a comparison, the US rate was 76.6%, meaning these communities, for the most part, started off better than average.

BRFSS uses self-reported data to estimate disease prevalence for diabetes and high blood pressure, asking respondents if a doctor has ever diagnosed him or her with these conditions. For these communities, rates averaged 8.42% for diabetes (SD=2.12) and 28.45% (SD=5.48) for high blood pressure. The lowest rates of both were found in Tri-County CO (5.5% diabetes and 23%

high blood pressure), with the highest rates for both found in Jefferson County, KY (13% diabetes and 39.2% high blood pressure).

Community Response Data

Media Attention

Based on the pilot test, two measures of media attention were employed: hits in local newspaper(s) and hits in the Google News Archive. Two time periods were examined: the 18 months prior to award (9/17/2008 to 3/17/2010) and the 18 months post award (3/18/2010 to 9/18/2011). While these search strategies surely do not capture all newspaper coverage, and likely capture some stories unrelated to the topic, consistency of search terms made the data relatively comparable across sites.

Newspaper searches were conducted in LexisNexis whenever possible to maximize consistency in indexing. The search string used was*: "nutrition AND government OR health department OR legislat$ OR law OR ordinance."* This search string captured stories related to food and nutrition that related to government actions. Searches that did not limit to government-related content tended to retrieve extraneous articles including restaurant reviews, food safety concerns, and dieting tips. Communities with two major papers averaged the hits between them. The study relied on the Alliance for Audited Media to determine the highest circulation newspapers for each area. Sources for each community are listed in Table 8. Most newspaper web sites supported identical search strategies to LexisNexis; however, the Miami Herald and San Diego Union-Tribune sites did not support Boolean searches, so a simplified search strategy was implemented using the string *"nutrition AND government."* One paper, the Birmingham News, did not have a searchable archive, but a news aggregator site was located to complete the search.

Table 8

Newspapers Searched by County (n=17)

County	Newspaper	Source
Bexar Co, TX	San Antonio Express-News	Newspaper site
Cook Co, IL	Chicago Sun-Times	Newspaper site
	Chicago Daily Herald	Lexis-Nexis
Davidson Co, TN	The Tennessean	Newspaper site
Douglas Co, NE	Omaha World-Herald	Lexis-Nexis
Hamilton Co, OH	Cincinnati Enquirer	Newspaper site
Jefferson Co, AL	Birmingham News	www.newslibrary.com
Jefferson Co, KY	Courier-Journal	Newspaper site
King Co, WA	Seattle Post-Intelligencer	Newspaper site
Los Angeles Co, CA	LA Times	Newspaper site
	Daily News of LA	Lexis-Nexis
Miami-Dade Co, FL	Miami Herald	Newspaper site with limited Boolean search
Multnomah Co, OR	The Oregonian	Newspaper site
New York City, NY	New York Times	Lexis-Nexis
	New York Daily News	Lexis-Nexis
Philadelphia Co, PA	Philadelphia Inquirer	Lexis-Nexis
Pima Co, AZ	Arizona Daily Star	Newspaper site
San Diego Co, CA	San Diego Union-Tribune	Newspaper site with limited Boolean search

Suffolk Co, MA	Boston Globe	Newspaper site
Tri-County, CO	Denver Post	Lexis-Nexis

In the 18 months preceding award, the average number of newspaper stories on food policy-related issues was 59.4 (SD=40.5). While the standard deviation is large, the distribution is approximately normal, with the median close to the mean (median=51.0). Coverage ranged from one story in Multnomah County, OR to 146 stories in Cook County, IL. In the 18 months following award, the average was 68.3 (SD=47.9), again with a reasonably normal distribution. The fewest stories were reported in King County, Washington (0), and the most were reported in Suffolk County, MA (159).

Table 9

Media Attention (n=17)

County	**Prior newspaper hits** (9/17/08-3/17/10)	**Post-award hits** (3/18/10-9/18/11)	**% Change in newspaper hits**	**Prior Google News hits**	**Post-award Google News hits**	**% Change in Google News hits**
Bexar Co, TX	61	103	69	59	50	-15
Cook Co, IL	146	112	-23	767	569	-26
Davidson Co, TN	39	69	77	74	38	-49
Douglas Co, NE	51	0	-100	38	36	-5
Hamilton Co, OH	45	27	-40	77	39	-49
Jefferson Co, AL	43	82	91	60	38	-37
Jefferson Co, KY	52	120	131	43	25	-42
King Co, WA	13	0	-100	138	110	-20

Los Angeles Co, CA	6	31	408	613	730	19
Miami-Dade Co, FL	94	73	-22	155	130	-16
Multnomah Co, OR	1	10	900	24	128	433
New York City, NY	107	131	22	614	2210	260
Philadelphia Co, PA	48	62	29	205	144	-30
Pima Co, AZ	86	83	-3	21	32	52
San Diego Co, CA	29	19	-34	187	127	-32
Suffolk Co, MA	124	159	28	590	591	0
Tri-County, CO	66	81	23	99	80	-19

Summary Statistics

	Prior newspaper hits	**Post-award hits**	**% Change in newspaper hits**	**Prior Google News hits**	**Post-award Google News hits**	**% Change in Google News hits**
Mean	59.4	68.3	85.5	221.4	298.6	25.0
Median	51.0	73.0	22.7	99.0	110.0	-19.1
Std. Deviation	40.5	47.9	239.0	251.1	540.4	127.4
Minimum	1.0	.0	-100.0	21.0	25.0	-49.4
Maximum	145.5	159.0	900.0	767.0	2210.0	433.3

For Google News Archive searches, the following string was employed: *"nutrition government OR health-department OR policy OR law OR ordinance "<county name>" location:<city/county name>".* Results are displayed in Table 9. The average number of prior online news stories was 221.4 (SD=251), with a low of 21 in Pima County, AZ and a high of 767 in Cook County, IL. For the post-award period, the mean was 298.7 (SD=540.4), with a low of 25 in Jefferson County, KY and a high of 2,210 in New York City.

News media data were widely dispersed, as evidenced by the large standard deviations and ranges of the data. Also, the variability in the data is likely due only in part to differences in community response; some variability is due to the size of the media market. While control variables such as population size may minimize this confounder, this analysis will instead rely on a percent change calculated variable as a measure of community response.

In order to account for differing media markets, percentage changes were calculated for both newspapers and Google News hits. Change in newspaper hits averaged an 85% increase, with a range of a 100% decrease (Douglas County, NE) to a 900% increase (Multnomah County, OR). These data were not normally distributed, but are right skewed due to two outliers (Multnomah and Los Angeles). Google news hits showed a similar pattern, ranging from a decrease of 49% in Hamilton County, OH to an increase of 433% in Multnomah County. Again data were positively skewed, and closer to normal if the two highest outliers were not considered (Multnomah and New York City).

Policy Objectives and Passage

CDC provided reference sheets that tracked all community-identified objectives and their milestones for the project period. Data were coded for the period of March 2010 to September 2012, a 30-month period. The project period was originally defined as 24 months; however, many projects requested extensions, some of which went beyond the 30-month period. Since timely implementation of policy interventions was a goal of the program, this study only included activities completed by six months after the project period ended.

Data coding focused on three characteristics of food objectives identified by the research questions: loss or gain frames, certainty (that is, whether the policy was mandatory, providing certainty of results), and passage. A codebook is included as Appendix A. Frame was coded as

negative if the objective aimed to limit a food, or focused on preventing harm. Examples included menu labeling of unhealthy items and tax initiatives that increase the cost of less healthy foods. If the objective sought to promote healthy foods, or was worded to improve health, it was coded as a positive frame—for example, subsidies for produce or farmers market initiatives. Mixed or neutral policies were code as such. Objectives were coded as "certain" if they contained a mandate or if the policy was implemented across an entire system, (e.g., all schools). Voluntary policies that encouraged but did not require action were coded as not certain. Objectives were coded as "passed" if the objective as originally stated was achieved in the timeframe. Objectives that were altered to change frame, certainty, or targets, were coded as "not passed." Where ongoing evaluation was being conducted, but activities had been implemented as planned, the objective was coded as "passed."

Limitations of this data source include inconsistency in project officers' data collection and recording practices and self-report bias. Approximately six different project officers worked with CPPW sites, and while data consistency is enhanced by standardized reporting formats and timelines, some variability is unavoidable. This may be minimized by the management team's review of reference sheets and requests for amendments or additions. Although these data were initially self-reported, project officers conducted some verification activities, including site visits and document review. Therefore, self-report bias may have been somewhat ameliorated, but not necessarily eliminated. Project officers have an interest in the success of their programs and may be inclined to report successes and not setbacks, resulting in biased reports. To address these limitations, CDC's evaluation team compared the multiple databases along with case study reports, and corrected reference sheets to better reflect more consistent information.

Another limitation is that objectives were formulated by each project, and varied widely in how ambitiously they are constructed. For example, one project may have committed to "pass restrictions on sugar sweetened beverages in three school systems," while another might have committed to "provide information to three school systems to inform sugar sweetened beverage policies." Clearly, the first formulation required the program staff to influence actions outside of their control, while the second formulation was entirely within the program's control, making it more achievable during the project period. This variability means that success in meeting the objective was not necessarily a comparable achievement across sites. Yet, this study is designed to examine program plans as formulated by different sites, so this variability is inevitable.

Coding of these data also required reliability checks. Two coders reviewed each county's set of data: the researcher and a colleague with a background in program evaluation. Disagreements were found in approximately 16% of codes. This excluded codes for certainty, where the second coding revealed a need to better define the construct for replication. After resolving inter-rater differences, 6% of the researcher's initial codes were changed to the second coder's code.

The certainty construct definition proved inadequate for replication by the second coder. Revisions to the codebook included adding the text in italics:

1. Certain:
    - Record a '1' if the policy is a mandate or is implemented across an entire system (e.g., all schools). This includes policies that require individuals or institutions to complete an action related to the objective. *For example, if schools in an entire school system have to change procurement standards for food, that is "certain." If schools in the system are encouraged and helped to change their procurement*

practices, that is not certain. Certain objectives often include regulations or changes to ordinances or laws.

- Record a '0' if the policy is voluntary or is implemented in only a fraction of a system (e.g., some convenience stores). *This includes activities that encourage, but do not require, changes in institutions or individuals. Media campaigns are not certain.*

Food Policy Objectives

Communities varied in the number of food policy objectives they pursued, with a low of four in Los Angeles, and a high of 17 in Multnomah County. The average number of policies was 10.18 (SD=3.93), as depicted in Table 10. The number of objectives was relatively normally distributed among the communities. A complete list of food objectives proposed by the communities in this study can be found in Appendix B. An example of a Los Angeles objective, coded as a gain framed, certain policy is:

Adopt and/or implement food policies to improve the nutritional content of school meals in at least 4 Los Angeles County school districts, including the Los Angeles Unified School District.

An example from Multnomah County coded as a loss framed, certain policy is:

Two or more school districts (totaling at least 50% of all K-12 students in Multnomah County) will implement policies that restrict availability of high calorie, high fat, low nutritional quality of food and beverages, and sets nutrition standards for food served outside of the federal school meals program.

Policy Frame

Based on the coding scheme above, policy frame was examined by calculating the percentage of objectives that were loss framed, with a focus on preventing harm. For purposes of this study, the loss frame was deemed most relevant, since neutral or positive frames both support the improving health message, while the loss frame invokes harm messages. CDC required communities to identify objectives from the MAPPS framework (Media, Access, Prompts, Pricing, and Social Support), and offered strategies with the same core actions framed either as promoting health (gain framed) or preventing harm (loss framed). Communities were free to design specific objectives using these strategies, and to choose how they were framed. Figure 11 depicts how core actions could be differently framed.

