

IF YOU BUILD IT, WILL THEY COME, AND WHAT WILL THEY EAT? INVESTIGATING
SUPERMARKET DEVELOPMENT IN FOOD DESERTS

Benjamin William Chrisinger

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Supervisor of Dissertation

Amy Hillier

Associate Professor, City & Regional Planning

Graduate Group Chairperson

Eugénie Birch, Lawrence C. Nussdorf Professor of Urban Research and Education

Dissertation Committee

Eugénie Birch, Lawrence C. Nussdorf Professor of Urban Research and Education

Shiriki Kumanyika, Emeritus Professor of Epidemiology

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Dedication

To Amy Hillier,

A true mentor, in all meanings of the word.

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ABSTRACT

IF YOU BUILD IT, WILL THEY COME, AND WHAT WILL THEY EAT? INVESTIGATING SUPERMARKET DEVELOPMENT IN FOOD DESERTS

Benjamin William Chrisinger

Amy Hillier

Over the last decade, increasing attention has been paid to communities with low physical access to full-service supermarkets, commonly called “food deserts.” These often have disproportionately high rates of poverty and minority residents, raising additional issues for local officials and advocates. Widespread research has also documented associations between poor access to supermarkets and negative health outcomes. To address these issues, coalitions of stakeholders have used development incentives known as “fresh food financing” to bring new supermarkets into food deserts, often invoking associative health claims as motivation. To date, few health evaluations have been completed, though of published results, few show improved health resulting from new supermarket development. This dissertation uses a multi-level, mixed-methods approach to understand three primary research questions: 1) How different types of development processes yield different types of supermarkets, 2) How different types of new supermarkets may drive different patterns of shopper adoption, and 3) How consumers engage with new supermarkets, and how might these behaviors be meaningful for health? A variety of primary and secondary data sources inform this research: an extensive document review, analysis of redemption data from the Supplemental Nutrition Assistance Program, open-ended interviews with major fresh food financing stakeholders, and walking interviews and surveys with shoppers at a store developed with fresh food financing. The investigation finds that while a number of financing methods have been employed to improve access to supermarkets in food deserts, the highly professionalized tools promulgated by industry leaders and officials are most prevalent. Additionally, most projects include local development incentives, even those not specifically

dedicated to expanding food access. Though the positive health effects of new supermarket development have not been empirically documented, this research shows that important diversity exists among the types of incentives and stores that have been created, which may also influence store adoption by low-income shoppers. Shoppers in this study grappled with changing their diets, even in the context of managing chronic disease conditions. These findings highlight important points of friction that must be addressed for new stores in food deserts to achieve desired health outcomes, and provide an illustrative model for those who hope to create greater synergy between community development and public health.

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PREFACE

I had just spent the past three minutes standing quietly in the dairy section, listening to Mona think aloud. This was the longest stop on our trip through the supermarket, which otherwise was straightforward: I want this, not that; I'll get this now, wait for that to go on sale; just a couple of things here and there, no big shopping. Just after eight in the morning on what would be one of Philadelphia's hottest summer days of 2014, the store was cool and quiet except for the sounds of associates stocking shelves, the familiar beep of a checkout counter, and a classic Motown song playing in the background. Mona, who worked a few blocks away, was just stopping in for a few groceries on her way to a healthcare job.

Despite the simplicity of the scene, which could well be replicated in supermarkets around the city, or even as part of my own childhood, shopping with my mother in Virginia, this particular moment and context, standing in front of packaged cheeses, was complex. Mona pulled a few bags of shredded cheese down and held them, as if to examine them closer. She had been comparing brands and prices, mumbling - partly to herself and partly to me - about her experience with specific products and how well they melted. Abruptly, Mona put everything back on the shelf: "I don't need it."

I naively asked her to elaborate: Did she already have cheese at home, or maybe would she get it later? Did she not need it at this specific moment? Departing from the apparent simplicity of the moment, Mona's responded: "No, really... I'm supposed to be trying to eat better. I just had a heart scare. I just had a stent put in... so a lot of the stuff I need to cut out." What I had originally perceived as a grappling with brands and prices now appeared to be a deeper reckoning with her own health. Mona's choice suddenly seemed more difficult to me, and she confirmed this: "I'm doin' pretty good, and I've cut out fried foods and you know. It's gonna be a process for me." In a matter of seconds, those three minutes in dairy aisle became far more significant.

I had expected to learn about individual experiences and behavior by shopping with customers at this North Philadelphia supermarket, developed several years earlier as part of a banner public-private partnership to bring healthy foods into poor neighborhoods. I hoped to consider if and how the store helps people access and consume healthier products. Based on my reading of previous research, I was skeptical the new store could do much to change the content of an individual's supermarket basket, despite a myriad of political advocacy running counter to this belief. Knowing that most residents of low-income neighborhoods that are underserved by full-service supermarkets (commonly and subsequently referred to as "food deserts") already shop at these types of stores, just ones further away from home, why would we expect proximity to matter?

My experience with Mona, and many other shoppers with similar stories, reframed this question. Instead of wondering about more-distant outcomes, like consumption of fruits and vegetables or weight status, which reflect a complex web of human behavior, why are we not first meeting people where they are? If we meet food desert shoppers at the supermarket door, we recognize that many are about to walk into the store with chronic health conditions. The complexity this introduces, layered on top of other well-documented food shopping issues, including limited incomes, shopping for a family, the influence of marketing and promotions, and limited personal transportation, should force us to pursue a more detailed consideration of new supermarkets in food deserts. Indeed, these stores must matter for health, though some shoppers are considering it

more explicitly than others. Within these contexts, what are reasonable health outcomes to expect from a new supermarket?

Points of Departure

As Laura Wolf-Powers (2014) reminds us, we apply different analytical and normative frames to perceiving, assessing, and implementing changes in the world. My expectations of how new supermarkets might affect their environment and individuals living nearby have been influenced by a variety of perspectives. First, the broad promotion and adoption of policies and initiatives designed to incentivize large food retailers, especially supermarkets, to open in food deserts, many of which directly cite scientific literature associating low food access to poor health. Second, a burst of research and programmatic funding to study or support new store development by the nation's major health institutions, including the National Institutes of Health (NIH), Centers for Disease Control and Prevention (CDC), and other divisions of the Department of Health and Human Services (HHS), and philanthropic foundations, such as the Robert Wood Johnson Foundation (RWJF) and The California Endowment. While these circumstances influenced my own initial enthusiasm about fresh food access, it is fair to say they also reflect a similar enthusiasm by thought-leaders and power brokers of government, planning, public health, research, and philanthropy.

My identity as a planning researcher also colored these expectations, and heightened my awareness of the civil institutions and stakeholders who helped new supermarkets become a place-based prescription for poor health. Community development experts do not readily agree whether place-based interventions are more effective than people-based investments in creating positive behavior change, though there is agreement that place matters, at least enough to marshal major federal redevelopment funds dedicated to improving the physical environment. Planning scholars remind us that while urban issues like deep poverty are too complex to be solved in the short-run by developing new housing or businesses, there is also value to these immediate, tangible interventions to place (Crane & Manville, 2008). As a planner, I was conscious of the need to act strategically, seize political opportunities, and form coalitions, often "satisficing," or acting with information that is "good enough," though less than comprehensive (Simon, 1947).

Beyond the societal dynamics around food deserts, I was also careful to consider the complexity of human behavior change, which applied a cautious brake to my enthusiasm about possible health impact of new supermarkets. Scholars in public health have developed and tested models of behavior adoption, maintenance, and change, which suggest that the path to dietary change - essentially, the summation and shifting of many separate behaviors - is winding, nonlinear, and context-driven. Even as I live in an environment saturated with healthy food options and am keenly aware of diet-related disease, I have admittedly taken dozens of writing breaks to corner stores for candy, revealing something about my own impulse control, risk perceptions, and limited barriers to access. I would speculate that most individuals can imagine similar scenarios of grappling with food choice in their own lives. Indeed, Americans do not eat the recommended daily number of servings of fruits and vegetables (on most days, I must include myself in this category), so clearly the adoption of ideal health behaviors is commonly elusive (Volpe & Okrent, 2012; Lin & Guthrie, 2012).

Perhaps the simplest facet of my expectations rested on a contentious question: How do we define and conceptualize health? Depending on how upstream or downstream we consider it, health might be measured as a manifested condition or status, such as the presence or absence of heart disease, or as the behaviors that contribute to the outcome, like consumption of fruits and

vegetables. It also matters when we aim to define health. It can be considered cross-sectionally, at a moment in time, or as a process, changing for better or for worse as we adopt and maintain certain behaviors. Our definition of health inevitably shapes our expectations, and the measurements we use to verify them.

One approach to conceptualizing health is through a behavioral model, recognizing that behaviors are far more proximal outcomes than the presence or absence of chronic disease. The domain of health behavior theory provides useful constructs to conceptualize how human beings behave, both as individual actors with bundles of unique traits, abilities, and predispositions, and as reactors, responding to external stimuli, including our exposure or ability to access certain amenities. Interwoven with norms, trends, institutions, capital, and other constructs, this social-ecological understanding of health behavior provides perhaps the most comprehensive view of how individual people consider, adopt, maintain, and change the behaviors that form health outcomes. Under this model, one could imagine a new supermarket encouraging positive or negative behavior change, or, alternatively, not influencing behavior at all.

Another approach to defining health outcomes is through choice models. While this is predominantly the domain of economists, it rests on a foundational, interdisciplinary structure of how individuals respond to incentives and choose among options. Choice models assume other tenets, such as agency, or the freedom to choose, and information, or the ability to differentiate between choices based on their characteristics. While choice holds much promise for considering interventions (i.e. financial incentives to increase fruit and vegetable consumption), the assumptions of agency and information also prove to be problematic.

The seminal work of Amartya Sen (1992) expands on this framework by suggesting that different individual, situational, and temporal characteristics cause people to respond to incentives in ways that are not well-predicted by traditional rational choice models. For instance, we may imagine a choice-set of all available food retailers in a neighborhood and develop a model to predict how an individual might choose between them. In reality, an individual's choice-set is perhaps much smaller, depending on their ability to access or select among options. In trying to stitch together a causal pathway between new stores and health outcomes, I find Sen's choice framework to be illustrative of both the theoretical shortcomings of the access-health discourse, and the places (and need) to look for health outcomes that are more proximal.

My understanding of choice is also influenced by sociology, especially the concept of "situated choice" described by John Laub and Robert Sampson (2003) in their longitudinal study of youth offenders. These researchers attempt to identify distinguishing features, situations, or circumstances for individuals who cease criminal activity, and those who recommit into adulthood, essentially disentangling cultural and environmental determinants of behavior. Ultimately, Laub and Sampson strike a distinctly middle ground, pointing to critical social institutions, such as marriage, as important moments of choosing to desist criminal behavior, though they are careful not to offer these as wholesale remedies for crime; instead, they suggest that choices can never entirely be divorced from environment, and are instead "situated" within an individual's unique circumstances. Situated choice vastly complicates attempts to connect individual-level decisions to population-level outcomes, especially given the importance (and unpredictability) of possible random life events, and carefully avoids any suggestion that predictions of future criminal behavior can be derived from present events.

This construct of situated choice is mirrored in the work of social epidemiologists, who contextualize disease transmission within ecological constructs and have greatly influenced my understanding of health disparities. Nancy Krieger (2011) offers the example of tobacco use and cancer development: while the causal pathways between cigarette smoking and cancer do not vary widely across time and populations, the social context around the behavior of smoking has changed dramatically. While smoking used to be regarded as a high-class activity, today it is most prevalent among low-income populations; as this behavior has shifted, so too has the risk of certain types of cancer. Thus, if we are to fully understand the development of certain types of cancers, we must also understand the behavior of cigarette smoking; to understand this behavior, we must seek to understand the social and environmental contexts that may surround it. Remembering back to Mona: an ecological approach is far less concerned with the fact she did not purchase cheese, and instead interested in why, where, when, and how she arrived at this decision.

I also remain aware of contexts beyond new stores and health, especially in the realm of poverty alleviation. For generations, scholars and urban reformers have argued about the root causes of persistent poverty, often ascribing blame somewhere in between people and place, behavior and environment, choices and access. These debates emerge in food desert discourses, and may reveal important foundations for expectations of these projects. Ultimately, as some argue, is poverty the urban problem from which all others, including diet-related disease, develop? This question is far beyond the scope of my analysis, though it is worth considering as a backdrop and influential factor in the emergence, persistence, and effects of food deserts.

CHAPTER I: Background

This chapter provides the context for understanding efforts to develop supermarkets in food deserts. It briefly introduces the policy landscape for these initiatives (which are further explored in Chapter II), but then offers a theoretical and empirical basis for forming expectations about new store development. These expectations are not always clearly aligned with evaluative strategies, and these points of dissonance will help position the dissertation's research questions and broader aims.

Building New Supermarkets in Food Deserts

Within the last decade, programs have been created at federal, state, and local levels to improve access to healthy foods by developing food retailers in underserved areas. In part, these programs react to a broad body of research that describes two concurrent disparities among disadvantaged urban communities: first, these areas have low physical access to affordable, acceptable healthy foods (Algert et al., 2006; Andreyeva et al., 2008; Raja et al., 2008; Larson et al. 2009); and second, they are disproportionately affected by diet-related chronic illnesses (Morland, Wing & Diez Roux, 2002; Morland, Diez Roux & Wing, 2006; Ingami et al., 2006; Giang et al., 2008). Furthermore, these disparities are especially prevalent in poor communities of color, adding important dimensions of race/ethnicity and socioeconomic status to food deserts in America (Zenk, et al., 2005a; Odoms-Young, Zenk & Mason, 2009; Odoms-Young, et al., 2012).

Begun in 2004, the Pennsylvania Fresh Food Financing Initiative (PA-FFFI) initiated a line of policy that explicitly connects food access to full-service supermarkets and health disparity. PA-FFFI highlighted negative spatial associations between premature death and supermarket proximity in Philadelphia, and invoked specific vocabulary ("fresh food") related to fruits and vegetables (Giang, et al., 2008; Pennsylvania House Appropriations Committee, 2010). Similar access-health measures have been used in cities and counties across the nation to motivate action to increase food access. Common interventions to increase neighborhood access to healthy foods include mobile produce markets, farmers markets, corner store retrofits, and supermarket development.

Each of these strategies may play a role in addressing access disparity, though programs to incentivize supermarket development, commonly referred to as "fresh food financing," particularly merits attention for several reasons. First, these programs require substantial public and/or private financing to overcome start-up constraints, typically on the order of hundreds of thousands to millions of dollars (Goldstein et al., 2008; The Reinvestment Fund (TRF), 2006; TRF, 2008). Second, grocery retail interventions present a substantial investment in underserved neighborhoods with numerous ancillary effects beyond the presence of healthy foods, including added employment opportunities and tax revenues. Third, compared to corner store upgrades and mobile produce markets, new grocery retailers introduce a larger amount of food choices to neighborhoods, and the effects of this change on consumer behavior are not well understood. Finally, supermarkets are the primary source of food for most Americans. The Food Marketing Institute (2011a) estimates that 86% of shoppers consider supermarkets or supercenters to be their primary source for groceries; price and product assortment drive this preference for larger stores, with only 2 percent of shoppers using smaller-format retailers as primary stores (FMI, 2012). It should be noted that while this type of food shopping is important, 42 percent of the average

American food budget is spent on meals away from home, which are typically higher-calorie and less-nutritious (Todd, Mancino, & Lin, 2010; Guthrie, Lin, & Frazao, 2002).

PA-FFFI was developed with a broad coalition of stakeholders, with prominent roles played by health officials and advocates (Giang et al., 2008). The program's main financial partner, The Reinvestment Fund, reports that nearly \$85 million in grants and loans had been distributed through PA-FFFI by 2010. As this model of incentivized supermarket development has been adopted by other cities, states, and the federal government, many evaluation studies have reflected the economic development benefits of supermarket development, including job creation and tax revenues (TRF, 2006; Hagan & Rubin, 2013). Since the inception of PA-FFFI, over \$500 million has been committed to the development of nearly 100 new supermarkets across the nation through a variety of similar initiatives.

In 2010, President Obama introduced the Healthy Food Financing Initiative (HFFI) as the primary federal effort to eliminate food deserts. HFFI dedicates \$400 million of new and existing resources from the Departments of Treasury, Agriculture (USDA), and Health and Human Services (HHS) (Treasury Public Affairs, USDA Office of Communications, & HHS/ACF Press Office, 2010). Funding commitments are split between the three agencies and are generally administered through existing programs or mechanisms: within HHS, \$20 million in Community Economic Development (CED) grants; within USDA, \$50 million was committed to leverage \$150 million in public and private investments toward grants, loans, and other programs; and within the Treasury, \$250 million of New Markets Tax Credits (NMTCs) were earmarked for organizations committed to improving healthy food access in underserved areas, and \$25 million for financial assistance (HFFI-FA) to improve fresh food access and build programmatic capacity through Treasury-certified community development agencies.

The \$250 million committed through the Treasury's existing New Markets Tax Credit program is the largest feature of HFFI and channels funds toward large redevelopment projects (at the scale of supermarkets), typically those requiring at least several million dollars. A range of existing community development financing tools have also been leveraged to support HFFI projects, including local Community Development Block Grant (CDBG) funds, state and local tax credits, tax increment financing (TIF), and revolving loan funds (PolicyLink & LISC, 2007). Supermarket industry officials are becoming increasingly aware these sources of gap financing to open in disadvantaged urban locations, broadening the pool of operators willing to take part in food desert projects receiving fresh food financing. Because of physical, economic, and political variations between sites, planning processes and development strategies used for specific deals are notably different.

Through HFFI, improving food access is touted as a method to encourage healthy eating, as evidenced by the program's name ("Healthy Food Financing Initiative"), positioning within First Lady Michelle Obama's larger "Let's Move" Campaign to combat childhood obesity, and the 2010 White House Task Force on Childhood Obesity's Report to the President (White House Task Force on Childhood Obesity, 2010). Building on a widely-cited literature base, this document followed the work of earlier summary reports advocating for new supermarket development in food deserts, such as PolicyLink and The Food Trust's "Grocery Gap" report that details the prevalence of food deserts and their correlations with diet-related disease, and charts a course of policy action to incentivize new supermarket development (Treuhaft & Karpyn, 2010). The Task Force's report also includes references to many early food access studies that associate physical food access with health outcomes, including adolescent BMI (Powell, et al., 2007),

health disparities (Larson, Story, & Nelson, 2009), and childhood nutrition (Mikkelsen & Chehimi, 2007).

In absolute terms, HFFI and related efforts using federal dollars do not represent a major shift in federal funding priorities for place-based community development. HFFI employs existing programs and structures to solicit proposals, review projects, and award funding, such as the New Markets Tax Credit program. Furthermore, the program ranks low in terms of overall funding, well behind larger development programs such as the Low-Income Housing Tax Credit (LIHTC) or Community Development Block Grants; President Obama's fiscal year 2015 budget for programs by the US Department of Housing and Urban Development (HUD) was \$46.7 billion, over 100 times the amount of HFFI (Government Printing Office, 2014). Furthermore, the bulk of federal funds available for HFFI, over 60 percent, come from tax expenditures through NMTC allocations, versus discretionary agency funds. Nonetheless, HFFI codifies the federal government's belief, at least in terms of community development, that access to healthy foods is connected to the health and wellbeing of Americans (Treasury Public Affairs, USDA Office of Communications, & HHS/ACF Press Office, 2010; H.R. 2343, 2013). While supermarkets are not an uncommon business strategy for place-based revitalization, given the size, use of public subsidy, complexity, and highly-visible promises of health improvement, new retailers in food deserts garner particular attention.

The Community Development Context of Supermarket Development

In the words of historian Michael Katz: "The path between the results of empirical research and policy, even when they are clear, which often is not the case, never runs straight." (2013, 154). In terms of fresh food financing's use of evidence, many of the twists and turns along the path toward policy can be explained by situating it within a larger trajectory of place-based community development efforts. Indeed, while calls for "reconnecting" planning and public have emerged concurrent to food access policy efforts, the fields maintain distinct expectations of how place-based interventions should be designed and implemented, and what effects they might have on human behavior (Corburn, 2004, 2007).

Community development efforts are typically classified as "place-based" or "people-based." People-based approaches focus on individual choices and abilities, while place-based approaches focus on the quality of the physical environment and the provisioning of access and opportunity (see Table 1). These approaches differ in terms of the beliefs and expectations of how an intervention will create change, how need is assessed, and the tools that are ultimately used. People-based efforts seek to directly intervene with specific groups or classes of individuals, following the assumption that if human capital, such as job skills, can be developed, broader improvements will be actualized. These programs must determine who is eligible based on individual characteristics, and attempt to align incentives to help participants make ultimately beneficial choices.

People-based interventions are characterized by beliefs that: first, some of (if not all) of the adverse outcomes associated with poverty have root causes in unique behaviors exhibited by the poor (or "underclass," according to sociologists such as William Julius Wilson), and second, it is possible to design programs or incentive structures to address and change these behaviors (Katz, 1997, 2013). For instance, time limits or work requirements on certain cash welfare programs are motivated by a belief that these restrictions incentivize participation in the labor force ("self-sufficiency") versus the reliance on the welfare state ("dependency"). Other examples of people-

based initiatives include attempts to decrease rates of single-mother households, or promote use of mainstream financial institutions.

Table 1. Characteristics of Place-Based and People-Based Community Development

	People-Based	Place-Based
<i>Effort to improve</i>	“Kinds of People”	“Kinds of Contexts”
<i>Program target</i>	Underclass	Underserved
<i>Behavior explained by</i>	Individual factors	Environmental factors
<i>Policy heuristic</i>	<i>Who</i> merits assistance?	<i>Where</i> merits assistance?
<i>Policy tool</i>	Choice-based (incentives to make good choices)	Amenity-based (opportunities to make good choices)

On the other hand, place-based approaches explain many behaviors in terms of contexts and environmental factors. By identifying neighborhoods and areas to invest, these amenity-based efforts seek to expand physical opportunities for individuals to make beneficial choices. Some place-based planning efforts aim to redress spatial inequalities. For instance, inclusionary zoning policies seek to improve access to affordable housing within a locality by providing a mix of housing types and options (Schuetz, Meltzer, & Been, 2011). A sufficient stock of affordable housing options may allow lower-income individuals and families greater access to beneficial amenities and decrease exposure to health hazards (Barton & Tsourou, 2000; Malizia, 2006). Similarly, mixed use zoning aims to increase physical access to a variety of amenities for area residents (Barton & Tsourou, 2000).

While many agree that the most promising interventions are situated somewhere in between people and place, different opinions exist over the most appropriate contexts for choosing one approach over another. For instance, some argue that different components of poverty are best served by more person-based approaches in the long run, while others require place-based approaches to confront the immediate issue of concentrated poverty (Crane & Manville, 2008). Others have suggested that the federal government is typically better at administering people-based programs, whereas place-based programs often face many logistical constraints. For instance, if a poor city government receives federal development dollars, must they channel this funding to their poorest neighborhoods, or is it permissible to reallocate funding toward business districts in hopes of broader revitalization (Rich, 1993)?

Beyond the complexity of place-based initiatives, other scholars have criticized federal community development funding as a piecemeal approach compared to the massive economic restructuring and upheaval created by single federal policies, such as foreign trade agreements or minimum wage laws (O’Connor, 1999). Furthermore, federal place-based efforts face an inevitable challenge of executing these redistributive initiatives; Arthur Okun (1975) famously described the process as a “leaky bucket,” whereby dollars intended for poor people must be spent on non-poor intermediaries to achieve this ultimate goal (Rich, 1993). Taken in sum, the

process of distributing federal place-based development also often yields diffuse investments, where dollars and projects are spread widely rather than concentrated in particular areas (Rich, 1993). History provides additional cautions around federal place-based investment, with legacies of urban renewal that distinctly have had adverse effects on poor neighborhoods, especially African Americans communities, in many American cities.

Nonetheless, place remains key to many federal, state, and local efforts to revitalize low-income communities and lift individuals out of poverty. Furthermore, even people-based investments ultimately occur in place; downtowns, neighborhoods, and supermarkets are proving grounds for efforts to improve job readiness, access to affordable home mortgages, or ability to spend food stamps (Gittel & Thompson, 1999; Chrisinger, 2014). Robert Sampson (1999) also points to the possible people-based outcomes of thoughtful place-based initiatives, suggesting that well-conceived land use planning may yield spaces and neighborhood forms which might promote interaction and the formation of social capital. Thus, most community development efforts are at least place-sensitive, even if they cannot be purely classified as place-based.

Recent theoretical work by Laura Wolf-Powers (2014) provides a formal avenue for considering equity as a distinct diagnosis from behavior and access-oriented understandings of community needs. She outlines three “theories of action” that underlie much of community development, and calls attention to possible misalignment between diagnoses and interventions when these theoretical perspectives are not well-articulated. These theories center on causes of community need, possible actions to take, and specific interventions to take. Broadly, Wolf-Powers classifies these as restoration of norms, which grows out of observations of disorganization and seeks to improve skills and choices; restoration of markets, which stems from a belief that traditional capital and labor market structures have deteriorated and aims to revitalize these systems; and reversal of injustice, which recognizes that groups and individuals lack access to power and seeks to reform existing structures and create alternative institutions.

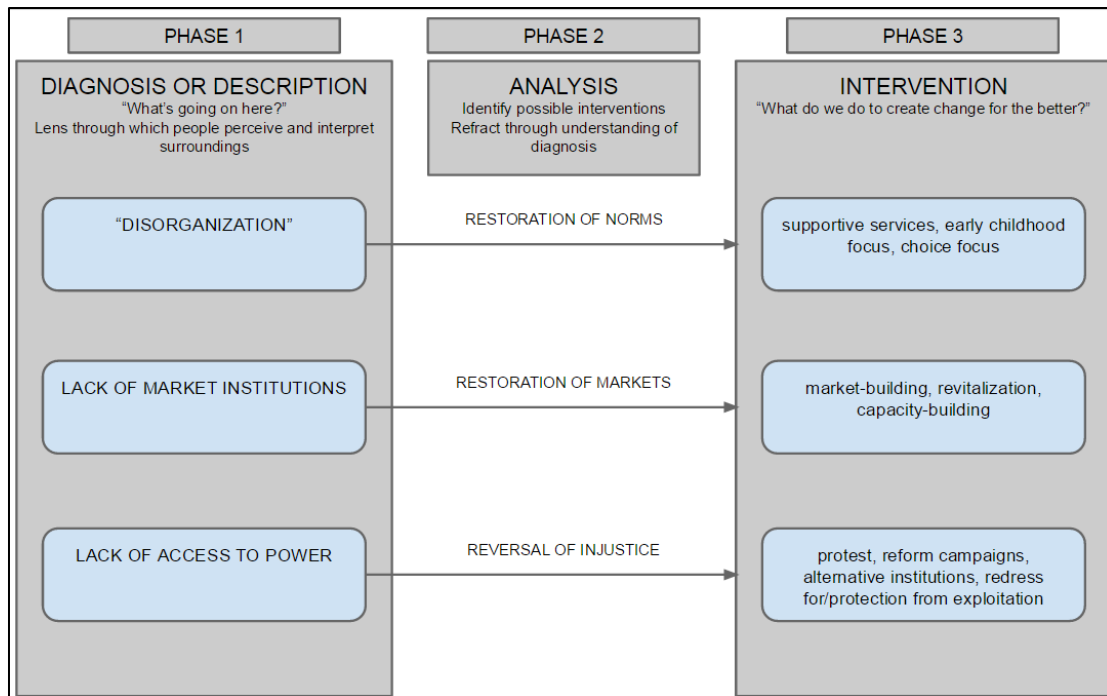


Figure 1. Theories of Action in Community Development (adapted from Wolf-Powers, 2014)

The theories of action framework provides a space to consider expectations of how behaviors are formed and changed, how environmental circumstances shape behaviors and place-based interventions may change these behaviors, and how inequality influences both behavior and environment. These constructs allow us to consider how expectations are formed, where they are well-aligned, and where conflict may emerge. Additionally, by including equity, this framework offers a more complete theoretical system than the “kinds of people” and “kinds of contexts” spectrum, providing a basis for considering supermarkets as community development.

In terms of diagnosis of a community problem - the “what’s going on here” to Wolf-Powers’ (2014) theories of action framework - multiple conclusions are possible. Observations of social disorganization and disorder often are manifest in rates of diet-related disease, including obesity, diabetes, and hypertension, that far exceed areas that are better served by supermarkets. The concept of a food desert as an “underserved” area follows a market theory, and identifies communities that have been overlooked by private capital investment (Weissbourd & Berry, 1999; Pawasarat & Quinn, 2001; TRF, 2013; Diao, 2014). Finally, food deserts may be caused by power imbalances, where discriminatory or overly-cautious developers avoid certain neighborhoods, or high concentrations of low-income and/or welfare recipient households are limited in their ability to “vote with their dollar” (D’Rozario & Williams, 2005; Raja, Ma, & Yadav, 2008; Zenk, et al., 2014).

In terms of action theories, disorganization theorists would see improving resident diets as a method of restoring norms, and may pursue nutrition education, cooking classes, or behavioral economics to encourage healthier choices. Market theorists may seek to build or bridge local institutions, such as community development corporations (CDCs), in order to leverage incentives that can activate the food retail market. Equity theorists may seek to improve outside

perceptions of the neighborhood, systematically document opportunities for development (and whether or not they are pursued by developers), or aim to increase the income available for food shopping, either through minimum wage actions or efforts to strengthen or protect existing welfare programs. It is worth noting that all of these methods, either in whole or in part, have been employed as advocacy for new supermarket development in food deserts.

Supermarkets as Place-Based Community Development

Most important for this investigation of new supermarket development, place-based financing of grocery retailers has a storied history within the last sixty years of community development. Federal government funding, such as the Community Development Block Grant (CDBG) program, and development strategies have previously been employed to overcome consistent barriers to developing new supermarkets in low-income neighborhoods, especially those in urban areas (Abell, 1988). Previous iterations of policy initiatives had been similarly led by community groups, especially community development corporations, and largely in response to major social initiatives. Beyond more obvious economic development outcomes in terms of job creation and tax revenue generation, supermarket projects have also been viewed as important community resources.

In the Civil Rights era, black capitalist leaders, such as Philadelphia's Rev. Leon Sullivan, sought to mobilize economic resources in predominantly black neighborhoods that were overlooked or exploited by non-resident business owners. Sullivan used locally-raised funds and larger amounts of federal, state, local, philanthropic, and conventional capital to plan and develop what would be the nation's first black-owned shopping center, Progress Plaza (Dyer, 2013). Among sources of assistance were grants from the federal Small Business Association and the Ford Foundation, as well as development incentives from the Philadelphia Redevelopment Authority (Dyer, 2013). This shopping center was intended to attract many types of retailers that were otherwise absent from the North Philadelphia marketplace, though readily available in more affluent, white, and suburban areas. While the original A&P supermarket developed at the site was one of the chain's most profitable in the Philadelphia region, it eventually closed in 1998, citing the limited building size (less than 20,000 square feet) as a challenge to continued profitability, among other issues (Dyer, 2013).

Later, in the 1990's, urban economists, such as Michael Porter (1995, 1997), reiterated the untapped economic potential of urban centers, especially in terms of retail. Notable success stories, such as Pathmark supermarket developments in Harlem, New York and Newark, New Jersey, served as emblematic projects that used creative financing and broad, multi-stakeholder approaches (Abell, 1998; Gittell & Thompson, 1999). Supermarkets became a key feature of these initiatives, both as important community resources, and as broader signals of economic resurgence and possible community revitalization.

The National Congress for Community Economic Development (NCCED), a trade association for community development corporations, published case studies of urban, plaza-style supermarket development in an effort to disseminate this model of inner-city redevelopment (Abell, 1998). Following on decades of decline across many US cities, these community development efforts were adopted and supported by federal development officials, including those at the Department of Health and Human Services, who authored the forward to a NCCED's supermarket pamphlet (Abell, 1998). Thus, by the start of the 21st century, the stage for supermarket financing

programs was well-set by community leaders, government officials, and financial partners.¹ Absent, however, were explicit references to the diets or health of underserved communities. These connections would be drawn by researchers and practitioners over the next several years.

Investigating the Relationship between Food Access and Health

Despite a lack of causal evidence between access and health outcomes (Caspi, et al., 2012), food desert policy initiatives draw much inspiration from a wide body of literature describing correlations between these and other related variables. By organizing the extant evidence between food access and health and focusing on theories and evidence that inform our expectations of new supermarkets in food deserts, I trace this inevitably winding path between empirical research and policy, and direct my own line of inquiry. Essentially, how could I expect that a new neighborhood supermarket would help Mona adopt and maintain a healthy diet?

Expectations of New Stores in Food Deserts

Grocery shopping is among the most familiar routines practiced by Americans. Beyond the necessity of procuring food for sustenance, we respond to numerous other external stimuli: the types of food retailers available (i.e. supermarkets, corner stores, delis, produce markets, etc.), prices, food budget, distance, weather, to name only a few. Over time, our responses to these stimuli become habits and routines, tracing the same pathways, both mentally and physically, in our pursuit of food. It is reasonable to believe that these habits influence our health, especially as behaviors are repeated thousands of times over the lifecourse. Similarly, our habits may affect the behavior of others, both directly, as a parent purchases food for a child (or conversely, a child nags a parent to purchase sweets in the checkout aisle), or indirectly, as perceptions and attitudes are shaped by interactions with friends, family, co-workers, or strangers.

Questions of disparity and equity quickly emerge when we acknowledge that these routinized behaviors yield vastly different outcomes along lines of socioeconomic status, race/ethnicity, and neighborhood (with frequent correlations between these groups). Clearly, environmental influences on human behavior are multifaceted and dynamic, varying between individuals and over time, limiting our ability to generate insightful predictions in certain situations. Nonetheless, efforts to improve the built environment would not be made so readily without at least a mildly-confident belief that individuals would be made better off, even when these beliefs are not supported by robust behavioral evidence (Hall, Galvez, & Sederbaum, 2014). This confidence (or expectation) is informed by normative beliefs about human choice and behavior, especially within contexts of disparity, deprivation, and poverty.

Before exploring the theoretical and empirical basis for connecting food access and health, let us consider normative, plausible, and likely expectations of new supermarkets in food deserts:

- Normative: What *should* we expect? How are environmental changes evaluated for their impact on human behavior, and what measures are chosen to determine efficacy? Healthy food access interventions are evaluated by different criteria depending on the evaluator, ranging from strict measures of health, such as Body Mass Index (BMI) to indirectly-related factors, such as the number of jobs provided by a new retailer, which

¹ The structure of these processes and funding systems as “fresh food financing” will be further explored by a landscape analysis in Chapter II.

could possibly affect the health of newly-employed residents. Health expectations that do not match our normative judgments about healthy food access could be regarded as unfair or unreasonable. Furthermore, these projects are often promoted on economic development grounds, in addition to any health claims. Should evaluations expect both health and economic impacts?

- Plausible: What *can* we expect? Given our theory-based understanding of health, what are reasonable health outcomes from environmental change such as a new supermarket in a food desert? Essentially, what are causally plausible health outcomes that could be measured to demonstrate change? Though a variety of outcomes are normatively explored, this research suggests a more modest, though science-based view of expectations. Though modest, these expectations are nonetheless important, and merit further exploration if disparate outcomes are truly of interest.
- Likely: What *do* we expect? Does advocacy, policy, or popular discourse support a narrative explaining what will happen to health when a new supermarket opens in a food desert? For healthy food access, this expectation narrative was evoked by researchers and advocates who documented adverse health outcomes among neighborhoods with low access to full service food retailers, though, in most cases, projects did not include plans to evaluate or monitor these expected health improvements.