Gains/Promoting Positive Externalities	**Core Action**	**Loss/Reducing Negative Externalities**
Media to promote healthy food/drink choices	Improve media environment	Media and advertising restrictions on unhealthy choices
		Counter-advertising for unhealthy choices
Make healthy food/drink more available	Improve retail food environment	Limit unhealthy food/drink availability
		Reduce density of fast food establishments
		Eliminate transfat through purchasing actions, labeling initiatives, restaurant standards
		Reduce sodium through purchasing actions, labeling initiatives, restaurant standards
Signage for healthy items	Improve decision prompts	Signage for less healthy items
		Menu labeling
Maximize healthy items' attractiveness		Minimize unhealthy items' attractiveness
Lower prices for healthy items	Changing relative price	Increase prices for unhealthy items

Figure 11. CDC's MAPPS food strategies by frame (adapted from CDC, 2009)

The range of loss framing in communities' plans was from no loss framed objectives in Los Angeles and Miami to 55% loss framed in Boston (Suffolk County, MA). A sample positive frame, not certain objective from Miami is:

> *Increase by 20% the availability of healthier foods from farmer's markets, located in public service venues (i.e. government facilities). The selected public service venues serve as a hub for government employees, residents utilizing government services, transportation gateways, and shopping venues.*

An example of a Boston objective that is a loss framed, not certain objectives is:

> *Conduct a hard hitting media/social marketing campaign utilizing multiple media channels that will expose 70% of Boston's adult population to messages that: a) give information on health impact of sugar-sweetened beverages and b) suggest opportunities for policy/community action to reduce consumption.*

The average percentage of food objectives that were loss framed was 18.5% (SD=15.92%). This distribution was right skewed, with 10 of the 17 communities under 20% loss framed. Still, the magnitude of right skew was acceptable for analytic purposes.

Table 10

Community Food Objectives (n=17)

County	Number of food objectives	% loss framed	% certain	% passed
Bexar Co, TX	12	17	17	92
Cook Co, IL	8	13	25	63
Davidson Co, TN	13	8	23	92
Douglas Co, NE	5	40	20	100

Hamilton Co, OH	8	25	13	88
Jefferson Co, AL	7	14	71	71
Jefferson Co, KY	9	22	56	78
King Co, WA	9	11	67	22
Los Angeles Co, CA	4	0	75	100
Miami-Dade Co, FL	13	0	23	54
Multnomah Co, OR	17	24	59	88
New York City, NY	15	40	40	80
Philadelphia Co, PA	13	31	38	77
Pima Co, AZ	16	0	25	69
San Diego Co, CA	7	0	14	86
Suffolk Co, MA	11	55	27	91
Tri-County, CO	6	17	17	100

Summary Statistics

	Number of food objectives	**Percent loss framed**	**Percent certain**	**Percent passed**
Mean	10.2	18.5	35.9	79.4
Median	9.0	16.7	25.0	85.7
Std. Deviation	3.9	15.9	21.4	19.8
Minimum	4.0	0	12.5	22.2
Maximum	17.0	54.6	75.0	100.0

Certainty

Based on the revised definitions in the codebook, objectives were coded as either certain or not certain. For analysis, the percentage of objectives that were certain was calculated, as

displayed in Table 10. This percentage ranged from 12.5% in Hamilton County, OH to 75% in Los Angeles. The mean percentage was 35.9% (SD=21.39%), again with a right skew, with 10 communities having less than 30% objectives coded as certain.

An example of a gain framed, certain objective from Jefferson County, AL is:

> *Jefferson County Department of Health will gain adoption of improved food procurement policies within three school systems with high-risk populations.*

An example of a gain framed, non-certain policy from Hamilton County, OH is:

> *Implement a multi-faceted social marketing campaign to promote healthier food & beverage choices and increased physical activity, as well as combat negative messaging.*

Passage. Objectives were coded as either passed or not passed. If an objective was changed because of midcourse barriers, it was coded as "not passed." For objectives that required evaluation data to verify, the objective was considered "passed" if all activities were complete and evaluation was underway. This was a common occurrence with media strategies.

For the analysis, percentage passed was calculated and is displayed in Table 10. The lowest passage rate was 22.2% in King County, WA, with the highest passage rates at 100% in three counties: Douglas County, NE, Los Angeles County, CA and Tri-County, CO. The average passage rate was high at 79.4% (SD=19.84%), with a fairly normal distribution. King County was an outlier, with a much lower passage rate than any other community.

It is likely that passage rates were heavily affected by how aggressive communities were in setting objectives, as demonstrated by the examples below:

From King County, WA:

> *By March 2012, at least one King County jurisdiction and/or state legislature will pass a sugar-sweetened beverage (SSB) tax or fee.*

From Tri-County, CO:

> *Three additional sustainable community gardens will be established in underserved areas of Adams, Arapahoe, and Douglas Counties that increase access to healthy food for WIC clients."*

Hypothesis Testing

The research plan for this study contemplated a path model analysis using MPlus. However, path models often require large amounts of data to achieve model identification and convergence (Olobatuyi, 2006). Given the sample size (n=17) and the number of variables collected, MPlus path models did not converge. Instead, a series of multiple regression analyses were completed to address each hypothesis.

To achieve the most parsimonious model, stepwise multiple regression was used to test each hypothesis. Stepwise regression systematically eliminates variables with non-significant relationships to the predicted variable, achieving a model that best predicts the dependent variable. To perform this analysis, SPSS performs tests at each step, determining the contribution of each predictor in the equation if it were the last entered. Some predictors might lose their predictive power when additional variables enter the equation (Pedhazur, 1997). This method is appropriate because each predictive construct in the study comprises multiple variables, but only some are likely to correlate with the dependent variables.

While stepwise regression is an efficient means of fine-tuning a model, this method has some limitations. Stepwise regression is criticized for inflating the potential for Type I errors through multiple tests, although this problem is lessened with a small number of predictor variables (Lewis, 2007). Stepwise regression is also subject to sampling error that can damage replicability, although this problem is also ameliorated with fewer variables and larger effect

sizes. Sampling error is less problematic with a sample that is a census (Lewis, 2007), which is the case in this study.

Stepwise regression was an efficient and systematic means to determine which variables had meaningful relationships, given the strong theoretical model underlying the analysis, the relatively modest number of variables, and the type of sample used. Using stepwise regression allowed for a systematic and parsimonious model for each hypothesis. Where stepwise regression could not produce a statistically significant model, an enter-method regression was used to allow an examination of the directionality of relationships. The set of hypotheses tested is depicted in Figure 12, below.

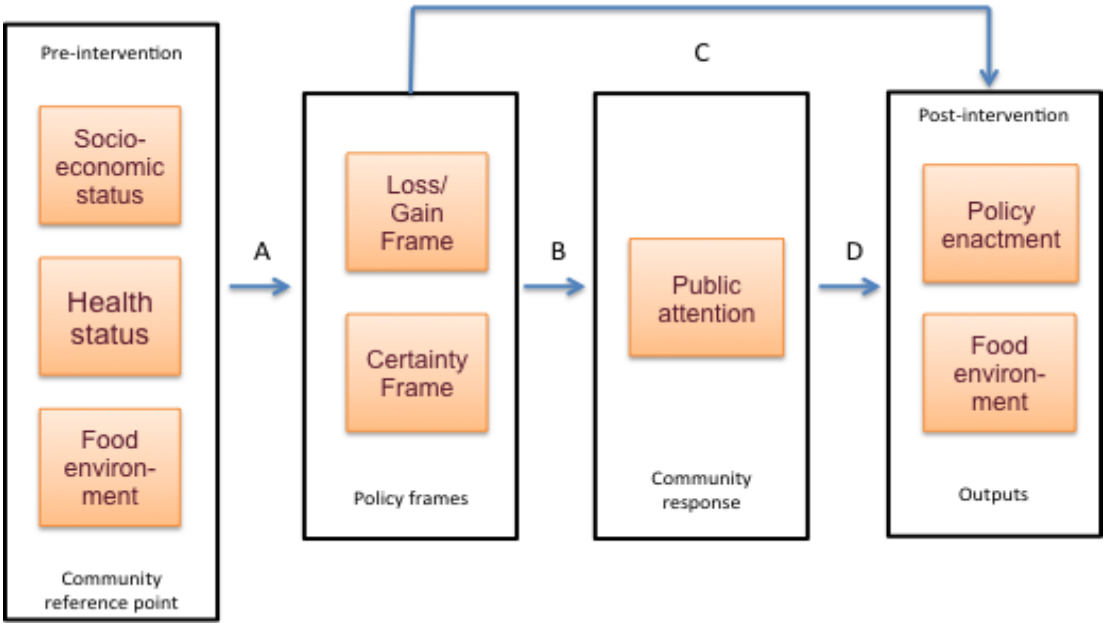

Figure 12. Hypotheses A-D

Hypothesis A: Communities That Have Less Supportive Food Environments and/or Poorer Health Status Prior to Policy Establishment Will Favor Loss-Framed and Certain Policies

To test hypothesis A, two stepwise multiple regression equations were analyzed. The first looked at the impact of community characteristics, health status and food environment on the percentage of loss framed objectives, and the second examined the same variables' effect on the percent of objectives that were certain, as depicted in Table 11.

Table 11

Multiple Regression Variables for Hypothesis A

Community characteristics	**Health status**	**Food environment**	**Dependent variables**
• Population quartile • Percent white • Percent in poverty • Unemployment rate • CPPW tobacco funding • CPPW funding amount • Prior chronic disease funding	• Percent overweight • Percent obese • Percent low fruit/vegetable consumption • Percent diabetes • Percent high blood pressure	• Farm to school • Grocery stores per thousand • Fast food per thousand • Soda price	• Percent loss framed objectives • Percent certain objectives

The first stepwise regression using the loss frame percentage as the dependent variable failed to produce a statistically significant model. This can be interpreted to mean that

community characteristics, health status, and the food environment in communities who were proposing objectives did not affect the framing of policies. However, it may be premature to draw this conclusion, given the available sample and the uncharacterized variability of the communities. To look for clues to the trends in these communities, an enter-method regression was run. The model was also not statistically significant ($F(1,15) = 5.870$, $p = .314$) with an R^2 of .989. No predictor in the model had a p-value of less than .302. Predictors association with loss framed scores are depicted in Table 12. Each construct has a mix of positive and negative associations, and the patters did not show that communities with more challenges were more likely to have loss framed objectives.

Table 12

Predictor Association with Higher Loss Framed Scores

Community characteristics	**Health status**	**Food environment**
+ Population quartile	+ Percent overweight	+ Grocery stores per thousand
+ Percent white	- Percent obese	+ Fast food per thousand
+ Percent in poverty	+ Percent low fruit/vegetable consumption	- Soda price
+ Unemployment rate	+ Percent diabetes	
+ CPPW tobacco funding	- Percent high blood pressure	
- CPPW funding amount		
- Prior chronic disease funding		

The stepwise regression predicting the level of certainty in community objectives did result in a statistically significant model, with an R^2 of .757 ($F(3,13)=13.501$, $p < .001$) using

CPPW tobacco funding (b =.183, p =.008), high blood pressure rates (b =.021, p =.004), and relative soda prices (b =1.615, p <.001) as predictors. These predictors represent one variable in each category: community characteristics, health status, and food environment. With certainty score expressed as a proportion between 0 and 1, the equation can be expressed as:

CERT= -1.958 + .183 TOB FUND + .021 HBP + 1.615 SODAPRICE

- A community that also received CPPW tobacco funding (a binary variable) had an increase of 18 points in the percent of objectives that were formulated to be certain. This may relate to the stronger formulation of tobacco policies in general, which could influence communities to follow suit when addressing obesity.
- For each 1 percentage point of high blood pressure in a community, the objectives were 2.1% more certain, indicating that communities with poorer health status were more likely to choose mandatory policies with certain outcomes.
- Because soda price is expressed as a ratio, the result indicates that the certainty score goes up by a multiple of 1.65 of the soda price ratio. This indicates that communities that had more supportive food environments were more likely to frame their policies as certain.