Theoretical Perspectives on Influencing Dietary Behavior Change

Health behavior theories provide a basis for understanding the challenges of changing human behavior and help deconstruct the too-broad notions of health outcomes into more proximal actions and circumstances. Though critical to our understanding of how individuals might respond to interventions which aim to change diet, these theories have not been fully explored or incorporated by many existing studies or programs to develop new new supermarkets in food deserts. Particularly relevant to the concepts of food access and diet are the theories of planned behavior and reasoned action, stages-of-change, ecological, and systems science frameworks. These models will be briefly reviewed in the context of new supermarkets and health to frame a subsequent consideration of existing literature.

It is worth focusing on health behaviors, not only because diet-related disease is the product of numerous sustained health behaviors (i.e. consumption of foods, physically active lifestyle), but because our concern over food deserts also stems from other shopping behaviors (i.e. more complicated, costly, or distant trips). Because they consider individuals contextualized within environments, health behavior theories can support both frameworks that describe “kinds of people,” or individuals who need skills, education, and motivation to improve their diet, and “kinds of contexts,” or environments, interactions, and situations that make maintaining a healthy diet more or less likely. Indeed, much of health behavior theory mirrors discussions of capability by Sen (1992) and situated choice by Laub and Sampson (2003).

These various health models offer logical tests for the validity of causal models connecting new supermarket development and improved health. For the purposes of this study, one specific model is not adopted, *per se*. Each acts as a different means of envisioning reasonable expectations of health outcomes by providing a framework of requirements and interdependencies for change to occur.

Individual Models

Health Belief Model (HBM). The HBM suggests that an individual's readiness to take on a health-promoting behavior (action) is directly influenced by that individual's actual and perceived risk and their perception of the behavior's benefits (Janz & Becker, 1984). By this model, an individual's willingness to eat healthy food is influenced by their perception of health risk (perhaps a diet-related condition, like diabetes), and their belief that healthy eating can effectively mitigate this risk. This model would suggest that individuals who perceive healthy eating as a viable benefit and diet-related disease as a real risk will pursue healthy food options, bypassing unhealthy options in search of healthier ones.

The Health Belief Model would suggest that place-based improvements or additions to the food retail landscape would only have an effect if the quantity or quality of healthy foods available in the neighborhood had been previously perceived as a barrier to healthful eating; in fact, two possible barriers are evident: distance and local availability. To include distance as a barrier factor, we must assume that a resident will only travel so far for healthful foods, or that traveling further distances alters or recasts an individual's perception of health risks or benefits. Local availability as a barrier assumes a resident will only purchase healthful foods in their own neighborhood. Presumably, both of these barriers could be addressed by introducing new healthful foods to the neighborhood. Nonetheless, other constructs, such as perceived susceptibility to poor health outcomes and perceived benefits of healthy eating, are not directly addressed by increasing food availability close to home.

Theory of Planned Behavior (TPB). Core constructs of the Theory of Planned behavior include perceived behavioral control (healthy eating is easy or difficult to execute), subjective norms (social pressures to eat healthy or not), and attitudes (eating healthy is favorable or unfavorable) (Ajzen, 1985). TPB implies that an individual's perceived control over healthy behaviors directly influences their intentions to make healthy choices. If an individual feels like they have the ability to regularly purchase healthy foods, TPB suggests they will be more likely to consume those foods. Conversely, an individual who feels like they have limited access (control) to healthy food options is less likely consume healthy foods. Under this framework, a new supermarket may directly and significantly improve perceived behavioral control in previously-deprived neighborhood. For this to be true, residents must have previously felt that travel distance required to find healthy foods made purchasing them difficult.

Social Cognitive Theory (SCT). Social Cognitive Theory emphasizes an individual's perceptions of a behavior and their ability and willingness to execute it. SCT suggests that health behaviors are formed by systems of reciprocal and interacting factors in personal (goals), environmental (barriers or facilitators), and behavioral (expectations) spheres of influence (Bandura, 2004). In the context of a new supermarket, healthy eating behaviors could be influenced by environmental conditions, such as the presence and prevalence of healthy food items; these conditions could lower the barriers to purchasing healthy items and give residents a greater sense of control over healthy eating. The presence of healthy foods might also operate as a reinforcing mechanism for the healthy eating behavior. Nonetheless, SCT also challenges us to consider how self-efficacy beliefs might be influenced by the presence of many unhealthy items alongside the healthy options in the supermarket environment. For residents to improve healthy eating behaviors, they must believe they can overcome old habits and temptations while shopping.

Stages of Change. The Stages of Change framework delineates constructs through time, based on an individual's progression toward a change: precontemplation, contemplation, preparation,

action, and maintenance (Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, & Evers, 2008). The earliest construct, precontemplation, defines a stage where the individual is unaware of change or the need to change, while maintenance indicates a behavior is regularly performed or completed. The Stages of Change model emphasizes the ability of an individual to move through stages in a non-linear fashion, perhaps skipping or regressing through stages, depending on individual circumstances.

Read through a stages-of-change model, the effects of new supermarket could be mixed. For individuals in the precontemplation phase, no change would occur; these individuals may be unaware of the new store or dietary change as something worth attempting. Should individuals move past this phase, it is conceivable that the availability of healthful foods may encourage the initial (and eventually habitual) purchasing of healthy items because of convenience or other factors described in previous theories. However, the model also highlights how health behaviors are changed through non-linear stages of indeterminate length, raising significant challenges to predicting the likelihood of positive health outcomes.

Contextual Models

Social Ecological Theory (SET) describes an environment in which a variety of social factors and levels influence individual behaviors: individual, interpersonal, organizational, community, and public policy (Stokols, 1996, 2000). By accounting for the mitigating social and environmental variables omitted by other theories, SET offers a more complex view of health behavior. Though healthy eating may be valued at individual and interpersonal level, an individual's ability to make healthy choices could be limited by organizational or community factors.

For a new supermarket development, the SET is most likely to predict indirect effects for most factors; community factors would be directly influenced by the presence of a new food retailer, and it is possible, though unlikely public policy factors would be influenced by this intervention. This model takes a more all-encompassing approach, meaning that most health behavior constructs would be indirectly affected in some way by a place-based intervention, though people-based strategies would be required to create direct effects. The exact amount and direction of influence would depend entirely on the exact context surrounding the intervention and individual.

Following the lead of other disciplines, systems science is an emerging arena of research within behavioral science (Leischow, et al., 2008; Mabry, et al., 2010). Systems science methodologies examine biological, social and environmental influences on behavior; these elements exist within a hierarchy (i.e. some influences are stronger than others, yet ultimately it is behaviors that contribute to health outcomes) and across time (i.e. influences shift over the lifespan) (Huang, et al., 2009). Though complex, the systems science framework offers promising insights into mechanisms of exposure and disease by explicitly incorporating a wide range of possibly influential factors. Rather than simply controlling for influential variables in statistical models, systems science seeks to understand the dynamics of these relationships, including unanticipated consequences or feedback loops (Kumanyika, Brownson, & Cheadle, 2012; Chatterji, Green, & Kumanyika, 2014).

This approach also allows for more flexibility and practicability in real-world contexts when compared to randomized controlled trial designs. Much like SET, systems science would attempt to measure the many effects of a new supermarket, although increased physical access to healthy

foods is likely to be the only direct effect. Systems thinking would emphasize the role of social factors and contexts in estimating indirect effects, and could consider the relative contributions and interdependencies of different interventions; for instance, is improved physical access able to change health, absent additional health promotion efforts? When these factors can be observed and reliably measured, agent-based modelling offers one quantitative method of using systems science in practice (Auchincloss, et al., 2011).

Thomas Friedan, Director of the Centers for Disease Control and Prevention, proposed a theoretical framework for considering methods of improving population-level health, bridging different scales of intervention and health outcomes. This “Health Impact Pyramid” attends to both individual-level and environmental-level intervention points (Friedan, 2010). Individualized attention, training, and counseling is most likely to achieve positive behavior change, though they require greater individual effort and have lower population-level impact. Meanwhile, more macro-scale factors, such as socioeconomic status and decision-making contexts, may have far greater impact on populations and require less individual effort. Others have emphasized the value of contextual interventions which can be broadly deployed without needs for “compliance by would-be beneficiaries,” such as vacant lot greening (Branas & MacDonald, 2014).

These theoretical constructs help imagine scenarios where an individual’s health status might change over time. They also underscore the complexity of this effort. If Mona’s psychological grappling over shredded cheeses, or my own inability to curb late-night snack breaks are any indication, choosing to improve one’s diet is but a small and difficult step to achieving better health outcomes. Notably, both the academic and gray literature that motivated fresh food financing efforts do not robustly employ health behavior theories to explain why better access would yield better health. To consider the plausibility of this theoretical connection, we should first explore the underlying constructs of health and environment, both why and how they could be related.

Connecting Food Access and Health

Diet, Disease, and Disparity

Though research has not established causal relationships between food access and health outcomes, much is known about how dietary intake contributes to health, leading medical experts to issue recommendations of foods that are health-promoting and cautions against health-compromising items (Caspi, et al., 2012; Otten, Hellwig, & Meyers, 2006). While a full review of dietary guidelines and their application for individuals is beyond the scope of this research, several recommendations are salient in terms of reducing risk of obesity, cardiovascular disease, hypertension, and diabetes, chronic diseases often cited in food desert literature. Failure to adhere to dietary recommendations (whether due to inability, unawareness, or disregard) is understood to increase the risk of disease, including those chronic illnesses prevalent in food desert communities.

Among high-income nations, the United States has the highest mean body mass index (BMI) for adults, with increasing prevalence over the last three decades (Finucane, et al., 2011). Obesity is of particular concern due to the increased risk of comorbidities, including diabetes, cardiovascular disease, and certain types of cancer, and because of the attendant healthcare costs of treating these conditions (James & de Chalain, 2013; Must, et al., 1999; Wang, et al., 2011). While weight gain and obesity is understood to be the result of energy inputs (diet) in excess of outputs (physical

activity), as well as genetic factors, research has linked the disease to certain types of foods, including energy-dense foods with few micronutrients and sugar-sweetened beverages (World Health Organization (WHO), 2003; World Cancer Research Fund, 2012). Higher intake of dietary fiber is also understood to help prevent obesity (WHO, 2003; Popkin, 2006).

Dietary quality is significantly correlated across lines of socioeconomic status and race/ethnicity, which contributes to disproportionately high rates of diet-related chronic diseases among low-income and minority populations (Winkleby, et al., 1998; Kumanyika, 1993; Miech, et al., 2006; Kant, Graubard, & Kumanyika, 2007; Gaskin, et al., 2013). Research provides a variety of interpretations of how these disparities emerge and persist, including cultural, social, economic, and environmental explanations. Given similarly well-documented patterns of residential segregation by race (Charles, 2003), some in public health have invoked neighborhood characteristics as particularly strong determinants of health (Williams & Collins, 2001; Ford & Dzewaltowski, 2008). One recent review of childhood nutritional health literature suggests that while neighborhood factors matter, attention must also be paid to cultural norms and marketing (Larson & Story, 2015). Additionally, the effect of diet on certain health conditions is different across ethnic groups; for instance, Appel and colleagues (2006) find that blacks experienced greater changes in blood pressure by modulating sodium intake.

Given the multitude of factors contributing to health inequities, many experts point to the challenge and importance of targeted interventions to see gains in health, ranging from environmental to individually-focused efforts (Kumanyika, 2005; Kumanyika & Grier, 2006; Jackson, Wiseman, & Wootton, 2013; Kumanyika, Whitt-Glover, & Haire-Joshu, 2014). To generate these tailored programs and strategies, contextual factors, including the quality of the food retail landscape, are often needed. The construct of “food environment” helps researchers quantify and compare these factors across populations and neighborhoods, offering a spatial dimension to the unequal distribution of food retailers.

Spatially Defining and Describing Physical Food Environments

Much of the attention surrounding healthy food access grows out of spatial analyses documenting disparate physical access to full-service supermarkets across urban neighborhoods; however, areas underserved by supermarkets are not entirely without food retailers, and often these communities have high concentrations of small stores and fast food outlets which often carry few healthy products. Studies of the food environment attempt to broadly describe physical and spatial patterns of food retailer availability, with special attention to food resources proximate to an individual's residence. In essence, the food environment is understood as the total set of food purchasing opportunities near home, especially for low-income individuals who may also have limited transportation options, regardless of the salience of particular options to an individual or group.

Several studies have established typologies for food environments, understanding that there are profound differences between neighborhoods, cities, and regions. Karen Glanz and colleagues (2005) have established what is perhaps the most utilized typology, citing four distinct food environments (called “nutrition environments” by the authors): the community nutrition environment, including the type, location, and accessibility of food retail outlets; the institutional nutrition environment, including home (Dodson et al. 2009), school (Austin et al. 2005; Zenk & Powell, 2008; Schafft, Jensen & Hinrichs 2009), and work; the consumer nutrition environment, including prices and healthy options (Pearson et al. 2005; Hendrickson, Smith & Eikenberry

2006; Webber, Sobal & Dollahite 2010); and finally, the information environment, including advertising and media surrounding food choices (Glanz, Bader & Iyer 2012). Additionally, Glanz and colleagues (2007) developed an instrument to assess the quality of in-store environments, known as the Nutrition Environment Measurement Survey for stores (NEMS-S), which has been widely adopted by food environment researchers (Honeycutt, et al. 2010; Franco et al. 2008; Andreyeva et al. 2008; Hillier et al. 2012).

Food environments around important subpopulations and in priority areas have also been explored to identify possible disparities in exposure or access, or measure associations with particular health outcomes. Many researchers have documented low food access areas in poor communities of color, raising equity questions along lines of race/ethnicity and socioeconomic status (Zenk, et al., 2005a; Odoms-Young, Zenk & Mason, 2009; Odoms-Young, et al., 2012; Bower, et al., 2013). These inequalities have also been shown to extend to in-store availability to healthy items between retailers in white and non-white neighborhoods (Zenk, et al., 2014), and to the prevalence of fast food retailers and convenience stores near schools in lower-income neighborhoods (Walker, Block, & Kawachi, 2013). Several notable studies have also raised questions about the methodological soundness of food environment measures, including illustrations of physical accessibility that conflict with food desert narratives (Apparicio, Cloutier, & Shearmur, 2007).

Food Deserts: Conceptualizing Deprived Food Environments

While the concept of food environment allows for a more nuanced measurement of quality and availability along a spectrum, it does not provide a clear pathway for intervention. Are there particular food environments that have more adverse health or welfare outcomes, and therefore merit greater attention? First formally offered by researchers in the United Kingdom, the construct of food deserts addresses this question by delineating specific characteristics of access that highlight disparities, focus on specific categories of food retailers, and intimates possible intervention strategies by seeking to understand how and why they exist (Beaumont, *et al.*, 1995; Wrigley, 2002).

Market-Based Approaches to Improving Access

A key construct to many food desert definitions, especially those adopted and espoused by the fresh food financing community, is a market failure framework. This framing emphasizes the business viability of large food retailers in underserved areas, and focuses on unequal start-up costs and constraints faced by inner-city retailers and developers (Pothukuchi, 2005; Initiative for a Competitive Inner City (ICIC), Undated; PolicyLink & Local Initiatives Support Coalition (LISC), 2007; Diao, 2014; Rabinowitz, 2014). Market metrics such as “food dollar leakage,” or the amount of household food spending not able to be captured within a certain distance of those households, underscore the potential for new retailers to be successful enterprises with the assistance of incentive programs, including tax abatements, land assembly, flexible or tax credit financing, or grant assistance. These approaches draw inspiration from earlier studies by Institute for the Competitive Inner City (founded by Michael Porter) and the Brookings Institute that describe inner-city markets as overlooked business opportunities (Pawasarat & Quinn, 2001; Weissbourd & Berry, 1999).

Though this market-based approach provides a useful way to consider the food desert problem and possible solutions, it neglects other important dynamics in community and economic

development. For example, it does not appreciate possible discriminatory actions that prevent stores from opening in minority or low-income neighborhoods, and take an effectively neutral stance on access outcomes that are unequal across racial lines (D’Rozario & Williams, 2005; Raja, Ma, & Yadav, 2008). Others suggest that a business-oriented approach fails to deal with broader, structural sources of persistent and concentrated poverty, or may lead to public-private partnerships that are far more beneficial to private actors (Bates, 1997; Harrison & Glasmeier, 1997; Mirafteb, 2004; Wolf-Powers, 2014). These critiques are notable, though it is clear that most healthy food financing initiatives adopt a more neoliberal belief that properly-aligned incentives can address or overcome these issues (Mirafteb, 2004). However, in terms of fresh food access, as distinct from widely-shared public amenities such as libraries, parks, and transportation, important questions emerge of the responsibility of government to ensure adequate provisioning of private food retailers.

Factors Beyond Access

Other factors beyond market-based measures contribute to conceptualizations of food deserts, including methods of identifying and prioritizing areas of particular need or importance. The United States Department of Agriculture (USDA) has provided what is perhaps the most commonly-used definition of food deserts and includes considerations of income in addition to measures of physical access (Ver Ploeg, et al., 2009). In USDA’s Food Environment Atlas, which allows users to spatially visualize data, a variety of additional variables, including rates of vehicle access and child or senior poverty, are incorporated as potentially useful factors (USDA, 2015).

While it has been relatively unexplored by the literature, neighborhood histories may also play a role in the social conceptualization of food deserts, especially among currently disadvantaged communities that were once thriving. In these circumstances, a community may perceive the need for a food retailer to replace one that formerly existed. This dynamic may include a spatial dimension if a particular building or site holds particular significance in the minds of area residents and leaders. Variations in site availability, alternative financing options, store or investor interest, and community support create additional contexts that complicate what may be otherwise straightforward spatial delineations of need (TRF, 2011b; Harries, et al., 2014).

Alternative Interpretations

Donald Rose and his colleagues (2008) use a case study of New Orleans to illustrate that while food access may be a health concern, the quality of food presently in the local food environment is a more serious issue. They introduce the term “food swamp” to describe areas with a disproportionately high share of poor-quality foods, including fast-food restaurants and highly-processed convenience store goods. Laura Leete, Neil Bania and Andrea Sparks-Ibanga suggest another term, “food hinterland,” in a 2012 Portland case study. This term refers to areas with limited food retail access, yet beyond the urban centers typically discussed in food desert literature. The authors emphasize that these often suburban areas are under-studied though have distinctly different qualities than urban food deserts.

Behavior and Choice: Questioning the Food Environment

As additional studies attempted to connect local food environments to health outcomes, the predominantly proximity-based notion of food deserts encountered significant methodological

and theoretical challenges, most of which complicated place-based measures with descriptions of human behavior. While few disputed the existence of food deserts, this body of research sought to understand how they might matter for diet and health, if at all. Indeed, some researchers suggested dispensing with the question of proximity altogether, and pointed to the strong relationship between other contextual factors, including socioeconomic status, diet cost, and obesity outcomes (Cummins & Macintyre, 2006; Drewnowski, 2012; Drewnowski, et al., 2012). Rather than frame physical access as a determinant of shopping behavior, this body of research treats distance as one factor among many, including possible incentives, preferences, perceptions, or abilities.

Determinants of Store Choice

The spectrum of food retail options can be broad; the Food Marketing Institute lists 11 types of retailer in their most recent description of grocery shopping trends: regular full-service supermarket, supercenter, conventional discount store, warehouse club store, low-price/no-frills grocery store, drug store, dollar store, natural or organic store, convenience store, ethnic grocery, and online retailer (FMI, 2014). This typology describes both the size, pricing, and product offerings of different types of retailers. Existing research illuminates some ways consumers differentiate between and among these retailer types.

A variety of studies point to economic and social characteristics, including *perceptions* of those characteristics, that inform store choice, and help move the field beyond proximity-based understandings of food access. How and why do people select a food retailer, or, more commonly, a suite of food retailers, to satisfy their household food needs? Researchers highlight the concept of “activity space,” or the geographic area most commonly traveled by an individual in daily life (Golledge & Stimson, 1997; Horton & Reynolds, 1971), as an important determinant of store choice and dietary behaviors (Zenk, et al., 2011a; Hillier, et al., 2015). This expands on neighborhood measures by examining where retailers are within a constellation of trips outside the home. If stores are on the way to other regular destinations, including a place of employment or the home of a close friend or family member, individuals may find them easier or more convenient to access, though they are not in their neighborhood (Cannuscio, et al., 2014). Relatedly, whether or not an individual owns a vehicle is also cited as a determinant of store choice (Bader, et al., 2010; Hillier, et al., 2015).

Elements of a retailer’s social and physical atmosphere also prove to be important choice factors and motivate trips beyond the closest retailer. Studies have documented a variety of social perceptions and experiences, ranging from cultural or ethnic cues (i.e. availability of ethnic food items) and interactions with store staff and other customers, to experiences of racial discrimination or discomfort in stores where most other customers appeared to be of a different socioeconomic status or race/ethnicity (Zenk, et al., 2014b; Cannuscio, et al., 2014). Physical features, such as perceived product quality and store cleanliness or orderliness, also have been shown to contribute to a shopper’s assessment of a retailer, thus influencing their desire to return (Cannuscio, et al., 2014; Frasso, et al., 2014; Thompson, et al., 2013; Zachary, et al., 2013).

Psychometric research may supplement the latter studies by demonstrating that residents of food deserts have similar expectations and needs from food retailers, including supermarkets, as do their neighbors in more favorable food environments. In a 2012 survey of several Boston neighborhoods, Renee Walker, Jason Block and Ichiro Kawachi show there is no significant difference between residents of food deserts and food oases with respect to consumer

expectations. Jana Hirsch and Amy Hillier (2012) found similar results in a survey of two West Philadelphia neighborhoods (one a food desert, the other a food oasis), demonstrating that no difference exists between the two for large shopping trips, factors motivating shopping, or shopping frequency.

Intuitively, these findings may support earlier USDA Food and Nutrition Service analyses of Supplemental Nutrition Assistance Program benefit redemptions by Nancy Cole (1997) and James Ohls et al. (1999), in that food desert residents have similar food needs, and therefore must interact with their food environment in ways that are distinct from neighborhoods with greater supermarket access. Several studies have found that many low-income individuals rarely shop at the supermarket closest to home (Hillier, et al., 2010, 2011; Cannuscio, et al., 2014). Many may leave their neighborhood for food shopping out of necessity if no adequate options exist; nonetheless, these studies show that shoppers also bypass supermarkets en route to their preferred retailer, suggesting that distance sometimes plays a secondary role in store choice.

Unsurprisingly, store prices, including the *perception* of prices, proves to be an important motivator for many individuals, and helps explain why retailers closer to home may be overlooked in favor of more affordable alternatives (Inglis, Ball, & Crawford, 2008; Jiao, Moudon, & Drewnowski, 2011, 2012; Hillier, et al., 2011; DiSantis, et al., 2013; Cannuscio, et al., 2013; Cannuscio, et al., 2014; Cummins, Flint, & Matthews, 2014). Price also plays a large role in the widely-shared preference for supermarket retailers over other smaller operators (Castner & Henke, 2011; Hillier, et al., 2011; Hillier, et al., 2012; Cannuscio, et al., 2014); nonetheless, much of the discourse around healthy food access perpetuates a mythology of the food desert resident regularly shopping at corner and convenience stores for staple goods (Chrisinger, 2014).

It is worth briefly clarifying this corner store misunderstanding, as it elucidates important elements of store choice by failing to account for several behavior-based realities. First, this myth misrepresents the burden of food shopping behavior by focusing on limited availability of healthy foods, rather than the complexity of trips made to supermarkets. Second, it distracts our attention from the task of “shopping while poor,” an undeniable computational and logistical challenge (Zachary, et al., 2013). Indeed, poverty further raises the incentive to make burdensome trips to supermarkets to take advantage of lower average prices (Cannuscio, et al., 2014); despite any savings, the low-income shopper may still face difficult choices at the supermarket checkout. Third, it misidentifies the type of food shopping that is most often done at corner stores as primary or major food shopping, which may lead to interventions that make healthy foods available in places and during times that consumers are not interested or able to purchase them, or overlooks the immense marketing of less-healthy products in supermarkets (Stanton, 2015). Finally, in terms of food budgets and diet, the influence of small, local stores on food desert residents is small compared to supermarkets (Castner & Henke, 2011; FMI, 2011a, 2012). If physical access to supermarkets complicates the maintenance of a healthy diet, it is not through a lack of supermarket shopping.

Determinants of Food Choice

Research has attempted to understand the relationship between the foods an individual purchases and the characteristics of food retailer used. Vast discrepancies in price and quality can exist between supermarkets and smaller stores, suggesting that food access can be a factor of distance to specific kinds of stores, rather than simply a raw number of food retailers (Block & Kouba,

2005). Studies documenting multi-store shopping, mode of transportation, and mixtures of planned and unplanned purchasing further complicate our understanding of food choice, creating some indication that consumers mentally designate different stores for different types of foods and trips (Jilcott, et al., 2011; Bodor, Hutchinson, & Rose, 2013; Gustafson, et al., 2013; Cannuscio, et al., 2014).

Several studies have found that consumers are more likely to purchase healthy foods at supermarkets and less-healthy foods at drug stores and convenience stores (Yoo, et al., 2006; Jilcott, et al, 2011c), and how some consumers perceive shopping at corner stores as wasteful (Cannuscio, et al., 2014). Nonetheless, some research also reveals that even within supermarkets, lower-income shoppers (in this case, participants in the Supplemental Nutrition Assistance Program, or SNAP) purchased nutritionally-deficient items (Cone, Smith, & Powers, 2009), leading to calls for better understanding of how exposure to product pricing, placement, and promotion in supermarkets influences food choices (Stanton, 2015). Thus, while store type influences what is available to purchase, perhaps playing a large role in the potential for unplanned purchasing, consumers tend to adjust their shopping trips to suit their intentions, preferences, and abilities.

Physical access may directly influence health if consumers find that the introduction of a supermarket with healthful foods has lowered their barriers to healthy choices and diets. Researchers have found a widespread positive associations between supermarket access and diet, often measured in terms of fruit and vegetable consumption (Rose & Richards, 2004; Bodor, et al., 2008; Larson, Story, & Nelson, 2009; Jago, Baronowski, & Baronowski, 2007). Additional research suggests nuances in this proximity effect between ethnic (Zenk et al. 2009) and demographic (Short, Guthman and Raskin 2007) groups. Others demonstrate that transit mode choice is a poor predictor of fruit and vegetable intake, calling into question earlier assumptions that personal vehicle ownership promotes healthier purchases (Fuller, et al., 2009), while Gustat and colleagues (2015) demonstrate that the number of shopping trips is related to produce consumption, though the distance traveled to store is not. Issues of reverse-causality must also be considered in assessments of physical access, whereby low neighborhood demand for healthy foods results in limited provisioning of these goods, or individuals with preferences for healthy foods sort into neighborhoods with better access to these items.

A growing body of evidence suggests food environment-diet effects are nuanced and dependent on many other factors (Macintyre & Ellaway 2000; Hillier, et al., 2011; Kestens et al., 2012; Lebel et al., 2012; Zenk et al., 2013). Some research finds that elements of food deserts, including food price, socioeconomic deprivation, and limited supermarket access, is not significantly associated with fruit and vegetable consumption (Pearson et al., 2005). Similarly, other studies using supermarket openings as natural experiments did not find significant change in fruit and vegetable purchasing (Wang et al. 2007) or consumption (Cummins, Pettigrew and Higgins 2005; Flint, Cummins, & Matthews, 2012; Cummins, Flint, & Matthews, 2014). Nevertheless, separate studies have found that physical proximity to some types of food retailers, including fast food restaurants, does have some effect on consumption (Boone-Heinonen, et al., 2011). Physical access to supermarkets cannot be discounted as influential, though to understand how and why it influences diet, different approaches and variables must be considered.

As previously mentioned, adherence to dietary guidelines may be understood as a factor of ability (i.e. cost), awareness (i.e. nutritional knowledge), and motivation (i.e. health purchasing). Given these factors, officials have three arenas for intervention: conscious decision-making,

subconscious decision-making, and option regulation. Efforts to change conscious decision-making try to convince shoppers of the benefits associated with healthy foods. Subconscious decision-making can be affected through “choice architecture” and behavioral economics (Sunstein & Thaler, 2008). Finally, option regulation defines the universe of products available to consumers.

Efforts to support conscious healthy choices attempt to influence planned behaviors. These interventions ask individuals to consider the risks or benefits associated with certain behaviors, form plans to adopt new, healthier behaviors, and encourage the long-term maintenance of these behaviors. The transtheoretical model (TTM) suggests that individuals non-linearly progress through stages of behavior change according to perceptions of supports/barriers and positive/negative outcomes (Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, & Evers, 2008). Given this understanding, we can imagine that vast diversity of stage is likely among any given population, including food desert residents.

To support behavior change, a variety of in-store interventions have been employed, both as part of a larger industry trend and as a means of differentiating stores from competitors. These efforts can include hiring of staff nutritionists, placing recipe kiosks or tasking stations, holding cooking demonstrations, or providing in-store space to health clinics. Each intervention provides the opportunity for additional knowledge, skills, or resources that could support improved dietary practices.

The question of food choice is also understood to be highly susceptible to subconscious cues, leaving great potential for store operators to “nudge” shoppers toward choosing healthier items (Raghunathan, Naylor, & Hoyer, 2006; Inman, Winer & Ferraro, 2009; Stille, Inman & Wakefield, 2010). This arena of intervention is well documented by behavioral economics and marketing research, featuring questions of consumer responses to subtle changes in product pricing, placement, and promotions (Wansink, Just & Payne, 2009; Gustafson et al, 2012; Dodson et al, 2009; Waterlander, et al., 2010; Waterlander, et al., 2012; Steenhuis, Waterlander & de Mul, 2011; Rahkovsky, et al, 2013). Other subconscious effects, such as the time of day, are also understood to affect what consumers buy, including the salience of health and wellness (FMI, 2014).

Different types of nudges are available to health intervention designers and marketers alike. Broadly known as choice architecture, these interventions can be as subtle as placing one item in better “default” position than others or offering well-framed health messaging to improve one option over another (Thaler & Sunstein, 2003, 2008; Loewenstein, Brennan, & Volpp, 2007; Keller, et al., 2011; Rahkovsky, et al, 2013). A primary economic principle, price elasticity of demand, also has allowed researchers to measure how consumers purchase more healthy items in response to reductions in price (Waterlander, et al., 2010; Waterlander, et al., 2012; Steenhuis, Waterlander & de Mul, 2011; Sigurdsson, Larsen & Gunnarsson, 2013).

Unlike physical proximity, the cost of food has been clearly identified as problematic for lower-income households to maintain a healthy diet (Inglis, Ball, & Crawford, 2009; Damman & Smith, 2010; Aggarwal, *et al.*, 2011; Monsivais, Aggarwal, & Drewnowski, 2011, 2012; Drewnowski, *et al.*, 2012; Mancino & Gutrie, 2014; Zenk, *et al.*, 2005b; Darmon & Drewnowski, 2008; Hiza, *et al.*, 2012; Leung, *et al.*, 2012 Drewnowski & Rehm, 2015). While many lower-income shoppers are aware of what constitutes a healthy diet, and would prefer to purchase these items, environmental and economic realities prove to be significant barriers to achieving these goals

(Wiig & Smith, 2009; Zachary, et al., 2013). Consumer perceptions of store affordability also appear to be important, as one study by Inglis, Ball, and Crawford (2008) found that consumers' perceived availability, accessibility, and affordability were greater predictors of fruit and vegetable consumption than socioeconomic status. Though there is wide consensus that poverty negatively impacts diet, questions remain over how much limited physical access further exacerbates the situation; this uncertainty is critical, as widely different food access intervention strategies could be taken depending on the importance of place.

Evaluating Retail-Based Food Access Interventions

Evaluating Health Outcomes

Researchers have demonstrated a variety of associations between food access and nutrition-related chronic disease (Morland, Wing & Diez Roux, 2002; Morland, Diez Roux & Wing, 2006; Ingami et al., 2006; Giang et al., 2008). Kimberly Morland, Ana Diez Roux and Steve Wing (2006) analyze data from a cardiovascular study to illustrate the spatial correlations between food access, obesity and chronic illness. Sanae Ingami and colleagues (2006) find significant associations between consumer health, the food environment of their neighborhood, and the food environment around their preferred store. In a review of relevant research, Larson, Story and Nelson (2009) suggest that individuals with better food access are less likely to be obese. Others, including a large national study and more localized assessments, find limited or no relationship between exposure to food outlets and obesity outcomes (Lee, 2012; Griffiths, et al., 2014).

A major limitation to these associative studies is that they do not clearly identify or document the causal mechanisms by which health outcomes are manifest. As consumers in intervention neighborhoods are presented with new sets of decisions and options regarding healthy foods, we might expect changes in resident purchasing behavior, but *how* and *under which circumstances*? This underscores the need for robust, time-series, and individual-level research (Fox, Hamilton and Lee 2004; Holsten 2009). Randomized trials of interventions are few, and many existing studies offer only preliminary health outcomes which may not accurately represent long-run scenarios (Lytle 2009; Ball et al. 2011). This approach uses random assignment, an intervention, and multiple data points (pre- and post-intervention), though significant challenges exist to employing this methodology in practice (Fox, Hamilton and Lee 2004; Glanz, Bader and Iyer 2012).

These practical issues leaves health as one of the least-studied outcomes of new store development in food deserts (Caspi, et al., 2012; Fleischhacker, Flournoy, & Moore, 2012). Nonetheless, as suggested by the Institute of Medicine's LEAD framework, multiple sources of evidence are required to makes sense of the "messiness" inherent in real-world policy settings where clinical standards of random assignment and equivalent dosage cannot be implemented (Kumanyika, Brownson, & Cheadle; 2012; Chatterji, Green, & Kumanyika, 2014). For example, evaluation research may create primary datasets that focus on individual-level behaviors and choices as the mechanisms of health change (Holsten 2009, Hillier et al. 2012).

A small amount of research has examined the impact of new supermarkets on consumer choice and health. Six evaluative studies of new supermarket development in food deserts - two in the United Kingdom and four in the United States - have produced mixed insights on the question of improved health behavior or status (Wrigley, et al., 2002; Cummins, et al., 2005; Cummins, Flint, & Matthews, 2014). The earliest supermarket studies were done in the United Kingdom, with the

first by Neil Wrigley and colleagues (2002). Their study examined the impact of a new store on a deprived area outside the city center of Leeds (in the United Kingdom), and surveyed area residents before and after a major retail store, Tesco, the UK's largest food retailer, was developed. The survey measured the rate of residents adopting the new store once open ("switching"), consumption of fruits and vegetables, and a variety of socioeconomic characteristics. Though the authors measured slight increases in consumption of fruits and vegetables, and note that greater attention is due to participants who experienced the greatest change in food shopping environment (i.e. "switchers" who previously used stores with fewer fruit and vegetable options).

A major limitation of the Leeds study was the lack of a control group, which would have helped control for possible population-level changes in fruit and vegetable consumption beyond the study area in Leeds. A later study led by Cummins and colleagues (2005, 2008) examines similar supermarket development in Glasgow, but also includes a control study area. In this study, the authors found residents switching to the new retailer, and very small increases in fruit and vegetable consumption. The authors are hesitant to attribute these changes to the new supermarket, but point to possible positive psychological benefits reported by many participants. In a 2003 letter to the *American Journal of Public Health*, Cummins notes that additional "natural experiment" studies are needed to understand the access-health connection, and that additional considerations, such as resident perceptions and mental health, must also be taken into account.

May Wang and colleagues interviewed neighborhood residents following the 2004 opening of a new supermarket in an underserved neighborhood of Oakland, California (Wang, et al., 2007). Their research design asked participants to identify shopping habits, including transit mode and use of food assistance benefits, and to recount possible changes in diet and behavior. The study found that most participants lived within a mile of the store; of this group, many walked to complete their shopping trips. No statistical difference was detected between new store adopters and non-adopters in terms of self-reported dietary change.

With American colleagues, Cummins replicated much of the Glasgow research design to evaluate a supermarket opened through PA-FFFI in a Philadelphia, Pennsylvania food desert in 2008. Similar to the findings in the UK, Cummins, Ellen Flint, and Steven Matthews (2014) report that while the new supermarket improved residents' perceptions of healthy food access in their neighborhood, it did not lead to significant changes in diet or BMI measured during the study period. This supermarket study was the first food desert intervention evaluation to receive major financial support from the National Institutes of Health (NIH), under their R21 and R25 funding mechanisms (through the National Institute of Environmental Health Sciences and Eunice Kennedy Shriver National Institute of Child Health and Human Development, respectively).

Three food desert studies were subsequently funded through an NIH Time-Sensitive Obesity Policy and Program Evaluation intended to investigate the health impacts of food retailer development in underserved areas (PAR-12-257) (National Institutes of Health, 2012). This mechanism funded two projects to examine the health effects of new supermarkets that received funding from PA-FFFI (Tamara Dubowitz, et al. 2010-2015, and Allison Karpyn, et al. 2014-2018) and one study of a food hub in South Carolina which received HFFI support (Patricia Sharpe, et al. 2013-2017). These ongoing projects share individual dietary change as a primary outcome measure; shopping behaviors, food environment perceptions, attitudes toward healthy eating, and BMI are also listed as primary outcome measures by some of these proposals.

Funded through separate programs at the Robert Wood Johnson Foundation and Aetna Foundation, Brian Ebel and a team of collaborators published a recent evaluation of a supermarket developed as part of the NYC FRESH Initiative in Morrisania, New York, a neighborhood in the Bronx (Elbel, et al., 2015). Using a difference-in-difference design, these researchers used several waves of pre- and post-opening intercept surveys and phone interviews among child caregivers to assess possible changes in the availability of healthy food at home and children's diet. Similar to other studies, this evaluation found no significant differences attributable to the new supermarket.

Another evaluation, funded by the Canadian Institutes for Health Research, assessed the influence of a new cooperative grocery store in an underserved part of Saskatoon, Saskatchewan (Fuller, Engler-Stringer, & Mahajarine, 2015). The study used retailer data to examine differences in the healthfulness of items purchased by former food desert residents and those who lived in higher-income neighborhoods. These researchers found that former food desert residents spent significantly more on vegetables, and less on meat and prepared foods compared to shoppers from higher income neighborhoods, and concluded that improved physical access was partially responsible for this pattern.

To date, three additional evaluation studies are underway as of January 2015: one in Pennsylvania (Amy Hillier et al.), one in Louisiana (Donald Rose et al.), and one in California (Sallie Yoshida, et al.). In Chester, Pennsylvania, Hillier and colleagues are investigating the effects of a nonprofit, limited-assortment supermarket, Fare and Square, developed by the region's major emergency food provider, Philabundance. In New Orleans, Rose and colleagues at the Tulane Prevention Research Center are investigating the impact of two new supermarkets, Whole Foods and Circle Foods, which were developed through the city's Fresh Food Retailer Initiative, created in partnership with The Food Trust. In California, Yoshida and colleagues, including Karpyn and Glanz, are evaluating the impact of the state's California FreshWorks Fund (CFWF), which has developed several new supermarkets in San Diego and Los Angeles regions.

Theory of Change: Health

Our expectations of intervention supermarkets depend heavily on our diagnosis of the problem. Depending on the normative position one selects to interpret a food desert neighborhood's distress, different theories of action become relevant. In attempting to settle on a diagnosis, the issue emerges that food deserts and attendant diet-related diseases are related in complicated, and poorly-understood ways. For instance, what are the possible causal mechanisms between diet-related disease (disorganization/behavior) and low food access (markets/environment)? Further complicating this question: In what ways does poverty (inequality) influence, or perhaps wholly modulate, the other two diagnoses? Given the challenge of specifying the problem and relevant questions that surround it, difficulty arises in following best practices of evidence-based public health, such as the Institute of Medicine's LEAD Framework, which guides decision-makers, intervention designers, and evaluators in locating, evaluating, and assembling evidence to inform decisions (Kumanyika, Brownson, & Cheadle; 2012; Chatterji, Green, & Kumanyika, 2014).

Regardless of their chosen outcome measures, all of the previously-mentioned evaluations follow a logic model that connects the introduction of a new supermarket with improved community health. While this Chapter has outlined notable gaps in evidence that limit our understanding of the access-health relationship, a foundational causal model remains. Figure 2 represents a plausible pathway between a new store opening and improved health, highlighting the key

requirements and path-dependencies for this change to occur. For instance, if the new store is to influence health, the first step in the causal model is for an individual to try the new store. Subsequently, they must adopt the new store for food shopping, shifting away from other stores previously used. The model also identifies the variable time scales that correspond to the different requirements; for example, we might expect residents to initially visit the new store within days or weeks of its opening, while the process of purchasing and consuming more healthy food may take months or years.

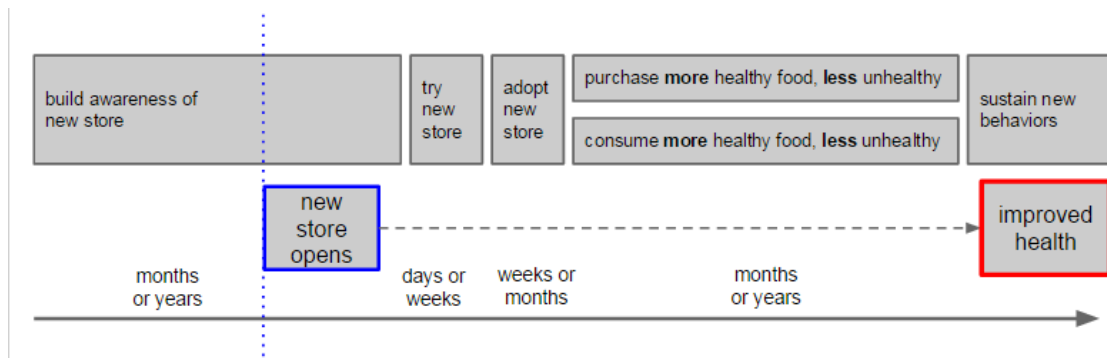


Figure 2. Theory of Change for New Supermarket Improving Health

Based on existing literature and following frameworks of health behavior theory, my interpretation of these findings ultimately drives my primary research questions. Given the known relevance of consumer perceptions on consumer behaviors, this finding is valuable; however, a logical next question would be, do consumers begin shopping in the new store, and if so, why? For Mona, this new store was on the way to work, in the neighborhood, and generally had the products she needed; essentially it fit well into her lifestyle, at least at the time we spoke. The notion that a new store could inspire health changes among non-shoppers, while plausible, appears unlikely. While it is unclear exactly how long is required for individuals to adopt healthier eating behaviors, this measure also assumes that consumers previously desired to purchase these items, but were somehow inhibited from doing so; the construct of *somehow inhibited* remains unexplored. Again, remembering Mona, even when shoppers actively try to improve their diets, they are faced with prices, marketing, and, perhaps most importantly, old habits that die hard.

A healthier diet may lead to a reduction in BMI, but again, the timing of this outcome measure remains problematic. Obesity is a frequent concern for food desert residents, though it is hardly the only diet-related illness at hand. The salience of specific health outcomes for Mona, who just had - in her own words - a heart-related “health scare,” might vary widely given her current priorities. Indeed, other conditions, such as hypertension and diabetes may require more active diet management to control adverse and relatively immediate adverse health outcomes. These findings provide a sound point of departure to consider how new supermarket affects the health of area residents. First, however, let us turn to the perspective of community development which ultimately provides the cornerstone to all new store-health evaluations.

Evaluation of Community Development Outcomes

Encouraged by funding agencies, community development officials often generate a causal model for how a project will be completed. Sometimes referred to a “theory of change,” it illustrates

required steps and path dependencies for a place-based initiative to meet its ultimate goals. Figure 3 describes a theory of change for developing a new supermarket in an underserved area, and where fresh food financing incentives may support or make possible a previously unworkable project. Both predevelopment and development costs can be defrayed by low-cost loans, grants, tax incentives, land deals, or expedited or reduced permitting processes. Notably, once a supermarket opens, most fresh food financing rhetoric suggests it will no longer require public subsidy, and that further capital needs (i.e. equipment upgrades) can be accommodated by traditional financing sources. Nonetheless, some fresh food financing programs have distributed grants and low-cost loans to bolster existing businesses.

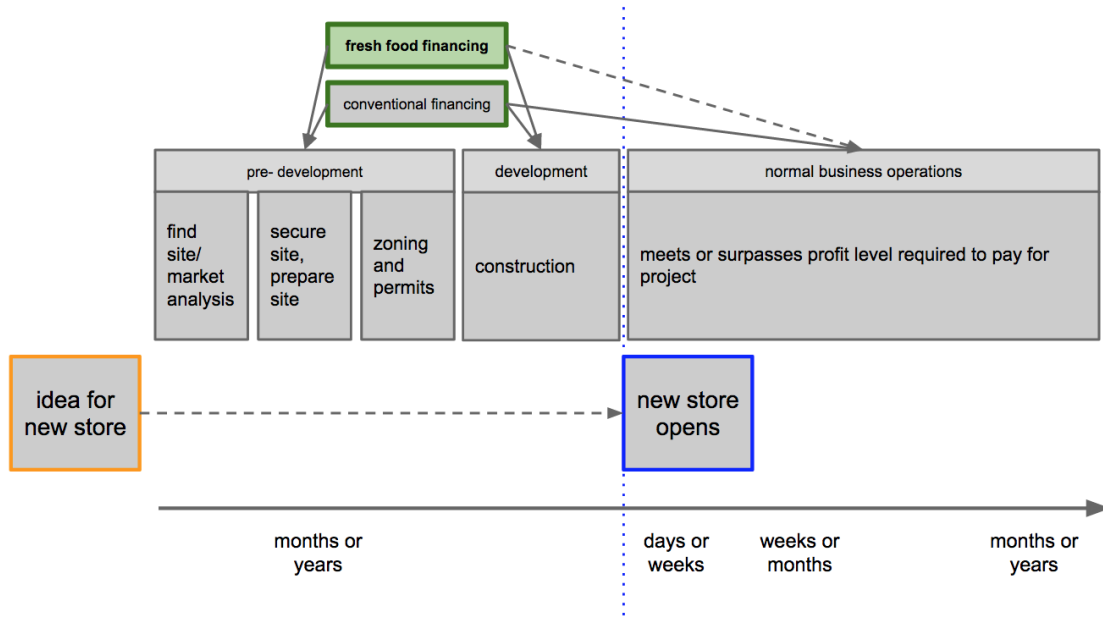


Figure 3. Theory of Change Model for New Supermarket Development

While measuring the performance of this theory of change model might be straightforward (i.e. How quickly were pre-development and development phases completed? How profitable is the new store?), is it not as simple to consider these measures holistically, nor is it always obvious how or if the project would have been executed without community development incentives. Beyond the exact timing and linearity of the change model, it is difficult to predict exact outcomes; while a developer may estimate that a hundred jobs will be created, the exact number, as well as the quality of these positions will likely be shaped over time, and to some extent by the process itself (Hollister, 2007). Also central to community development evaluations is a need to document how funds were used to assist low-income people, as well as the magnitude of these effects. Given possible people-based alternatives (i.e. direct payments to poor individuals), advocates for place-based community development aim to document the broader, more long-lasting effects that motivate these projects.

Many of these evaluation challenges stem from experimental design issues for real-world projects. Just as officials cannot readily implement randomized controlled trials on major health policies or programs, inherent features of community development prevent or hamper this evaluative approach. Mitigating and mediating factors, such as local government support or developer capacity, often core characteristics of projects, rather than variables to be controlled for

in statistical models. Indeed, the complex choice process of site selection for a new supermarket illustrates how much a specific place matters; this primacy of place for community development significantly limits a researcher's ability to randomly assign a place-based treatment, or identify an authentically counterfactual site (Rossi, 1999). Nonetheless, the simplified theory of change illustrated in Figure 3 identifies key expectations and requirements for a store to be developed and sustained.

Merging Theories of Change

While these models of change - one for health, the other for food access - are rarely discussed together, this research aims to synthesize these processes and interrogate possible points of opportunity or dissonance (see Figure 4).

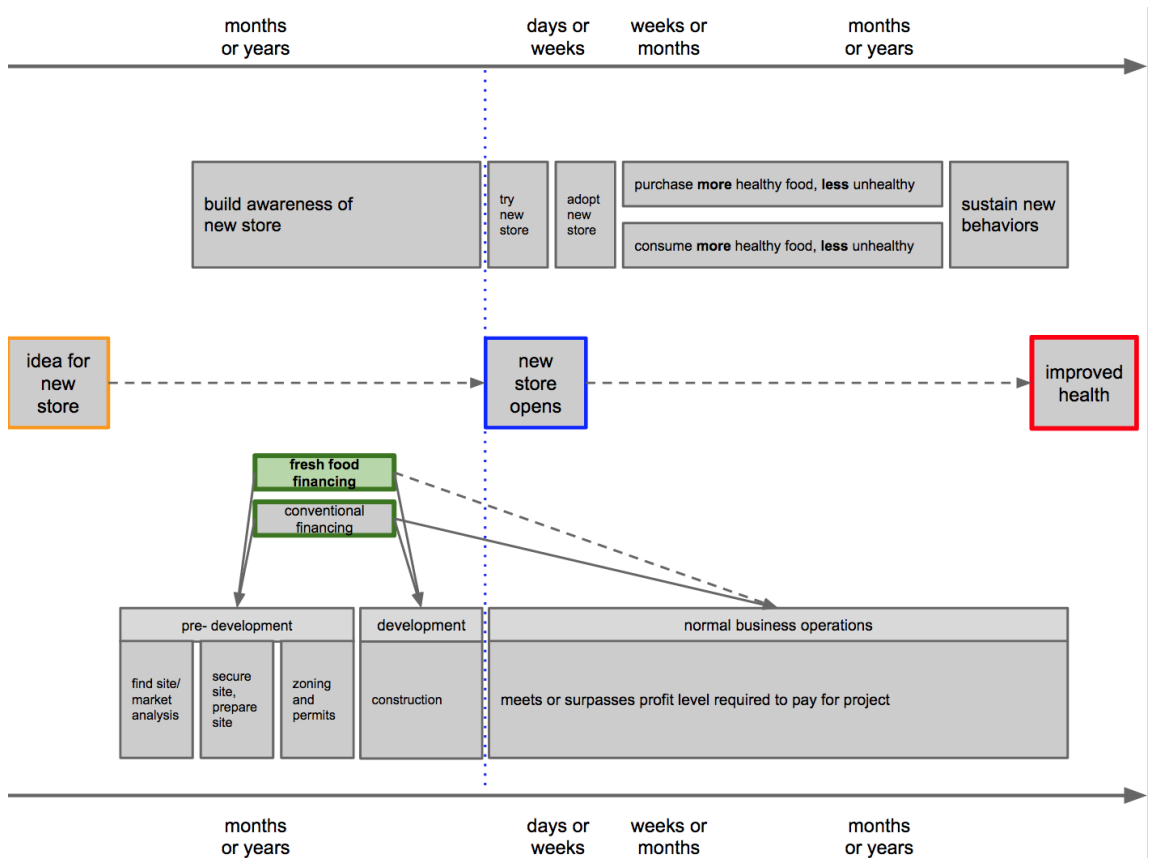


Figure 4. Theories of Change: Community Development and Health Improvement

These models will be revisited throughout the dissertation, though three circumstances are immediately apparent. First, the community development model does not rely on the health model to be valid. Second, the health model is entirely predicated on the community development model being actualized. Finally, model variables from health and community development are likely to be related; for instance, if a sufficient amount of consumers do not try and adopt the new store (health model), the business will face significant profitability challenges (community development model). Alternatively, one could imagine how fresh food financing's

support of the predevelopment process (community development model) might raise the level of community awareness and anticipation prior to the store's opening (health model).

Research Questions

With these contexts and expectations in mind, I have sought to apply a planning framework to better understand the process of new store creation, and expand on existing evaluations with new types of behavioral data. I approach this investigation with three primary research questions:

- 1) **How do different types of development processes yield different types of supermarkets?** Not all new stores created with fresh food financing incentives look the same, which can be attributed to the diversity of sites, financing tools, stakeholders, and types of retailers. Completed stores also vary widely in terms of store size, ownership/management structure, and incorporation of in-store health education and promotion. This questions makes sense of the variability and considers relationships between processes and store characteristics. For example, do incentive programs that resemble the Pennsylvania Fresh Food Financing Initiative use similar processes to identify qualifying projects, and are certain types of retailers (i.e. independent operators versus national chains) more likely to be involved?
- 2) **How do different types of new supermarkets drive different shopper responses?** Much of food access and food environment literature focuses on physical distance to retailers, though evidence also shows the complexity of store choice, calling to question the neighborhood store model. If health is to be affected by new supermarkets, this first implies a change in shopping behavior (i.e. where people shop), followed by a change in dietary behavior (i.e. what people purchase and consume). Using both primary and secondary behavioral data, this question investigates how new supermarkets are adopted by low-income shoppers, and if differences in adoption may be attributable to differences in store characteristics. For instance, are low-income shoppers more likely to adopt a new supermarket if it is of a particular size?
- 3) **How do consumers engage with new supermarkets, and how might these behaviors be meaningful for health?** If we can demonstrate that low-income individuals begin using new supermarkets for their food shopping, then a critical secondary question for health centers on in-store behaviors. In their own words, how do consumers describe their experience and environment while shopping at supermarket developed through the Pennsylvania Fresh Food Financing Initiative? These perceptions of place provide a more nuanced, proximal picture of health behavior change compared to previous evaluation metrics, such as consumption of fruits and vegetables and weight status.

Overview of Chapters

Chapter Two begins with a national scan of completed fresh food financing supermarket projects. Since no formal database exists to document fresh food financing efforts, I have systematically collected information for all known projects that have been completed or are in development or planning phases. This chapter will describe the variety of data sources, including industry newsletters, local media, federal reporting systems, a stakeholder survey, and numerous consultations and interviews with key experts across the nation. These data help answer the first research question by first detailing the spectrum of existing development processes and types of supermarkets developed through fresh food financing efforts.

Chapter Three elaborates on this scan with a geospatial analysis of projects in California, New Jersey, and Pennsylvania, home to over 30 percent of food desert developments, to consider how low and moderate-income individuals adopt (or do not adopt) new stores. This analysis uses geographic information systems (GIS) to integrate data obtained from the USDA Food and Nutrition Service, including monthly ZIP code-level SNAP redemption data and annual point-level locations of retailers who are authorized to accept SNAP, with neighborhood characteristics from the American Communities Survey, and project characteristics from the national scan detailed in Chapter 2. I describe how rates of new store adoption by SNAP participants vary widely between projects, answering a key component of the second research question and informing our expectations of shopping behavior change. Of all the behaviors a new supermarket may change, the most important is the choice of store.

In Chapter Four, I describe the consumer experience from a Philadelphia supermarket that received development incentives through PA-FFFI, and qualitatively consider how the store contributes to the daily lives and health of shoppers. Data were collected during July and September 2014 through a series of 32 walking interviews with shoppers, including Mona, who were asked to narrate their trips aloud. Qualitative data analysis was completed through a process of memoing, transcribing, open-coding, and close-coding, with input and double-coding from other researchers. This chapter addresses the third research question, and provides a critical new perspective on how health outcomes might be shaped by in-store behaviors. While existing supermarket evaluations find no neighborhood-level changes in consumption and obesity, I measure more proximal outcomes to describe why this might be.

Chapter Five provides a synthetic account of these findings and provides an assessment of how well fresh food financing efforts are working. I place these results within broader discourses in planning and public health, and offers a forward-looking assessment of supermarket development in food deserts. I will conclude the dissertation with my personal reflections on fresh food financing, including my suggestions for strengthening the positive health impacts of new supermarket development in the future.

All methods and analyses detailed in the following chapters were approved by the University of Pennsylvania Institutional Review Board on May 13, 2014.

CHAPTER II: Project Landscape

INTRODUCTION

On February 1, 2012, months before the opening of a new Northgate Gonzalez Market just outside Los Angeles, a cadre of local dignitaries gathered in the store's dimly-lit, warehouse shell (Beltzer & Tokumatsu, 2012). Though much of the store's interior was far from finished, a well-designed stage for a press conference had been assembled in a corner of the building, in many ways resembling the set of a television studio. Against a backdrop of several prop shelves, well-stocked with assorted pastas, oversized bottles of olive oil, and bright orange bell peppers, these leaders welcomed First Lady Michelle Obama to the microphone. "This is the story that we want to tell in cities and towns across America," she remarked. "This is the story, this is what it's all about" (aleboglez, 2012).

Flanked by Inglewood Mayor James Butts, Los Angeles Mayor Antonio Villaraigosa, and Northgate Gonzalez co-president Oscar Gonzalez, Obama heralded the Gonzalez's store as something greater than a new supermarket in an underserved neighborhood. "It's a story about bringing fresh, healthy, affordable food into communities that need it most. It's a story about creating jobs, about revitalizing neighborhoods, and it's a story... this story, like the Northgate store... that don't just sell healthy food, but they also promote healthy lifestyles by helping their customers make the decisions that are right for their families. And that's more than just owning a store, that's being a responsible member of the community. That's like being family, and that's what you would hope for the institutions that would come into our community."

While Northgate may feature as a model citizen within the landscape of fresh food financing, it is hardly the only model. Given the diversity of community needs, development constraints, and regional supermarket competition, and the cost and challenge of creating new stores in food deserts, we would expect a variety of models to be used. However, not all stores are operated in the same way; as the First Lady noted, Northgate's efforts at health promotion go beyond simply offering a well-appointed produce section. At a 2015 supermarket industry health and wellness summit, Gonzalez elaborated: "It's more than just having the food there, having the fresh produce, fresh meat, fresh breads. It's really about creating an environment where families feel safe and where there's a platform of respect" (Telesca, 2015).

As the First Lady concluded her remarks from the supermarket podium, she reiterated her interest in the Northgate model: "This is the story that we want to tell, and that's why I'm here, and that's why I'm glad so much of the country and the world will hear this story" (HealthHappensHere, 2012). Indeed, there is much that distinguishes the efforts of Northgate Gonzalez and its partners to develop new stores in underserved communities. Yet, theirs is only one story of many in a much broader trend of financing and supporting new stores to develop in food deserts. In order to form clear expectations of these retailers, including how they might contribute to health, we should first understand how their stories differ and consider why this might matter.

Several health evaluations have been completed of new retailers in food deserts. These include a national chain retailer (Glasgow: Cummins, et al., 2005, 2008), regional chains developed with city (Oakland: Wang, et al., 2007; New York City: Ebel, et al., 2015) and state (Philadelphia: Cummins, Flint, and Matthews, 2014) incentives, and a cooperative market (Saskatoon: Fuller, Engler-Stringer, & Mahajarine: 2015). Each retailer has its own unique origin story, including

the financing used, stakeholders involved, and community contexts. How might the diversity of stories influence the generalizability of any health outcomes that resulted from their development?

Chapter Two offers one way of considering these stories with a national scan of planned and completed fresh food financing supermarket projects. Since no formal database exists to document fresh food financing efforts, I systematically collected information for all known projects that have been completed or are in development or planning phases. This chapter describes the variety of data sources, including industry newsletters, local media, federal reporting systems, a stakeholder survey, and numerous consultations and interviews with key experts across the nation. These data help answer the first research question - how do different processes yield different types of stores - by detailing the spectrum of existing processes and types of supermarkets developed through fresh food financing efforts, and help elucidate the connections between process and outcome.

BACKGROUND

The constellation of incentive programs designed to encourage new supermarket development in underserved areas has grown steadily since the early 2000s. Programs have been designed by all levels of government; similarly, funding sources for projects include federal, state, local, and philanthropic dollars. The following section will outline several of the key initiatives and sources of financing for developments in food deserts. Though there are as many combinations of incentives as there are projects, these initiatives were early leaders and have served as models for subsequent funding sources.

State-Level Programs

Most of the largest initiatives to finance new supermarket development in underserved communities are state-level programs, many of which follow a model established by the first program, Pennsylvania's Fresh Food Financing Initiative (PA-FFFI). PA-FFFI was established in 2004 with \$30 million of seed funding from the Pennsylvania House Appropriations Committee "for the benefit of the people of [Pennsylvania], for the increase of commerce and prosperity and for the improvement of health, safety, welfare and living conditions" (Evans & Weidman, 2011; General Assembly, 2004). Following this initial state investment, PA-FFFI leveraged nearly \$150 million from other sources of capital to create a diverse fund of grants and low-interest loans to develop or preserve food retail in food deserts (Fox, Marchowsky, & Fellencer, 2010; Smith, 2012).

PA-FFFI defined eligible projects as those that were: "located in a low- to moderate-income census tract; provide a full selection of fresh foods; [and] locate in areas that are currently underserved" (TRF, 2008). The program made available grants of up to \$250,000 that could be used for pre-development costs, such as market studies or appraisals, land assembly costs, such as demolition of existing structures or environmental remediation, soft costs, which might include employee training, and general construction costs (TRF, 2008). Through PA-FFFI, The Reinvestment Fund, a certified community development financial institution (CDFI), also offered loans for real estate and operator costs below rates that would otherwise be available to similar projects from conventional lenders. While the program ended in 2010 after the initial program funding was deployed, though two of the key stakeholders from PA-FFFI, The Food Trust and The Reinvestment Fund, have sustained efforts to develop new supermarkets in food deserts both in Pennsylvania and beyond (TRF, undated-a).

The California FreshWorks Fund (CAFWF) is another state-level program that assembled multiple sources of funds to enable tailored financing packages for specific projects. Though the Fund lists the state of California as partner, this support exists outside of the legislative process, marking a distinction from the PA-FFFI model which has also been followed by New Jersey (National Center for Chronic Disease Prevention and Health Promotion, 2011). Announced by Michelle Obama on July 20, 2011, the Fund expands on the PA-FFFI model by drawing on a broader range of equity investors, including regulated (conventional banks) and unregulated (mission-driven entities) lenders. This structure allows CAFWF to make grants and loans up to 90 percent of a project's value; this compares to a more typical rate of 60 percent which renders many challenging urban sites undevelopable (Sporte & Howard, 2012). Similar to PA-FFFI, CAFWF stakeholders have positioned the fund as both a mechanism for economic development and improving healthy food access. In a newsletter published by the US Office of the Comptroller of the Currency, a division of the Treasury Department, a senior JPMorgan Chase official is quoted:

“The California FreshWorks Fund allows bank investors to put their capital to work in low-income communities, creating fresh food retailers and improving health outcomes. [...] The fund structure allows Capital Impact to offer flexible loan products that can help grocers enter markets that have traditionally been underserved, while also giving regulated investors the comfort they need to participate in the fund” (Sporte & Howard, 2012).

In January 2011, the CDC reported retail-based initiatives to increase healthy food access in twelve states across the nation, including the District of Columbia (NCCDPHP, 2011). These measures range from complex assemblages of financing, such as PA-FFFI (with similar programs in California, the District of Columbia, Illinois, Louisiana, New Jersey, and New York), to earmarked funds from existing economic development, agriculture, or small business grant programs, to tax incentives. Also included in this assessment were state task forces established to investigate the issue of healthy food access and make recommendations for further action; notably, The Food Trust served as a consultant for several task forces, several of which led to financing programs being adopted.

Federal Programs

Partially modeled on PA-FFFI, the federal Healthy Food Financing Initiative committed \$400 million between three cabinet-level agencies: the Treasury Department, Department of Agriculture, and Department of Health and Human Services (Pennsylvania House of Representatives, 2014; Wides, 2012; Treasury Public Affairs, USDA Office of Communications, HHS/ACF Press Office, 2010). Though originally enacted by President Obama in 2010, HFFI was formally passed by Congress as part of the Agricultural Act of 2014, also known as the Farm Bill. Using a variety of existing mechanisms, including NMTC, community development financial institutions (CDFI), and Community Economic Development (CED) funding, the Initiative steers resources toward programs which increase access to healthy foods.

Health and Human Services: Community Economic Development (CED) Grants
Administered through the Department of Health and Human Services (HHS), CED grants are distributed annually and are intended to finance development in distressed communities. The grants can be used for a variety of purposes, including start-up funding, loans, and operating

expenses. As part of the HFFI initiative, CED grants that feature healthy food initiatives were highlighted beginning in the FY 2011 grant cycle. In both cycles, HFFI initiatives made up a significant part of all CED grants awarded (16/25 in 2011, 13/38 in 2012) (Office of Community Services, 2012a, 2012b).

CDFI Fund: New Markets Tax Credit (NMTC) Allocations

Administered through the Treasury Department's Community Development Financial Institution (CDFI) Fund, the New Market Tax Credit program encourages development in low income areas by offering tax credits against the investor's federal income tax (39% of the amount invested). Treasury-approved Community Development Entities (CDEs) apply to the NMTC program and receive an allocation amount if selected. This figure represents the amount of tax credit-eligible revenue the CDE can raise. For instance, if a CDE's allocation amount is \$1 million, their investors can cumulatively avoid up to \$390,000 in federal taxes by financing projects in low income census tracts (as defined by the Treasury Department).

In general, awards are broad and do not always reveal the format healthy food retailers will take (i.e. supermarket, grocery store, etc.). Though NMTC awards were given to supermarket development prior to HFFI, the Treasury started reporting projects featuring healthy food in FY 2011. Reporting strategies changed between 2011 and 2012, with FY 2011 HFFI records including projects with as little as 2% of funds devoted to healthy food initiatives; HFFI records for FY 2012 only feature more substantial projects (Community Development Financial Institutions Fund, 2011, 2012). In Obama's 2010 announcement, \$250 of the \$400 million overall funding commitment was designated from NMTC allocations.

CDFI Fund: Financial Assistance Awards

In an effort to build capacity among the nation's CDFIs, the CDFI Fund also issues annual Financial Assistance (FA) awards up to \$2 million (CDFI Fund, 2015). Since 2011, 46 of 538 FA awards have been designated for HFFI-related efforts (HFFI-FA), and have been used for a variety of purposes, so long as the award amount is matched by non-federal funds (CDFI Fund, 2014). Examples of this may be capitalizing a loan fund, or matching philanthropic dollars to create a loan loss reserve.

Local Initiatives

At the local level, municipalities have attracted supermarket retailers to underserved areas in a number of ways, ranging from financing, in-kind support (land or technical assistance), to tax abatements. Incentive zones may be created internally as a mix of politics and science, rather than more formulaic designations as USDA food deserts or TRF low-access areas. To fund initiatives that require capital expenditures, cities may devote their federal redevelopment dollars to increasing food access; for instance, Community Development Block Grants (CDBG). Many cities and urban counties qualify as "entitlement communities," and automatically receive annual grants based on a formula which considers poverty and population, among other indicators. For example, Philadelphia has annually received about \$75 million, Los Angeles about \$45 million, and St. Louis about \$25 million (average amounts, 2003-2008) (IHS Global Insight, 2011). As another example, the City of New Orleans used a set of post-Katrina CDBG funds to help seed their local Fresh Food Retailer Initiative.

Another model of local incentives is exemplified by the NYC Food Retail Expansion to Support Health (FRESH) Initiative. Rather than provide direct grant or loan support, NYC FRESH effectively reduces the cost of development for eligible food retailers in designated parts of the city (City of New York, 2013). This is achieved through a set of zoning incentives, including added development rights, lowered parking requirements, and permitting larger stores in certain districts. Financial incentives are also part of NYC FRESH, and include exemptions or reductions of city taxes on real estate, sales, and mortgage recording. Similar local strategies exist in other cities, essentially relaxing development regulations or associated taxes to stimulate development to particular neighborhoods or sites.

Research Question

This diverse range of tools to develop new stores in underserved areas all operate under a banner of increasing “healthy” or “fresh food access.” While many reports detail individual, emblematic, or specific types of fresh food financing projects, no literature details the overall landscape of projects. Given the continued interest by government leaders, advocates, and financial partners in these types of projects, it is critical to consider the potentially meaningful differences in strategies to develop new stores and their outcomes. Because little comparative knowledge exists outside conversations and reports within professional circles, new policies and programs to incentivize the development new stores cannot be fully informed by the history and progress made in this arena. Thus, this chapter takes a broad approach to investigating how different methods to fund and develop new stores yield different types of outcomes.

METHODS

This landscape study attempts to fill a gap in fresh food financing literature: currently there is no comprehensive list of projects both planned and completed. In attempting to compile this list, a broad range of sources and data were needed. Data sources were imported into an NVivo 10 project (QSR International). Each document was coded according to project or projects it describes, allowing for quick reference of all sources of information for a particular development. This need to stitch sometimes disparate sources of information together, while logistically challenging, forced additional layers of triangulation, and affords some additional confidence that this landscape is sufficiently representative of fresh food financing efforts in America.

Google Street View

As a list of projects was generated, virtual ground-truthing was done using Google Street View to verify the location and status of retailers. Retailers that were not visible in Google Street View may have opened after the most recent images were collected, which ranged from 2007 to 2014. In these cases, Google Search results helped differentiate between completed and uncompleted projects, and those that were open and those that had gone out of business. Google Street View also assisted in identifying different types of sites. Projects were coded according to four distinct types: stand-alone store, shopping plaza, shopping strip, mixed-used development, or main street store.

Primary Data Collection

Survey

In September 2014, a survey was sent to individuals who had been identified in a preliminary list of projects. These individuals include project managers, community development executives, local administrators, and journalists. Based on the list generated through the document review, known features were listed for each project. Some projects may have a near-complete set of characteristics, while others may be quite sparse. Using the stakeholders identified through the document review, as well as authors listed in documents used, I compiled a list of project contacts. Each of these contacts receive an emailed summary of project characteristics with an invitation to verify, revise, or supplement the summary with their own information (including possible new projects). The validation survey was delivered in September 2014, with a reminder email sent in October 2014.

Semi-Structured Interviews

Participants were recruited through a convenience sample, beginning with two initial expert groups from The Food Trust and The Reinvestment Fund. A recruitment email was sent to prospective participants, requesting a one-hour interview to discuss their perspectives of retailer interventions. Once contacts agreed to become participants, I arranged on-site interview times that were mutually convenient. To maximize the amount of expert data I could collect, I asked all participants if they could think of colleagues who might also be able to contribute. Both initial contacts offered other contacts within their offices (5 total participants; 2 from The Food Trust, 3 from The Reinvestment Fund), and subsequently group interviews were arranged to be respectful of all participants' time and because I did not expect participant responses to be significantly different between individual and group settings based on the interview protocol. Later individual interviews included affiliates of regional supermarkets who participated PA-FFFI, including two individuals at a corporate level, a store manager, and a director of human relations.

All interviews were completed during 2013 and 2014, audio-recorded following the exchange of an information form (see Appendix). The interview protocol was approved by the University of Pennsylvania Institutional Review Board.

Informal Interviews

Twelve informal interviews were conducted with stakeholders and experts in fresh food financing from across the country. These included officials in philanthropy, community development financing, advocacy, and the supermarket industry. The exploratory, informal interviews were intended to gain a better understanding of the field, important characteristics of fresh food financing programs and projects, and to locate potential case studies for further investigation.

Store Tour of Jeff Brown's ShopRite at Baker Center

In February 2013, I attended a tour of a new supermarket in a formerly underserved section of Northeast Philadelphia, the Baker Center ShopRite, led by the company's president and chief operating officer, Jeff Brown, and coordinated by a local nonprofit organization, Net Impact (Philadelphia Social Innovations Journal, 2013). During this tour, I was able to observe various health and wellness strategies being employed, and consider how the store's owner characterized the process of developing in food deserts.

Novogradac New Markets Tax Credit Conference

In October 2013, I attended Novogradac's major conference and training on New Markets Tax Credits, held in New Orleans, Louisiana (Novogradac, 2013). This experience provided context for understanding NMTCs as the most commonly used federal development incentive for fresh food financing, and helped identify common features and issues with NMTC projects broadly.