Hypothesis B: Communities with More Loss-Framed Policies and More Certain Policies Will Have Higher Levels of Community Response

Hypothesis B examined the effects of objective framing (loss framing and certainty) on community response, as represented by newspaper and Google News hits. In order to eliminate differences in media markets as a driver of news coverage, the output variable used was the percent change in news coverage. Two stepwise multiple regression equations examined this hypothesis, one with the dependent variable as change in newspaper hits, and one with change in

Google News hits. Some community characteristics were retained in this analysis as control variables.

Table 13

Multiple Regression Variables for Hypothesis B

Community characteristics (Control variables)	**Objectives**	**Dependent variables**
• Population quartile • Percent white • Percent in poverty	• Percent loss framed objectives • Percent certain objectives	• Change in newspaper hits • Change in Google News Hits

The stepwise regression predicting newspaper hits produced a statistically significant model, with the percent certainty of the objectives predicting increased newspaper coverage ($F(1,15)=4.835$, $p=.044$). None of the control variables were retained in this model, nor was loss framing. The model predicted 24.4% of the variability in newspaper coverage ($R^2=.244$). For each one point increase in certainty, the percent change in newspaper hits went up by 5.5 points ($b=5.519$, $p=.044$). This result is consistent with Hypothesis B. The same regression using Google News Hits did not result in a statistically significant model. When analyzed again using the enter method, the equation resulted in an R^2 of .382, and a p-value of .460 ($F(6,10)=1.020$, $p=.460$). However, using this method, both the percent of loss framed objectives ($b=3.690$, $p=.162$) and the percent of certain objectives ($b=3.180$, $p=.090$) were positively associated with increases in news coverage, with large effect sizes, and relatively low p values. While not statistically significant, this result adds some evidence that loss framing and certainty may lead to more news coverage, a measure of community response.

Hypothesis C: The Relationship between Community Characteristics and Response Will Be Mediated by Policy Frames

Community response as indicated by news coverage was affected by certainty and possibly would show the same result for loss frames in a larger sample. Analysis of Hypothesis B also showed that community characteristics did not predict changes in news coverage. Because regression analysis does not allow for an analysis of indirect effects, this hypothesis could not be tested explicitly. However, with no relationship between community characteristics and response as measured by news coverage, no mediation is possible.

Hypothesis D: Communities with More Loss-Framed Policies and More Certain Policies Will Have More Favorable Outputs, Which Will Be Mediated by Community Response

Two outputs were examined for this hypothesis: the percentage of objectives passed, and the change in farmers markets per thousand. Change in farmers markets could not be predicted in the model, perhaps because so many other forces are currently affecting farmers' markets. A stepwise regression analysis did not produce a model for predicting passage rates. Using the enter method, the model was still not statistically significant, but may help inform future research with larger samples. The model produced an R square of .753 ($F(9,7)=2.373$, $p=.134$), and found effects at the $\leq .1$ level for several variables: CPPW tobacco funding ($b = -.422$, $p=.09$), change in news coverage ($b=.041$, $p=.10$), and the number of food objectives ($b = -.033$, $p=.07$). While intriguing, these patterns do not support the effects of framing on outputs.

Chapter Summary

Several empirical findings emerged from this study. While community characteristics did not predict loss framing, they did predict certainty frames. Certainty scores for community objectives varied directly with CPPW tobacco funding (funded or not funded), rates of high blood pressure, and soda prices. These variables represent three constructs that were hypothesized to affect certainty scores: community characteristics, health status, and food environment. In addition, certainty scores predicted changes in news coverage, with higher certainty scores associated with larger increases in newspaper hits on obesity policy topics. Several non-significant findings are consistent with the hypotheses of this study, and should be examined in a larger sample with more power to detect statistically significant effects. The next chapter will discuss these quantitative findings.

CHAPTER 5

DISCUSSION

The obesity epidemic is becoming a permanent fixture of our nation's health. Obesity is a risk factor for major chronic diseases such as heart disease, stroke, cancer, diabetes and arthritis, making reduction of obesity a major goal of public health (CDC, 2011a). Other dietary risk factors, such as excessive sodium intake and trans fat consumption, also have earned public health attention for their association with heart disease and stroke (CDC, 2011a). Poor diet and lack of physical activity have been blamed for 365,000 deaths per year, making obesity the second leading "actual" cause of death, second only to tobacco use (Mokdad, Marks, Stroup, & Gerberding, 2005).

A heated debate about appropriate responses to obesity has ensued, particularly as it pertains to food policy. While some traditional views (and much of the food industry) have held obesity to be an individual problem of willpower, increasingly food and physical activity environments have been at the center of efforts to improve health (Brownell et al., 2010). With approximately seven in ten adult Americans classified as overweight (NCHS, 2013), addressing the problem as an individual failing seems overwhelming and likely unproductive by itself. The prevalence of obesity for adults aged 20 to 74 years increased by 19.7% percentage points for men and by 19.1% percentage points for women between 1976 and 2008 (Flegal et al., 2010), a time during which the food environment changed radically (Larson & Story, 2009). This has led many in public health to examine food environments as a population-based strategy to promote healthy weight. Supporting the argument for policy interventions, The *Australian Assessing Cost*

Effectiveness (ACE) in Obesity (Haby et al., 2006) and *ACE in Prevention* strategies (Vos, Carter et al., 2010) found that the most cost effective interventions in obesity are policies: unhealthy food and beverage taxes, front of pack nutrition labeling, and reduction of junk food advertising to children.

Public health approaches to chronic disease prevention and control are increasingly embracing policy change tools (Frieden, 2010). CDC furthered this movement in 2010 by initiating *Communities Putting Prevention to Work* (CPPW), a community-based chronic disease prevention program relying extensively on evidence-based policy implementation, funded by the *America Recovery and Reinvestment Act* (Bunnell et al., 2012; CDC, 2011b). CPPW sites were funded for two years to implement evidence-based MAPPS strategies (Media, Access, Point of decision information, Price, and Social support services) that were "expected to have lasting healthful effects in the years following the end of the two-year funding period" (CDC, 2011b). While the policies themselves are considered evidence based, there has been little examination of the effects of the policy change process on the communities and individuals involved, or the combination of multiple policies. The core action of these policies is well defined, but core actions can be framed either as preventing harms to health (e.g., reducing access to unhealthy foods) or improving health (e.g., increasing access to healthy foods), and can be formulated as requirements or encouragements. The choice of frame has not been studied, nor have the effects of those choices. This unprecedented investment in policy provided an opportunity to examine the processes and outcomes that unfold. Understanding the pathways that lead to successful policy implementation has potential to better target these crucial public health efforts in the future.

Communities addressing obesity chose, framed, and sought to pass and implement food policy changes that affect food choices among individuals. A number of studies examine the effectiveness of policy tools to improve nutrition and reduce obesity, with a growing evidence base for population-based nutrition strategies (Brownell & Frieden, 2009; Faith, Fontaine, Baskin, & Allison, 2007; Milstein, Homer, Briss, Burton, & Pechacek, 2011; Miner, 2006; Pomeranz, 2012).

Evidence for nutrition interventions included in the CPPW MAPPS strategies vary from randomized trials of specific policies (cf., Perry et al., 2004) to qualitative reviews of the literature (cf., Glanz & Hoelscher, 2004), to correlational evidence for environmental influences (cf., Moore, Diez Roux, Nettleton, & Jacobs, 2008), to extrapolation of individual interventions to a population (cf., Sacks et al., 2001).

Evaluating each potential environmental change separately is a necessary first step, and well suited to traditional evaluation research methods. However, the CPPW program requires communities to undertake two endeavors not guided by the existing literature:

1. Tailor evidence-based actions to the policy environment of an entire jurisdiction. Most experimental evidence is limited to certain organizations or study populations, and evidence based on jurisdiction-wide action is difficult to generalize to other localities. For example, New York City's food policies have been closely watched and studied, but most localities are not comparable to the nation's largest city.
2. Pursue a number of environmental and policy changes simultaneously, in a limited time period. Few studies examine this element of implementation.

This study sought to shed light on how jurisdiction-wide, multi-faceted food policy interventions are designed, evolve, and ultimately succeed or fail in communities. In designing

the CPPW Initiative, CDC had little evidence to justify frames for environmental interventions that engendered controversy; for example, while price sensitivity has been established, taxation as a method for increasing price has less evidence, leading to conflict over whether evidence supports increased taxes. In tobacco control efforts, such policy options have been carefully studied and supported by evidence, driving great advances in public health (CDC, 2007).

Given the unique investment and research opportunity, this study aimed to answer questions about comprehensive food policy change efforts. The existing evidence for each stand-alone intervention is often devoid of contextual factors, including whether the policy is framed as preventing harm or promoting health, and whether the policy, if implemented, would provide certainty of benefit.

This study is a prospect theory analysis of public health policy, a novel application that could expand its use from health communications to other parts of public health. Prospect theory has been called "the most influential behavioral theory of choice in the social sciences" (Mercer, 2005, p. 17) and forms the foundation of behavioral economics. Bringing this powerful theory to bear on public health policy illuminates these problems in new ways, establishing a multi-disciplinary basis for research and intervention. Behavioral economics is already touted as an innovative approach to the obesity epidemic (Brownell et al., 2010; Just & Payne, 2009), making prospect theory applications timely for the topic.

Given systematic biases in decision-making, prospect theory predicts that the way a problem is framed, either as a loss or a gain, greatly influences the outcome, as does the subjective reference point from which a decision maker assesses changes in utility. Also, the theory predicts that how certain an outcome is affects choices. These findings have been applied to some public policy research, particularly in the area of international affairs, and several

authors have called for expanded theoretical applications in political science (Mercer, 2005; Vis, 2011).

Application of prospect theory to public health policy frames provides a clear conceptual definition to categorize what has been a slippery topic: how to distinguish between policies with the same core actions, but which differ in their presentation. Public health officials discuss this distinction in a number of fuzzy ways: policies with a "big P," hard-hitting policies, "real" policies. Regardless of the findings of this study, the addition of framing language to these discussions will contribute clarity.

The food policy evidence employed by public health has focused on the core action of the policy. Prospect theory provides a framework for examining differing effects of the same core actions achieved through loss or gain framed policies. Understanding these effects will augment efforts to improve community food environments, allowing public health policymakers to carefully frame their evidence-based actions in terms of gains and losses and certainty. This study identified baseline characteristics of selected communities and characteristics of communities' policy choices. The ultimate aim was to examine four hypotheses related to policy frames, each with implications for social work and public health practice.

Community Characteristics

As a group, these communities had a higher percentage of people of color, a higher poverty rate, and a similar unemployment rate to the US overall. While these characteristics may relate to reference point, they also may tie to the requirement that grantees have jurisdiction over a population of at least 500,000, with larger, more urbanized areas likely to have higher poverty rates and more racial diversity.

While no US comparison was available for the food environment data, the communities in this sample varied widely on grocery store availability (.097 per thousand residents in Bexar County, TX to .651 in New York City) and farmers markets (.003 per thousand in Miami-Dade to .033 in Jefferson County, KY), but varied little in fast food outlets per thousand, from .572 in Miami-Dade County, FL to .903 in Davidson County, TN. This implies that access to healthy food may be more variable in these communities than availability of less healthy choices. Soda price as a proportion of the US average varied, but no community was lower than 93% of the national average (Suffolk County, MA). Multnomah County, OR was an outlier, with sodas priced at 124% of the national average.

Communities had a varied history of funding prior to CPPW, and had a range of funding levels for the project itself. Since funding was partly dependent on population size, there was a range of $5.7 million to $16.1 million, with a Person Correlation to population quartile of .875 (p <.001). Six of the seventeen communities had been funded for chronic disease efforts prior to CPPW (Bexar County, TX, Cook Co, IL, Hamilton County, OH; King County, WA; Philadelphia County, PA, and Suffolk County, MA). Of the communities funded for obesity, seven were also funded for tobacco control efforts (Cook County, IL; Jefferson Count, AL; King County, WA; Los Angeles, CA; New York City; Philadelphia, PA; Suffolk County, MA), and this status was associated with several important outputs.