Food Marketing Institute (FMI) Conference

In June 2014, I attended the FMI's major annual exhibition and conference, FMI Connect, held in Chicago, Illinois (FMI, 2014). While at FMI Connect, I met with industry analysts and stakeholders who were familiar with new store development in underserved areas, and in-store marketing of health and wellness.

Expert Panel

In October 2014, I convened a panel of three experts in fresh food financing to trace the movement's progression since the Pennsylvania Fresh Food Financing Initiative's launch in 2008. Two of these experts had personal involvement in the creation of PA-FFFI, though all three worked in some aspect of the advocacy, finance, or business of new supermarket development in food deserts.

Secondary Data Collection

Healthy Food Access Portal

In 2013, three of the major leaders in fresh food financing, The Food Trust, The Reinvestment Fund, and PolicyLink, launched the Healthy Food Access Portal a web-based resource for funding opportunities, case studies, policy examples, and industry news and reports (PolicyLink, TRF, & The Food Trust, 2013). The initiative was guided by a diverse advisory board, including individuals from government, advocacy, business, finance, and public health, and was funded by the Robert Wood Johnson Foundation.

HFFI Grantee Convening Documents

The Reinvestment Fund has compiled lists of projects that have received federal HFFI funding. These lists include projects with funding from HFFI Financial Assistance awards, HFFI NMTC allocations, HHS CED-HFFI grants, and USDA financing. Project data are provided voluntarily by grantees, and vary widely in terms of detail and specificity. Earlier iterations of this document were provided by TRF officials, though later versions are accessible through the Healthy Food Access Portal.

Novogradac NMTC Database

Novogradac & Company LLP is a major tax credit organization and serves as a major resource, convener, and consultant for the community development finance industry. They frequently advocate on behalf of the industry for permanent continuation of federal tax expenditure programs, such as the New Markets Tax Credit, and collect and disseminate about how programs are implemented around the country (Novogradac, 2015). Novogradac collects project

information from Community Development Entities who have received NMTC allocations (“allocates”) on a voluntary basis, and compile this information by state and congressional districts, presumably for easy use in lobbying efforts to elected officials. Through a partnership with The Reinvestment Fund’s PolicyMap, the company also provides a NMTC Mapping Tool (Novogradac, undated).

Food Marketing Institute (FMI)

FMI serves as a key food industry trade association. The organization collects information about the state of food retailing, and supports the industry through government lobbying, research, and holding semiannual meetings or expositions. Through contacts at FMI, I have reviewed several research briefs on food access efforts within the industry.

CDFI Fund Awardee List

The Community Development Financial Institutions (CDFI) Fund, a program of the US Department of the Treasury, was established in 1994 through the Riegle Community Development and Regulatory Improvement Act. The CDFI Fund broadly supports the capacity and financial ability of CDFIs across the country to implement projects in distressed areas, and oversees programs like the New Markets Tax Credit. Two major sources of federal HFFI funding are administered by the CDFI Fund: HFFI NMTC allocations, and HFFI Financial Assistance (HFFI-FA) awards.

HHS CED Awardee List

The US Department of Health and Human Services’ Community Economic Development grant program is intended to stimulate the creation of businesses and employment opportunities, and is overseen by the Administration for Children and Families’ Office of Community Services. As part of the federal Healthy Food Financing Initiative, HHS was instructed to designate up to \$20 million of CED grants toward increasing access to healthy foods (denoted as CED-HFFI). The Office began providing an annual listing of CED-HFFI grantees in fiscal year 2011, and has continued through FY 2014 (Office of Community Services, undated). This listing provides information about the grantees, including address, website, total funding requested, and the organization’s authorizing official. Project characteristics, such as the number of jobs to be created and amount of other funds to be leveraged are included alongside a brief description.

USDA Compilation of HFFI Grantees

A Microsoft Excel database was located through a Google Search query and downloaded from a USDA server. This document outlines a variety of HFFI recipients, especially those who have received HSS CED awards or funding from USDA financing programs. The database provides information for 123 grantees.

Newsletters

Two major supermarket trade organizations, Supermarket News and the Food Marketing Institute (FMI), publish daily newsletters with a collection of industry headlines and blog entries. To identify possible fresh food financing projects, these newsletters were reviewed daily since early 2014. Additionally, older newsletter content was queried through organizational websites, including *Supermarket News* and *Progressive Grocer*.

Media Sources

Local media sources were also explored for identified projects through web searches. Websites for local papers were most commonly used, though press releases, blogs, Facebook posts, and other searchable information was also used to help triangulate project characteristics.

Analysis

Spatial Analysis

To understand the spread of projects around the country, all identified projects were geocoded using Google Earth. All completed projects were mapped to the address-level, as were most of the planned projects. Five planned projects were not able to be associated with a specific address or site; in these cases, the neighborhood or city name was used for geocoding.

Qualitative Analysis

All semi-structured interviews were recorded and transcribed verbatim. Through the course of collecting, organizing, and interpreting these and other data sources with NVivo 10, emergent themes were identified. These themes help group the projects under different models of programs, processes, retailers, and health. These models were identified through an iterative and deductive sequence, ultimately reflecting on multiple years of inquiry and examination of the assembled database.

Summary Statistics and Bivariate Correlations

In order to assess the prevalence and spread of different project features, descriptive statistics were generated in SPSS.

RESULTS

Based on this assessment, 131 distinct projects were identified in the United States. As of March 1, 2015, 95 projects had been completed, with the earliest projects opening in 2004, leaving 36 projects listed as planned or currently in development. Between 2004 and 2010, 15 stores were opened, though the vast majority of supermarkets have opened since 2011 (n=79), following the implementation of the federal Healthy Food Financing Initiative in 2010. Figure 5 illustrates this progression over time, while Figure 6 identifies where these projects have been developed.

Between planned and completed projects, nearly 3.2 million square feet of supermarket retail space has been developed, with an average building area of just over 28,500 square feet (minimum = 900 sq. ft., maximum = 120,000 sq. ft., median = 20,000 sq ft.). For comparison, typical suburban-format stores are about 40,000-60,000 square feet, while smaller, urban-format supermarkets are between 20,000 and 40,000 square feet, on average (Newberg, 2011). In terms of overall employment, just over 7,200 jobs have been created (excluding construction jobs), with an average of 88 jobs per project (minimum = 2, maximum = 400, median = 45). In terms of site configurations, most projects were identified as shopping plazas (n = 46) and stand-alone stores (n = 38); mixed-use developments and main street stores were less prevalent (n = 19, n = 5, respectively).

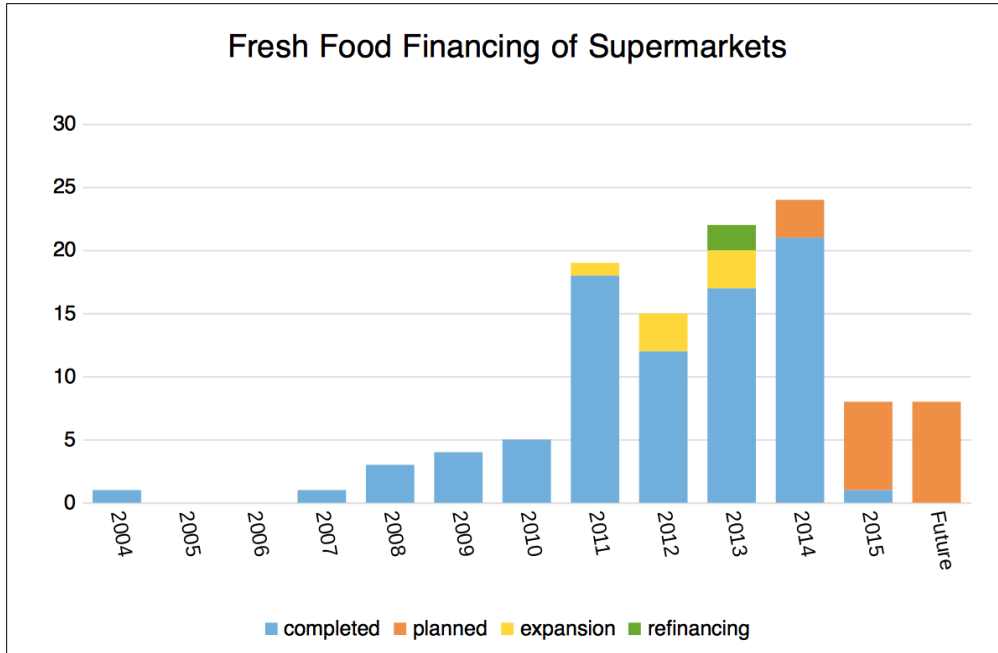


Figure 5. Fresh Food Financing of Supermarkets, 2004-Present (including completed new stores, planned projects, expanded stores, and refinancing initiatives)

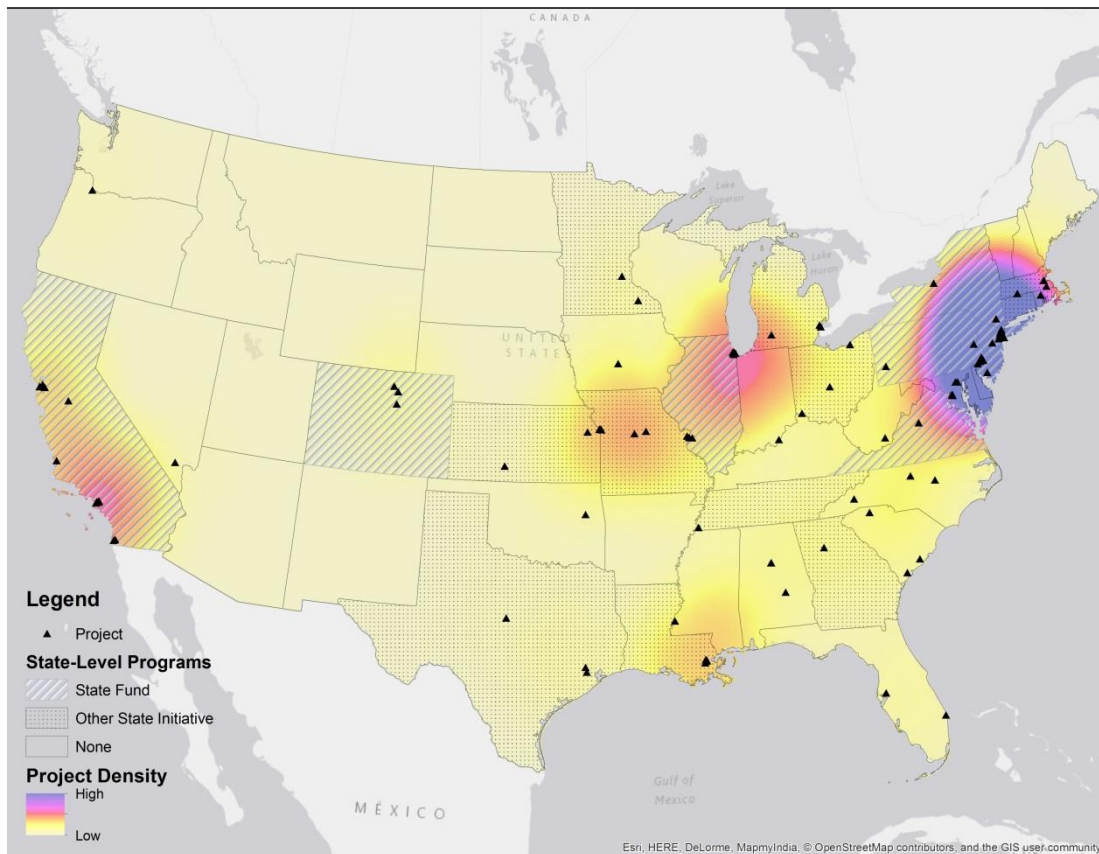


Figure 6. Fresh Food Financing Projects in the United States, 2004-Present

In terms of project financing, 34 projects used federal funding, including New Markets Tax Credits, sources from the Department of Housing and Urban Development (HUD), Community Development Block Grant allocations, or Enterprise Zone funding; of these sources, NMTC financing was the most prevalent, with 31 projects involving some type of NTMC deal. State funds were similarly prevalent, with 34 projects drawing from some state-level resource, including funds designated for economic or workforce development, and dedicated fresh food financing programs, such as the Pennsylvania Fresh Food Financing Initiative or the California FreshWorks Fund. Perhaps unsurprisingly in terms of planning and urban development, local financing is most prevalent (73 projects), and includes economic development grants or loans, dedicated funds for fresh food financing, and in-kind and technical support such as parcel assembly, zoning amendments, or expedited review of development documents. The subsequent sections describe projects in terms of project models and their respective prevalence in the United States over the last 15 years.

Project Models: Shared Themes and Characteristics

After collecting this wide assortment of project characteristics, the database was reviewed for themes that could help identify both important variations in development processes, including the use of financial incentives, and store outcomes, including the presence of health and wellness programming. Four project models were identified: financing models, site models, retailer models, and health models. Financing models focus on the main sources and structure of incentives used to support the development of a new supermarket. Site models describe part of the supply-demand dynamic that underlies a project: does the site pursue the retailer, does the retailer pursue the site, or do other stakeholders pursue both to improve food access? Retailer models situate the business within the larger food retail industry, as national chains, regional or independent operators, cooperatives, or nonprofits, while health models suggest how and why health is incorporated in stores.

Table 2. Models of New Store Development in Food Deserts

Financing Models	Site Models	Retailer Models	Health Models
Professionalized (48)	Site-Driven	National Chains (41)	Retailer Mission
Regulatory and Tax Incentives (55)	Retailer-Driven	Independent/ Regional Operators (71)	Business Model
Local Coalitions and Start-Ups (31)	Community Initiative	Cooperatives (9)	Grant Supported
		Nonprofits (4)	Partner Supported
			Industry Trend

Financing Models

Professionalized Fresh Food Financing

The first model, professionalized fresh food financing, is directly or indirectly inspired by the types of programs espoused by The Food Trust and The Reinvestment Fund, in that many stakeholders are involved, the retailer is most often a regional or independent operator, and a package of flexible financing tools are employed. These projects often use dedicated funding sources, federal (CDFI Fund's HFFI-FA awards), state (California FreshWorks Fund, Illinois Fresh Food Fund, Pennsylvania Fresh Food Financing Initiative), or local (New Orleans Fresh Food Retailer Initiative), which provide tailored packages of grants, loans, and other financial tools to match the specific project needs. Though the specific financial plan for each intervention is unique to its site and circumstances, the long-term viability of the project is critical to its initial approval. Funding organizations are careful to only select projects that are financially feasible and have strong and knowledgeable management; ultimately, the narrow profit margins of the supermarket industry heighten the importance of experience, especially dealing in low-income contexts. As expressed by one financial expert: “[Y]ou know it's money; at the end of the day, loans you have to pay back, a grant you want to make sure is going into a sustainable business.”

In 2011, The Reinvestment Fund detailed much of this professionalized model in a report, “Underwriting Supermarkets and Grocery Stores,” supported by the CDFI Fund's Capacity Building Initiative, and intended (as the name implies) to enable a broader audience to learn from TRF's experience in this arena (TRF, 2011). This report, along with a multitude of other documents made available by the CDFI Fund and disseminated in annual convenings organized among HFFI grantees, illustrates how this model is highly professionalized, values experience and the capacity to organize a robust pipeline of potential projects. Similarly, officials at The Food Trust described other elements of this professionalized model, including eligibility identification (“due diligence”) and community engagement, in a 2014 article published in the *Journal of Public Health Management and Practice* (Harries, et al., 2014).

Regulatory and Tax Incentives

The second financing model, regulatory and tax incentives, aims to expedite or lessen the burden associated with building or expanding a supermarket, and is largely overseen and championed by local authorities. The model centers of the relationship between the development project and local government, and seeks ways that the public sector can accomplish multiple goals simultaneously. For instance, these projects may help deliver on promises made by elected officials, create jobs in underserved neighborhoods, or spur the redevelopment of major publicly-owned sites or anchor master-planned initiatives. These projects may also be the result of championing by local leaders, such as San Francisco Mayor Gavin Newsom's support of the Bayview Fresh and Easy project, Chicago Mayor Rahm Emmanuel's support of new Save-a-Lot developments, or New York Mayor Michael Bloomberg's establishment of the FRESH program.

Through this model, local development authorities identify eligible projects and areas to benefit from incentives. Created in response to a food access study by the New York City Department of City Planning, the NYC FRESH was implemented in 2008 to encourage the development and expansion of supermarkets in specific areas (New York City Department of City Planning, 2014). The program identifies eligible areas through an interactive website, and also details the minimum eligibility standards in terms of the amount and variety of food sold. Zoning and financial incentives range from allowing different uses by-right to reduced or abated real estate taxes. Though these programs can be strongly affiliated with a particular political leader, it is

possible that they may continue under a different administration; for instance, NYC FRESH started under Mayor Bloomberg, and has continued since Mayor Bill De Blasio took office in 2014.

Local Coalitions and Start-Ups

The third financing model, local coalitions and start-ups, exists when area institutions or organizations pursue new retail development, and actively must fundraise beyond the community and economic development channels used by the first two financing models. Involved stakeholders may have little or no experience developing or operating a supermarket, meaning that they must convince existing business to partner with their initiative. Some retailers in this model operate alternative business practices to conventional retailers, including cooperatives and nonprofits, and typically have a smaller retail footprint. One expert representing the professionalized model of financing suggested that their organization found smaller, less-tested projects to be riskier:

“There were some early projects early on where it seemed like, oh that sounds so good, let's take a risk on this inexperienced, but wants-to-do-the-right-thing kind of project.

But it's not easy to make it work financially and some of those projects didn't succeed.”

Thus, these initiatives often cannot depend on larger professionalized funding sources for capital.

This typology is not meant to imply that projects cannot be partially in between models; indeed, advocates of professionalized fresh food financing point to the benefits of property development as motivation for their projects. Similarly, major redevelopment efforts that are perhaps more property-focused can involve independent operators and employ state or federal fresh food financing dollars. Nonetheless, the typology suggests that different programs seem to seek and attract different types of projects and retailers as a default.

Site Models

Though not entirely independent of financing models, site models provide some spatial context for how retailers and sites were selected and developed. One type of site model is site-driven: problematic or hard-to-develop sites have been identified, and retailers are being solicited to fill this space. The other site model is retailer-driven: developers and operators are attracted by the presence of incentives and consider a variety of site options within a qualifying area. Again, as with financing models, projects may fall somewhere in between site-oriented and retailer-oriented, though the degree to which they fall on either side of this spectrum may influence both the incentives that are offered and the flexibility of retailers to deviate from a typical operations strategy.

Site-Driven

Common types of site-driven projects include redevelopments of abandoned supermarkets or shopping plazas, former industrial areas that are very large and may need environmental remediation, or other large parcels that have remained vacant for some time. A key feature among these types of projects is a specific identification by community stakeholders that a supermarket is an essential element to redevelopment efforts. For example, the communities surrounding Pittsburgh's Heldman Plaza and Philadelphia's Progress Plaza demanded that these spaces be used for supermarket development. In the case of Pittsburgh, the neighborhood had suffered years of disinvestment following urban renewal, and was able to secure a community benefits agreement with multiple city stakeholders as part of a larger redevelopment project (Hill

District Consensus Group, undated). In Philadelphia, Sullivan Progress Plaza was originally developed in 1968 through the organizing efforts of its namesake, Rev. Leon Sullivan, a prominent Civil Rights leader, and holds the unique distinction as the country's oldest shopping center that is both owned and operated by African Americans (Dyer, 2013). Despite periods of neighborhood disinvestment and decline, the historical significance Sullivan Progress Plaza propelled the site toward supermarket development (Dyer, 2013; TRF, undated-b).

Beyond the desire for access to a supermarket and concerns over health, local communities may also associate new supermarkets with filling a particular community void. Developing these sites is can be important and symbolic, especially for individuals who live nearby. For instance, a San Diego city councilmember and Barrio Logan resident described the opening of a nearby Northgate Gonzalez Market to a local journalist:

“I am thrilled that it’s open. We’ve been waiting a very long time. These lots when I was a child walking from right down the street to Perkins Elementary, they were empty lots. Both Estrella del Mercado and Northdage were empty lots for a long, long time. I had friends who actually lived onsite and their houses were demolished. That was about 20 years ago. We have been waiting a long time” (Beltrán, 2012).

This site identification and advocacy also extends to the lack of local employment. In an interview with a local newspaper, the director of a campaign for a new store in Springfield, Massachusetts, articulated how her community’s standards for a supermarket were not unqualified: “Are you employing a cross section of the community? [...] We are not just blindly asking for a supermarket” (Kinney, 2014). This model of community expectation around potential employment opportunities matches earlier observations by experts in the pilot study.

Other site-driven models include efforts by developers to create major shopping plazas or retail centers, sometimes in collaboration with a local redevelopment authority. Supermarkets are widely regarded as important retail “anchors,” and serve as keystone businesses in these large, complex arrangements. Smaller tenants may be attracted by the promise of an adjacent large supermarket, much as city officials may consider relaxing zoning or development restrictions to allow the supermarket project to go forward. These large projects may also help city officials deal with difficult sites, such as former industrial sites, where project layout and potential environmental remediation may pose significant issues. For instance, Unified Government officials in Kansas City allowed tax increment financing to be used for the redevelopment of a designated Superfund site into a Walmart Neighborhood Market (Campbell, 2014).

Retailer-Driven

In some instances, supermarket chains will seek to strengthen their business presence in a city or region by expanding into new areas, or solidifying their dominance in existing ones. Though national chain operators do not commonly participate in the traditional fresh food financing model (though notable exceptions exist), the regulatory and tax incentives model can offer attractive incentives that motivate retailers to pursue sites. Alternatively, some retailers are already focused on lower-income shoppers as a market segment, and are thus open-minded to the idea of establishing new stores in marginal neighborhoods.

For example, Save-a-Lot, a discount supermarket chain, opened six new stores in underserved areas of Chicago following Mayor Rahm Emmanuel’s request to food retailers that they open new stores in food deserts; these store openings were later heralded by Emmanuel as a victory for his

administration, and a display of goodwill by the chain retailer. At the grand opening of one Save-a-Lot in November 2011, Emmanuel remarked:

“It is unacceptable that a half-million Chicagoans do not have access to healthy, fresh foods for their family and I am committed to the elimination of these food deserts in our city. [...] I would like to thank Save-A-Lot [sic] for ensuring that residents in Lawndale have access to the foods they need to make healthy choices for themselves and their families” (City of Chicago Mayor’s Press Office, 2011).

Similarly, New York City’s FRESH program motivated regional supermarkets such as Food Bazaar and Western Beef to expand or solidify their presence in parts of Brooklyn, Bronx, and Queens by offering retailers and developers tax abatements and zoning incentives.

Community Initiative

While site-driven projects grow out of strong place-based demand for a food retailer, and retailer-driven projects develop through an operator’s interest in entering or expanding in a specific area, community initiative projects emerge in the absence of these factors. These types of projects are created as local interest groups identify the need to increase healthy food access without necessarily specifying a particular site or retailer to achieve this goal.

Initiatives that seek to improve food access through supermarket development must identify viable market areas that might also qualify for available development incentives. Though they are sometimes favored by policymakers, entirely quantitative methods of determining intervention zones, such as USDA food deserts or TRF limited supermarket access areas, are most helpful as guiding tools, and must be “ground-truthed,” or supplemented with other data sources (Smith, 2012; TRF, 2010; TRF & Opportunity Finance Network, 2013). Baseline standards for intervention, including low-to-moderate income areas, are needed, but according to one expert, caveats exist:

“When we’ve looked at our methodology... it does kind of almost guarantee that you’re going to have a primarily residential component going on [...] You’re not going to tear down a half block of rowhouses to build a new store just because the government says you have to build a store in here. I mean that’s crazy, right?”

Thus, rigid boundaries or location rules do not reflect complex realities and on-the-ground situations: “You can - should - have criteria [...] but you should have some flexibility.”

Community initiative projects must also find an able retailer to operate in challenging economic circumstances. Therefore, this model carefully screens for projects that are both financially feasible and have strong and experienced management. As described by one official: “[Y]ou know it’s money; at the end of the day, loans you have to pay back, a grant you want to make sure is going into a sustainable business.” Performing “due diligence,” such as reviewing and reassessing financial projections, visiting the site, interviewing key community stakeholders, provides the funding organization with additional evidence whether or not the project is likely to succeed over the long run. Additionally, this model looks for skilled store management for valuable experience and perspectives on potential opportunities and pitfalls. One expert reflected on an early, less successful project: “There were some early projects early on where it seemed like, oh that sounds so good, let’s take a risk on this inexperienced, but wants to do the right thing kind of project. But it’s not easy to make it work financially and some of those projects didn’t succeed.”

Retailer Models

As one participant concisely stated: “Different formats, different markets.” This includes the funding package (based on need and availability of grants, loans, tax credits), product assortment (based on community demand), and store configuration (based on site suitability and existing retailers). Interrelationships between features also play a role; for instance, limited federal funding may limit the size of the retailer, or encourage stakeholders to consider upgrading existing neighborhood stores. One participant emphasized the role of both the funding and space constraints: “Everybody wants the big 40,000 square foot store, sure, but that’s impossible. That’s not going to happen.”

Retailers were placed into four broad categories based on ownership: large national chains (n=41), independent and regional operators (n=70), cooperatives (n=9), and nonprofits (n=4). Large chains have a nationally-recognizable presence, and include retailers such as Aldi, Save-a-Lot, and Whole Foods. Independent and regional operators typically have several stores in a specific metropolitan region, and include stores such as Brown’s ShopRite, The Fresh Grocer, Northgate Gonzalez Markets, and Food Bazaar. Retailers that operate under an employee or member-ownership model are identified as cooperatives. Finally, stores who do not seek to maximize profits and are driven by a social mission fall under the nonprofit model of retailers (Internal Revenue Service, 2008). Store size, though not used in this categorization, can contextualize the typology; generally speaking, full-service suburban supermarkets are between 40,000 and 60,000 square feet in size and offer multiple product departments (i.e. meat and deli counter), while limited-assortment urban format stores range from 10,000 to 20,000 square feet and offer fewer, if any, additional services (Newberg, 2011).

Many experts in the fresh food financing industry cite independents as critical stakeholders in many negotiations to develop new stores, especially when compared to national operators (TRF, 2011). Several factors contribute to this: independents may be more entrepreneurial or willing to take risks, can more easily adjust their model to meet community needs, and need financing assistance. Conversely, corporate chains often do not participate because they are more risk-averse, have predefined store models and target markets/locations, and self-finance projects. Though some corporate chains are beginning to address food access issues, they tend to “take a little bit more time to get there.” Ultimately this is reflected in the number of projects that have been completed or planned using independent and regional operators, though large chains also appear to play an important role in certain situations. Much less prevalent are cooperatives and nonprofits; nonetheless, these models of retailers have been able to secure federal HFFI financing through CDFIs (Fare & Square nonprofit supermarket) and HHS CED grants (Wirth Cooperative Grocery).

Health Models

Though health outcomes, such as rates of obesity, diabetes, or heart disease, are explicitly invoked by fresh food financing programs, stakeholders are careful to separate advocacy from implementation. As they enter into a difficult business environment, supermarket operators may want to avoid additional requirements of health outcomes or programming. As expressed by one expert: “Having too much prescription can really break projects.” Similarly, food access advocates, including stakeholders involved with the Pennsylvania Fresh Food Financing Initiative and the California FreshWorks Fund, are wary that potentially-interested retailers may balk at enhanced expectations. Instead, health expectations are often framed as supplemental and post-development aspirations for projects, which are considered to be critical infrastructure. In the

words of another expert: “[I]t’s about getting the infrastructure in place and then [...] making it easier for them to do the things you want to do. Whether it’s promoting in-store marketing of healthier foods, or grocery tours or local foods, or all of the above.” Indeed, many projects are not held to health expectations at the outset.

Nonetheless, some supermarkets include explicit efforts to improve health, including retail dietitians, cooking classes, wellness programs, and favorable pricing, placement, and promotions of healthy items. Increasingly, these efforts involve multiple partners from different sectors, as summarized by one expert in the professionalized fresh food financing arena: “I mean, this is where it takes everybody, right? A village?” Based on this assessment of the fresh food financing landscape, I suggest that we can interpret health-interested supermarkets in several ways: retailer mission, business model, grant supported, partner supported, or industry trend.

Retailer mission

In this scenario, the owner or operator has a personal mission, philosophy, or business model that depends on some appreciation of health outcomes. Retailers may view health and wellness as part of their brand, or they may incorporate health-promoting practices without the knowledge of customers. Mission-based models are demonstrated by Northgate Gonzalez Markets (San Diego and Los Angeles, California), where store wellness programs, including healthy cooking classes and marketing, have garnered significant attention, and by The Fresh Grocer (Philadelphia, Pennsylvania), where store officials have allowed researchers to test promotion and placement strategies for healthier items.

In an interview with *Salud America!*, a senior vice president of Northgate Gonzalez Market captured this mission-based sentiment: “Our communities are hit with obesity and diabetes. [...] Since the beginning we thought, ‘how can we help other than having our produce?’” (Community Commons, 2014). An official affiliated with the People’s Grocery in Oakland California expressed a similar attitude to a reporter in 2013 (though the store is yet to be developed): “Obviously we’ll be measuring financial performance in terms of both traditional business metrics and local economic impacts... We’ll also measure health impacts, dietary change and residents becoming more socially connected and increasing their community networks” (Henry, 2013). In the words of these individuals, the store’s commitment to health is inherent in its identity.

Retailer mission can also be motivated by significant events or trends. For example, a planned visit from Michelle Obama prompted The Fresh Grocer to consider and develop additional efforts at health promotion, which included the development of a “Healthy Kids Corner” display. This section continues to be stocked with healthier-option lunch packs and snacks. Further marking the significance of the visit, a photo of the First Lady hangs in the store’s entryway, and customers can still enjoy a “Michelle Obama” fruit smoothie from the store’s cafe.

Business model

Some retailers orient their business practice to include health and wellness in ways that would otherwise require some form of subsidy or outside support. One approach is exemplified by Fare & Square (Chester, Pennsylvania), which operates under a mission-driven, nonprofit model that allows a greater focus on health and away from traditional merchandising. While the store offers an assortment of healthy and unhealthy items, the parent organization, Philabundance, has made efforts to promote healthier options and provide a robust produce section.

In a more traditional business sense, a store's produce and deli sections are widely considered to be the most important departments. These sections can "make or break a store," both in terms of profitability and consumer loyalty: "[O]perators recognize there's tremendous value in their perishable section. That's where their money is made. If someone walks in and you have terrible fruit, people [...] just walk back out." Thus, store managers must put great emphasis on one of their healthiest sections as a matter of good business practice.

An emerging business strategy of providing in-store health care has been led by Brown's ShopRite Stores. Opening in 2013, their Bakers Centre location (Philadelphia, Pennsylvania) made health an explicit part of the business model by leasing space to a Federally Qualified Health Clinic (FQHC), providing an in-store pharmacy, and creating healthier prepared food options. Notably, in an industry where square footage equates to sales, this type health incorporation requires that the operator commit to these physical elements early on in the planning process.

Grant supported

In this scenario, a retailer receives significant financial support to implement in-store health programs, beyond what is required to develop the facility. For example, most Save-a-Lot developments do not include health-focused programming, though the Argentine Save-a-Lot (Kansas City, Kansas), has partnered with local community organizations for cooking demonstrations and other health programming, underwritten by a HFFI-CED grant and the Robert Wood Johnson Foundation (Argentine Neighborhood Development Association, undated). Though not uncommon in the supermarket industry, Brown's ShopRite has received Supplemental Nutrition Assistance Program Education (SNAP-Ed) grants to support their in-store efforts at health promotion (Society for Nutrition Education and Behavior, 2013).

Partner supported

Some retailers incorporate health programming or education, such as cooking classes or nutritional counseling, through partnerships with local organizations or institutions. This model includes examples from all types of retailers (nonprofits, independents, and nationals). For instance, Numero Uno Markets, an independent chain in Los Angeles, has partnered with Cedars-Sinai Medical Center to implement "Health and Fitness Days," according to the Center's reporting of planned community benefits. On the national front, several Save-a-Lot retailers, including stores in St. Louis, Chicago, and Kansas City, have partnered with area nonprofits or social services organizations for health promotion efforts.

Industry trend

Over the past ten years, the grocery industry has responded to growing consumer awareness of healthy eating. This is evident in the proliferation of health-oriented marketing and programming in stores, such as the hiring of store dietitians and nutritionists, and in the media disseminated by industry groups (both the Food Marketing Institute and Supermarket News have organized major convenings or conferences on the topic) (FMI, 2008; Natural Products Expo West, 2015). Table 3 illustrates the remarkable prevalence of different health and wellness-related store tours offered by different retailers, according to survey responses by industry officials. Industry trade journals now feature and celebrate stores who are particularly progressive in promoting consumer health, and expert interviewees cited this as a fairly recent phenomenon. The opening paragraph from a recent article in Supermarket News, "Want a big slice of a trillion-dollar pie?," illustrates both the novelty and direction of this trend: "America is in a health crisis. Everybody and their

grandmother is looking for a health and wellness solution. You have the opportunity to be the solution and clean up on sales.” (Drake, 2015).

Table 3. Prevalence of Health and Wellness Initiatives in the Supermarket Industry

Type of Tour Available	Percent of Stores ²
Diabetes	90
Healthy Eating	90
Nutrition Labeling	75
Weight Management	65
Children	60
Hypertension	55
Shoppers with Diet Restrictions/Food Allergies	55
Cholesterol	50
Adults	50
School Programs	45

This trend can be viewed several ways. Grocers are constantly trying to differentiate themselves from their competitors, and health marketing is a newly-popular avenue. As one participant put it, industry executives are “reading the tea leaves,” anticipating the consumer of the next five to ten years to give their business a competitive edge. With 90 percent of surveyed retailers reporting the availability of diabetes and healthy eating store tours, one might question how often these services are used, or how strongly they are promoted or encouraged by retailers. This assessment suggests a greater industry interest in promoting the availability of nutrition education, and promoting products many consumers perceive as healthy (i.e. “all-natural,” “organic,” “gluten-free”), as elements of marketing rather than a more significant incorporation of health into new store plans and everyday business, as under the retailer mission and business model types.

Alternatively, as grocers (and particularly independents) are included in multi-stakeholder processes to open stores in underserved areas, they become aware of their possible role in community health. One expert reflected on her experience with retailers:

“I mean, it’s a little different now than when we first started out. Now, in grocery industry newspapers, like running stories on food deserts and obesity every like other month, so it’s a little different than when we first started and when this was really an issue

² Adapted from Food Marketing Institute. (2015). 2014 Report on Retailer Contributions to Health & Wellness. Retrieved from: http://www.fmi.org/forms/uploadFiles/2758C100000639.toc.FMI_-_H%26W_2014_-_Final_-_Feb_26_2015.pdf

that was like, you could almost see the lightbulb go off in people's heads like – whoa. They run their grocery business, they don't think of themselves necessarily as champions of the local health or essential to the local health. Although they know it intuitively, it's always really helpful to have that public health leader up there kind of sharing that data, kind of eye-opening, both on the problem but also saying, grocers you're part of the solution.”

Though it is impossible to determine the exact motivation of a retailer for launching and maintaining health and wellness initiatives, it is important to situate these efforts by new supermarkets within a larger industry that is increasingly interested in using health programs, imagery, and language to attract customers.

Bivariate Correlations

Significant correlations between project variables were observed, especially between the level of government incentive (federal, state, or local), size of the project (in square feet) and type of development (stand-alone stores, shopping plazas, mixed use developments). Somewhat intuitively, project size and number of employees was significantly related ($p=0.001$); thus, while correlations between project size and other variables will be reported here, it is reasonable to assume that on average, larger projects promise more employment opportunities.

Projects receiving any type of federal incentive were significantly more likely to also involve state and local incentives, and have a larger footprint ($p=0.05$). State-level incentives were also significantly related to larger projects ($p=0.05$), and shopping plaza style developments ($p=0.01$); local-level incentives were similarly correlated with large projects ($p=0.01$), but were also more likely to involve mixed use developments ($p=0.01$). Local incentives and site-driven site models were also significantly likely to have occurred more recently ($p=0.05$).

DISCUSSION

This landscape study offers a complicated picture of efforts to develop new stores in food deserts. It suggests that fresh food financing in America is far from a policy monolith. Though under the banner of improving food access, these projects are conceived of, planned, and executed for a diverse set of reasons and through an equally diverse set of pathways. As researchers seek to understand how new stores might affect health outcomes, and as planners and advocates seek to develop more stores in food deserts, it is important to contextualize existing projects within this diversity.

The models identified in this landscape study help explain why new stores look and feel the way they do, and help us form expectations about future projects. Additionally, some of these models pose significant questions for behavior change. For instance, does a regulatory and tax incentives-based financing model engage community residents as much as local coalitions, and, if so, does it matter for local shopping behaviors? Similarly, do site-driven site models encourage levels of community advocacy and buy-in that make area residents more likely to adopt the new store once it opens? Are smaller nonprofit retailers as attractive to food desert residents as large, and perhaps more familiar chain stores? Finally, in terms of health, if the new store alone is not a “silver bullet” for improving community health, which models can be expected to support the more “comprehensive approach” espoused by advocates?

Exploring the health question further: a critical and divergent view of health emerges within the landscape of projects. On one hand, health is seen as an expectation and necessity for store operators to thoughtfully incorporate, either through a tailored business model or pursuit of outside incentives. On the other, health is an issue to be considered only after the store is developed, providing critical neighborhood infrastructure to support health behavior change. Retailers who benefit from intervention programs may be good partners for implementing in-store health promotions, though this is most likely after a retailer has become established in the community. New opportunities may arise for in-store health partnerships as operators look to differentiate themselves from potential competitors, respond to larger industry trends, and develop stronger community relationships. Whether or not these intentions or ideas are actualized is another question altogether.

From this landscape study, it appears that the most active retail partners in the health promotion are mission-driven, can incorporate health efforts into their business model, and are willing and able to engage with community partners. Thus, the possibility for a new supermarket development to go beyond merely offering healthy options seems to rest heavily on the choice of retailer. In scenarios where retailers are being pursued as partners (i.e. site-driven and community initiative models), health promotions have been suggested as overly prescriptive, and despite broader industry trends, only a small subset of retailers are highly engaged in helping shoppers achieve dietary improvements. This raises distinct questions about reasonable expectations of health promotion as part of supermarket incentive programs; essentially, the current situation cedes this space entirely to the supermarket industry.

Intervention managers and designers realize that new food retailers are not a “silver bullet” for community health improvement. Physical access, convenience, and economic development benefits play dominant roles in crafting “win-win” projects. While this does not diminish the potential value of new stores to community health, this demonstrates some internal recognition that retailer interventions alone may fall short of changing consumer diets. Given recent studies that suggest the store alone is insufficient for health behavior change (Ebel et al, 2015; Cummins, Flint, & Matthews, 2014), it seems that this divergence of opinion will demand future attention from planners, policymakers, and advocates. In terms of this study, it motivates an attempt to understand how consumers use a new store (detailed in Chapter Five), meeting shoppers where they are in order to imagine possible health improvements for the future.

Connection to Chapter III

Each fresh food financing project has unique features that are critical to its completion; thus, a relevant question following this observation is how these differences could contribute to the success of new stores. While this landscape assessment (including the pilot study) provides some insights and examples of success and failure, a more nuanced understanding beyond business survival is warranted, especially if individually-oriented outcomes, such as health behaviors, are of interest. Chapter Three investigates this question by documenting how low and moderate income individuals adopt new stores once they are developed, using monthly ZIP-code level expenditures from the Supplemental Nutrition Assistance Program as an approximation of behavior change.

CHAPTER III: New Store Adoption by Low-Income Shoppers

INTRODUCTION

In August 2011, a highly-anticipated grocery store finally opened in the Bayview-Hunters Point neighborhood of San Francisco, California, an area with low access to full-service supermarkets, low incomes, and high rates of diet-related diseases. Following on a commitment made by then-Mayor Gavin Newsom, the new Fresh & Easy grocery store promised to change the lives of area residents. Local organizations collaborated with researchers at U.C. Berkeley and PolicyLink to study the store's effects, including changes in "community nutrition and health outcomes" (Southeast Food Access Working Group, undated). At the opening ceremony, Fresh & Easy CEO Tim Mason told assembled neighborhood residents "You don't have to get fast food. You can get real food" (Coté, 2011).

Just over two years later, Fresh & Easy closed and left Bayview as a food desert once again. Despite intensive market research and a convenience-focused strategy, the international retailer pulled out of many "underperforming" locations across several American cities in 2013 (Hirsch, 2011). This explanation did not resonate with local leaders: "Fresh and Easy may point to the low-performance of the existing Bayview store as the primary reason for why it was not included in the acquisition agreement," said area Supervisor Malia Cohen in a message to constituents, referencing the United Kingdom-based chain's recent sale of stores to a Southern California businessman. "However, this statement does not take into account that Fresh and Easy made little effort to support the day to day operations of the store."

In an interview with the *San Francisco Examiner*, Cohen cited other concerns: "I think that Fresh & Easy didn't do its due diligence in marketing and outreach to the surrounding community" (San Francisco Examiner, 2013). Examples of community mismatch included English-only marketing in neighborhoods with significant populations of Spanish and Asian-language speakers. Other observers echoed this perception of cultural negligence and extended it to socioeconomic issues. One area resident explained a key misstep to the local public radio station, *KALW*: "When they first opened they weren't taking the system, the EBT system – the food stamp system. [...] A lot of the people in these communities are using that system, and it's just hard to get groceries if you are not accepting that type of payment" (Dilling, 2014).

By Cohen's estimation, the Fresh & Easy officials did little to encourage neighborhood residents to shop at the Bayview location. "I don't think they did a very good job of trying to be successful," said Cohen to the *Examiner* in 2013. Crezia Tano, of the San Francisco Office of Economic and Workforce Development, offered a different assessment of the closure to a *KALW*: "When a community is so used to not having a grocery store, it takes time to change those shopping habits" (Dilling, 2014). Whatever the underlying cause, shoppers did not come to the Bayview Fresh & Easy. The theory of "if you build it, they will come" did not hold, even in a food desert. As it relies heavily on the latter part of this undermined theory, our causal model of supermarkets improving health grows more complicated in practice. Indeed, if you build it, they *must* come for health effects to be possible.

Beyond this multifaceted question of community fit, other examples exist of communities directly embracing or rejecting a retailer. For instance, when residents of Cincinnati's Walnut Hill neighborhood learned that their local Kroger supermarket was slated for closure, a concerted effort was made to patronize the store and bolster its sales. A local community group official

described his organization's "Buy 25 Tuesdays" initiative to a local news organization: "We have extra people in the parking lot, citizens on patrol, to help make it feel safer. They come in, spend \$25, and tell the manager who is on duty during the events what they want to see improved about the store [...]." (Kettler, 2012). Nearly two years after Kroger announced their intentions to close the Walnut Hill store, company officials reversed their decision. Though Kroger extended its lease for three years, company leaders also expressed a concern about profitability to city officials: "We value our Walnut Hills customers and appreciate their patronage and support. However, we know that we cannot sustain a store that loses money" (Coolidge, 2013).

Alternatively, history provides numerous examples of grassroots efforts to boycott stores. The Civil Rights era gave rise to Operation Breadbasket, which used the practice of selective patronage to pressure many retailers in black neighborhoods, including supermarkets, to increase their hiring of black workers, diversify the ranks of management and corporate-level employees, and keep their money in black-owned banks (Beltramini, 2013). By steering retail dollars toward or away from specific retailers, these social movements were highly influential in the economic success or failure of these businesses.

This chapter elaborates on the preceding landscape of incentives with a geospatial analysis of all known supermarket projects in California, New Jersey, and Pennsylvania, home to over 30 percent of food desert developments, to consider how low and moderate-income individuals adopt (or do not adopt) new stores. This analysis uses geographic information systems (GIS) to integrate data obtained from the USDA Food and Nutrition Service, including monthly ZIP code-level SNAP redemption data and annual point-level locations of retailers who are authorized to accept SNAP, with project characteristics from the national scan detailed in Chapter Two. I describe how rates of new store adoption by SNAP participants vary widely between projects, answering a key component of the second research question - how do different types of retailers drive different types of shopper behavior - and informing our expectations of possible change. Of all the behaviors a new supermarket may change, the most important is the choice of store.

BACKGROUND

In a 2013 article in the *Journal of Public Health Management and Practice*, Sheila Fleischhacker, Rebecca Flournoy and Latetia Moore described "meaningful, measurable, and manageable" ways to evaluate the impact of new supermarket development in food deserts. One recommended approach is through physical proximity measures; for instance, an evaluation might report the number of low-income neighborhood residents within a one-mile radius of the new retailer. While these metrics are easy to measure and understand, they leave many questions about how stores are actually used by area residents.

Another approach suggested by the authors relies on sales data to consider the economic strength of the new retailer and consumption patterns of shoppers. While retailers may be generally aware of how many low-income residents shop in their store based on loyalty card data or SNAP benefit redemption, these figures are very rarely shared as part of larger evaluations. For this project, sales information was requested directly from two Philadelphia-area retailers and from others chains across the nation through contacts at the Wharton School's Baker Center for Retailing; all requests to share data, even aggregated and anonymized records, were declined. Though retailer data could potentially illustrate a wide variety of behavior changes, including the adoption of new stores and shifting patterns of purchasing, they are not widely accessible, even to fresh food financing affiliates who underwrite new store development. Other possible retailer-based datasets

include the for-fee Nielsen Trade Dimensions, which can reveal a store’s size and monthly sales; however, these data are not inexpensive and cannot help focus an analysis on characteristics such as the average income of shoppers.

In terms of health, this article emphasizes the use of both short and long-term measures to describe possible changes in health. For instance, comprehensive impact evaluations might measure changes in food purchasing (short term), diet (intermediate), and obesity (long-term). To properly implement this type of assessment, researchers must assign a control group of individuals who live in socio-demographically similar neighborhoods, but without a grocery store. Significant financial resources are required to execute this type of health study: similar NIH-funded evaluations led by Tamara Dubowitz and Allison Karpyn have total budgets of \$2.7 and \$1.5 million, respectively (NIH, 2015a, 2015b). Beyond this financial requirement, researchers must be able to collect sufficient baseline data prior to a store’s opening, further complicating efforts to plan, fund, and execute this type of research design.

While these types of outcomes recommended by Fleischhacker, Flournoy, and Moore (2013) (proximity, economic viability, and health) may be important, they neglect a more primary question: Do low-income shoppers change their shopping behavior by adopting the new, more proximate retailer? If food desert residents do not shift their shopping patterns, then other, more downstream indicators fail to appropriately measure impact on low-income populations.

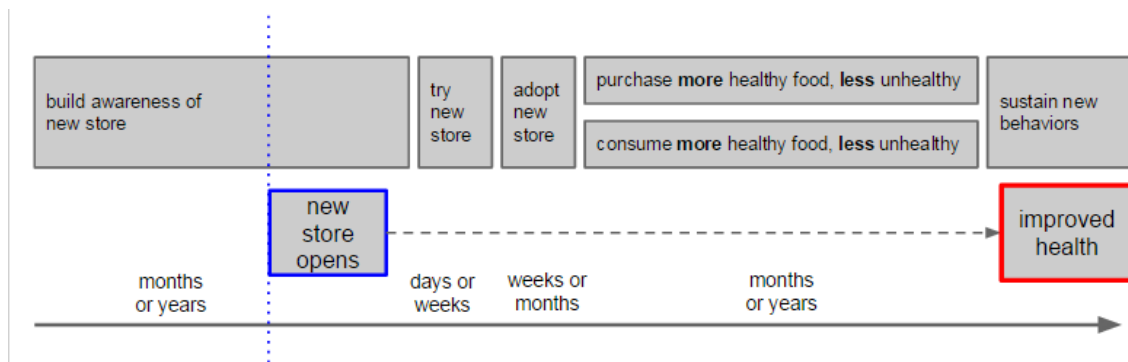


Figure 7. Theory of Change for New Supermarket Improving Health

Existing health evaluations focus on fairly downstream behavior changes, including consumption of fruits and vegetables and obesity status. However, this causal model (Figure 7) suggests that for new supermarkets to improve the health of individuals (change in food choice), they must first be utilized for food shopping (change in store choice). Low-income residents usually choose supermarkets as their primary stores, even when they must travel outside of their neighborhood to access them, yet we also understand this choice of store to be complex and multidimensional, including factors such as item price, shopper race and sex, transit mode, and activity space (Cannuscio, et al., 2014; Hillier, et al., 2015). Thus, there are critical reasons for planners, policymakers, and researchers to avoid assumptions about store adoption and instead explore if and how this change in shopping behavior occurs.

When to Measure Change?

In addition to grappling with questions of selecting appropriate and available data, evaluators must determine when sufficient time has elapsed to document change. Of evaluations discussed in Chapter I with a natural experiment design, six months was often used as the “after” benchmark. Yet, as the earlier causal model diagram suggest, multiple time horizons are implicated in the larger processes of store development, adoption, and dietary change. The process of learning about, exploring, testing, and adopting the new store could take weeks, months, or years, given different scenarios. Furthermore, where individuals fall along this line for change as they enter and exit the study could be significant in terms of their overall store exposure.

The Utility of SNAP in Assessing New Supermarket Development

Low-Income Focus of New Store Development

Perhaps not explicitly stated in all food access literature, but interest in the possible health effects of food deserts is strongly tied to concentrated residential poverty. This connection works in several ways. First, poverty helps explain - though imperfectly - the existence and persistence of food deserts, and how retailers, developers, and financiers perceive the absence or presence of business opportunity for supermarkets. Second, poverty exacerbates issues of access and opportunity, including access to transit, especially a personal vehicle, and an increased need for lower prices; ultimately, poverty strongly influences store selection and may lead to burdensome, complicated, or time-consuming shopping trips. Existing qualitative literature suggests some reasons for low-income households to utilize larger food retailers, despite the added transportation costs associated with accessing them. One reason may be, on average, lower per-unit costs (i.e. price savings). Another may be the ability to complete larger shopping trips at once, versus making smaller trips to multiple retailers (i.e. time savings, convenience). Yet another benefit could be product or store quality, including freshness, cultural appropriateness, or customer service (i.e. value). Some of these themes are further described and validated through a qualitative analysis of shopper interviews in Chapter IV.

Finally, many of the federal community development funding streams, including New Markets Tax Credits, and programming expect or require that low-income communities benefit from their investments. Indeed, other intermediary measures, such as The Reinvestment Fund’s limited supermarket access designation, also consider whether or not a potential area for investment is low-income, or if it is adjacent to and could reasonably serve a low-income community. Therefore, while many areas do not have easily walkable or driveable access to a full-service supermarket, lower-income communities have merited particular attention for public-private partnership and intervention.

The Reinvestment Fund’s methodology for defining geographic areas of need, or “Limited Supermarket Access” areas (LSAs) is significant for three reasons (TRF, 2010). First, it incorporates demographic factors that are most commonly discussed in food desert discourses, most notably, low-income populations with limited access to full-service grocery stores. Second, it identifies areas where food dollars are available to be spend on groceries, but must be spent elsewhere because no appropriate food retailer is available, also known as retail “leakage;” we may assume that a new retailer could capture these food dollars, effectively stopping the “leak.” The LSA construct is grounded in a retail gravity model (Huff model), which quantifies the

possible attractiveness of a new retailer, given a set of site and store characteristics, including neighborhood density and income, and retailer size (TRF Policy Solutions, 2012).

Finally, the LSA methodology is supported by the CDFI Fund and employed as a standard for identifying and underwriting fresh food financing projects, especially those that use the professionalized model of project financing, and TRF has made this spatial information freely available through their web-based geographic information system, PolicyMap (TRF & Opportunity Finance Network, 2013; TRF, undated). Thus, stakeholders and citizens around the country can easily determine if neighborhoods qualify as LSAs. It is worth noting that while developers and supermarket operators have their own proprietary market analyses for building new stores, the LSA designation may significantly affect considerations if projects are eligible for financial assistance.

SNAP's Relationship to Retailers and Low-Income Households

SNAP is the largest component of the federal government's food assistance efforts for low-income individuals and households (USDA, 2014). The program is partially administered by the USDA Food and Nutrition Service (FNS) as well as state-level welfare or social services offices. Formerly designed as a voucher program (hence the program's previous name, "Food Stamps"), benefits are now redeemed through an electronic benefit transfer (EBT) system, without limitations on specific items; some restrictions, such as prohibitions on purchases of prepared foods, alcohol, or tobacco, are also built into the EBT system (USDA FNS, 2014a). A monthly (or bimonthly in some states) allocation of SNAP benefits are disbursed into participant EBT accounts, and can be redeemed using a state-issued debit card at any eligible food retailer; for instance, Pennsylvania issues benefits over the first ten business days of every month, California over the first ten calendar days, and New Jersey over the first five calendar days, all depending on a participant's identification number (USDA FNS, 2014b, 2014c, 2014d).

SNAP-eligible items are not restricted on the basis of nutritional quality, though this possible revision has been previously discussed. Item restrictions for SNAP purchases are widely regarded to be prohibitively complex and are neither favored by the USDA Food and Nutrition Service, nor stakeholders in the food industry (USDA FNS, 2007; FMI, 2012). This stands in contrast to a much smaller USDA food assistance program, the special supplement for Women, Infants, and Children, commonly known as WIC. This program, administered as item-specific vouchers versus a monthly food budget for unspecified items, has been shown to achieve improve health outcomes among participants and also affect retailer stocking behavior (Owen & Owen, 1997; Hillier et al., 2012).

As of March 2015, over 256,000 retailers nationwide are eligible to accept SNAP benefits as payment (USDA FNS, 2015). Requirements are generally considered to be low, with many different types of food retailers, including corner and convenience stores, able to meet eligibility criteria. Furthermore, retailers in low-income neighborhoods recognize the importance of these benefits to their potential customers, and many are eager to accept SNAP for payment. Approved retailers must continuously stock certain food categories (such as meats or fish, bread or cereal, fruit or vegetables, and dairy), or have greater than half of their total retail sales from SNAP-eligible staple foods (USDA FNS, 2013a). In 2014, more stringent stocking requirements, called "retailer enhancement," were reviewed by the Food and Nutrition Service, primarily targeting small stores that offer few healthful food items and are considered to be the most likely sources for program fraud (USDA FNS, 2013b).

USDA's Economic Research Service analysis of SNAP benefit transactions reveal several trends worth noting (Castner & Henke, 2011). First, the majority of transactions (64 percent) occur at supermarkets and supercenters. Second, the average participant spends 84 percent of their monthly allocation (in dollars) at supermarkets and supercenters. Given what is known about SNAP participant preferences for using benefits at supermarkets and supercenters, it is reasonable to assume that in areas with high rates of SNAP participation, stores have high rates of SNAP redemption. It may also be reasonable to assume that if no store is available, residents will travel outside their neighborhood to use their SNAP benefits at more preferable stores. Furthermore, one might expect that when a new retailer opens in a high-SNAP, low-access area, this new retailer will cause residents to shift their SNAP spending from other, more distant retailers. These are among the hypotheses which will be tested in this section of the dissertation.

SNAP as the Primary Currency of Low-Income Food Shopping

Beyond participating in the program as eligible retailers, the supermarket industry is the primary recipient of SNAP benefits and thus a major stakeholder in low-income food shopping. Retailers are highly-aware of SNAP participation rates, spending cycles, and participant needs and preferences, both before and after entering a new location. Indeed, the industry's major trade organization, the Food Marketing Institute, is actively engaged in lobbying for the program and reviewing potential revisions or amendments. In 2012, FMI filed a public report stating their position on SNAP:

“FMI supports SNAP as an effective, efficient way of reducing hunger and improving access to food for our nation's poor. [...] We oppose significant program restructuring, such as breaking SNAP into 50+ variable state programs or government intervention, such as limiting food choice, both of which will increase the costs of administering the program” (FMI, 2012).

In response to a March 2015 proposal passed by the US House of Representatives to devolve more program control to the states, FMI's Director of Government Relations issued an open letter in opposition, emphasizing the supermarket industry's role in creating efficiencies for the program and improving participants' ability to “stretch their benefits” (Walker, 2015).

Interviews with industry experts and retailers (detailed in Chapter II) also reveal how store operators and managers account for lower sales as SNAP allocations become exhausted through the month. These cycles are formally accounted for in the store's business and operations planning. For example, as I prepared to schedule in-store interviews with customers at a North Philadelphia supermarket (detailed in Chapter IV), the store manager advised me to avoid the last week of the month because business would be very slow. Alternatively, some customers told me they avoided shopping during the first week of the month, when SNAP benefits were distributed, because stores were too busy. Thus, retailer success in a food desert depends, in part, on their ability to attract SNAP shoppers and adapt to the program's timing and requirements.

There is widespread agreement that current benefit amounts fall short of household needs, but still represent a vital and majority share of the monthly food budget. By the second week of a month's allocation becoming available, the average SNAP participant has spent over half of their benefit amount (Castner & Henke, 2011). These circumstances force many participants to supplement food budgets with cash or other sources, or cut back on food purchasing altogether. Though not specifically about food stamps, the title of sociologist Kathryn Edin's 1993 study of welfare recipients in Chicago illustrates this situation well: “There's a lot of month left at the end

of the money.” Researchers have documented a variety of compensatory strategies in the face of dwindling food budgets, including eating canned and packaged foods, limiting the variety of foods eaten, or relying on emergency food outlets (Wilde & Andrews, 2000; Kempson, et al., 2002).

Researchers have also demonstrated a link between the monthly food budget shortages and hospital admissions for hypoglycemia, suggesting that low-income diabetics may struggle to manage their blood sugar levels through diet as benefits run out (Segliman, et al., 2014). From a business perspective, many food retailers located in low-income neighborhoods suggest that monthly sales are strongly tied to SNAP disbursement schedules (indeed, retailers interviewed for this study regularly reduced staff hours towards the end of the month), perhaps revealing that, on average, participants reduce the amount of food purchased after benefits are exhausted.

Despite these shortcomings, SNAP is also understood to protect participants against severe poverty and food insecurity, and was a pivotal component of the American Recovery and Reinvestment Act (ARRA) (Nord & Prell, 2011; Nord & Golla, 2010; Tiehen, Jolliffe, & Smeeding, 2013; PBS Newshour, 2013). Under ARRA, households received a SNAP benefit supplement between April 2009 and November 2013, both as a recessionary expansion of a key safety net program, and a direct economic stimulus (Dean & Rosenbaum, 2013). This supplement was allowed to sunset by Congress in November 2013, raising concerns among many hunger advocates that this narrowing of food stamp budgets would lead to greater food insecurity (PBS Newshour, 2013).

Shopping Needs and Preferences among SNAP Participants

Previous research on SNAP shopping patterns and preferences helps connect a general concern about food access to the specific needs of participants, raising questions about overall program efficacy. In 1999, the USDA Food and Nutrition Service’s Office of Analysis and Evaluation released a report on the state of SNAP participants’ physical access to food retailers (Ohls, et al., 1999). This study investigated many of the same food accessibility and shopping behavior questions that have persisted in food access and health research through the subsequent 15 years. A brief excerpt from the report’s executive summary illustrates this similarity:

“1) At what kinds of stores do low-income households shop? 2) What distances do low-income households travel to reach those stores? 3) What transportation methods do they use to reach their food stores? 4) Do low-income households engage in shopping behaviors that can allow them to get the most out of the money and food stamp benefits they spend on food? and 5) In general, how satisfied are low-income Americans with their shopping opportunities?” (Ohls, et al., 1999, p. xiii)

To answer these questions, the investigators employed a mixed-methods research design, involving interviews, surveys, and nutritional assessments of purchases, which allowed for a more nuanced interpretation of existing program evaluations (Cole 1997).

Many of the study’s findings about SNAP participant shopping behaviors are consistent with subsequent research on low-income consumers. First, 90 percent of households surveyed reported supermarkets as their primary type of food retailer, and among participants who shop outside of their neighborhood, 51 percent cited a lack of stores as a cause. Over 80 percent of low-income households described their primary food store as “good” or “excellent,” and cited things such as store cleanliness, meat quality, and employee interactions as positive features. Thus, participants preferred supermarkets, and were willing to travel to ones that met their standards.

Notably, the study also elucidated a desire for a specific type of neighborhood shopping option: “When asked about the types of improvements they would like to see in the shopping situations of their neighborhoods, respondents commonly mentioned the introduction of more supermarket shopping opportunities” (Ohls, et al., 1999, p. xiv). Though low-income shoppers may leave their neighborhoods for better stores, and desire better local retailers (specifically, supermarkets), would they use new stores if they were developed in their neighborhood? From the same study, we are cautioned to appreciate the degree to which low-income shoppers bypass neighborhood stores that are not perceived to be appropriate.

Much of the discourse surrounding supermarket interventions in food deserts assumes that local low-income shoppers will adopt new stores. This study of SNAP participants, though over 15 years old, offers some sense how these assumptions may be disconnected from the actual shopping patterns of low-income individuals. Furthermore, one way of asking “who benefits from food desert developments” is “who shops there?” How long does it take? Is this behavior sustained over time? If any health benefits are to occur through an improved food environment, it is most likely to happen through prolonged exposure by regular food shopping.

Using SNAP Redemption Data as a Proxy for Shopping Behavior

One recent study by Jerry Shannon (2014) highlighted the utility of SNAP redemption data in estimating store choice and shopping behavior of program participants, which was found to be similar to other qualitative and survey-based studies: participants will travel to supermarkets for food, even when they are not close to home. Using ZIP-level redemption data from the 2010 fiscal year (October 2009 to September 2010), Shannon employs a spatial method called dasymetric mapping to effectively allocate redemptions to a much finer scale of analysis (in this case, a 30-meter resolution raster grid) based on where different types of food retailers are located. Though freely available, these ZIP-level data must be obtained by request from the USDA Food and Nutrition Service, which may partially explain their infrequent use by researchers outside the federal government.³

Critical to Shannon’s exploration and my present analysis, SNAP redemption data allow us to consider how people actually shop, offering a more behavior-based picture of how individuals navigate available stores. Furthermore, food deserts are by definition areas with high rates of poverty (and, typically SNAP participation); if we hope new supermarket development will improve the lives of food desert residents, one basic metric is whether or not they use new stores. As low-income shopping data, SNAP redemptions provide a proxy measure for this usage.

Others have used program redemption data to illustrate aggregate change over time. In response to myriad studies and policies that focus on physical access to supermarkets, Andrews, Bhatta, and Ver Ploeg (2013) use an econometric model to consider the effect of increasing SNAP benefit amounts. They find that when benefit amounts are raised, counties with supermarkets and supercenters see improvements in the amount of SNAP redemption, although counties with a greater proportion of residents living in food deserts receive less of this increment.

³ I would like to gratefully acknowledge Dr. Shannon’s assistance in understanding the procedure for requesting and obtaining these data from USDA.

Researchers with The Reinvestment Fund have used these data to describe changes in the retail food environment over time as an estimate of “food retail leakage;” essentially, food dollars that residents have available to spend, but choose to take elsewhere to preferred retailers (TRF & Opportunity Finance Network, 2013). One could imagine extending this type of spatial understanding of leakage to SNAP dollars as a specific measure of low-income shopping. To my knowledge, this study represents the first use of the longitudinal SNAP redemption dataset to consider the effect of fresh food financing stores on low-income shopping patterns and the surrounding retail food environment.

This chapter examines if, how, and when new supermarkets in food deserts are adopted by low-income shoppers. Three research questions guide this inquiry:

1. Do new stores capture food dollars from low-income households that were formerly spent elsewhere?
2. Given that food expenditures are relatively constant, what effect do new stores have on existing stores in adjacent areas?
3. Are project characteristics related to the relative rate and strength of new store adoption?

These questions inform my overall interrogation of how different types of financing programs and packages may influence store characteristics such as size and retailer type (Chapter II), how store outcomes may influence low-income shoppers’ interactions with the local food environment (Chapter III), and how shoppers experience the new stores (Chapter IV).

METHODS

To focus the study, three states are examined: California (n=11), Pennsylvania (n=9), and New Jersey (n=2). These states are significant in terms of number of food desert projects (33% of all completed supermarkets), and their highly-replicated models of financing new store development.

Description of Data Sources

Two main SNAP datasets are employed: 1) addresses of all approved SNAP retailers, and 2) ZIP-level amounts of SNAP redemption. These data exist as annual records from 2000 to the present. In the absence of proprietary retailer data, these records offer the best possible estimate of local behavior change caused by new store development across multiple locations. From the comprehensive review of projects described in Chapter II, a database of food desert developments was assembled and serves as the basis for this analysis.

SNAP-Eligible Food Retailers

Since SNAP can only be redeemed at eligible food retailers, these represent the universe of stores for this analysis. This assumes that despite changes in the food environment (i.e. with stores opening and closing, entering and exiting the program over time), participants are only able to shift their SNAP purchasing patterns from one eligible retailer to another (i.e. ineligible food retailers are not options).

A database of SNAP-eligible food retailers was obtained by request from the USDA Food and Nutrition Service (FNS) in 2014. This database provides a monthly list of names and addresses for eligible retailers nationwide between January 2000 and December 2013, the most recent time period available at the time of this analysis.

SNAP Redemption Amounts

A separate database of SNAP redemption amounts was also obtained by request from USDA FNS. These data provide a ZIP code-level account of the monthly total amount SNAP benefits redeemed at eligible retailers for every month between January 2000 and December 2013. Per USDA policy, ZIP codes with fewer than four eligible retailers are redacted to protect proprietary retailer information (Email communication with USDA FNS, 2014). For most urban areas, however, this threshold does not eliminate a large number of ZIP codes from the database. As a way to document these missing data, counts were recorded for all sampled time periods and ZIPs, and are reported in the Results section.

Specific months were selected for each project depending on its opening data (collected as part of the landscape study described in Chapter 2) to observe changes in SNAP redemption amounts: two months prior to project opening, the opening month, and two, five, and ten months following opening. For the pre-opening baseline, two months prior was selected to avoid any possible contamination from early or “soft” store openings which may not have been documented in the landscape study. The opening month was documented, but is important to interpret with caution; stores opened on a wide range of dates, ranging from the first to the last days of months. Thus, redemption data from two months following store opening was used to provide a better assessment of post-opening change. Providing a control for any possible novelty effect of the new store, five months after opening was included. Ten months following opening was also included as an assessment of sustained store adoption and relative importance with regard to other stores in the area. The two month before benchmark was revised to three months prior for one project (PA05) due to an anomalous spike in redemption data from Pennsylvania and New Jersey in October 2011.

Limited Supermarket Access (LSA) Areas

All ZIPs including or surrounding projects were viewed in PolicyMap to see if LSAs were present within their boundaries. This was an analogous process to a select layer by location procedure in ArcGIS, following the rule that if any part of an LSA fell inside a ZIP, that ZIP was classified as having an LSA. This process did not record LSA size or possible spread between multiple ZIPs.

Project Location and Characteristics

The addresses, size, opening date, and other project characteristics collected through the landscape study were used for the subset of projects within California, New Jersey, and Pennsylvania.

Spatial Analysis

All SNAP data described above were imported into ArcGIS 10.2.2 (ESRI, 2014) and mapped by ZIP code. Projects were geocoded in Google Earth Pro, saved as a KML file, and imported into ArcMap 10.2 using the KML to Shapefile tool. This strategy was employed to utilize Google’s geocoding capabilities, instead of an Address Locator and Geocode by Address procedure in ArcMap. ZIPs containing projects were identified with a spatial join procedure. Using Model Builder for ArcGIS 10.2, ZIP codes were identified as “nearest neighbors,” meaning that they shared a border with the ZIP code where a new store opened, and “second nearest neighbors,”

meaning that they shared a border with a nearest neighbor ZIP. The model selected these regions and exported their attribute tables (containing the SNAP information previously detailed) to a separate Excel file. The purpose of selecting these regions was to observe trends in adjacent and nearby areas that may offer alternative grocery shopping opportunities. The distance from the store to surrounding ZIPs, measured by Euclidean distance to polygon centroids, was calculated through a spatial join procedure in ArcMap 10.2.2.

Measures of Change

By employing several different measures, I aim to contextualize the observations of change and other patterns using the best-available dataset. Each of these measures is described below.

Total SNAP Benefits Redeemed Per Month

The most straightforward measure involves changes in ZIP-level redemption amount between months for project areas and surrounding areas. Taken as a descriptive measure, three basic trends are evident and help identify useful composite measures for subsequent investigation. First, noticeable increases in monthly redemption amounts occur in most, but not all project areas. Second, the increases in certain ZIPs correspond to changes in redemption in others; this observation motivates some way to estimate the relative share or importance of one ZIP versus its neighbors. Third, the implementation (in April 2009) and discontinuation (in November 2013) of the American Recovery and Reinvestment Act (ARRA) is evident; ARRA increased maximum benefit amounts for SNAP participants as a method of economic stimulus, so some correction for this macroeconomic circumstance must be incorporated.

Another way to visualize these data are as rates of change over time. Using the benchmark months for each project (two months prior to opening, opening month, and two, five, and ten months following opening), percent change was calculated for individual ZIPs (project and neighboring areas). The market share calculation described below helps illustrate the magnitude of the changes more directly by placing each ZIP in a broader spatial context.

Share of Area SNAP Redemptions

Do specific areas become more or less relevant for low-income food shopping after new stores open? If new stores are adopted by low-income consumers, we would expect areas with food desert interventions to become more relevant, and take a larger market share of food dollars spent in the broader region. To estimate this, two calculations of change were done: change in market share, and change in rank. The market share was calculated by summing all ZIPs that were first or second nearest-neighbors to the project ZIP (including the project ZIP); each individual ZIP was divided by the area sum for every benchmark month, yielding that ZIP's percent of SNAP redemptions in the broader area. To examine how this share changed over time, the rate of change was calculated between two months prior to opening and two, five, and ten months following.

Beyond how quickly market share was increasing or decreasing, the relative rank of ZIPs compared to one another is another estimate of change in importance to low-income food shoppers. ZIPs were ranked by SNAP redemption amount for each benchmark month, and rank improvements were calculated between two before and opening, opening and two, two and five, and five and ten months.

Relationships to Project Characteristics

Project characteristics collected through the landscape study were referenced against these change measures to help contextualize outcomes and explain qualitatively why stores may have performed better or worse in terms of attracting and retaining low-income shoppers.

RESULTS

Overall, 22 projects completed between 2004 and 2013 were included in this analysis. Eleven projects were located in California, two in New Jersey, and nine in Pennsylvania. On average, stores were 33,281 square feet in size (minimum = 2,200, median = 30,000, maximum = 74,000). The size of the surrounding study area (i.e. nearest neighbors and second-nearest neighbors) was 4.57 miles, measured between the retailer and neighboring ZIP centroids (minimum = 2.11, median = 3.54, max = 14.01).

In the following sections, three projects are presented as illustrative examples: Northgate Gonzalez Market of Inglewood, CA, Parkside ShopRite of Philadelphia, PA, and Wellness Plaza Fresh Grocer of New Brunswick, NJ. Similar illustrations for all projects are included in the Appendix.

Data Coverage

On average, 88.6 percent of a project's benchmark ZIPs (surrounding areas two months before opening, at opening, and two, five, and ten months following) were included in the USDA dataset (i.e. had at least four SNAP-redeeming stores during the time period), and 92.4 percent of these ZIPs were included in the time horizon provided by USDA. Taken together, the average project had over 80 percent of all ZIPs and benchmark time periods included in the dataset. One particular project in New Jersey (NJ02 - Vineland, NJ) was particularly problematic, with only 33.3 percent of data points represented; removing this project raises the overall project average to 91.3 percent unredacted by USDA, and 83.2 percent included in the proper time horizon.