As a group, communities had lower overweight and obesity rates than the US average, higher rates of fruit and vegetable consumption, and similar rates of diabetes and high blood pressure to the US overall. Only two communities had an overweight rate higher than the US (37.0%): Bexar County, TX at 37.8% and Miami-Dade County, FL at 41.9%. Only one community had a higher percentage of citizens getting too few fruits and vegetables—Douglas

County, NE at 77.4% vs. 76.6% for the US). While no statistical tests were performed on these comparisons, these data imply that the selected communities had better health status that the US overall. It is possible that communities with strong applications for CPPW had some prior success or an advantage in health status. This finding could be explored further; a common challenge in public health and social service program design is the tension between funding areas with the best chance of success versus communities with the greatest need.

Policy Choice Characteristics

As expected, communities took various approaches to formulating objectives within the CDC-recommended MAPPS strategies. The study examined two aspects in depth: frame and certainty. However, it is worth noting other differences. Some communities chose a small number of focused food policy objectives (e.g., Los Angeles with 4 and Douglas County, NE with 5) while others created long lists of objectives (Multnomah County, OR with 17 and Pima County, AZ with 16). Some objectives were framed with very aggressive targets to achieve a policy change (see King County, below), while others set out to move toward, but not necessarily achieve, such change (see Jefferson County, below).

King County, WA:

Statewide child care licensing standards for physical activity, nutrition and screen time <u>will be developed and adopted</u> by the Washington State Department of Early Learning (DEL) to reflect current recommendations (2005/2010 Dietary Guidelines and "Caring for Our Children 2010").

Jefferson County, AL:

Jefferson County Department of Health will advance policy changes within United Way Community Food Bank to acquire and deliver fresh fruit and vegetables to food pantries and non-profit agencies jurisdiction-wide.

Communities chose how to implement MAPPS strategies in their own projects, and therefore, these variations are part of the multi-site design. However, no theoretical construct was included in the study to account for the differences described above. Proposals were selected for funding based on objective reviewers' determination that the project would advance health, and this study assumes that each project plan and each objective was appropriate to the task.

As a group, these communities proposed 173 food objectives, with 19.1% of them framed as preventing harm, a loss frame. This small percentage is not surprising given the controversy generated by the negative framing of some actions. Four communities avoided loss framing all together (Los Angeles, CA; Miami-Dade County, FL; Pima County, AZ; San Diego County, AZ), while other areas had 40% loss framed objectives or more (Douglas County, NE; New York City; and Suffolk County, MA). These differences are intriguing, and would be interesting to investigate further using qualitative methods to understand community framing decisions.

Communities were bolder in choosing objectives with certain, or mandatory, actions. As a group, over one third (35.26%) of all objectives were certain, with the average rate among communities at 34.85%. Every community worked toward at least one certain objective, with one community pursuing 10 certain objectives (Multnomah County, OR). The inclusion of higher rates of certain objectives may result from the program selection process, or may be a result of CDC guidance in objective formulation.

The overall passage rate for objectives was 78.0%, a high success rate, with the average passage rate at 79.4%. Three communities achieved all of their objectives (Douglas County, NE; Los Angeles County, CA; and Tri-County, CO). These communities all set six objectives or fewer. While there was no statistically significant correlation between the number of objectives and the percentage passed, a future study might look at the effects of setting fewer objectives on achievement.

Study Hypotheses

Understanding how communities chose policies based on prospect theory has implications for CDC and other organizations promoting state and local policy change. While community status did not affect loss framing in this study, it did have an impact on certainty choices made by communities. Communities with tobacco funding, higher rates of high blood pressure, and higher soda prices were more likely to choose mandatory policies with certain outcomes. Recommended tobacco interventions favor policies that include mandatory actions, such as smoking bans and tobacco taxes. Combining tobacco interventions with obesity interventions seemed to lead communities to employ more coercive means to change food environments and behavior. Blood pressure rate as a marker of health status was associated with more coercive policies, showing an effect of poorer health status on community choices. Lastly, communities with relatively higher soda prices were more likely to set objectives with mandates. This may represent a tendency in communities that have soda taxes or other pricing disincentives already in place to choose similarly coercive interventions. These conclusions require more study to fully understand the decision making mechanisms at work.

Loss framing was not statistically associated with more community response, but certainty frames were. The latter is consistent with theoretical predictions of this study, as well

as those in Steinacker's work (2006, 2008), which predicted greater salience for mandatory actions than voluntary ones. In another measure of community response—Google News hits—both the percent of loss framed objectives (b =3.690, p =.162) and the percent of certain objectives (b =3.180, p =.090) were positively associated with increases in news coverage, with large effect sizes and relatively low p values. While not statistically significant, this result adds some evidence that loss framing and certainty may lead to more community response.

Further research is needed to identify whether a higher level of community response is desirable for achieving food policy goals. In a larger sample, it is possible that the trends in news coverage affecting objective passage rates would be statistically significant, solidifying the link between community response and successful passage of policies. If the last link in this chain were verified, one would see that certainty in policies (and potentially loss framing, as well) was related to increases in public response, which in turn led to higher passage rates. Such a finding would support communities pursuing a higher percentage of mandatory policies in their efforts to change food environments and reduce obesity and related diseases. Again, a large but not statistically significant effect was found for tobacco funding, this time showing that communities receiving tobacco funds had lower passage rates than those that only received obesity funding.

This study did not examine whether loss-framed or mandatory policies each, individually, led to different outputs. Rather, it examined the total package of policies pursued by communities to see how the mix of frames affected these outputs. This methodology is innovative, providing a more realistic and nuanced picture of how policy choices are made and pursued together, rather than traditional methods that isolate each policy choice as its own separate intervention. An intriguing theory put forth by van der Doelen (1998) states that

successful packaging of policy instruments requires optimizing legitimacy and effectiveness. That is, instruments that are framed as stimulative—or giving—enhance legitimacy of the government's power, allowing for instruments that are framed as repressive—or taking—to be implemented to effective ends. As the author states, "the central thesis…is that government should in a balanced way simultaneously give and take: the giving contributes to the legitimacy, the taking to the effectiveness." (van der Doelen, 1998, p 130).

The question of policy combinations is particularly relevant to CPPW, where communities implemented multiple policies aimed at the same goals. In fact, this study examined only the food objectives that were pursued; all communities addressing obesity also pursued physical activity objectives, and a subset of the communities also pursued tobacco control objectives. Frame choices did affect the outputs studied here, showing that the mix of frames, at least in terms of certainty/coercion, is associated with more public attention, a critical element of not only policy adoption, but of food behavior change.

Limitations

Sample Selection

This study examined all communities that met the criteria for CPPW food implementation (n=17). The number of communities fitting this criteria made use of path analysis impossible and made normality of data difficult to ensure. Access to standardized data on community food policy intervention is limited, with no systematic data collection on community efforts, milestones, and implementation. For this reason, researchers do not have access to data sets that represent the vast number of community efforts underway, funded by federal, local, and state government, foundation support, or simply developed by grassroots efforts.

This problem of studying policy interventions is an ongoing challenge in research on community-level efforts. Some research designs to address this problem are used by economists, including synthetic controls, instrumental variables, matched controls and propensity score weighting, and could be used in further examining the CPPW experience. Another limitation of the available data is the inability to examine curvilinear relationships. Some theories underlying policy mixes posit a U-shaped curve, where a balance of coercive and supportive policies might maximize community response and passage (van der Doelen, 1998). Both the available data and the analytic techniques of this study may mask such relationships.

Despite these limits, several statistically significant effects were detected. Also, since this sample comprised all projects counties directly funded for obesity interventions under CPPW, for program evaluation purposes, this is a census, not a sample. Findings specific to CPPW could be described without inferential statistics. This study, though, aimed to provide guidance to similar actions beyond the CPPW-funded communities.

Because this study relied on all available data, other inferential methods may be required in future research with similar samples. For example, Bayesian methods that take into consideration prior probability and effect size have been suggested in clinical studies where all available data may not provide statistical power adequate to reject the null hypothesis (Burton, Gurrin & Campbell, 1998). The non-significant findings regarding framing effects on web news coverage (loss frames: b =3.690, p =.162 and certainty: b =3.180, p =.090) and regarding the effects of tobacco funding on passage (b =-.422, p =.09) may fall into the category of statistically non-significant results that are large enough to be practically or clinically relevant.

Clinical versus statistical significance has been discussed extensively in medical literature, often in relation to large samples where a very small effect may be statistically

significant, but have no practical relevance (Sainani, 2012). Statistical significance only tells us whether the confidence interval includes no effect, while clinical significance asks whether any values in the confidence interval have practical impact. In clinical studies, several effect size measures are suggested (Kraemer et al., 2003). However, no such measures are available for the relationships examined here. Based on the estimated slopes in multiple regression, one could conclude that, while masked by amount of data available, the effects discussed above likely have practical significance.

Validity of Self-Reported Data

Both health status and programmatic data were self-reported, defined as "information provided to the researcher from a research participant, which the participant obtained by observing and describing his or her own experiences rather than having someone else, such as the researcher, describe the behaviors." (Holosko & Thyer, 2011, p 114). There are two perspectives on validity problems with such data: cognitive and situational (Brener, Billy, & Grady, 2003). The cognitive perspective focuses on respondent's ability to recall and record information about his or her experience, while the situation perspective considers external factors, such as social desirability and perception of confidentiality. Both of these perspectives are relevant for this study.

Behavioral Risk Factor Surveillance System (BRFSS) data on health status are self-reported, and likely subject to both kinds of validity issues: valid recall of dietary intake in particular has been subject to criticism from researchers (cf., Nestle, 2007), and social desirability bias is a well-known phenomenon in reporting of height and weight, for example. Knowledge of disease diagnosis also can be a barrier to accurate reporting. More comprehensive diet surveys are typically more accurate than short food surveys like the questions in the BRFSS

survey, but longer surveys are not as useful in broad, population-based surveillance efforts where brevity is crucial. Brief surveys are able to rank individuals according to intake, and are often used to monitor local and national trends in fruit and vegetable consumption (Kim & Holowaty, 2003). While all of these limitations are important, BRFSS remains the only data source for most chronic diseases and their risk factors, particularly for county-level data (Remington & Brownson, 2011), and it is the only source that provides comparable data for many counties, all states, and the US as a whole.

Self-report bias in programmatic data is more likely affected primarily by situational factors: funding decisions can be based on program success, and there is a strong incentive to report progress to continue having access to awarded funds and to minimize federal government oversight. Although these data were initially self-reported, project officers conducted some verification activities, including site visits and document review. Therefore, self-report bias may have been somewhat ameliorated, but not necessarily eliminated. Project officers have an interest in the success of their programs and may be inclined to report successes and not setbacks, resulting in biased reports. To address these limitations, CDC's evaluation team compared the multiple databases along with case study reports, and corrected reference sheets to reflect accurate information.

Related to self-report biases in this study is the variability in formulation of objectives. Some objectives were more modest in their aims, requiring only that program staff complete planned actions, while other objectives required that program staff influence large institutions to change practice. Future research might seek to code for these differences.

Measures of Community Variability and Response

While the study uses several indicators of variability in communities, a number of differences among these communities are undetermined. Differences of region, culture, language, customs, and other sociological patterns were not quantified in this study. No community can be adequately described through statistics of any sort, making qualitative considerations important to interpreting results of this research.

Because community response could not be directly observed, media coverage was used as a proxy. While this is a reasonable proxy, it does not reflect more grassroots attention to food policy objectives. Also, the search strategy, while consistent, clearly missed some media coverage while potentially including some extraneous coverage. The study aimed to use consist searches to minimize the cross-site differences, therefore allowing for comparisons.

Implications of Findings for Practice

Policy change is core to social work (NASW, 2012) and public health (APHA, 2011), with both professions focusing on people in relation to their social and physical environments. While public health has long engaged in policy change to reduce infectious disease, chronic disease prevention and control efforts are only recently embracing policy change tools (Frieden, 2010).

For both social work and public health, formulating policies has not been guided by evidence; evidence focuses on the core action. These findings build on the body of empirical evidence for prospect theory to support policy formulation. As predicted by the theory, the study demonstrates a stronger public response to certainty frames and possibly also to loss frames. While the core actions of strategies pursued by communities were neutral, preferences of

policymakers and response of citizens are affected by the frame: loss-framed policies loom larger than gain-framed policies, and reactions are greater to certainty of outcomes.

This study has implications for public health and social work practice at the federal, state, and local level, depicted in Table 14. While this study did not provide conclusive findings on loss framing, it did find that using mandates and requirements led to more community attention to policy change, and to higher passage rates.

Table 14

Implications for Social Work and Public Health Practice

Finding	**Federal/State**	**Local**
Funded communities had more favorable baseline characteristics	• Consider new models of funding that also support disadvantaged communities • Work to strengthen local capacity to successfully compete for needed resources	• Work to strengthen capacity to successfully compete for needed resources
Tobacco funding combined with food policy led to higher percentage of public policy mandates	• Consider combining tobacco and obesity control efforts	• Consider public policy mandates regardless of mix of issues addressed

Certainty and loss framing support increased media attention	• Provide communities with a mix of frames for evidence-based policy actions • Encourage use of certainty and loss frames	• Choose a mix of frames for evidence-based policy actions that includes public policy mandates and loss frames
Media attention led to higher passage rates	• Encourage frames that support public engagement and discourse • Encourage media engagement on policy change efforts	• Choose frames that support public engagement and discourse • Consider media attention as part of the behavior change intervention
Fewer objectives may be associated with higher passage rates	• Encourage a few focused objectives with a mix of frames	• Choose a few focused objectives with a mix of frames

For all pursuing food policy change in public health and social work, this study shows that use of mandates has benefits: 1) more attention to policy change efforts promotes social discourse on food policy issues, potentially furthering culture change efforts; and 2) in addition to providing more certain outcomes, the generation of more attention by proposing mandatory policies may also promote a higher passage rate for the suite of policies pursued. For community public health and social work practice, this evidence for mandates supports choosing these policies, despite (or perhaps because of) the likelihood that they will be more controversial. For

state and federal efforts, these findings support funding and promotion of a mix of policies that includes mandates, again giving evidence to support more politically challenging choices. This study also provides some evidence that loss-framing may have the same effects on public discourse, informing decisions to focus on harm reduction as part of the policy mix in communities.

For federal public health efforts, the finding that funding for tobacco control was associated with more certainty in objectives is intriguing. In CPPW, communities were required to apply for two separate grants if they wanted to address both obesity and tobacco control. During program development, some officials expressed the opinion that communities were not likely to be able to address both issues adequately, and the decision was made to separate the programs. Other officials argued for combining the tobacco and obesity control, providing the opportunity for interventions to support each other. While more study is needed, the findings here suggest that communities addressing both issues showed important differences in outputs. Tobacco control policies tend toward mandates, such as smoking bans, product labeling, and taxation; communities addressing both issues showed a tendency to apply these same tools to food.

A finding of keen interest to those funding public health and social service programs is that these communities appeared to have more favorable health status and socioeconomic indicators than the average community. These data were consistent with a tension in community funding decisions: should the most needy or the most capable communities be supported? Supporting projects most likely to succeed—whether because of stronger organizational capacity or less vexing problems and barriers— helps initiatives reach their goals, demonstrating that investments were worthwhile, and increasing potential for wider implementation. Strong

program implementation also helps to develop the evidence base by identifying practice situations that allow evidence-based interventions to thrive.

On the other hand, selecting strong communities forgoes opportunities to support those in greatest need, but with less ability to succeed, either because organizational capacity is less robust, or because health problems and barriers to addressing them are more robust. Investing in these communities is perceived to have a higher risk of failure, slowing evidence-based interventions' dissemination and hurting future expansion of initiatives. In a program like CPPW, investing many millions of dollars in communities ill-equipped to manage the program well was certainly of concern.

In federal public health and social services funding, most competitive proposal processes are judged by objective reviewers on the strength of the proposal submitted, and the likelihood that the proposed plan will achieve the desired outcomes. In order to select proposals based on need, rather than merit, some federal programs award funds based on disease burden. This is common in programs that provide funding to all eligible entities (e.g., all states receive funding from CDC for HIV prevention, and a major factor in the amount of funding is the disease burden in each jurisdiction), but less common in competitive awards.

In chronic disease prevention, many jurisdictions have high burdens of disease. In fact, few would be considered to have a low burden. For example, no state has an obesity rate of less than 20%, and no state met the Healthy People 2020 goal of reducing obesity to 15% (CDC, 2013b). Given the high burden in all jurisdictions, investing in communities with stronger program plans is a reasonable approach. Examining the finding that the communities selected appear to have had better circumstances would help illuminate how the competitive process of public health and social service funding may perpetuate disadvantage for some communities.

Implications for Research

This study used secondary programmatic data to understand policy choices, community response, and programmatic results of community-based food policy change efforts. The theoretical framework of prospect theory has potential for continuing to examine public health policy change efforts. An experimental design would be ideal, with random community assignment to different policy mixes. However, policy choices are highly context-driven, and a funding entity would face challenges to randomization.

Access to standardized data on community food policy intervention would greatly bolster efforts to build an evidence base for food policy. A variety of community efforts are underway, both through formal multi-site interventions and through grassroots efforts. A surveillance system similar to those used to catalog tobacco control policy experiences would enable robust research to inform policy action (cf., State Tobacco Activities Tracking & Evaluation System, http://apps.nccd.cdc.gov/statesystem/Default/Default.aspx).

Future study in this area could take several directions. Continued quantitative analysis would benefit from larger samples. A larger number of CPPW programs could be sampled if tobacco programs were included, or if smaller community efforts coordinated by state health departments were included. CDC has continued to fund similar, but smaller, community change projects through the Community Transformation Grants supported by the Prevention and Public Health Fund. These grants go to a mix of states, non-profits, and large and small communities (CDC, 2013a). While a larger data set, projects vary widely in their scope and focus, and selection would need to be carefully considered to establish a relevant sample.

Lastly, investigating the policy choices of communities would benefit from survey research and qualitative studies aimed at understanding the experiences of program staff and leadership. These programs have a rich story to tell about policy choices and their consequences.

Ultimately, the most important question is which policy choices led to population health improvements: changes in dietary behavior, overweight and obesity rates, and disease rates. Prior research gives some reason to believe that loss framed messages will lead to more behavior change (Rothman & Updegraff, 2011). Since chronic diseases and their risk factors develop over a period of years, studies of policy choices' effect on health should be conducted in a reasonable time frame to detect important health improvements.

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APPENDICES

APPENDIX A
CODEBOOK FOR COMMUNITY POLICY CHOICE DATA

CDC has collected each community's stated objectives as part of a project management database, with each community's activity recorded in an Excel file called a "Reference Sheet." These objectives are categorized into the recommended media, access, pricing and policy strategies. Data collection will further categorize the objectives based on the research questions about framing and certainty. Because programs are held accountable for these objectives, no self-report bias is expected. In piloting the coding schemes, the researcher has identified the need for a brief codebook to establish definitions for gain and loss framing, certain and uncertain policies, and to standardize counting of the number of policies pursued when objectives may have some overlap. The researcher will enlist up to two CDC officials to employ this codebook to code objectives and check for inter-rater reliability.

Reference Sheets contain a tab for each objective. Using the CDC Reference Sheet for each community, the coder will record all coding in the "food objective" data file, which contains the following fields:

1. County
2. Objective number (ObjNo)
3. Food objective (Food)
4. Frame
5. Certain
6. Passed

Coding scheme

1. County: Record the name of the county or city

2. Objective Number: The community-identified objective number on the tab.
3. Food objective: Record a ‘1’ if the objective is about food. Record a ‘1’ if the objective is about both food and physical activity. Do not record breastfeeding objectives as food objectives. Physical activity or tobacco objectives do not need to be recorded, so all recorded objectives should have a ‘1’.
4. Frame:
    - Record a ‘-1’ if the objective seeks to limit a food, and/or focuses on preventing harm. Objectives that include menu labeling, taxes, XXX should be recorded as a ‘-1’.
    - Record a ‘1’ if the objective seeks to promote a food, and/or focuses on promoting health. Objectives that include subsidies, XXX, should be recorded as a ‘1’.
    - Record a ‘0’ if the policy is mixed or neutral. This applies when multiple policies are included, or when entities targeted by the activity can choose how to frame the policy.
5. Certain:
6. Record a ‘1’ if the policy is a mandate or is implemented across an entire system (e.g., all schools). This includes policies that require individuals or institutions to complete an action related to the objective. *For example, if schools in an entire school system have to change procurement standards for food, that is “certain.” If schools in the system are encouraged and helped to change their procurement standards, that is not certain. Certain objectives often include regulations or changes to ordinances or laws.*

7. Record a ‘0’ if the policy is voluntary or is implemented in only a fraction of a system (e.g., some convenience stores). *This includes activities that encourage, but do not require, changes in institutions or individuals. Media campaigns are not certain.*
8. Passed:
    - To determine if the objective was met, look for the activity most closely related to the objective as stated (e.g., 10 school systems adopted policy). Do not rely on the “complete” designation for the activity alone; check notes for modifications to the targets.
    - Record a ‘1’ if the policy was completed with the same scoring on ‘frame’ and ‘certain’ by September 2012
    - Record a ‘0’ if the policy did not pass by September 2012, or was altered to a different frame or different certainty in order to assure passage/implementation.
    - If the policy passed, but enforcement or evaluation efforts are incomplete or ongoing, record a ‘1’

Any explanation or questions can be recorded in the Notes column.

APPENDIX B
COMMUNITY OBJECTIVES

Bexar Co, TX
41-02.1. Expand Healthy Menu Initiative; at least 24 restaurants or restaurant chains will participate in the Healthy Menu Initiative and establish a policy through City of San Antonio ordinance to allow a discounted food service licensing rate for restaurants that participate by the end of the grant cycle. (Combines 2.1.1 & 2.2.1)
41-02.2. Establish a recommended Nutrition Policy for the City of San Antonio Senior Nutrition Policy and ensure the Summer Youth Program follows the recommended USDA nutrition guidelines by the end of the grant cycle.
41-02.3. Establish a Food Policy Council by creating a 3-5 year "Food Policy Council Plan" by the end of the grant cycle. (Revised)
41-02.4. Provide school districts with training, tools and resources to increase access to healthy food options through establishment of salad bars in schools and enhance their written wellness policy by the end of the grant cycle. (only timeline changed)
41-02.5. Provide school districts with training, tools and resources to increase healthy programming in before and after school programs and enhance their written wellness policy by the end of the grant cycle. (NEW-replaced menu labeling)
41-02.6. Provide school districts with training, tools and resources to limit availability of unhealthy food and drink options through implementation of a healthy fundraising initiative and enhance their written wellness policy by the end of the grant cycle. (only timeline changed)
41-02.9. Establish a policy to increase availability of healthier food & beverage choices in public service venues by the end of the grant cycle. (NEW)
41-03.5. Develop and implement a plan to increase the number of Farmer's Markets in the community (targeting those areas with health disparities) by the end of the grant cycle. (NEW)
41-04.1. Develop a social marketing campaign strategy on obesity and related risk factors - nutrition and physical activity - using proven marketing materials principals; implementing the strategy and evaluating the campaign results.
Cook Co, IL