Total SNAP Benefits Redeemed Per Month

Figure 8 uses an example from Philadelphia to illustrate how ZIP-level SNAP redemption data can be charted over time, highlighting the new store ZIP in red and denoting the opening month with a marker (similar graphs for all projects can be found in the Appendix). This illustration shows patterns from October 2009 (two months before the store's opening) to October 2010 (ten months following the store's opening). First, the store's opening coincides with a marked increase in SNAP redemptions for its ZIP. Second, this increase is mirrored by decrease in at least two other ZIPs. To contextualize these changes we must also consider rates of change in redemption amount and overall share of redemptions.

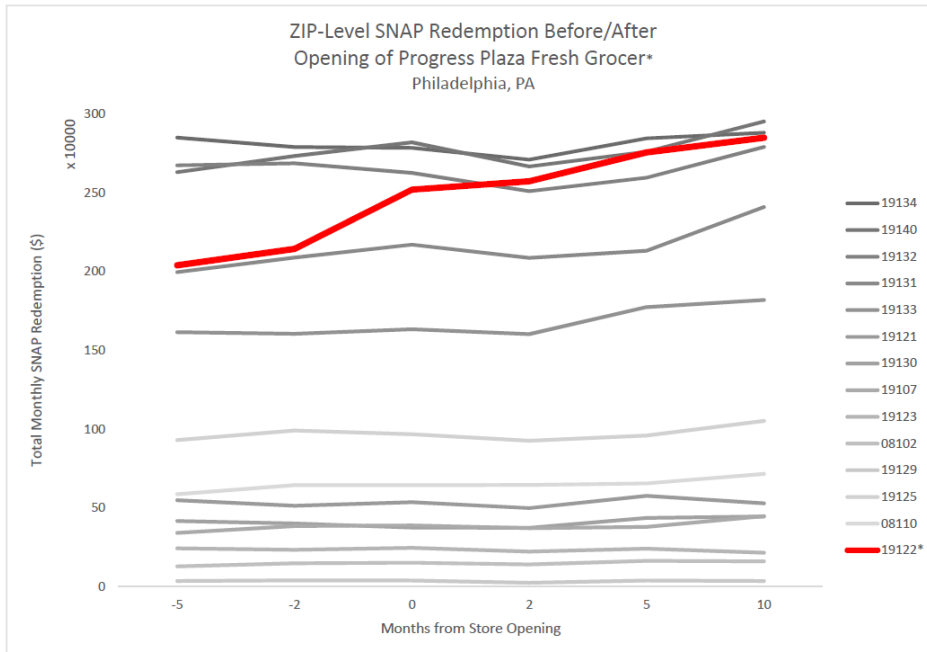


Figure 8. Total SNAP Benefits Redeemed Per Month Before and After Opening of Progress Plaza Fresh Grocer, Philadelphia, PA

Percent Change in Monthly SNAP Redemption

Calculations of rate of change help quantify the ZIP-level shifts observed in the month-to-month graph above. This makes for a more straightforward comparison of changes in project ZIPs and surrounding areas at two, five, and ten-month intervals. These data are also summarized in Table 6, and additional figures for other projects appear in the Appendix. Of the ZIPs containing projects, all but four experienced increases in SNAP redemption after two month; of these, eight experienced increases of 20 percent or more. The market share approach helps illustrate the magnitude of these changes more directly by placing each ZIP in a broader spatial context.

Change SNAP Redemption Relative to Surroundings

Two methods were used to describe ZIP-level SNAP redemption changes within a broader retail environment: change in share of area redemptions, and change in ZIP rank. Additionally, this comparison could incorporate differences between surrounding ZIPS; most notably, whether or not areas contained LSAs.

Change in Share of Area Redemptions

Again, an example from Philadelphia helps illustrate how the same data can be visualized within a broader context. Figures 9-12 shows how the ZIP receiving a new supermarket increased in its overall share of SNAP redemption data compared to surrounding ZIPS, and held relatively steady at that share through the ten month benchmark. Of projects with data available for the two month post-opening benchmark, only two areas decreased in their share of area SNAP redemption (see Table 7). Increases in redemption ranged from 1.2 (Urban Radish, Los Angeles) to 1522.9 percent (Bakers Center ShopRite, Philadelphia); thus, important differences exist among these increases. For instance, of areas experiencing over twenty percent increases in SNAP market share, most were funded through professionalized fresh food financing.

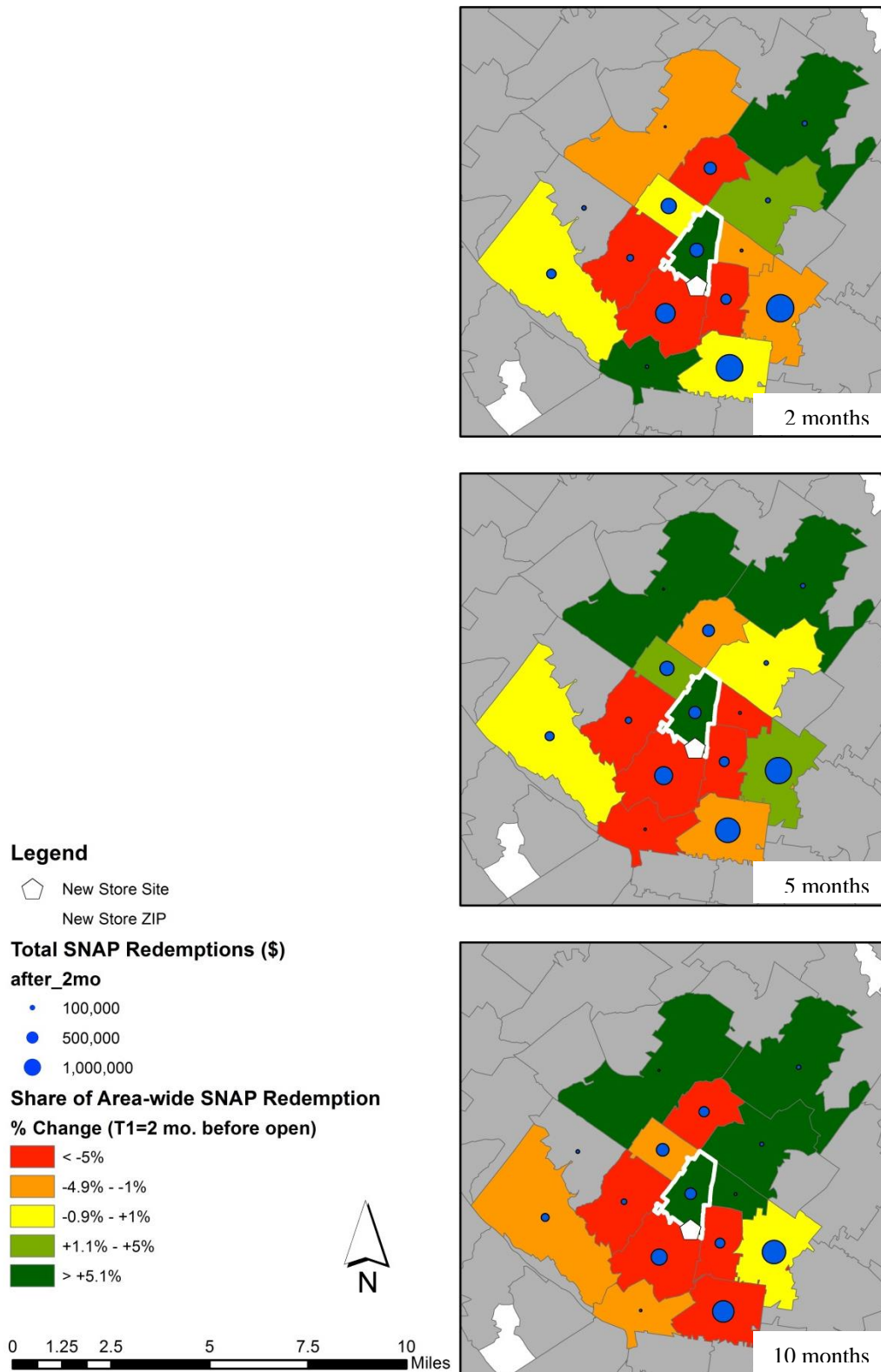


Figure 9. Change in SNAP Redemption Patterns (Parkside ShopRite - Philadelphia, PA)

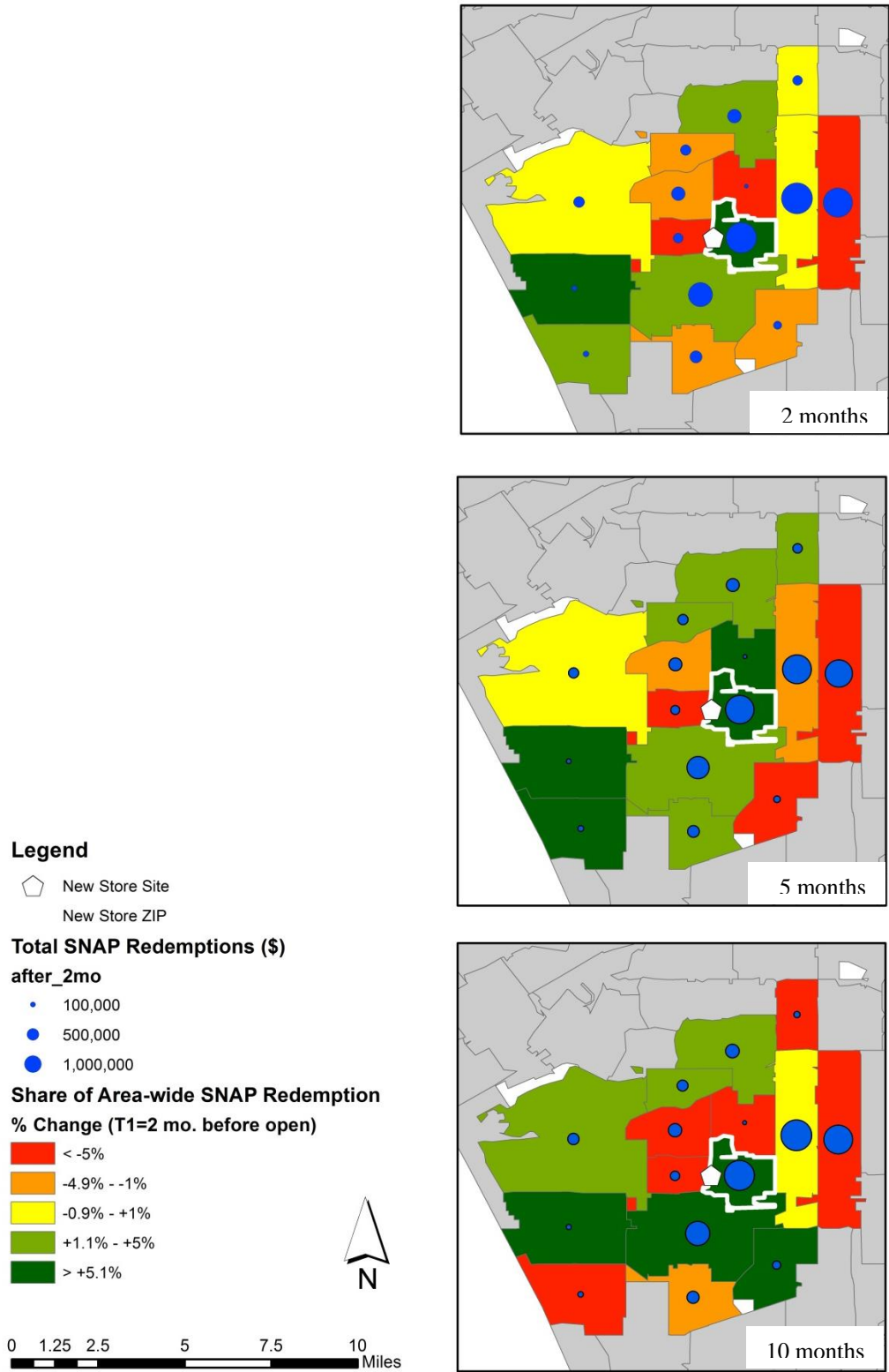


Figure 10. Change in SNAP Redemption Patterns (Northgate Gonzalez - Inglewood, CA)

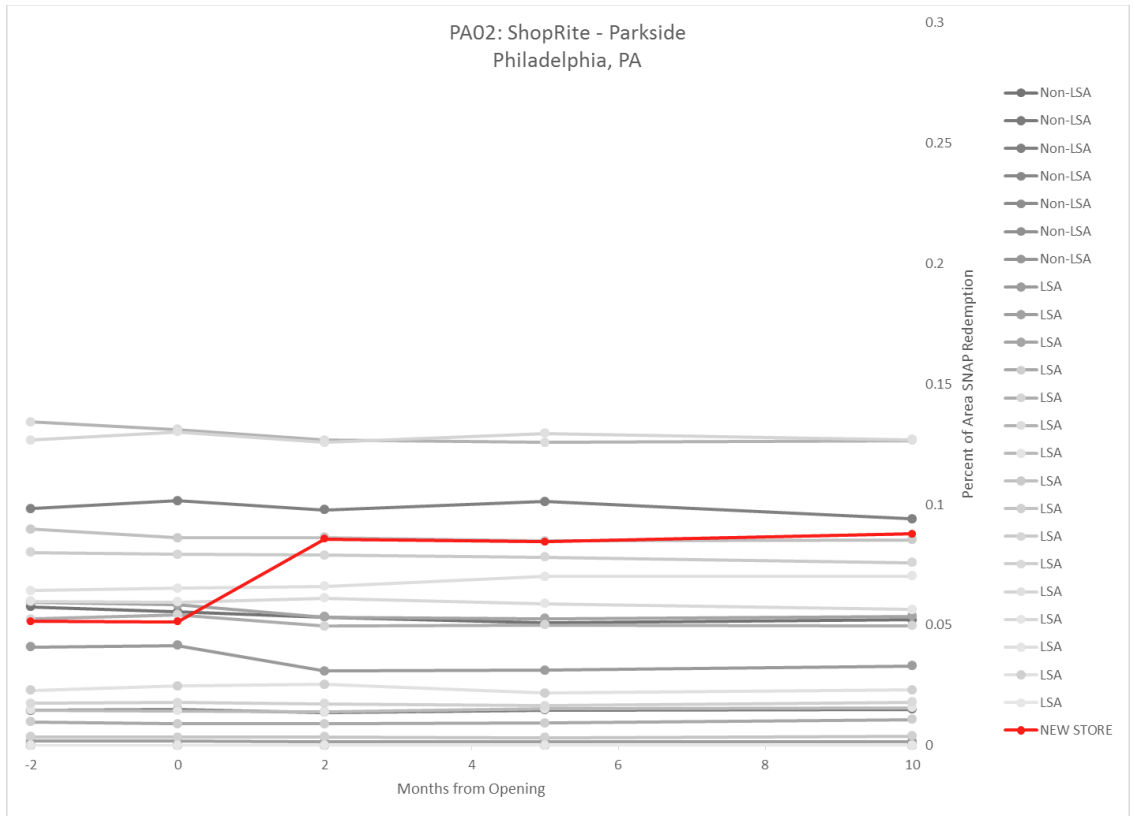


Figure 11. Change in SNAP Redemption Patterns by Share of Area Total (Parkside ShopRite - Philadelphia, PA)

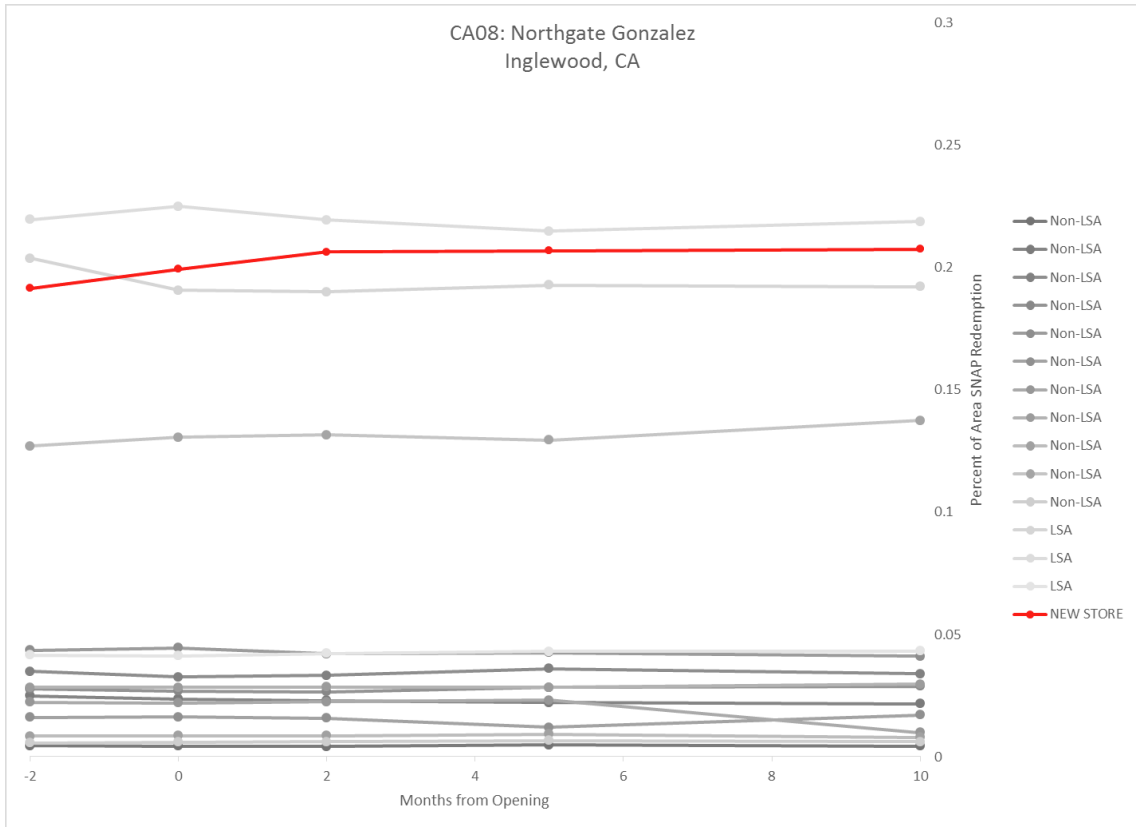


Figure 12. Change in SNAP Redemption Patterns by Share of Area Total (Northgate Gonzalez - Inglewood, CA)

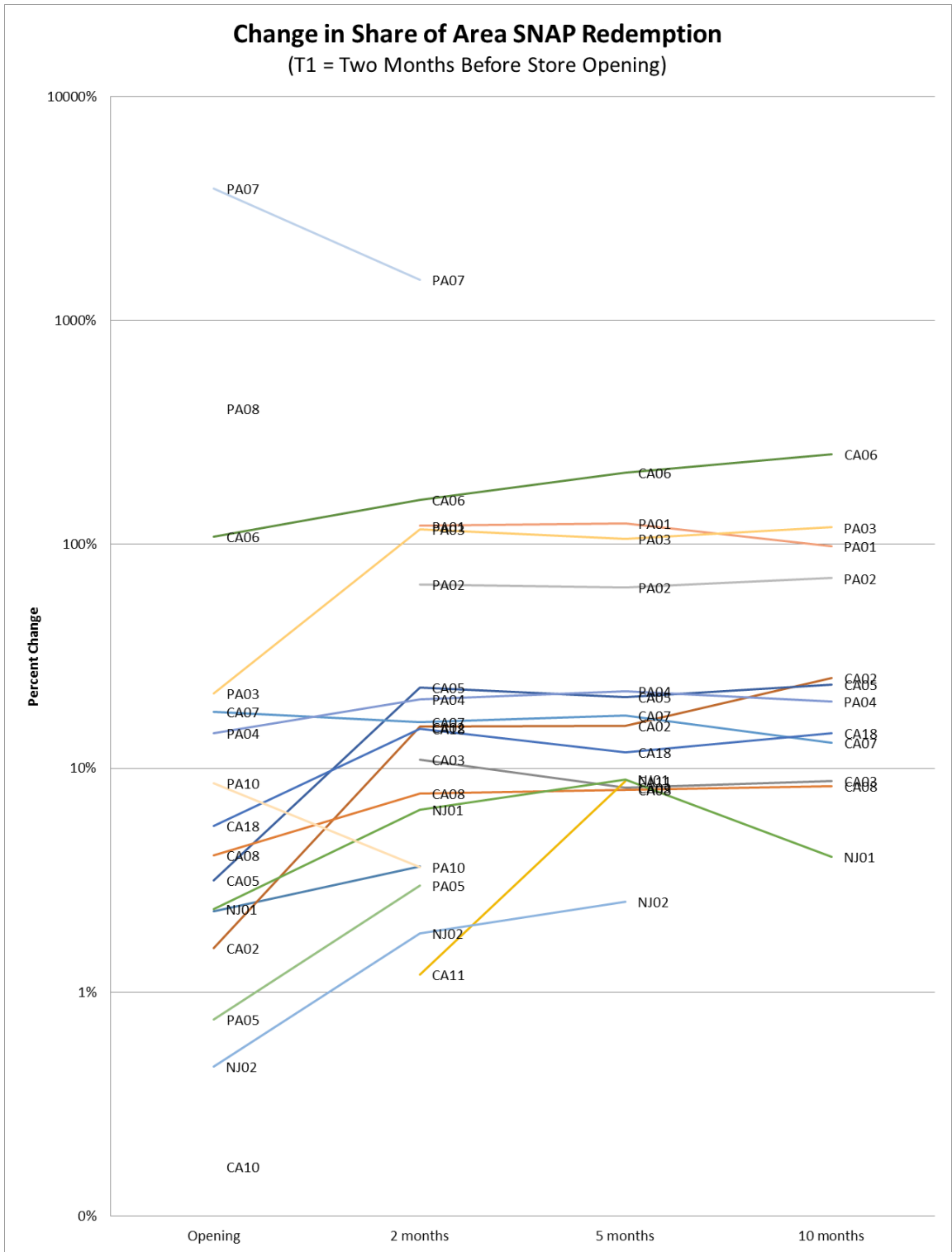


Figure 13. Change in SNAP Redemption Patterns by Share of Area Total (All Stores)

Change in ZIP Rank by Amount of SNAP Redemptions

Overall, ten project ZIPs improved in their rank of overall SNAP redemptions among their neighbors and nearest neighbors between two months prior to opening and the other benchmark months. Four project ZIPs improved in the opening month, seven at the two month interval, none at the five month interval, and two at ten months. No project ZIP consistently improved its rank across the four benchmark months. The Bakers Center ShopRite (Philadelphia), Heldman Plaza Shop ‘n Save (Pittsburgh), and Parkside ShopRite (Philadelphia) were located in ZIPs with the greatest overall change in rank (increases of 12, 10, and 7, respectively). Table 8 describes these rank changes for all project ZIPs across the benchmark months.

Relationships to Project Characteristics

When plotted, the increases in ZIP-level SNAP redemption appear to have a positive correlation with changes in both overall SNAP redemption and the share of SNAP redemption among neighbors and nearest-neighbors (see Figure 14, which illustrates changes between two months prior to opening and two months following for all projects with positive-value changes). This suggests that the opening of larger stores may have played an important role in shifting the shopping behavior of low-income consumers.

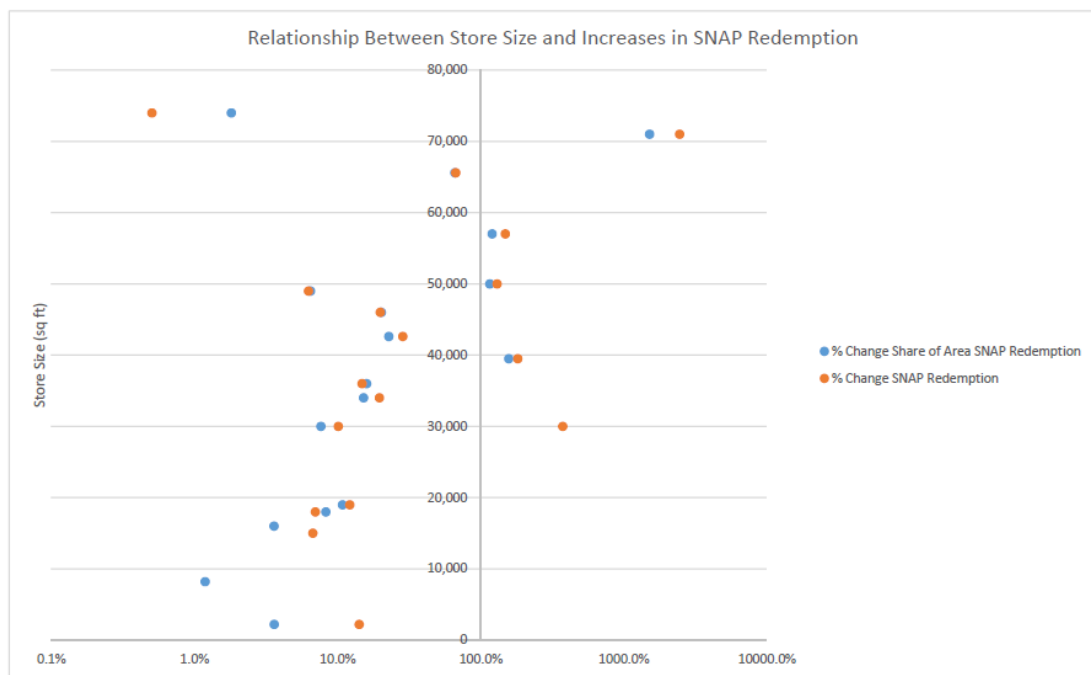


Figure 14. Relationship Between Store Size and Change in SNAP Redemption

Limitations

This approach to considering changes in low-income food shopping behavior has several limitations. First, given the well-documented limits of SNAP allocations in covering monthly food budget needs, it is unlikely that this dataset represents the entirety of low-income food shopping. Indeed, other studies point to reliance on emergency food networks and other

institutions at the end of the month for many food insecure households. Nonetheless, SNAP is a scarce financial resource, and the choice of where to spend those benefits is far from insignificant, whether or not a monthly food budget is supplemented by other means. Similarly, from the supply-side, it is possible that retailers who do not accept SNAP are significant fixtures in the low income food shopping space. While the datasets employed here cannot refute this hypothesis, myriad other studies would suggest this is highly unlikely.

Another limitation to this approach is these data only reveal where consumers spent benefits, but not where they came from. Though an attempt was made to obtain participant data from state-level agencies (as did Shannon in Minnesota for his 2014 study), this was not feasible for the states included in this study. Again, previous studies would suggest that low-income shoppers, when presented with viable options, prefer to shop closer to home.

With these questions and available datasets, a variety of approaches were possible. Given the statistical requirements for econometric modeling, and considering the complexity and diversity of project development and implementation described in Chapter II, I took an intermediate approach and descriptively investigate a variety of changes over time for this subset of projects. Future research could include a more sophisticated use of this panel dataset to better quantify interactions between areas over time.

DISCUSSION

When new stores open in underserved neighborhoods, they inevitably change the food environment; the degree to which this change matters to low-income shoppers appears to differ depending on a variety of factors. Among stores that increase their ZIP's share of area-wide SNAP redemptions and improve its ranking relative to neighboring ZIPs, these changes appear to occur before the five-month benchmark. Only two projects improve their rank at the five or ten-month benchmark, indicating some stability in the SNAP redemption landscape that may occur among well-adopted projects. Other projects were not able to improve their area's share of overall SNAP spending, including some instances where a ZIP's significance appeared to decline following the store's opening.

These data effectively demonstrate that low-income shoppers adopt certain types of new supermarkets in food deserts. Among stores in this sample, larger stores were more likely to play a significant role in the food retail landscape for SNAP shoppers, which is consistent with the retail gravity-based LSA model of estimating potential retail demand in low-income, underserved areas. These findings help demonstrate that new stores in food deserts can benefit low income food shoppers, insofar as these benefits can be conceptualized as part of store utilization.

This investigation also provides an important cautionary lesson: new stores in food deserts cannot be assured of low-income customers. Indeed, some stores changed little in terms of the overall low-income food shopping environment. Considering the level of investment required of these projects, this finding should encourage careful matching of retailers to neighborhood. Indeed, this is the message espoused by many experienced retailers and communities alike, though the message should not be lost on advocates for improving food access through retail development. Simply put: one size will not fit all, though, generally speaking, larger appears to be more attractive to low-income shoppers.

From a planning perspective, the question of large stores must also be further interrogated. The average suburban grocery store ranges from 40,000 to 60,000 square feet, while smaller urban formats typical are typically between 10,000 and 20,000 square feet; the average store in this analysis was just over 33,000 square feet in size (Newberg, 2011). The demands of large sites, especially in complex cases of urban property development, are far from insignificant. Importantly, many of the most adopted retailers studied here were the result of major advocacy and/or redevelopment. Essentially, momentum and community enthusiasm for these projects seemed to transcend the cause of “healthy food access.” This is a critical observation in terms of subsequent retailer adoption of health promotions and programming, and, again, highlights the relevance of retailer motivation in this particular arena.

Connection to Chapter IV

While these data effectively demonstrate shopping behavior change toward certain types of new supermarkets in food deserts, and how these rates of change happen unevenly across different sites, they do not illuminate why these changes occur. New stores may present a useful option to low-income shoppers, but why are they selected, and how do people experience them? Again, should we seek to draw a causal connection between new stores and health outcomes, we must understand the store’s contribution to individual lifestyles and livelihoods. In order to explore this, we must do more than “meet people where they are;” instead, it is necessary to meet people where they shop. The final part of this investigation takes us into the aisles of a supermarket, back to where we met Mona, to document how new stores matter in the lives of individuals who shop there.

CHAPTER IV: Shopping in a Food Desert Supermarket

INTRODUCTION

As the previous chapters have demonstrated, important differences exist among the many efforts to develop new supermarkets in underserved neighborhoods. These new stores have also been adopted by low-income shoppers in different ways, a critical consideration to evaluate how much a project serves the needs of a neighborhood, and, in some cases, such as the Bayview Fresh & Easy, a determinant of success or failure. Beyond a business' economic viability, low-income shopping helps document exposure to the new environment, which is the only plausible pathway to health improvement in individual and community health.

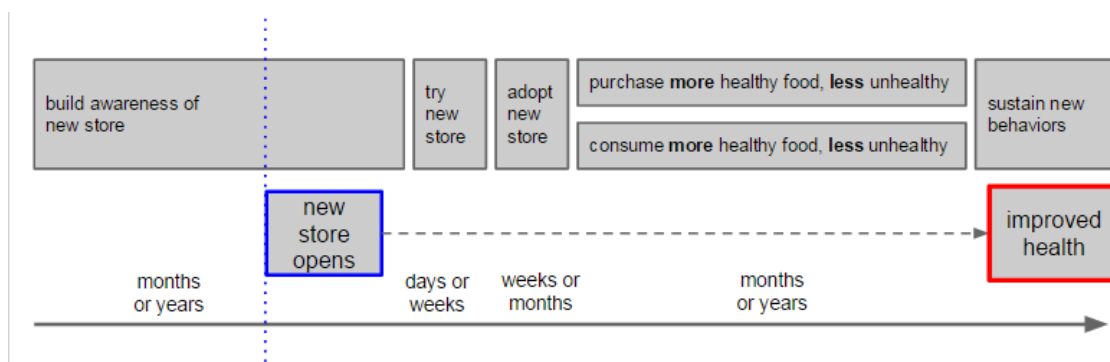


Figure 15. Theory of Change for New Supermarket Improving Health

With this in mind, we rejoin Mona in the dairy aisle with even more context and understanding of how this store came to exist in her community. This much-heralded retailer was developed almost four years earlier with support from local, state, and national leaders, and structured vital project financing through the Pennsylvania Fresh Food Financing Initiative. After opening, a distinct upward trend in food stamp redemption is observable in the surrounding ZIP code, suggesting that low-income shoppers were exposed to this new supermarket environment. While these contexts inevitably influence features of the store where we met, and how other SNAP participants chose to shop or not to shop there, the most important context for Mona's health is her own experience. What does the store mean to Mona? How does it factor into her ability to manage her health?

BACKGROUND

In Chapter Four, I describe the consumer experience from a Philadelphia supermarket that received development incentives through PA-FFFI, and qualitatively consider how the store contributes to the daily lives and health of shoppers. Data were collected during July and September 2014 through a series of 32 walking interviews with shoppers, including Mona, who were asked to narrate their trips aloud. Qualitative data analysis was completed through a process of memoing, transcribing, open-coding, and close-coding, with input and double-coding from other researchers. This chapter addresses the third research question - how do shoppers experience new supermarket environments - and provides a critical new perspective on how health outcomes might be shaped by in-store behaviors. While existing supermarket evaluations find no neighborhood-level changes in consumption and obesity, I document more proximal outcomes to describe why this might be.

As documented in Chapter II, retailers have employed a variety of in-store interventions to support behavior change, both as a part of a larger industry trend and as a means of differentiating stores from competitors. These efforts can include hiring of staff nutritionists, placing recipe kiosks or tasking stations, holding cooking demonstrations, or providing in-store space to health clinics. Each intervention provides the opportunity for additional knowledge, skills, or resources that could support improved dietary practices.

If we believe that new stores might help or support more healthful food choices, we assume that residents will readily adopt the new retailer for grocery shopping, as demonstrated in Chapter III. Once shoppers have adopted a new store, then it is hoped that they shift dietary behavior through in-store decisions. It is to these decisions and the context in which they occur that we now turn.

Accessing Health via Supermarket

Following the causal diagram presented before, food desert residents must first become aware of and choose to utilize a new supermarket for positive health outcomes to be possible. Researchers have demonstrated that residents of food deserts are highly aware of their limited physical food access, and how these perceptions may improve when new stores open. However, these self-reported environmental perceptions do not appear to be significantly associated with consumption of healthy foods or health improvement, at least as most often measured by consumption of fruits and vegetables and Body Mass Index (Lucan et al, 2014; Sohi et al, 2014; Cummins, Flint, & Matthews, 2014).

Recent evaluations have also questioned the ability of new stores alone to lead to changes in community health, pointing to the importance of in-store environment, including pricing, placement, and promotions, in motivating behavior change (Cummins, Flint, & Matthews, 2014; Ghosh-Dastidar, et al, 2014). Additional research of dietary interventions reveals that high-quality food environments can improve the efficacy of these programs, suggesting that new stores may still have a role to play in improving neighborhood health though they may not trigger health improvement by themselves (Wedick, et al, 2014; Berge, et al, 2014). Following on these evaluative studies, stakeholders in supermarket development projects have emphasized that new store developments are not a “silver bullet” for community health. As described in Chapter II, many funders and advocates within the fresh food financing arena emphasize the primary importance of developing new stores as critical infrastructure, with subsequent implementation of health initiatives and interventions as secondary goals.

While current research is not optimistic about the ability of new retailers to automatically lead to positive health outcomes, evidence exists to suggest that supermarkets may play a supporting role in changing healthy eating behaviors and addressing diet-related disease. Anecdotal examples of health-oriented supermarkets, such as the Northgate Gonzalez stores celebrated by Michelle Obama, suggest that new retailers can and sometimes do explicitly consider health, employing health promotions (conscious decision-making) and nudges (subconscious decision-making) to influence consumer purchasing (Gittelsohn & Lee, 2013; Galizzi, 2014; Thaler, Sunstein, & Balz, 2012; Thaler & Sunstein, 2008). Corresponding health and wellness trends in the supermarket industry, including retail dietitians, nutritional labeling, health screenings, cooking classes, and healthy check-out lanes, all play a role in possibly creating a more health-promoting in-store environment (Prevention, FMI, Rodale, 2013).