8-01. By March 2012, tax policy legislation will be introduced in the Illinois General Assembly that will increase the price of unhealthy foods (and/or beverages), as determined in the Dietary Guidelines for Americans 2005, and will create a revenue stream to fund prevention.
8-02. By March 2012, establish a Cook County Fresh Food Fund by leveraging SCC CPPW funds with private donor investments to support the development of access to healthy foods in highest need communities. This fund would be modeled after the Illinois Fresh Food Fund and the Pennsylvania Fresh Food Financing Initiative.
8-03. By March 2012, a Cook County government ordinance that sets nutritional standards for vending machines in Cook County government buildings will be passed as determined by assessment and review process of current Cook County vending standards.
8-08. By March 2012, 1/3 of 33 municipalities will have completed or updated at least 2 independently implementable key chapters - food systems and transportation - of a 10-chapter comprehensive plan based on the Chicago Metropolitan Agency for Planning's "Go To 2040" strategic plan. Of the 65, emphasis will be placed on those communities in greatest need.
8-11. By March 2012, 25% of 100 schools will create comprehensive action plans to improve policy, systems or environmental change aligned with MAPPS strategies and evidenced-based Healthy Schools Program framework criteria.
8-12. By March 2012, 25% of 100 schools will improve the school food environment by at least one policy, systems or environmental change related to schools meals program or competitive foods and beverages based on MAPPS strategies and Healthy Schools Program (HSP) Framework.
Davidson Co, TN
29-01. By March 31, 2012, a minimum of 10 community based organizations will adopt policies or practices that support healthy eating, are culturally relevant, and are consistent with IOM guidelines and recommendations.
29-02. By March 31, 2012, a minimum of 4 community based organizations that serve high risk populations, funded through the CPPW grant, will develop and implement new policies, systems, or environmental changes that support healthy eating and active living.
29-03. By March 31, 2012, a minimum of 10 youth recruited businesses and organizations that serve high risk populations will adopt and implement policies or directives that support healthy eating and physical activity.
29-04. By March 31, 2012, Nashville's existing menu-labeling policy will be implemented.

29-05. By March 31, 2011, Nashville's mayor's plan, Healthier Places, will include policies consistent with IOM guidelines, and address the needs of high risk populations based on community health assessments and health impact assessments.
29-06. By March 31, 2011, MPHD leadership will issue departmental policies that increase resources to support healthy eating and active living initiatives: a) 80% of grant applications will include strategies that support healthy eating/active living; b) a minimum of 2 student internships will be devoted to healthy eating/active living initiatives, annually.
29-07. By March 31, 2012, Metro Nashville School Board will adopt high leverage IOM recommendations for meal plans, district wide that will: a) expand the availability of healthy foods & beverages including fruits and vegetables, grains, and low fat milk; b) decrease the availability of unhealthy foods and beverages including decreasing salt in food preparation. This will affect approximately 76,000 students of whom 72% qualify for free or reduced price lunch and whose ethnic composition district wide is 47% Black, 33% White, 16% Hispanic, 4% Asian and < 1% other races/ethnicities.
29-08. By March 31 2012, Metro Nashville Public Schools will increase availability of healthy foods and beverages by adopting a policy to expand healthy food & beverage options in all high school vending machines, district-wide.
29-09. By March 31, 2012, community awareness and knowledge about healthy eating and active living will be increased by 25% from baseline assessment.
29-10. By March 31, 2012, youth awareness and knowledge about healthy eating and active living will be increased by 25% from baseline assessment.
29-11. By March 31, 2012, access to healthy foods and beverages will be improved among low income residents by deploying permanent coolers for stocking and selling fresh fruits and vegetables in 29 corner stores located in 3 geographic areas that are defined as food deserts in low-income neighborhoods.
29-12. By March 31, 2012, access to healthy foods and beverages will be improved among low income residents by increasing shelf space by 20% for selling healthy foods and beverages in 29 corner stores located in 3 geographic areas that are defined as food deserts in low-income neighborhoods.
29-13. By March 31, 2012 a minimum of 10 community gardens will be established in low-income neighborhoods associated with churches, schools, worksites or community centers, to increase access to healthy fresh food and increase opportunities for physical activity.
29-15. By March 31, 2012, all Davidson County Head Start pre-schools will adopt and implement Headstart's Gold Sneaker nutrition and physical activity policies.

29-19. By March 31, 2012, the 10 largest employers in Davidson County will adopt/ improve employee wellness by developing and implementing policies or programs/initiatives that will increase healthy eating and physical activity and decrease unhealthy eating and sedentary behaviors.
Douglas Co, NE
10-01. March 2012, 35% awareness of the City at Risk media campaign will have been achieved as well as an 10% increase in intention to change measures regarding the importance of physical activity and nutrition. Awareness of the Live Well Omaha movement will also have been increased by 35%.
10-02. March 2012, 270 organizations - drawn from physician's offices, businesses, ethnically diverse agencies and faith-based communities - will have signed letters of intent/covenants and implemented at least one policy related to increased physical activity and/or healthy food/drink choices. All policies will be relevant to the MAPPS strategies in order to be approved and will be further categorized as "priority" or "approved but not priority."
10-03. March 2012, at least 40 after school programs will have adopted a policy for 20 minutes of daily physical activity and a policy to eliminate access to sugar sweetened beverages.
10-06. March 2012, increase the availability and affordability of healthy foods in high need areas at 8 retail outlets by the adoption of healthy food promotional materials, product placement, and healthy product labeling.
10-07. March 2012, district-wide policies will be adopted within at least one school district which creates procedures for 1) establishing safe and sustainable Farm to School and 2) utilizing school gardens as learning laboratories. Local barriers will be assessed and viability demonstrated through the development of 10 Farm to School and 4 school garden sites.
Hamilton Co, OH
13-01. Implement a multi-faceted social marketing campaign to promote healthier food & beverage choices and increased physical activity, as well as combat negative messaging.
13-02. Adopt model competitive foods policy in all schools throughout Hamilton County, with focus on underserved communities, by Feb. 2012.
13-03. Expand gardens and fresh markets, focused on under-served populations, as well as introduce county-wide policy and systems change for community gardens and produce distribution by Feb. 2012.
13-04. Increase availability of venues for healthier food and beverage access, and improve geographic food balance throughout Hamilton County, with focus on underserved areas.

13-07. Provide county-wide healthier living information intervention via an on-line interactive Healthy Resources Map.
13-11. Implement faith-based system for model wellness policies to support healthier food and beverage choices and increased physical activity throughout Hamilton County, with focus on underserved and high risk populations, by Feb. 2012. Goal: 30 church communities Faith-based defined as religious congregation (church, mosque, synagogue, or temple). Current Center for Closing the Health Gap faith-based consortium includes 105 congregations. The 30 targeted congregations for implementation in the grant period will be those in highest risk, underserved areas with largest reach. The wellness policy and turnkey models will be part of the sustainable plan.
13-12. Introduce BMI surveillance models and systems changes to improve obesity preventive care, identification, and counseling to 20 practices and translate changes into county-wide plan for standard obesity training and BMI data collection by February 2012.
Jefferson Co, AL
16-03. February 2012, Jefferson County Department of Health will advance policy changes within United Way Community Food Bank to acquire and deliver fresh fruit and vegetables to food pantries and non-profit agencies jurisdiction-wide.
16-04. February 2012, Jefferson County Department of Health will promote the passage of incentives for increasing access to fresh produce in specific neighborhoods with health inequities, based on the results of the food desert assessment.
16-05. February 2012, Jefferson County Board of Health will adopt a policy requiring childcare centers jurisdiction-wide to meet standards for age-appropriate nutritional quality, physical activity, screen time and eliminate 3rd-hand smoke exposure.
16-06. February 2012, Jefferson County Department of Health will gain adoption of improved food procurement policies within three school systems with high-risk populations.
16-07. February 2012, Jefferson County Board of Health will amend current food handler training requirements to include standardized nutrition training for all school cafeteria workers in all 12 school districts.
16-08. February 2012, Jefferson County Department of Health will advance adoption of afterschool wellness policies across all 12 school districts in Jefferson County.
Jefferson Co, KY
23-02. 3/2012, Jefferson County Public Schools (JCPS) procurement policy will include an allocation of 10% of its fruit and vegetable budget for local growers and school gardens.

23-03. 3/2012, there will be a 10% increase in the average number of students participating daily in the School Breakfast Program (28,600 to 31,000) and the National School Lunch Program (58,400 to 64,000).
23-04. 3/2012, JCPS will decrease the average amount of sodium by 5% and the average amount of added sugar by 10% in school breakfast and lunch.
23-07. 3/2012, new licensing regulations passed requiring all licensed childcare providers to increase physical activity and access to healthy food and drinks.
23-08. 3/2012, food establishments in Louisville with fewer than 20 locations nationally will adopt a menu labeling policy passed by Metro Council.
23-11. 3/2012, increase access to healthy food and beverage for 50,000 households in the initiative-designated neighborhoods.
23-12. Through the work of the Food Policy Council, the following policies will be passed:1) a "buy-local" procurement policy within the Louisville Metro Department of Public Health and Wellness by January 2011; 2) a healthy food and beverage corner store policy (e.g. reducing negative messaging, increasing positive messaging, point of service product/signage placement) will be implemented by March 2012; and 3) food establishments in Louisville with fewer than 20 locations nationwide will adopt a menu-labeling policy by March 2012.
23-23. By March 2012, 40% of individuals exposed to the Food Fight social marketing campaign will value choosing healthy food and drink over unhealthy food and drink.
23-24. By March 2012, 80% of the coalition members will believe that systems and policy changes create an environment that supports physical activity and healthy nutrition. (innovative strategy)
King Co, WA
45a-01. By February 2012, nutrition standards that meet the 2005/2010 Dietary Guidelines will be adopted and implemented by the Seattle, Renton, Highline, Auburn and Tukwila school districts, affecting at least 50% of all King County school-age children, and 85% of school-age children in the focus communities (6 of 7 school districts in focus communities, and including Seattle, the largest school district in King County).
45a-03. By March 2012, child care licensing standards for physical activity, nutrition and screen time will be adopted in City of Seattle Human Services Department/Early Learning and Family Services Division, Seattle Parks and Recreation Department, King County Housing Authority and in five Central and southeast Seattle African-American churches to reflect current recommendations (2005/2010 Dietary Guidelines and "Caring for Our Children 2010")

45a-04. By March 2012, statewide child care licensing standards for physical activity, nutrition and screen time will be developed and adopted by the Washington State Department of Early Learning (DEL) to reflect current recommendations (2005/2010 Dietary Guidelines and "Caring for Our Children 2010").

45a-09. By December 2011, 50 worksites recruited by the Health Promotion Research Center (HPRC) in focus communities will implement and sustain policy changes that support healthy eating (meeting the 2005/2010 Dietary Guidelines for Americans), physical activity, and weight control.

45a-10. By February 2012, Puget Sound Health Alliance (a five-county regional partnership of employers, physicians, hospitals, patients, health plans, and others), in partnership with the Health Promotion Research Center (HPRC), will develop and implement group contracts between 20 worksites and local suppliers for foods meeting the 2005/2010 Dietary Guidelines for Americans and for physical activity resources (fitness clubs, bicycle commuting, walking, transit promotion, etc.).

45a-11. By March 2012, at least one King County jurisdiction and/or state legislature will pass a sugar-sweetened beverage (SSB) tax or fee.

45a-12. By February 2012, 100% of food procured by King County government for King County sites and services and food procured by King County contractors using King County awarded funds will meet the 2005/2010 Dietary Guidelines for Americans.

45a-13. By March 2012, the "Healthy Food Here" program will increase the availability of healthy food in at least 20 corner stores in focus communities. Food sold at these corner stores will come from at least one new urban agriculture project involving 15 or more low-income/immigrant farmers producing 10,000 lbs. or more of food annually.

45a-14. By March 2012, 15 existing farmers markets in focus communities in King County will have new capacity to accept WIC and SNAP benefits and King County policies will be changed to require that vouchers and electronic debit cards are accepted at all new farmers markets in King County.

45a-15. By February 2012, 450,000 King County residents (70% of focus community residents) will be exposed to targeted media messages that describe how community and institutional environments shape people's choices regarding eating and physical activity in order to build support for policy and systems changes.

45a-16. By February 2012, a new Local Education Network will have issued at least 30 communication notices (i.e., reports, issue papers, policy updates) related to CPPW policy initiatives, such as soda taxes and land use policies, each of which will have reached at least 200 member organizations.

45a-17. By November 2011, work with Pacific Science Center (PSC), to create and launch enhancements to new permanent children's exhibit, Professor Wellbody's Health & Wellness Academy, that supports healthy food and drink choices and policy initiatives. Exhibit will have 50,000 visitors per month on-going.
Los Angeles Co, CA
21-01. March 2012, adopt policies and/or implement environmental changes to increase access to healthy foods and beverages and/or decrease access to sugar sweetened beverages in eight cities with childhood obesity rates above the county average.
21-02. March 2012, develop, adopt, and/or implement healthy food/beverage policies in at least three County of Los Angeles departments.
21-03. March 2012, adopt and/or implement food policies to improve the nutritional content of school meals in at least 4 Los Angeles County school districts, including the Los Angeles Unified School District
21-04. March 2012, implement policy guidelines in at least 60 preschools in low income communities in the LA Universal Preschool (LAUP) network of providers to increase access to healthy foods/beverages, reduce access to unhealthy foods/beverages, and increase opportunities for physical activity.
Miami-Dade Co, FL
25-01.1. By September 2010, a Leadership Team consisting of 10 to 12 high-level community leaders will pledge through a formal agreement to oversee the strategic direction and enact policies related to healthy eating and increasing physical activity in Miami-Dade County.
25-01.2. By February 2011, the collective membership base of the four Consortium Committees responsible for accomplishing proposed Community Action Plan will have increased by 25%.
25-02.1. By January 2011, implement a mass media/social marketing campaign that will reduce obesity and change subjective norms, beliefs, self-efficacy, and perceived behavioral control of unhealthy choices: a. By January 2011, 40% of those exposed to messages will believe that choosing healthier food is reasonably priced and more available. b. By January 2011, 40% of those exposed to messages will believe that they can adopt a healthier lifestyle by engaging in physical activity opportunities through the built environment, parks and recreation, and school.
25-03.1. By January 2012, legislation will have been introduced at the public policy level that proposes to enact nutrition standards for child care centers in Florida including mandating low or fat-free milk for children 2 years of age and older; provision of whole fruits and vegetables (fresh, frozen, or canned) five days week at breakfast and snack time.

25-04.1. By July 2012, the School Wellness Advisory Committee (SWAC) will revise the school wellness policy to include nutrition standards for foods in schools, in accordance to IOM standards.
25-04.2. By December 2011, 45 reimbursable Healthy Food Vending Machines will be installed throughout 45 senior high schools, based on National School Lunch Program Nutrition standards.
25-04.3. By March 2012, the Miami-Dade Public School Board will have adopted a policy that assures Farm-to-Schools programs connecting at least 30% of MDCPS sites to local farms. Schools will be selected based on highest burden of obesity, high risk groups, and/or greatest impact or reach.
25-04.4. By March 2012, Miami-Dade Parks and Recreation will adopt policies requiring 100% of vending machines managed by Miami Dade Parks and located at park sites, to be in accordance to Parks Healthier Vending guidelines. Healthy vending machines placed at parks and recreation facilities will be selected, based on highest burden of obesity, high risk groups, and/or greatest impact or reach.
25-05.3. By March 2012, 30 schools will have adopted the Healthy Schools Program. Selected schools will be based on the highest burden of obesity, high risk groups, and/or greatest impact/reach. Implement policy that supports physical activity and nutrition and build a sustainability model/capacity of the county, ongoing support to school.
25-06.1. By January 2012, 50% of the 40 participating WIC and/or SNAP approved convenience stores will adopt a policy to place fresh fruits and vegetables where they are highly visible to customers, in a manner that is "attractive and appealing."
25-07.1. By March 2012, at least two identified sites will be selected based on greatest impact and high risk population, for a farmers' market location and will be coupled with a community garden combination program, which would allow for provision of products to the market.
25-11.1. By January 2012, there will be a 10% increase in the number of Consortium member organizations that have implemented a Worksite Wellness program.
25-11.2. By March 2012, two large-scale public service venues (i.e. local government facilities) will have healthier food & beverages options available through vending machines. The selected public service venues serve as a hub for government employees, residents utilizing government services, multiple public transportation sources, and shopping venues.
25-11.3. By March 2012, increase by 20% the availability of healthier foods from farmer's markets, located in public service venues (i.e. government facilities). The selected public service venues serve as a hub for government employees, residents utilizing government services, transportation gateways, and shopping venues.

25-11.4. By May 2011, 40% of the Consortium Member Organizations will adopt a policy that meets recommended strategies adopted from the CDC guidelines for Worksite Wellness in reference to nutrition and physical activity.
Multnomah Co, OR
28-01. By February 2012, 2 or more school districts (totaling at least 50% of all K-12 students in Multnomah County) will implement policies that restrict availability of high calorie, high fat, low nutritional quality of food and beverages, and sets nutrition standards for food served outside of the federal school meals program.
28-03. By February 2012, 2 or more school districts (totaling at least 50% of all K-12 students in Multnomah County) will implement food procurement policies and practices that support farm to school partnerships.
28-04. By February 2012, 2 or more school districts (totaling at least 50% of all K-12 students in Multnomah County) will implement policies and practices that increases and promotes the availability of drinking water for students.
28-05. By February 2012, 2 or more school districts (totaling at least 50% of all K-12 students in Multnomah County) will implement school cafeteria reforms including policies and system change that address product placement, promotion and appeal of healthy options, pricing strategies, and signage prompts for healthy choices.
28-07. By February 2012, 100% of Multnomah County-contracted services for after-school (SUN) programs will implement nutrition standards for food and beverages served to children and youth that align with the statewide nutrition standards adopted for food served outside of the federal school meals program.
28-10. By February 2012, 100% of school districts and Multnomah County-contracted services for after-school (SUN) programs will implement restrictions on the advertising and marketing of unhealthy food and beverages to children and youth.
28-16. By February 2012, one major public entity, such as Multnomah County, the City of Portland, or the City of Gresham, will adopt nutrition standards.
28-17. By February 2012, one major public entity, such as Multnomah County, the City of Portland, or the City of Gresham, will implement food procurement policies, reflecting the adopted nutrition standards, for programs and facilities that serve the public.
28-18. By February 2012, public entities, including Multnomah County, the City of Portland, and the City of Gresham, will implement organizational policies and practices to increase and promote the availability of safe tap water for consumption by employees, agency partners, and the public.

28-19. By February 2012, at least 4 hospitals in Multnomah County will implement food procurement policies and practices that support farm to institution partnerships.
28-20. By February 2012, at least 4 hospitals in Multnomah County will implement nutrition policies that set standards for food served to the public.
28-22. By February 2012, at least 10 faith-based campus environments, with a focus on African American congregations, will implement congregation policies and practices that restrict the availability of sugar sweetened beverages and promote water consumption
28-24. By February 2012, 5 Multnomah County-contracted senior meal program sites will implement food purchasing and procurement policies and practices that support farm to senior meal program partnerships.
28-25. By February 2012, all Multnomah County-contracted for senior centers will implement nutrition standards for food served outside of the federal meals program.
28-26. By February 2012, Multnomah County Health Department will implement a Healthy Retailers Initiative with at least five convenience stores and one major chain that implements a menu of voluntary and regulatory actions to reduce the availability of sugar sweetened beverages to children and to increase equitable access to healthy foods including fruits and vegetables.
28-27. By February 2012, among adults in Multnomah County exposed to campaign messages, there will be a 25% increase in those who believe that availability of healthy food and beverages is an important health issue requiring community action.
New York City, NY
30-01. March 2012, launch 1 small and 2 large media campaigns to increase awareness that sugar-sweetened beverage consumption is harmful to health.
30-02. March 2012, increase access to healthy foods among high-need populations through increase in electronic benefit transfer machine (EBT) usage among 55 Farmer Markets in high need areas. NC3B: Increase access to healthy foods among high-need populations by increasing the number of operational Green Carts by 200 by March 2012.
30-03. March 2012, increase access to healthy foods (i.e. whole grains, produce, low fat milk, etc.) by increasing by 400 the number of Bodegas in high-need communities that are compliant with the new New York State WIC policies or that promote WIC approved items.
30-04. Develop and implement one or more policy strategies to reduce the ubiquity of and access to sugar-sweetened beverages (SSB) and/or other junk foods in food service establishments or community settings by March 2012.

30-05. Facilitate population-level salt intake reduction by reducing the sodium in the NYC (and national) packaged and restaurant food supply system through the development of one salt surveillance system by March 2012.
30-06. To decrease access to unhealthy foods and increase access to healthy food, strengthen implementation of food procurement standards in 12 city agencies (affecting 226 million meals and snacks) and increase implementation of beverage vending standards by March 2012.
30-07. To increase access to healthy foods and decrease access to unhealthy foods in private organizations, implement food environment policies in 100 large businesses/employers, universities, hospitals, and community organizations by March 2012.
30-08. March 2012, facilitate environmental change in 40 grocery stores in high-need areas to support placement, quality and attractiveness of produce.
30-09. March 2012, develop and enact one new policy requiring the posting of certain calorie information at additional venues.
30-10. March 2012, in order to change the relative price of healthy vs. unhealthy items, develop one state or local policy or one system-level policy, to increase the price of sugar-sweetened beverages (SSBs) relative to low-calorie beverages in the entire municipality or in at least one large workplace setting.
30-11. By March 2012, in order to change the relative price of healthy vs. unhealthy items, enact a policy that would either allow produce to be discounted for all low income households receiving SNAP in NYC or limit unhealthy food access, or both.
30-20. Increase access to healthy foods, and water consumption, among students by installing at least 144 water jets in school cafeterias in target areas by 2011.
30-21. Increase access to healthy foods and assist with the implementation of school wellness policy by facilitating improved selection, appearance, placement, and preparation procedures system-wide for fruits and vegetables on salad bars in all 196 high school kitchens by December 2011.
30-22. March 2012, decrease access to unhealthy foods in 425 high schools by facilitating the implementation of the NYC Chancellor Wellness Policy.
Philadelphia Co, PA
34-47-NQ5. Media: Decrease by 10%, sugary drink consumption among children and adults by implementing a multi-media social marketing campaign.

34-53-NQ5. Access: Implement components of the School Wellness Policy through the work of School Wellness Councils by decreasing competitive foods of minimal nutritional value and increasing opportunities for physical activity in 200 public schools.
34-54-NQ5. Access: Increase free/low-cost breakfast participation by 10% in the School District of Philadelphia through the implementation of breakfast carts in 100 schools.
34-55-NQ5. Access: Increase low-income children's' access to healthy, complete after-school meals by implementing the USDA Meal (Supper) Program in all (97) recreation center after-school programs (serving 3000 low-income children annually).
34-57-NQ5. Access: By the end of the initiative, the Health Promotion Council will develop a policy to establish nutrition and physical activity standards to be incorporated in all DHS-funded after school programs.
34-58-NQ5. Access: Increase access to produce for low-income Philadelphians through 10 new farmers' markets.
34-59-NQ5. Access: Develop a city-wide network of local food retailers that sell new, healthy products by engaging 600 corner stores in a Healthy Corner Store Initiative.
34-60-NQ5. Price. By end of initiative, achieve a 75% redemption rate for Philly Bucks coupons designated for the purchase of fruits and vegetables at Philadelphia farmers' markets.
34-61-NQ5. Support Services. Increase workplace-based incentives and benefits for physical activity and healthy eating through implementation of workplace wellness initiatives in 10 mid to large-sized employers in the City.
34-63-NQ5. Receive exemption from preemption from the FDA for Philadelphia's local menu labeling law. Ensure 90% compliance with menu labeling law in Philadelphia.
34-64-NQ5. Introduce and pass a local tax on sugary drinks for the City of Philadelphia.
34-65-NQ5. Access and Price: Implement healthy beverage vending policy changes in all City-owned buildings.
34-66-NQ5. Access and Price: Provide affordable, healthy produce through "healthy carts" in areas that show sufficient demand and do not have food access.
Pima Co, AZ
36-01. By March 2012, statutorily required General Plan elements (including Land Use, Circulation, Open Space, Growth Area, Housing, Public Service and Facilities, Public Buildings, Conservation Rehabilitation and Re-development, Safety, Bicycling, Energy, Neighborhood Preservation and Revitalization) in the City of Tucson, Pima County, City of South Tucson, Sahuarita, Marana, Pascua Yaqui Tribe, and Tohono O'odham Nation will include model

language based on Public Health Law & Policy (PHLP) best practice standards that support safe, attractive, accessible places for physical activity, and access to healthy food, with emphasis on high risk areas. Note: All jurisdictions in Arizona are required to update their General Plans in 2012.