Making Decisions in a Supermarket

Given the availability of possible in-store health efforts, it is important to consider how individuals actually behave within supermarket environments. These health efforts seek to influence shopper behavior in distinctly different ways; three primary methods are through conscious decision-making, subconscious decision-making, and option regulation (Galizzi, 2014). Efforts to change conscious decision-making try to convince shoppers of the benefits associated with healthy foods or the hazards of unhealthy foods, motivating them to purchase more healthy and less unhealthy options. Subconscious decision-making can be affected through “choice architecture” and behavioral economics, wherein shoppers are not aware of their selection of healthier options, though less-healthy choices still exist (Sunstein, Thaler, & Balz, 2012; Sunstein & Thaler, 2008). Finally, option regulation defines the universe of products available to consumers and may ban or limit certain products based on nutritional standards. Though each method has been discussed by policymakers, this research focuses on the first two as the most common health interventions adopted by supermarkets.

Conscious Decision-Making

Efforts to support healthy choices attempt to influence planned behaviors. These interventions ask individuals to consider the risks or benefits associated with certain behaviors, form plans to adopt new, healthier behaviors, and encourage the long-term maintenance of these behaviors. The transtheoretical model (TTM) suggests that individuals non-linearly progress through stages of behavior change according to perceptions of supports/barriers and positive/negative outcomes (Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, & Evers, 2008). Given this understanding, we can imagine that vast diversity of stage is likely among any given population, including food desert [SR3] residents. Furthermore, we might imagine that supports and barriers to achieving a healthy diet may be experienced differently by residents of food deserts.

Subconscious Decision-Making

Less prevalent among supermarket health efforts are those that influence subconscious decision-making. The question of food choice is understood to be highly susceptible to subconscious cues, leaving great potential for store operators to “nudge” shoppers toward choosing healthier items (Raghunathan, Naylor, & Hoyer, 2006; Inman, Winer & Ferraro, 2009; Stille, Inman & Wakefield, 2010). This arena of intervention is well documented by behavioral economics, featuring questions of consumer responses to subtle changes in product pricing, placement, and promotions (Wansink, Just & Payne, 2009; Gustafson et al, 2009; Dodson et al, 2009; Waterlander, et al., 2010; Waterlander, et al., 2012; Steenhuis, Waterlander & de Mul, 2011; Rahkovsky, et al, 2013).

Different types of nudges are available to retailers and intervention designers. Broadly known as choice architecture, these interventions can be as subtle as placing one item in better default position than others (libertarian paternalism, asymmetric paternalism) or offering well-framed health messaging to improve one option over another (enhanced active choice) (Thaler & Sunstein, 2003, 2008; Lowenstein, Brennan, & Volpp, 2007; Keller, et al., 2011; Rahkovsky, et al, 2013). A primary economic principle, price elasticity of demand, also has allowed researchers to measure how consumers purchase more healthy items in response to reductions in price (Waterlander, et al., 2010; Waterlander, et al., 2012; Steenhuis, Waterlander & de Mul, 2011; Sigurdsson, Larsen & Gunnarsson, 2013).

Health Promotion

Retail-based health promotion studies have demonstrated how consumers respond to different types of interventions, including conscious and subconscious cues. For example, Gary Foster and colleagues (2014) found in a randomized controlled trial that placement and promotion strategies were effective in improving supermarket sales of reduced-fat milk, water, and certain types of frozen meals at several supermarkets in low-income, high-minority neighborhoods. Etienne Phipps and colleagues (2015) tested the effect of offering a rebate incentive for fruit and vegetable purchases, and found that participants increased purchasing of these items while the incentive was offered, but returned to pre-incentive levels after the intervention ended. With other colleagues, Phipps (2014) also demonstrated that low-income shoppers respond to product sales in different ways. In their analysis of transactions, the researchers found that participants were more likely to buy certain types of unhealthy foods on sale, but this did not extend to the likelihood of purchasing healthful, low-calorie foods. Taken together, these studies suggest that shoppers can be incentivized to make healthier decisions, though dynamics beyond price, placement, and promotions clearly matter in terms of food shopping.

Outside of these conscious and subconscious health efforts employed by supermarkets, we must also recognize the enormous influence of product marketing by the food industry. Indeed, even before shoppers enter a supermarket, they already carry subconscious preferences for certain products based on certain visual cues, brand-recognition, or marketing. The food industry's immense competition and defense of supermarket shelf space, combined with multi-billion dollar marketing budgets, suggests a belief that consumer choice can be influenced both inside and outside the store.

Additional understanding of how individuals translate health awareness and food shopping to health behavior change, especially given calls for more culturally-tailored and appropriate interventions to address diet-related diseases (Kumanyika, Whitt-Glover, & Haire-Joshu, 2014). While much is understood about consumer attitudes and perceptions (i.e. price sensitivity, brand loyalty) as well as in-store actions and reactions (i.e. movement through store, product placement/promotions), less is known about the behaviors which connect them. These points of connection stand to offer insights for future in-store health efforts by identifying existing challenges and opportunities.

Qualitative, in-store methodologies stand to document behavior in ways that are also sensitive to social and cultural contexts, and allow shoppers to articulate the value and experience of new stores in their own words. Documenting these in-store dynamics is necessary to understand the opportunities new stores have created for residents of food deserts, remaining barriers to health behavior change, and avenues for future interventions. If new supermarkets in food deserts do not improve the health of area residents, why not? What is happening as individuals plan and execute food shopping trips?

Focus on Social Dynamics

Two recent qualitative studies provide specific context for this inquiry by describing the complex social dynamics that affect food shopping. The first, by Claire Thompson and colleagues (2013), uses the walking interview methodology to examine different types of food shopping strategies and behaviors in an underserved food environment. The researchers focused on individual agency within various food environments, and suggested a spectrum of engagement with the in-store environment ranging from very active engagement (i.e. highly-planned trips) to passive (i.e.

reacting to marketing). The study included 26 participants who shopped at a variety of neighborhood stores over the course of the project. One primary conclusion drawn from these experiences is that in terms of health outcomes, recognizing the spectrum of individual agency may be more illuminating than simply identifying areas that are underserved by full-service food retailers.

The second study, by Carolyn Cannuscio and colleagues (2014), also explores shopping behaviors and store choices with structured and semi-structured interviews in Philadelphia, PA. The study illuminates ways that lower-income shoppers adapt shopping trips to the constraints they face, and how different stores are chosen based on a variety of social and economic factors. For instance, shoppers preferred stores they perceived to be safe and easily accessible, but also where other shoppers shared similar racial and income characteristics and where they felt well-treated by store staff. The study suggests that these social dynamics are critical points to consider in terms of health behaviors, though they are often overlooked by assessments of the physical food environment.

While both of these studies consider how different shoppers sort into different types of stores, this study deeply explains how consumers sort into *a particular store*. This approach offers a snapshot of store use, behaviors within it, and perceptions and attitudes. Individual perceptions and descriptions of in-store experiences place the case supermarket in the context of everyday life, where routine behaviors form health outcomes over time. This study also expands on the concept of agency used by Thompson et al. (2013) and the idea of social influence on health behaviors used by Cannuscio et al. (2014) by specifically considering chronic conditions and health behavior change as participants describe them in the course of their shopping trip.

As the original causal model of supermarket development influencing health requires, exposure to the new store matters. This inquiry focuses on what happens as shoppers engage with this exposure, and how these behaviors could be meaningful for health. Three main questions guide this analysis:

1. How do participants characterize their in-store shopping decisions and strategies?
2. What role does the case supermarket play in participants' everyday lives?
3. How might the answers to these questions influence health behaviors?

These research questions are interrogated by way of walking interviews. To my knowledge, this method has never been used to evaluate new supermarket development in food deserts.

METHODS

Study Area

Philadelphia, Pennsylvania is the birthplace of the nation's first major program to encourage food retail development in underserved communities, the Fresh Food Financing Initiative (FFFI). A prominent local retailer agreed to participate in the research and allow me to conduct on-site surveys and interviews with stakeholders and customers at a store developed through FFFI during the last decade. The case store is a medium-sized urban supermarket of about 30,000 square feet, and is located along several modes of public transportation in North Philadelphia, in addition to offering a surface parking lot. The store is open 24 hours a day, and is a full-service supermarket, offering deli, meat, and seafood counters, as well as a cafe and prepared food section. A community space with tables and chairs is also available for customers to use.

According to a PolicyMap report, the neighborhoods within a half-mile radius of the store were 56.3 percent African American, 35.9 percent White, and 2.2 percent Asian, as measured by the 2008-2012 American Community Survey (ACS). The area has an especially high rate of households making less than \$50,000 annually: 79.1 percent in 2012, compared to 48.0 percent statewide. Over 58 percent of households earned less than \$25,000 in 2012, far more than the citywide rate of 36.6 percent. Based on 2009-2013 ACS figures, 60.9 percent of households with children and 40.2 percent of all households in the ZIP code tabulation area for the case retailer receive SNAP benefits, compared to city averages of 39.1 and 23.2 percent, respectively. Despite these economic challenges, parts of the neighborhood have recently seen massive redevelopment by a local university, with further changes anticipated both by local planners and community members.

Study Components

Walking Interviews

Walking interviews (also called “go-along” interviews) stand to offer qualitative insights about how individuals navigate the in-store environment. Qualitative public health researchers have adopted go-along interviews as a participatory, in-depth field method (Miaux, et al., 2010), including studies of perceived neighborhood safety (Carpiano, 2009), student awareness of health resources (Garcia, et al., 2013), and consumer food shopping behavior (Thompson, et al., 2013; Frasso, 2014).

Participants were recruited by intercept as they entered the vestibule area in front of the store’s entrance. Three practical criteria were used to identify eligible customers: 1) individuals who had shopping carts, in an effort to differentiate between customers who were grocery shopping (i.e. making multiple purchases) and those who were only visiting the store’s prepared foods section, 2) were not talking on cell phones or using headsets, and 3) were not engaged in conversation with another individual. Eligible customers who agreed to participate were asked to sign an informed consent form, and offered a \$25 giftcard as compensation upon completion of the walking interview. Interviewing took place over nine days in July and September 2014, including a variety of times of day, days-of-week, and times of month.

After participants signed the consent form, I equipped both the participant and myself with a digital voice recorder and lapel-clipping microphone. Once the digital recorder has been turned on, I asked participants to “teach me how to shop,” pretending as if I have never set foot in a supermarket before and need instruction how to complete a trip successfully. As the interviews progressed, I allowed the participant to lead me around the store, and provided additional prompts as needed to clarify statements and location within the store. For example, if a participant was standing in front of a shelf, the interviewer may ask, “What are we looking for here?” After participants had proceeded through checkout, a short shopper survey was administered. Following this, participants received their giftcard and an unsigned copy of their consent form.

Shopper Survey

Brief shopper surveys and go-along interviews were designed to provide a quantitative and qualitative basis to consider the consumer experience and shopper demographic characteristics. Validated measures of food environment perceptions, fruit/vegetable consumption, and readiness to adopt healthier behaviors were employed to create a composite survey instrument. The short

survey was five to ten minutes in duration, and was administered in a corner of the store entrance, immediately after the participant completed checkout.

Memoing

On days when walking interviews were conducted, I completed qualitative memos at the end of each site visit. These memos documented any notable incidents or circumstances, such as weather conditions or conversations with store staff. The memos also allowed for preliminary reflection on shopper patterns and possible methodological improvements. One example was transitioning the shopper survey from self-administered to orally-administered; this was after observing some participants experiencing difficulty reading the paper form (possibly due to poor eyesight or confusion), and because responses to survey questions sometimes set off illuminating anecdotes that provided further qualitative context.

Stakeholder Interviews

I conducted key informant interviews during 2013 and 2014 with ten participants with affiliations to FFFI or with specific knowledge about the retailer where interviews were conducted. These interviews were structured as semi-structured individual (n=5) and group (n=2) interviews, based on stakeholder availability, and were audio-recorded and transcribed verbatim. Specific to this case supermarket, interviews included a store manager, director of human relations, director of community relations, and local law enforcement official who worked in the neighborhood and used the store as a “home base.”

Data Analysis

Survey Analysis

Survey data were entered into an SPSS database. Additional fields were added to document the interview date, participant’s race and gender as interpreted by the interviewer, and length of the trip. Descriptive statistics were generated to describe participant characteristics and patterns between variables, such as distance from the store to home and number of trips per month.

Transcription and Coding

Codebook Development

Audio files from the participant voice recorder were transcribed verbatim. In most audio files, both voices (the participant and interviewer) can be heard and understood; however, in some cases, when audio from one voice recorder became inaudible, was accidentally turned off, or experienced other technical difficulties, the researcher audio file was used to complete the transcript.

Interview transcripts were used to establish a preliminary list of codes based on recurring themes and concepts. A rigid definition accompanied each code, including key features such as specific words or phrases, activities, or ideas; these definitions were intended to allow an unaffiliated researcher to effectively code the same transcript and arrive at a similar conclusion. Another researcher independently analyzed these transcripts to create a list of codes and definitions based on their own assessment of the data.

After both researchers were satisfied with the breadth of codes created, their independently-generated codes and definitions were discussed to collectively develop a codebook. Equipped with the mutually agreed-upon definitions, researchers returned to a subset of five transcripts and apply a closed-coding method in separate NVivo 10.0 projects, only identifying words and passages that meet the coding criteria specified in the codebook. After this subset of transcripts had been independently coded by both researchers, an NVivo report was generated to document the level of coding agreement. Agreement levels below 70% were flagged and discussed in a subsequent meeting between the researchers.

Finally, a third, unaffiliated researcher applied the codebook to five of the interview transcripts. The purpose of this step was to ensure that even someone not involved with code development would interpret their use in the same manner. Again, an NVivo report was generated to understand the levels of agreement between coding.

RESULTS

Coding Themes

Five coding themes were identified and agreed upon by both researchers. These include attitudes about the store, food perceptions, shopping logistics, health attitudes, and trip type. Store attitudes illustrate how participants perceive and describe the store atmosphere, including environmental and social observations. Food perceptions pertain to attitudes and opinions about store products, including quality, cleanliness, freshness, or prices. Shopping logistics were expressed as strategies for completing the shopping trip, including constraining and supporting factors that were influential, such as transportation or a limited budget. Participants raised health attitudes in discussing items that could support a healthy lifestyle, describing efforts to maintain or change health behaviors, or mentioning other opinions about health. Finally, participants often characterized their shopping trip by its size, timing, or purpose. Taken together, these codes help characterize why and how different individuals find themselves at the supermarket at that moment.

Description of Sample

Thirty two individuals were successfully recruited and signed the consent form. Participants in this study were predominantly women (n=27) and African Americans (n=31). Nearly all participants in this study identified themselves as the primary food shoppers for their household (N=31). One participant, also an African American woman, was excluded from subsequent descriptive statistics because she lived over 20 miles away and was primarily shopping for lunch items to take back to her office, which was nearby. Removing this case significantly changes our understanding of proximity effects; notably, the average participant distance is reduced by almost 0.7 miles. On average, participants were 53.1 years old (SD=12.7), were shopping for households of 2.7 individuals (SD=2.0), lived 1.3 miles from the case retailer, and reported an average of 6.8 trips to the retailer per month (SD=6.6). Figure 16 provides a spatial representation of several of these characteristics. The average interview duration was 29 minutes (SD=14). 74.2 percent (n=23) of participants reported participation in the Supplemental Nutrition Assistance Program (SNAP), and 6.5 percent (n=2) participated in the Women, Infants, and Children (WIC) program. All names used in the following sections are pseudonyms.

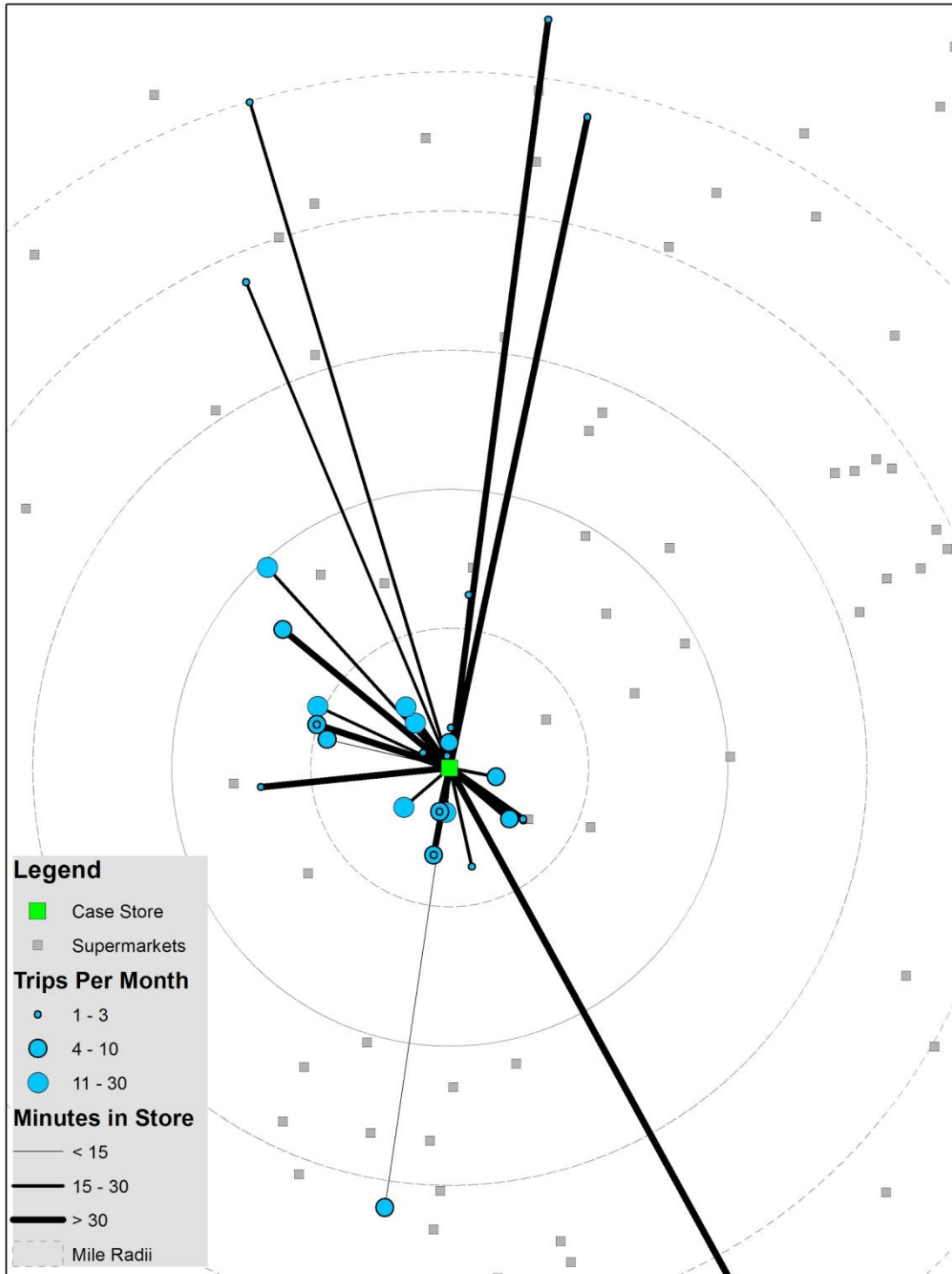


Figure 16. Participant Home-to-Store Distance, Trip Duration, and Estimated Trips Per Month

Descriptive Statistics

To explicitly consider the contribution of the case supermarket to area residents, participant responses were binned by those who lived within one mile and those who did not (n=19 within one mile, n=13 further than one mile). Several interesting trends are worth noting. First, the majority of participants who reported buying most of their groceries at the case supermarket lived within a mile (n=17 versus n=5 for participants living beyond one mile). This trend was also consistent in terms of where participants reported purchasing most of their fruits and vegetables.

Participants living closer to the case supermarket were also more likely to report satisfaction with the quality of groceries in their neighborhoods. Of participants living within a mile, 89.5 percent either reported “agree” or “strongly agree,” compared to 38.5 percent among those living further away. Similarly, 78.9 percent of participants who lived within a mile reported that fruits and vegetables were easy to find in their neighborhood, compared to 53.8 percent of participants living further away.

Another notable difference between participants based on distance is evident in general perceptions of fruit and vegetable perishability (not specifically related to their experiences at the case retailer). Approximately 78.9 percent of participants living within a mile agreed that fruits and vegetables spoiled “too fast,” compared with only 30.8 percent of participants living further away. This theme is also evident in the analysis of walking interview transcripts, described in a later section.

Average participant attitudes and perceptions were also analyzed. It is worth noting that many of these measures record a great deal of agreement between participants, regardless of distance traveled to the store; particularly poignant for considering health effects, all participants agreed or strongly agreed with the statement “Fruits and vegetables are good for the body” (SD=0.5). However, participants a range of opinions on the quality of groceries in their neighborhood, with an average score of 3.6, just above “Don’t Agree or Disagree.”

Table 4. Descriptive Statistics from Shopper Survey

	N	Range	Min	Max	Mean	Std Dev
TRIP LENGTH (MIN)	31	0:57	0:10	1:08	0:29	0:14
TRIPS TO STORE PER MONTH	31	24	1	25	6.81	6.60
HOUSEHOLD SIZE	31	9	1	10	2.68	1.99
AGE	30	55	25	80	53.13	12.68
DISTANCE FROM STORE (MI)	31	5.33	0.09	5.42	1.28	1.51
ESTIMATED FV/WEEK (TIMES EATEN)	29	16	5	21	12.29	4.07
<i>LIKERT (1=STRONGLY DISAGREE, 5=STRONGLY AGREE)</i>						
FAMILY DISLIKES VEGETABLES	29	4	1	5	2.34	1.11
DISLIKE TASTE OF VEGETABLES	31	3	1	4	1.94	0.73
HARD TO INCLUDE FV IN MEALS WHEN TIRED	31	4	1	5	2.77	1.06
FV ARE GOOD FOR THE BODY	31	1	4	5	4.45	0.51
HAPPY W/ GROCERY QUALITY IN NHOOD	31	4	1	5	3.61	1.05

Crosstabs

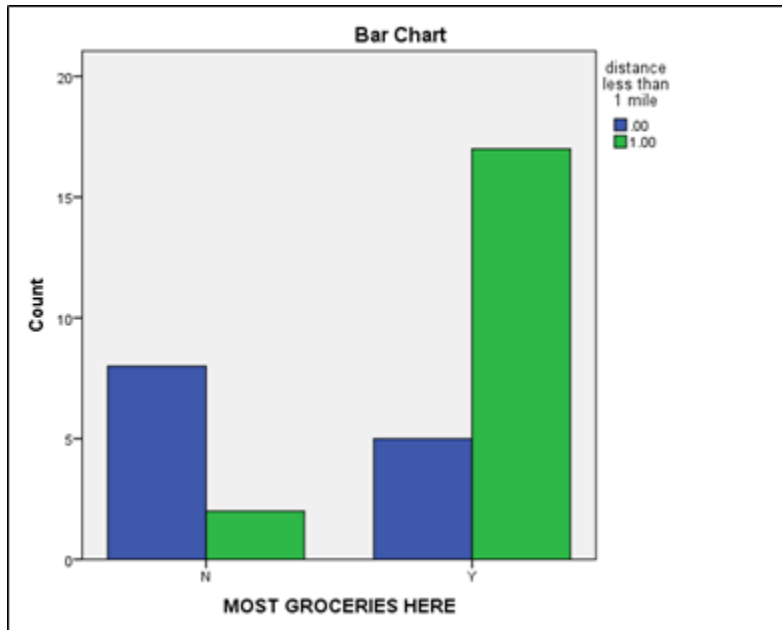


Figure 17. Shopper Perceptions by Distance to Store: "Do you purchase most of your groceries at this supermarket?"

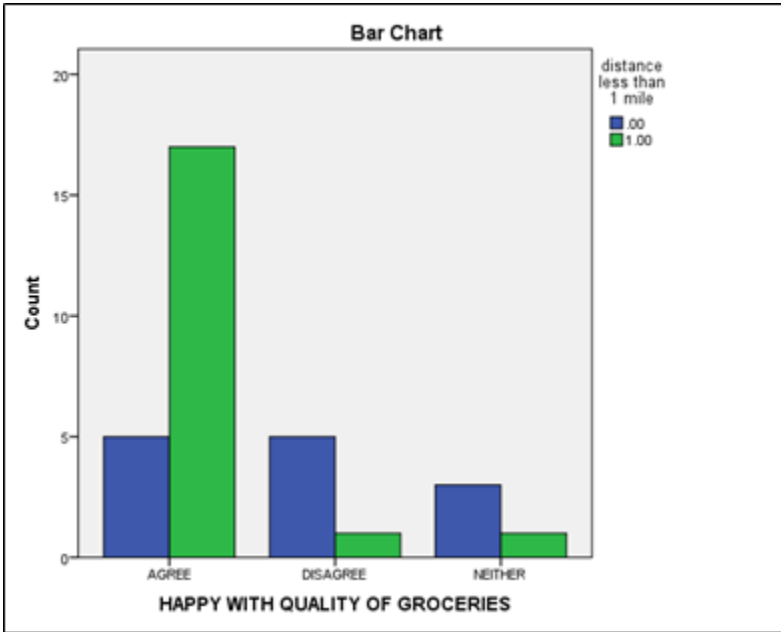


Figure 18. Shopper Perceptions by Distance to Store: "I'm happy with the quality of groceries in my neighborhood."

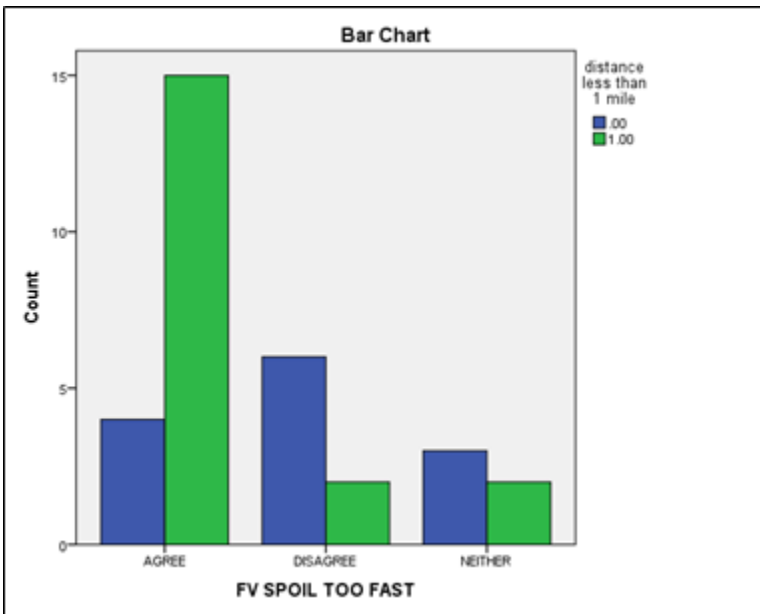


Figure 19. Shopper Perceptions by Distance to Store: "Fruits and vegetables spoil too fast."

Bivariate Correlations

Statistically significant bivariate correlations were documented for several survey variables, and are reported in Table 2. Participants who reported high levels of satisfaction with the quality of groceries in their neighborhood were significantly less likely to find fruits and vegetables to be too expensive, or live far from the case supermarket. Participants who reported fruits and vegetables to be too expensive were also significantly more likely to report that their family dislikes vegetables. A marginally-significant negative correlation between the number of trips to the retailer and trip length was also observed ($p=0.51$); this finding is reinforced by emergent themes from the walking interviews.

Table 5. Bivariate Correlations: Selected Survey Variables

		Dist.	Time	Trips/ Month	Happy w/ quality of groceries	Family dislikes vegetables	FV are too expensive
DIST.	Pearson Correlation	1	-.019	-.036	-.454*	-.015	.452*
	Sig. (2- tailed)		.921	.849	.010	.940	.011
	N	31	31	31	31	29	31
TIME	Pearson Correlation	-.019	1	-.354	.032	.110	.053
	Sig. (2- tailed)	.921		.051	.864	.570	.778
	N	31	31	31	31	29	31
TRIPS TO STORE PER MONTH	Pearson Correlation	-.036	-.354	1	-.016	-.119	-.242
	Sig. (2- tailed)	.849	.051		.932	.539	.190
	N	31	31	31	31	29	31
HAPPY WITH QUALITY OF GROCERIES	Pearson Correlation	-.454*	.032	-.016	1	-.036	-.389*
	Sig. (2- tailed)	.010	.864	.932		.854	.030
	N	31	31	31	31	29	31
FAMILY DISLIKES VEG	Pearson Correlation	-.015	.110	-.119	-.036	1	.469*
	Sig. (2- tailed)	.940	.570	.539	.854		.010
	N	29	29	29	29	29	29
FV TOO EXPENSIVE	Pearson Correlation	.452*	.053	-.242	-.389*	.469*	1
	Sig. (2- tailed)	.011	.778	.190	.030	.010	
	N	31	31	31	31	29	31

*. Correlation is significant at the 0.05 level (2-tailed).

Shopping Themes

Value of Case Supermarket in Everyday Life

Many participants mentioned a variety of constraints and types of uncertainty that influenced their shopping, including their current trip to the case supermarket. These factors pushed certain

individuals to design seemingly complicated trips, and also appeared to heighten the perceived risks if trips did not go according to plan, or if their system of shopping could not be accommodated for some reason. The exacerbating effects of complexity appeared to turn what otherwise may be frustrating or inconvenient moments into potentially large disturbances. Participants also described methods for coping with constraints and trying to control possible risks, and the role of the case supermarket in these strategies.

Better than the Rest - Clean, Safe, Friendly

Many participants characterized the value of the case supermarket in contrast to others in the vicinity or in their home neighborhoods that were not as favorable. These descriptions included factors such as perceived safety (including food safety), orderliness and cleanliness, staff helpfulness and positive demeanor, and the presence of senior citizens. Delores, an 80 year-old and lifetime neighborhood resident, voiced her discomfort with places outside the supermarket, in terms of personal safety: "Cause, you know sometimes people do stuff like that, they try you to get your money or take somethin' from you, you know what I mean? And all they do is sit around preyin' on people and it's bad. Cause it... it ain't safe out here."

Later in the interview, she extended this to her experience with food safety: "Yeah. Cause you can't... you gotta be careful where you get your meats at. Cause it make you sick... then you'll be sick. Yeah I mostly, mostly I do all my grocery shopping here. Yeah, mhm."

One participant, Annie (61), lived within a mile and characterized the store in terms of cleanliness and reliability: "This store stays pretty clean, you know? When they say they have something on sale, most of the time they have it... It's not like them other stores." A less-frequent shopper at the case supermarket, Miriam (27), also found it to be clean and orderly: "Yeah, I mean I've been in here a couple times, so I know exactly what aisles to go to. And this market right here is one of the cleanest markets they have. Like it's real organized. I like that it's real organized, and people are real friendly at the register and stuff."

Another participant, Emma (63), agreed with the sentiment that the case supermarket was uniquely clean:

Emma: "But as a whole I come in here, it's clean, that's important to me. I don't like to go in a market and see that the floors haven't been scrubbed, or... it have smells. So, [Case Supermarket] and [Competitor Supermarket, also an FFFI beneficiary], I've found them to be clean."

Interviewer: "Ok, and that's not, that's not the case in other places around?"

Emma: "Well, it seems like they really... They make a point to make it sparkle. So when you come in, it's lit up. Some markets is not as bright. [...] And another thing, this is in the community and like I said, senior citizens shop in here. It used to be, one time, you would only seem 'em at Acme."

Miriam (27), offered a very similar perspective of the case supermarket, extending it to how she felt treated by store employees: "Very clean. I like that, um... I like that it's real organized, and people are real friendly, at the register and stuff... But for the most part, the people here are really nice. I never came here and had a bad experience. [...] I've been in a couple markets that's really rude... But this one is really, this one is actually... ok with me." Another participant, Karen (50), was also pleased with the store's staff: "People in here are friendly. I know a lot of people that workin' here, and I like the items that they carry, and everything is fresh and they change everything up in the morning, put out fresh things."

Though she did not claim to know any store employees personally, Emma also had a favorable opinion of store staff: “Well, they... I know they faces and you know. And everybody here's nice, really. Everybody, they always treat you nice. If you ask a question, they'll stop, just like that man just did, I asked him twice for somethin', and um... if somethin's not right, then they'll call somebody to the... [...] Yeah everybody's nice in here. I like comin' here. Everybody's nice. They always treat you nice in here. [An employee in the checkout line had overheard Emma talking and thanked her.] I do! Everybody's nice, whenever you ask for somethin', um... they help you, or they bring... ask somebody to come and help.”

As another example of a positive store perception, Hattie (65) described making trips to the case supermarket as way to pass the time:

Hattie: “You know, I uh, if somebody says ‘What do you do in your spare time?’ I go to the market. And I just walk around (laughs)...

Interviewer: “Yeah? This is nice place to be, just to check it out?”

Hattie: “And that's it. If I don't have any place to go, nothing to do, I'll go to the market. And I'll window-wish. Cause it used to be window-shop – window-wish – I just look around at what I want. And most of the time I don't want nothin. Cause it's about a want, not a need.”

Interviewer: “Mhm... do you do that often?”

Hattie: “Mhm. Yeah, I.. I live alone. So basically, all my spare time, I'm at home. Not everyday, I do work – I'm very busy, I work. I work with children, I love them. But when I'm just at home, and nothing else to do, and I start thinking negatively, I'll say I know, I can go to the supermarket, they love me there.”

Transportation

Participants cited a wide variety of strategies for dealing with the complexity of transportation for food shopping, helping to control risks and economize on what resources they had available. Several participants adjusted the size and quantities of purchases to their transit type. One participant, Deborah, described this practice as using “wisdom” while shopping; in her case, this meant limiting the number of items to allow her to ride a city bus comfortably. Mona (57), employed a similar strategy by using a rolling luggage bag to carry items from the store to work, where she could store them until after her shift; ultimately, this strategy allowed Mona to go straight home after work without the hassle of grocery shopping. Similarly, Karen (50) preferred using the case supermarket on her way to and from her job in North Philadelphia to stores closer to her residence in New Jersey as a matter of convenience. Others who lived nearby also completed smaller shopping trips with the intention of returning later in the day or week.

Others would collaborate with family, friends, or neighbors to use personal vehicles for shopping trips. Delores (80), had arranged this trip with a neighbor: “See, he over there waitin' for me, my neighbor. See he brings me if my daughter can't bring me, that's how I get here.” Lisa (51), described that before the case supermarket opened, her transportation for food shopping was even more complex: “I had to go further. And pay a hack man to bring me home. Hack man want like... ten dollars.” According to one store employee, the case supermarket screens these informal cab drivers and keeps their information on file as a means of protecting their customers.

Several participants planned to use a courtesy shuttle provided by the case supermarket if shoppers purchase over \$60 worth of groceries. Though this service appeared to be heavily

utilized, it was not without caveats. Lisa characterized several reasons this service was not a good match for her needs: “They have a um... a truck that take you home here, but you have to spend like a hundred or... close to a hundred, yeah. That's pretty um... nerve-wracking. You have to stand out there and wait in the heat, and you got ice cream and stuff, while he's taking other people.” Annie (61), had completed her shopping trip over an hour before the shuttle service started, unfortunately on one of the hottest days of the year: “Aw man, a whole hour to wait. ... Yeah. Now I gotta go wait in the heat for an hour. [...] Feel that heat already. I dont' know why the van doesn't get started up until 11.”

Perhaps the best illustration of the potential complexity of shopping trips came from Cara (51), who had traveled from far North Philadelphia by multiple forms of public transportation to shop at the recommendation of her daughter, and intended on purchasing a large number of items. She was devastated to learn that the shuttle service was only offered within a three-mile radius of the store, derailing her planned trip and consuming much of our subsequent conversation:

“See, I can't go shoppin' like I want to cause I don't drive – I drive, but I had my license runned. And the one that was gonna take me shoppin', he, they had to go get they hair cut. [...] I'm talkin' about they only deliver in certain areas so I can't go shoppin' here like I want to and I don't have the transportation and I don't have the money to pay for no hack driver. They got hacks around here that'll charge you up and I just don't have it. They'll charge you up. From where I live at to here, they'll charge me probably thirty or forty dollars, maybe fifty. And that's crazy. But the store delivers, but you deliver in a certain area, why you can't... if you gonna deliver, deliver. I don't live in... I live at... this Broad Street, 66th and Broad and like five blocks over. So why can't you all take my stuff home? That ain't fair to me.”