36-02. By March 2012, Wellness Resource Centers are established in 15 high risk neighborhoods for expanded access to local physical activity and healthy food facilities at existing community based facilities such as churches, charter schools, etc., for use of facilities such as gyms, pools, fitness centers, kitchen facilities, basketball courts, etc. through discounted fees, expanded hours, expanded offerings and/or use agreements.

36-03. By March 2012, zoning ordinances in all Pima County jurisdictions will include incentives that support access to healthy food. These might include mixed use zoning, high density zoning, zoning for food production, and placement of outlets for healthy food.

36-08. By March 2012, 15 high risk neighborhoods covering 150 square miles and serving 398,000 people will have selected a leader to participate in the CPPW Connectors Network and partnered with PRO Neighborhoods and the Community Food Bank to develop and implement neighborhood plans to support healthy eating; they will have instituted a system to access local and other assets to fund and sustain the neighborhood plans. These plans and collaborations will be grounded in best practices of Asset Based Community Development.

36-09. By March 2012, 300 new family gardens, 3 community gardens and 5 new school gardens will be created and an additional 500 people will join the Community Food Bank Gardening Cooperative. The family gardeners will produce an average of 40 pounds of produce annually for a total of 12,000 pounds. Each gardener will share their produce with 3 other people thereby increasing the number of people having access to fresh food through backyard gardens to 4500. An additional 4,000 will have increased access through school gardens (5 gardens x 800 students each) and 200 people benefit from the 3 community gardens. 150 gardeners will become consignment sellers and provide additional produce to supply the farmer's markets.

36-10. By March 2012 the number of people using EBT and WIC coupons at Community Food Bank farmers markets will increase from the current 90 to 195 (50% increase plus 40 new users at the new farmers market) through outreach to WIC and SNAP offices with flyers, posters and educational presentations.

36-11. By September 2010, an additional year round farmers market in an area at high risk for obesity and low income will be added to the current 10 year round markets (4 of the 10 are in high risk areas), increasing the percentage of farmers markets in high risk areas to 50%. A Mobile Market will also provide locally grown fresh fruits and vegetables to targeted areas at high risk for obesity and low income and that currently have limited access to fresh produce.

36-12. By March 2012, a single cooperative purchase policy to supply schools with lower cost healthy snacks, locally grown produce and dairy products is developed by the Community Food Bank and adopted by 50% of the 18 school districts in Pima County.
36-13. By October 2012, the Community Food Bank will create and implement a healthy snack purchasing cooperative that follows established guidelines for healthy food for 150 child care centers and 100 home care sites serving 850 children with 75% of them in areas at high risk for obesity and low income.
36-14. By March, 2012, collaborative plans for comprehensive programming for increased physical activity and improved nutrition following best practices and evidenced based programming have been developed and implemented in all Pima County school districts and 250 child care facilities (with focus on high risk areas) for before, during and after school for children of all ages including having all Pima County school districts adopt a policy requiring 150 minutes per week of physical activity in public elementary schools and 225 minutes per week of physical activity in public middle and high schools. Plans will follow NASPE for PA and AAP EMPOWER standards for child care and afterschool programs.
36-15. By March 2012 polices following Wellness Council of America and CDC/DNPAO guidelines are adopted and implemented by100 faith based organizations to improve opportunities for physical activity and access to healthy food for 75,000 parishioners.
36-16. By March 2012, policies following Wellness Council of America and CDC/DNPAO guidelines are adopted and implemented in 100 clinics/physicians' offices and all (9) Pima County hospitals to improve opportunities for physical activity and access to healthy food for 37,444 employees and their families (total of 112, 332 people) and 364,000 patients and family members.
36-17. By March 2012, policies following Wellness Council of America and CDC/DNPAO model policy guidelines are adopted and implemented in 200 worksites to improve opportunities for physical activity and access to healthy food for 50,000 employees. Special focus will be on those worksites that have a high percentage of employees who are at high risk.
36-18. By March 2012, all Pima County and local government agencies and all Pima County hospitals, and school districts adopt and implement a policy requiring their respective facilities to provide breastfeeding accommodations for employees and students that include both time and private space for breastfeeding and/or pumping during working/school hours.
36-19. By March, 2011, Pima County Health Department has established a voluntary "Healthy Restaurant" designation similar to the Seattle Healthy Food and Drink Business Incentive program best practice and based on the Howard County healthy restaurant nutrition criteria.

36-20. By March 2012 a breastfeeding policy has been adopted and implemented in all Pima County hospitals that have obstetrical departments (7 of 9 hospitals have OB departments) following World Health Organization Baby Friendly Hospital guidelines that support mothers through breast feeding education and training.
36-21. By March 2012, all Pima County jurisdictions have adopted a policy to apply nutrition guidelines that are consistent with the CDC/DNPAO to all foods sold in vending machines within local government facilities including school jurisdictions, following model policy i.e.: CA Center for Public Health Advocacy.
36-22. By March 31, 2012, among adults in Pima County exposed to campaign messages there will be an increase of 75% in those who believe that access to reasonably priced healthy foods is an important health issue requiring community action.
San Diego Co, CA
42-03. February 2012, implement policy, systems and environmental changes in a minimum of 6 local jurisdictions countywide that specifically support MAPPS strategy – access – to increase active living and access to healthy food.
42-07. March 2012, develop and implement a hard hitting, comprehensive, community-wide media campaign that results in 10% of San Diego County residents having been exposed to messages promoting increased physical activity, improved nutrition, decreased obesity prevalence and/or related environmental changes.
42-08. February 1, 2012, establish a regional food hub facility in San Diego County that will aggregate, lightly process, package, distribute and coordinate the sale of locally produced food to increase the procurement for local institutions; and increase the access and purchase of nutritious produce for residents.
42-09. February 1, 2012, a minimum of five (5) local jurisdictions will develop and implement policies in general plans, permits, and/or ordinances for gardens and will establish five (5) Regional Garden Education Centers.
42-10. February 1, 2012, implement the Fresh Fund pricing incentive strategy at a minimum of six (6) farmers' markets with Electronic Benefit Transfer capability to increase access to nutritious produce for at-risk and vulnerable populations in San Diego County.
42-12. Implement a community-based micro-enterprise agricultural growing, sales and educational pilot project within a high need area of Southeast San Diego, one of the most underserved communities within San Diego County, which can be replicated countywide. By March 31, 2012, establish a minimum of one (1) residential micro enterprise farmers' market which will be supplied with agriculture grown from a minimum of one (1) resident established community garden and other supporting local growers.

42-13. February 1, 2012, enhance a minimum of six (6) school district wellness policies to create school environments that promote nutrition, physical activity and overall student wellness throughout both the regular school day and before- and after-school programs by achieving a minimum of three (3) of the following five (5) selected strategies: implement healthy nutrition options, increase Moderate to Vigorous Physical Activity (MVPA), improve lunch-time schedules, implement a Breakfast in the Classroom (BIC) pilot, establish intergenerational advocacy teams.
42-14. February 1, 2012, institutionalize model breakfast delivery systems that will eliminate participation barriers to increase student participation in Healthy School Breakfast program within 10 high need areas of San Diego Unified School District by 95% from baseline in selected elementary school sites, 50% from baseline at selected secondary school sites; and increase the Summer Meals program participation rate by 25% from baseline for children and youth at non-school, community sites. Create a sustainable systems procurement policy that will assist the inclusion of local grown food into the school meal programs.
Suffolk Co, MA
3-01.1-NQ5. Conduct a hard hitting media/social marketing campaign utilizing multiple media channels that will expose 70% of Boston's adult population to messages that: a) give information on health impact of SSBs and b) suggest opportunities for policy/community action to reduce consumption, by March 2012.
3-01.2-NQ5. Conduct youth-directed social marketing campaign utilizing multiple media channels that will expose 50% of youth ages 13 – 21 to messages that a) give information and change social norms on SSB consumption; and b) suggest opportunities for youth involvement to reduce consumption, by March 2012.
3-02.1-NQ5. Enact City of Boston policies and implement systems that restrict access to and marketing of SSBs and that introduce point of decision signage through city agencies by March, 2012.
3-02.2-NQ5. Enact policies and implement systems in at least 6 health care organizations (3 major hospitals and 3 community health centers) that restrict access to and marketing of SSBs and that introduce point of decision signage and/or increase absolute/relative price of SSB's by March, 2012.
3-02.3-NQ5: Enact policies and implement systems that restrict access to and marketing of SSB's in other sectors and that introduce point of decision signage by March, 2012.
3-06.1-NQ5. By March 2012, create permanent environmental changes and support systems that increase access to fresh fruits and vegetables for residents of Boston's low-income neighborhoods by renovating and upgrading a 10,000 square-foot Greenhouse and Learning Center in Roxbury; and establish a new gardening support systems that include referrals, outreach, training.

3-06.2-NQ5. By March 2012, create permanent environmental changes and support systems that increase access to fresh fruits and vegetables for more than 2,000 residents in three low-income neighborhoods by building 400 backyard raised beds; and developing a system of referrals, outreach, training and support for new gardeners.
3-06.3-NQ5. By March 2012, create permanent environmental changes and support systems that increases access to fresh fruits and vegetables to 1,200 residents of Boston's most low-income neighborhoods by renovating/creating more than 252 new additional community garden plots; and by offering workshops, garden skill-building and mentoring.
3-07.1-RQ5. Revise municipal zoning policies to make agriculture an allowable use with required conditions being met.
3-07.2-NQ5. Enact municipal policies and implement systems regarding use of open city land to encourage temporary or permanent land utilization for community gardens and other agricultural use.
3-09.1-NQ5. BPS enacts policies and develops systems to ensure that competitive foods/beverages* meet optimal nutritional guidelines. (*Competitive foods/beverages are those available at schools outside the USDA school meals program.)
3-09.2-NQ5. Enact policies that decrease access to unhealthy foods/beverages on or near school grounds.
Tri-County, CO
48-01. March 1, 2012, all 15 school districts in TCHD's jurisdiction will have enhanced, or adopted, and implemented new wellness and other policies that result in: 1. Increased access to healthy food/drink, and/or limit availability of unhealthy food/drink; 2. Increased non-food or healthy food-related parties or rewards in the classroom; and, 3. Increased weekly physical activity.
48-02. March 1, 2012, 100% of the target audience will be exposed to the social marketing campaign, and at least 50% will report a positive attitudinal change.
48-03. March 1, 2012, increase by 75% the number of local governments that show readiness to change, and at least four local governments will make one land use planning or zoning policy change to support healthy eating and/or physical activity.
48-04. March 1, 2012, at least 30 local restaurants will adopt the Smart Meal Seal policy-based program, with at least half of the restaurants operating in low-income communities.
48-05. October 31, 2011, three additional sustainable community gardens will be established in underserved areas of Adams, Arapahoe, and Douglas Counties that increase access to healthy food for WIC clients.