At this point, Cara pulled out her transit pass, an eight-dollar ticket that provides up to eight rides, to further illustrate how her trip plans were disrupted:

“And I did kind of come... now to be honest, now I'm on SEPTA, look. And I'm a show you somethin' why I came here. I'm on SEPTA with a day pass. Right, so I'm a have to carry this on the bus. Where's my card? With a day pass... With a day pass, you have to use... Once you use, they clamp all of these holes, it's done for the day. They give you one two three four five six seven eight rides. Now I walked all they way from 12th... 11th Street to here so that I can so I can catch the sub, and then catch the 12 bus and then I'll be home. Ok... Cause if I go to Berks Street, that mean that I have to catch this bus, they gonna stamp it to Berks Street, right? Then once I catch it to Berks, I gotta get on another bus, get on that bus, then I don't know, it's like oh goodness. So... I gotta check out. [...] You know I just it's the first time that I ever experienced this goin' through this kind of thing.”

The complexity of Cara's trip to and from the store dramatically limited her ability to complete the trip as she had hoped.

Fitting a Niche

Similar to other studies, participants here employed multi-store shopping strategies for a variety of reasons. Price comparisons on similar items between stores were common, where participants would read store circulars or visit multiple retailers to determine the best available prices for the items they needed. Sharon (46) offered a frequently-echoed description of this particular trip as part of a larger shopping agenda:

“So I'm looking at... they give us sales items in front of our door every week, so I go to each store and see what's on sale and compare prices. So, like I buy certain stuff out here, like they really have a good sale, like five cases of Pepsi sodas for 11 dollars, you can't beat that. He's a Pepsi-drinker [referring to her husband]. They orange juice, two dollars, they cereal... I get my daughter Hot Pockets, you can get five hot pockets for ten dollars. I get my ice cream. You know, the stuff that I know is gonna cost more at another store, I come here and get it on sale.”

Other shoppers, like Ethel (54), already knew the prices of similar products at nearby stores, including a chain pharmacy across from the case supermarket: “So I'm a see if the price is compared to... Now, across the street it's \$3.49. Over here, it's \$3.33. So, it's a deal!”

Participants also designated certain types of items to certain types of retailers. Several shoppers who felt the case store's prices were high compared to others in the neighborhood would only buy limited quantities or types of items like meat or fish, leaving those purchases to other retailers. For example, Tia (36): “Yeah, I come here, like to get things spur of the moment. Little things. But um, I don't buy meat from over the butcher... They too high. I usually get packed meats, stuff like that.” Alternatively, the wide assortment of name brand products offered by this supermarket appeared to be an enticing factor compared to other, perhaps cheaper, neighborhood stores.

Nonetheless, this shopping strategy had logistical limits in terms of the savings benefit compared to the overall burden of shopping at multiple stores, both in costs of time and resources. As one participant, Emma (63), contemplated a seemingly small purchase of just under two dollars, she made this cost-benefit aloud: “Hmm... high most of the time in the markets. But \$1.89 is a little higher I think, with this. With Lipton onion soup. But, you don't save no money be runnin' all around and I gotta, and I'm goin' back home, so I think real good.” Another participant, Alice (44), suggested that nearby stores would run similar sales simultaneously, raising the importance of convenience: “Like I said, dependin' on where you like or which is easier for you to get to, when they have a sale like this, usually so does all the other stores - ShopRite, and Acme, - so they usually all be runnin' along the same lines.”

Health Attitudes

Though it was not explicitly raised by the interviewer as part of the walking interview protocol, health emerged as a key theme to participant shopping trips in several ways. First, many shoppers described awareness of health and nutrition (i.e. “eating right,” “high blood pressure”), including those who had experienced acute medical issues. Second, participants identified specific items or behaviors (i.e. “low sodium”) that were important for health, including individuals who used these items or behaviors regularly to manage chronic health conditions. Third, the challenge of moving from awareness to adoption and maintenance of health-promoting behaviors, including social, economic, and family contexts, emerged as a critical sub-theme.

Awareness

Some shoppers illustrated their awareness of healthy and unhealthy foods by characterizing their own habits, both in a positive and negative light. For instance, several participants described preferences for certain “junk” items. Immediately after picking out a serving of cut fruit from the salad bar, Sharon (46) went to the bakery section and shared her affinity for cheesecake: “Oh, this is my favorite, Ben, cheesecake. I always get cheesecake. I get the small one, though. The five

dollar one. I don't know. Let me get what I gotta get. I'm like a real big junk eater, like for real. Yep, mister Ben I will eat junk, junk, junk.”

Delores (80) also described a similar feeling:

“I like, see I like crazy stuff. And my, sometime my daughter, she come with me and say, “Mmm. I don't see no meat and you got a whole lot of junk.” And I say alright, don't worry about it (laughs). She be wantin' me to buy a whole lot of food. I'm a junk... I could eat junk better than I could eat food... I'm not a big eater, but I could eat junk.”

While neither of these instances speak to overall dietary quality, nor the full contents of their shopping carts, they do illustrate how Sharon and Delores have characterized their personal recognition and perceptions of less-healthy options.

In some situations, it was clear that participants were aware of, but unsure about certain product health information. For instance, Cara, a 51 year-old shopper from another part of the city, voiced some of this uncertainty as she considered a beverage:

Cara: “I like these Gatorades... They 99 cents. I tasted lemon lime for the first time yesterday.”

Interviewer: “Oh really? You liked it?”

Cara: “Yeah I like it, but some people said it's too much sugar. What you think? Do you drink em?”

Interviewer: “I haven't had a Gatorade in a while...”

Cara: “Do you drink em? What's good?”

Nonetheless, Cara was well-aware of healthy foods and cooking, further exemplifying the tension between awareness and action expressed by many participants. Later in the interview, in response to a survey question about fruits and vegetables being beneficial, she contrasted her cart's contents with her knowledge of a healthy diet:

Cara: “Oh, yes most definitely. I read that you need at least... I mean fruits and vegetables and... You see what I came in and got. I like... I got that cause I don't eat pork, so I'm gonna eat chicken, fish, and turkey. But that's for a stew, I'm a stew it up and bake it. I don't fry stuff... and I'm tryin' to eat healthy because of my health, and plus my age.”

Interviewer: “So you're trying to eat different things?”

Cara: “No, eat the right foods. Like the stews instead of fried chicken, baked chicken, instead of fried chicken, stewed chicken.”

Pursuing Healthier Options

Some shoppers described their choices of specific items based on certain health criteria such as sugar or sodium content, or tried to avoid or modulate their purchases of items that were not reduced-sugar or reduced-sodium. For instance, as her trip was concluding, Emma (63), described her affinity for a specific brand of juice for several reasons, including reduced sugar content:

Interviewer: “You've got everything on your list?”

Emma: “Uh-huh, and I don't be rushin'. I always get my cranberry juice here, too. Cause they have, um... what is it, this one. Apple and Eve. I like Apple and Eve, I always get my Apple and Eve, cause they don't have the added sugar.”

Interviewer: “You don't like the added sugar?”

Emma: “Uh-huh, mhm... and Apple and Eve been around for awhile.”

Another participant, James, a 54 year-old who lived about 2 miles from the store, described a similar desire to avoid too much sugar. This was illustrated well during the first stop for James on his shopping trip, as he added individually-wrapped Power Bars to his cart:

Interviewer: "So do you normally get Power Bars here?"

James: "Well not really. Because I don't really want to eat stuff with sugar in it. Cause... I'll space it out."

Interviewer: "Ok..."

James: "And now I'm starting to uh... You know for like, almost thirty years, they told me I couldn't work out, said I had a bad heart and this and that. And now I be going back forth, you know, Center Hospital told me that. And now I've been going to the Hill Medical Center, they say there's nothing wrong with my heart. So I just started working out again."

Interviewer: "Yeah?"

James: "So I'm getting in shape. So I'll just take... I... Hopefully this will help me. But I still don't want to eat a lot of this [points to the Power Bars]."

Deborah, a middle-aged participant who was shopping after working out at a nearby recreation center, spent several minutes searching for a specific package of snack pretzel with reduced sodium. As she continued searching without success, she contemplated how to make alternative options work for her needs:

"Aw, man. Let me see if this is what I want. Well, maybe I will have to buy one... Yeah, this is what I do. I showed you, I look really close... and see if I can find em... cause the fat-free is really eh. But I like the lightly salted. [...] But you know what, I think I'm a just go ahead and... buy... Let me see the rye... I think I'll buy the rye... cause these, no. I'm a get these anyway. Sodium content [reading the back of the packaging]... Don't you know I know sodium... So I just have to scrape em."

Managing Health Conditions for Self and Others

After describing her strong preference for lightly-salted pretzels, Deborah elaborated on this motivation and connected it to a chronic health condition: "Yeah, not this... the lightly salted. See, these... you know, these are better because they don't have as much salt contents on em. But um, you know, people of color, we have high blood pressure, so we have to watch for stuff like that." Like Deborah, most participants who described motivations for selecting healthier items cited a need or desire to manage some type of chronic condition, including diabetes (n=3), hypertension (n=3), or other health issues (n=8), either for themselves or a family member. These conversations often began as participants were carefully selecting items with lower sodium or sugar content. For instance, while choosing among an assortment of juices, one 60-year old participant and neighborhood resident, Lewis, was asked if he was looking for a familiar flavor or brand:

Lewis: "Well, I usually get this. I usually get some carrot, but... I already have carrot."

Interviewer: "Alright, so you're trying a different... a different flavor?"

Lewis: "Yeah, I'm trying, what I'm trying to do is... See, I'm a diabetic. See what I'm sayin'? I'm trying to um, you know, watch my intake of sugar and whatnot."

After choosing low-sugar juices, Lewis went on: "Yeah, now, since I'm a... I have high blood pressure, too. So I'm a get some low-sodium V8 juice." Similarly, another

Two participants, Joanne and Sharon, discussed how their food selections were accounting for the chronic conditions of others. Joanne, a 54 year-old neighborhood resident, mentioned this as she

was selecting a salad dressing for an upcoming family meal: “I have a sister who is a diabetic, so we try to always um, you know, keep, think about her. Ok, like that, so, and these are all the light varieties, so no matter what, she should be ok.” Sharon, 46, considered how her purchase might affect her husband’s health: “Let me get my seasoning, uh... I have garlic powder, I have black pepper... I don't like to use too much salt ‘cause he got high blood pressure.”

Though most prevalent, hypertension and diabetes were not the only health conditions mentioned by participants. For instance, Cara (51), who earlier acknowledged that her cart had few healthy items though she knew these items were beneficial, also described how she used certain healthy foods to manage her anxiety:

“So, it's like, it's possible that if you eat the right food, you will live longer, you will be better... And you can't avoid somethin' that is already there, but it will help. Like, uh, a smoothie. Smoothies is off the chain and I have been doin' the smoothies. And I have certain little stuff goin' on in the house, like anxiety and my heart be like... And I drink smoothies and eat right and I feel better and I can tell this is playin' a part and a role in helpin' me feel better in my health.”

Though Cara was not actively seeking to manage this condition by the items purchased during the interview, she was familiar with specific foods and behaviors that helped her feel more in control of her health.

Another participant, Theo (67), was experiencing kidney failure and used this supermarket to purchase a protein supplement he needed: “Course, I'm a dialysis patient, so I need proteins... so... Well, actually I make sure I have meat... And then I have a protein drink that I get from here also. Believe it or not, they have it.” Yet another participant, Stephanie (25), indicated that her choice of breakfast cereal (Cheerios) was motivated by a desire to lower her cholesterol, though it was unclear if this was in response to product marketing or physician advice.

Though the shopping trip was related to her diabetes, Roberta (66), was not looking for many food items; instead, she was purchasing tonic water at the recommendation of her doctor. When asked to describe her trip, Roberta illustrated this prescription:

“Today I will also be um in the tonic water aisle... um I am diabetic. Um I was at my foot doctor, and um I do experience foot cramps and um leg cramps. And so, I inquired about potassium pills, and so he expressed to me that that is something that they really don't like to give their patients um uh because there could be a level of danger uh with potassium if it's not given properly. So, he wants me to drink a lot of orange juice and he wants me to purchase the tonic water. So um you know I am going to you know get the tonic water and hopefully you know that will you know do, do the job.”

Challenge of Change

Several participants spoke about the challenge of managing health conditions, including diabetes, hypertension, and hypercholesterolemia, through diet. Of these individuals, many framed this management as a series of challenging decisions; essentially, these participants understood what was needed to maintain good health and feared the consequences of failing to adhere to a healthy regimen, but still voiced a struggle to choose healthier options. Two participants, Mona and Roberta (a diabetic), offered emblematic perspectives on this challenge:

Mona: “I’m supposed to be trying to eat better. I just had a heart scare... I just had a stent put in... Yeah... So I really... So a lot of the stuff I need to cut out. But I’m doin’ pretty good, and I’ve cut out fried foods and you know... It’s gonna be a process for me.”

Roberta: “What are you gonna do, Roberta? You know, you can’t, and I’ll be very honest with you, potato chips is, when I tell you it’s an addiction for me, but I know that you have to curb it, I know I have to talk to myself and say alright, you know, you love potato chips. You are in love with potato chips, but Roberta, you can’t eat a bag of chips every day, you can’t do that. You can’t do it. Doctor doesn’t say that you can’t have some chips. But you can’t eat a whole bag of chips everyday. Cholesterol, you know. All types of problems. [...] I haven’t 100 percent mastered my eating habits. Um, I want to do better... It is hard. You know, but I wanna, I want to do better, because um you know, sometimes... it’s scary when um I uh see an individual, you know, uh who is missing a foot, a toe, and really I get scared.”

Making healthier choices for other family members also factored into decision-making at the store. For instance, though Sharon was aware of how added salt and seasonings could contribute to her husband’s high blood pressure, multiple points of tension emerged throughout the shopping trip based on his health: “Wait a minute, bae, you come get this, or you want me to get my regular kind? Seasoning salt? Something I don’t need to get?” When her husband responded that the seasoning would exacerbate his condition, Sharon agreed: “I’m not even gonna get it.” Later in the trip, Sharon explained this interaction: “Yeah... He got high blood pressure. He say I be putting too much seasoning... He try to blame it on me [...] It don’t work. Can’t do it. It ain’t gonna work.” Yet, at another point, Sharon discussed potato chip options with husband: “Low-salt, or no... You want the ones with no salt? No salt? Who eats chips with no salt?” At other moments during this trip, Sharon’s husband chose low-sugar options, including sugar-free Kool Aid packets and regular Cheerios, initiating similar interactions between he and his wife.

Paying More for Fresh, Healthy, Quality

While prices were a clear factor in many participants’ grocery shopping routine, some individuals clarified how other priorities, including health, provide a counterbalance to economic considerations. For instance, Delores, an 80 year-old and lifetime resident of the surrounding neighborhood offered a salient metaphor for the cost of good health:

“You know, sometimes it’s better... It’s better to get somethin’ good than to get somethin’ that hurts you. You don’t want no bad eatin’ food, you know that. Anything you buy. If you buy a coat... If you buy a good coat, that coat might last you maybe five or six years. But you buy somethin’ cheap, it ain’t gonna last. Even in shoes and sneaks, if you don’t buy somethin’ good on your feet, it ain’t gonna last.”

Cara (51) suggested that her preference for certain types of healthy snacks was not sensitive to price or distance, though she had earlier expressed strong constraints with regards to her small SNAP allocation and suspended drivers’ license: “You see I love these [points to package of dried fruit in cart]... The nuts with the mixed fruits in there, I eat them. I’ll go a mile to get them. I love them, dried fruits and nuts. ... I paid four dollars for them. I’ll pay four more dollars, I’ll eat em all. I could survive off of that.”

This willingness to accept greater cost for healthier, quality products also extended to how individuals decided where to shop, sometimes taking on more complex trips or higher prices.

Roberta, a 66 year-old with diabetes, described this sentiment in terms of accessing items that could help her manage her blood sugar:

“Here's also another neat thing. Now there are so many stores like Trader Joe's, like Whole Foods, you know, and of course it can get pricey, but um for people like myself with the diabetes and things, because you have to read the labels, and you have to be careful. Because there's so much gluten, where Whole Foods and Trader Joe's they specialize in foods that's non-gluten. [...] Sometimes I will have to just make a sacrifice and just go, you know. Ride up, ride up to Whole Foods and do some shopping there, and like I said it can get a little pricey, you know, but what are you, what are you gon' do? It's better to make the sacrifice and spend the money, so that you can eat healthy.”

Similarly, Sierra (35), a neighborhood resident and SNAP participant, was not willing to compromise on her perception of freshness for a store's lower prices. As she shopped with her elementary school-age son, she contrasted the case supermarket to new discount supermarket: “Also, they opened up a Bottom Dollar on Girard Avenue. Yeah, so a lot of people go there now. Because it's way cheaper. But I can't... I'm a picky person, so I have to go where I know the food is fresh, you know? Even if it's a franchise, I don't know that it's fresh.”

DISCUSSION

Clean, Safe, Friendly: A Cosmopolitan Canopy

In 2004, the sociologist Elijah Anderson introduced the construct of the “cosmopolitan canopy.” These urban spaces allow otherwise guarded city-dwellers to connect with one another under social controls and expectations of civility and good behavior, in stark contrast to the normal controls of indifference and wariness of strangers. Anderson points to Philadelphia's Reading Terminal Market as the paradigm of a cosmopolitan canopy (2011); coincidentally, this marketplace was reinvigorated and made permanent through the early efforts of The Food Trust, who often will invoke this space in describing a vision for expanded healthy food access in the city. He also contrasts the apparent harmony of Reading Terminal with a the nearby Gallery Mall, a space governed by the “code of the street,” characterized by brusque personal interactions and a pervasive threat of disruption or disorder.

Participants in this study valued the case supermarket for elements of physical and social civility: it was clean, bright, even “sparkling;” it was safe and orderly, reliable and well-stocked; it accommodated the needs of the elderly; it allowed customers to feel respected and well-treated. All of these elements were drawn in sharp contrast to experiences in other neighborhood stores, and were reasons for selecting the case supermarket over other spaces. In neighborhoods where this type of “civil” food shopping is not the norm, we must strongly consider the significance that this environment may hold.

Given the vast complexity and likely stress associated with food shopping trips in low-income, low-mobility neighborhoods, we come to understand the new store as a possible support structure within individual coping strategies. As Anderson suggests, social interactions under the cosmopolitan canopy are less guarded and indifferent; the case supermarket may function as yet another socially-supportive structure in that it provides a civil and convenient resource. Remembering Deborah's characterization of “shopping with wisdom,” it is possible that by shopping under the canopy of the case retailer it is easier to be wise.

The awareness of several participants of foodborne illness, especially in drawing a distinction between the case retailer and others, is also significant. In their most recent survey of national grocery shopping trends, the Food Marketing Institute reported that 91 percent of Americans “trust their grocery store to provide safe food,” and that this figure has remained stable over the last decade (FMI, 2014). While the vast majority of Americans do not worry about food safety while grocery shopping, participants in this study had reasons to be vigilant, either from negative past experiences or broader perceptions of quality. This is consistent with another Philadelphia-based study of shopping in a low-income neighborhood (Frasso, 2014).

The frequent exchanges of pleasantries - excuse me's and thank you's - provided an additional layer to the canopy. Amid the hustle and noise of urban street life described both by Anderson and earlier by Louis Wirth, these verbal notes of politeness are often absent. Many trips to the case supermarket in North Philadelphia - walking from my apartment through Rittenhouse Square, into the 15th Street subway terminal, to the case supermarket - or even in daily life around the campus of the University of Pennsylvania, would produce fewer of these polite exchanges than I observed in the store. Indeed, I would suggest that even the Whole Foods described as a cosmopolitan canopy by Anderson and the Trader Joe's where I most frequently shop feature far less of this interaction.

Health Awareness and Change

Health, while not originally expected to be so directly invoked by participants, proved to be a critical theme for many shoppers in this study. Many participants in this study were keenly aware of the healthfulness of food products, especially those who were actively managing a chronic disease for themselves or others through diet. While explanations for why new supermarkets may not improve neighborhood health often cite lack of nutritional knowledge as a factor, this did not appear to be the case among most participants in this sample.

This illustrates another key finding: fruits and vegetables made up a small piece of health information described by most participants. Most people, even those who purchased less-healthy items or referenced their preference for less-healthy (“junk”) products, stated positive opinions toward fruits and vegetables. Similarly, fruit and vegetable purchases did not translate to an overall positive attitude toward a healthy diet. Furthermore, for individuals with specific chronic conditions, consuming fruits and vegetables may not be a significant consideration compared to avoiding less-healthy items that will cause health complications (“That’ll make my high blood pressure messed up”; “I don’t really need it... I’m trying to eat better”).

Individuals who had acute conditions, including recent diagnoses or procedures, were probably the most aware and motivated to change. These participants still described the challenge of changing old habits, despite their desire to change and avoid negative health consequences. Again, consider the causal model of new supermarkets affecting resident health outcomes: these individuals are well within the stage of adopting and maintaining positive health behaviors, yet friction clearly exists in this process.

Understanding these points of friction is critical. For these participants, the challenge of making healthy choices and systematically replicating them was no small task, especially within the context of old habits, limited budgets, preferences, and social factors, including the influence of family. Nonetheless, participants were presented with and did sometimes choose certain healthier options in the supermarket, contextualizing these decisions within larger health concerns. It is

also relevant to consider if shopping under the case supermarket canopy, with its associated favorable social structures, presents greater opportunities to lessen points of friction over time.

Limitations

This research design has several possible limitations. It is possible participants purchased healthier items in response to the presence of a researcher. This type of response bias is difficult to completely avoid in most other types of individual-level food environment research, including surveys, interviews, food diaries, focus groups, and even receipt collection. In this case, the interviewer was a young, white man in an environment largely comprised of middle-aged and senior black women; this positionality was reflected upon in memoing and analysis, though it inevitably shaped the interactions between participant and researcher. There are several reasons why favorability bias, though potentially present, may be limited: first, these interviews were conducted as brief and unexpected encounter, limiting a participant's ability to adjust their behavior based on expectations of the interviewer; second, most participants were faced with firm shopping limits in terms of time or budget, and exceeding these limits may have caused hardship; finally, any possible priming about health would come from the brief survey, which was reserved for after the shopping trip was complete.

“Once a Grocery Store is There...”

As described by fresh food financing advocates, new supermarkets may never get developed in food deserts if they are subject to many additional expectations, namely programmatic or evaluative requirements about community health. Indeed, as this study has shown, there are significant contributions to the accessibility and convenience of a neighborhood store to the everyday lives of low-income, low-mobility shoppers. Importantly, this study imagines an in-store etiology of chronic disease, whereby shoppers carry the daily burden of managing diet-related chronic disease, and that these decisions are difficult and multi-dimensional. Should new supermarkets aim to assist shoppers in improving their health, either by access alone or by additional health programming, these realities must be incorporated into the store itself.

CHAPTER V: Conclusions

If the experience in Pittsburgh's Hill District store is any indication, expectations about the success of a new supermarket in a food desert can be placed on community residents. Following the opening of the long-awaited Heldman Plaza, the *Pittsburgh Post-Gazette* editorial board made a clear statement of responsibility: "Market value: The Hill District must support its new Shop'n Save" (Post-Gazette, 2013). The board described the large, multi-stakeholder effort required to build the store, and highlighted promises made along the way: "Those who worked hard to pull the Shop'n Save deal together are finally in a position to prove what they have maintained -- build a full-service supermarket in the Hill District and customers will come. After that, so will businesses and homeowners." Yet, neighborhood residents were also implicated: "Now the grateful neighbors have to do their part -- patronize the store to keep it a winner."

While these attitudes unfairly assign responsibility for the success of what is, ultimately, a privately-held business, they are important lessons for food access advocates. Indeed, as Chapter III demonstrated, some new stores in underserved areas may not be adopted by low-income shoppers after opening, while others can change the entire landscape of food shopping. The difference between adopted and not-adopted retailers seems to be at least partially a factor of store type, and whether the retailer matches existing community needs, which, as Chapter IV describes, can be wide-ranging and dynamic. The expectation for low-income residents of food deserts to "do their part" by patronizing the store is notable because it ignores this reality, but also takes a small, but possible theoretical step toward responsibility-based health outcomes; residents should "do their part" to become healthier, given this new resource. Who is to blame if no one becomes healthier after supermarkets open in food deserts?

This research provides empirical evidence to complicate these perspectives, and calls into question many of our original expectations of new stores. It reminds us of how the world of fresh food financing is as diverse as the communities where new supermarkets have been developed, and that these differences matter, both for the economic success of projects and the exposure to new stores required for any health improvements to be expected. Most importantly, it identifies key challenges and points of friction that may continue to make "doing one's part" difficult.

The now-familiar practice of developing new supermarkets in underserved areas has been adopted by a diverse coalition of stakeholders, ranging from local citizen groups, planning officials, community development banks, mayor and governors, and even the First Lady of the United States. In most of these efforts, the connection between healthy food access and diet-related health has been clearly stated: a lack of full-service supermarkets has left low-income communities in a battle against health they are unlikely to win. Similarly, professional health associations and government health agencies have issued public statements agreeing with this logic and the use of supermarket development as a community intervention.

In light of early findings that new supermarkets have little effect on the measured health of area residents, proponents have refocused their approach. During a 2014 expert panel convened to reflect on a decade of fresh food financing in Pennsylvania, stakeholders reiterated a comprehensive approach to improving health, where stores are important pieces, but not "silver bullets."⁴ Months later, Yael Lehmann, executive director of The Food Trust, emphasized the

⁴ Following the panel, a researcher in the audience commented to me: "They've moved the goalposts," referring to the evolution in the access-health narrative since PA-FFFI's inception.

importance of a physical access and education in a webinar facilitated by the St. Louis Federal Reserve Bank, invoking the socio-ecological model of health as inspiration for future efforts. In retrospect, researchers and stakeholders, including those beyond the practice of fresh food financing, may have softened assertions of an access-health connection, and perhaps would have modified intervention proposals, especially if guidelines of evidence-based public health, such as the LEAD Framework, had been more carefully followed (Kumanyika, Brownson, & Cheadle 2012). Nonetheless, as existing projects are evaluated and new ones move forward, who will dedicate themselves to making these stores successful for health? Indeed, some stakeholders, including shoppers, are trying.

Following the opening of a new store in a food desert, significant inertia exists to maintain the status quo for community health. In terms of health, it is exactly this “doing one’s part” that appears to be so complicated, according to findings from Chapter IV. Given the apparent challenge of changing one’s own health behaviors, especially with the added difficulty of supermarket shopping in low-income neighborhoods, even within an intervention supermarket, we should interrogate the access-health question yet again. Were early advocates so wrong to suggest that poor access to high quality, full-service supermarkets might have some connection to resident health? Or that developing stores in underserved areas may help residents improve their health? While the narrative over fresh food financing has begun to change, this assessment provides a novel interpretation of the original health-access question.

Review of Findings

As a framework to consider the overall findings of this study, let us revisit the original questions:

1. How do different types of development processes yield different types of supermarkets?
2. How do different types of new supermarkets drive different types of shopper behavior; in this case, how low-income shoppers adopt or do not adopt new stores?
3. How do consumers engage with new supermarkets, and how might these behaviors be meaningful for health?

Different Processes Yield Different Stores

While every project is unique, several types of efforts exist based on the financing, development process, site, and incorporation of health and wellness. This is critical for several reasons. First, it significantly challenges efforts to compare health outcomes between projects by introducing significant variation in stakeholders involved, store environments created, and health efforts implemented. Second, it underscores the multidimensional nature of project goals; health is but one of many desired outcomes for new supermarkets, and different stakeholders, including community residents, may prioritize these outcomes in different ways. Finally, the models of new supermarket development identified help us shape expectations of store outcomes and community response.

Industry is mature enough that there is a professionalized system of fresh food financing that cities and states can adopt, emulating ideas put forth by The Food Trust and The Reinvestment Fund. These organizations have disseminated their model of fresh food financing through collected resources (Healthy Food Access Portal), trainings and workshops (CDFI Fund), academic publications, reports (Grocery Gap, Closing the Grocery Gap), and tools (PolicyMap LSAs). These organizations can also be contracted as consultants in these efforts. Even if a city

or state cannot create a fresh food financing fund, the professionalized system is perhaps more accessible to retailers and developers who may not traditionally execute these types of projects, and provides a working proof-of-concept.

Health and wellness is an industry-wide trend within supermarket retailing, with analysts predicting continued growth in this area. Though impossible to distinguish what is trend-driven and what is not, several beneficiaries of fresh food financing have instituted significant in-store health efforts, including education, product reformulation (i.e. reducing sodium content in prepared foods), store dieticians or nutritionists, and clinics and pharmacies. The most innovative supermarket projects incorporate health at the earliest phases of development, providing space for health clinics and creating healthier recipes for prepared food options. This level of commitment introduces a variety of logistical issues which will be discussed later in the Conclusion.

Larger, full-service stores can provide more products and services, and typically employ more people. Additionally, larger stores appear to be more attractive to low-income individuals, at least as measured by change in SNAP benefit redemptions. However, larger stores require larger sites, which may not be available in many urban neighborhoods. Even when large sites are available, or could be assembled by combining multiple available parcels, other local regulations may prohibit this type of development. Nevertheless, local officials may be eager to make exceptions for certain projects, and New York City's FRESH program formalized a process to allow larger, "big box" retailers in areas where they were previously banned. Yet, one could also interpret these efforts as weak enforcement of zoning ordinances, or, more pointedly, a suburbanization of urban neighborhoods and retail environments.

Moving forward, this suggests important sub-questions to the first and second research questions. For instance, if larger stores can catalyze such change, how can smaller, more typically urban-format stores compete? Similarly, should funders prefer one type of store over the other? Conversely, if smaller-format are most appropriate for particular sites or community needs, but require additional support and subsidy, is this an acceptable option for fresh food financing? If stores are indeed a vital asset for areas that cannot logistically or economically support a store, perhaps there is a role for the public sector in provisioning this type of neighborhood amenity.

If You Build It, They Will Come, Depending on What You've Built

Chapter III demonstrated that in terms of low-income food shopping, new supermarkets in food deserts are not guaranteed to be successful, despite the apparent availability of food dollars to be spent. Measured by the best-available measure of change in low-income shopping behavior, ZIP-level SNAP redemption data, wide variation is evident in how low-income shoppers adopt new stores, both in terms of rate of adoption, and in relative significance compared to neighboring areas. By focusing on all known fresh food financing stores in California, Pennsylvania, and New Jersey, which are home to over thirty percent of projects nationwide and intellectual parents to other local, state, and federal efforts, the analysis suggests that this diversity can be expected elsewhere.

This investigation also helps answer the question of how long it takes low-income shoppers to adopt new stores, if at all. This is particularly important for store evaluation studies. If a research team chooses a post-opening sample period that is too close to the opening, shoppers may still be trying the store and incorporating it into their daily routines. While this certainly meets the

criteria for exposure (having ever used the store), the question of sustained exposure relies on more regular use and shifting away from previously-used stores further away.

Based on the measures used in Chapter III, it appears that by the five-month post-opening benchmark, most areas with new retailers had become relatively stable in comparison to neighboring areas. This does not suggest that five months is an appropriate window to measure health outcomes, though it may be sufficient to document change in shopping behavior. Most important, this documents an important empirical validation of a measure to a timeline of observation, notably absent from existing evaluations of health outcomes from new store development.

If They Come, Eating Better Will Still Be Hard

The experience of Mona and other shoppers at the case supermarket described in Chapter IV offer insights on what “fresh food access” actually means to low-income shoppers. Existing evaluations of new stores in food deserts have focused on outcomes such as perceptions of food access, food purchasing and consumption, and weight status. This study took a distinctly more proximal approach by documenting in-store behaviors. These qualitative data offer greater understanding of how and why the case supermarket fit into the lives of shoppers, and how these factors could influence health.

This sample of shoppers found the case supermarket to offer value in a variety of ways, including its overall quality with regard to other supermarkets in the area. Participants described the store’s cleanliness, orderliness, and helpfulness of staff as features that were not readily found elsewhere. For many, the store offered a predictable, safe, and convenient place to shop, sometimes multiple times a day or week. Shoppers also felt well-treated by store staff, again in contrast to previous retail experiences.

Even in food desert supermarket, the significant challenge of shopping with transportation constraints was still a factor, particularly for those hoping to buy several bags of groceries at once. The store’s shuttle service helps mitigate some of these issues, as does its proximity, which allows some trips to be completed on an as-needed basis. Food shopping can be an incredibly challenging and stressful task; in this context, significant theoretical questions arise about an individual’s ability to resist the marketing of unhealthy foods, purchase new and healthier items, and maintain these behaviors over time.

Finally, the burden of chronic illness can be particularly challenging for shoppers, though these individuals were the most likely to frame their food choices in terms of health. Read through health behavior theories, we would expect these shoppers to be highly primed to think about health, given that they have some education and awareness about which foods to purchase and consume, and physically experience the effects of adhering or not adhering to medical guidelines. Despite this, many of these participants still raised the difficulty of constantly managing their diet; this grappling seems to evoke the theory of planned behavior, especially the construct of perceived behavioral control. In this light, can we identify and amplify existing supports or reduce barriers to help shoppers actualize their health needs and goals? Yet, if this group of highly-primed, motivated shoppers still grapples with improving their food choices, what can be expected from those with less awareness or motivation? Perhaps a better question is what should be expected of retailers and food access advocates who aim to serve these shoppers’ needs?

Measurable, Meaningful, and Manageable, but Messy: Challenges for Research and Evaluation

What's actually "measurable, meaningful, and manageable?" Though we may aim to follow best practices of evidence-based public health, the planning concept of "satisficing" is expressed in many existing interventions and evaluations; essentially, what is "good enough" to meet standards of evidence and evaluative goals, given a certain set of constraints, including time, cost, and access. While this is not intended as an apologetic for the limits of evidence-based research and evaluation on new supermarkets, I aim to illustrate the unique circumstances that exist in this particular arena of public-private partnerships. Through iterating through several research designs for this project, several key conditions were identified that challenge evaluation in this space; these observations are informed by Fleischhacker, Flournoy, and Moore (2012), though expand beyond their suggestions for "measurable, meaningful, and manageable" evaluations.

Several assumptions and expectations are inherent in the goal to inform public health practice with evidence, and are evocative of Wolf-Powers' (2014) theories of action in community development. First, we must understand what constitutes "evidence." In order to understand that a program or intervention caused any meaningful change, we must have relevant and valid data points to inform this assessment; determining which data are relevant and valid. Literature on research design in the social sciences suggest approaches for selecting data, but also bring additional expectations about data availability and collection, the second assumption.

Given their choice of evidence, researchers must then develop methods of building or rebuilding datasets. This process is unavoidably influenced by logistical constraints, ranging from cost of data collection, to subject privacy, to the time required to measure an effect. Literature on program evaluation and qualitative research suggests that investigators should seek to optimize designs under within this system of constraints, seeking to control for influential variables whenever possible.

Even if evaluators successfully define what evidence is needed and create a viable system for collecting it, evidence-based practice further assumes that it is possible to develop a shared understanding of the evaluation output, the third assumption. For instance, if thirty percent of shoppers at an intervention supermarket report trying a new fruits or vegetable they had not previously purchased, how should one interpret this finding, even if there is a strong degree of agreement that this is a meaningful and valid data point? One might interpret thirty percent as a meaningful behavior change in the study population; conversely, one could also suggest that over half of respondents did not report trying new produce items at the new retailer. Questions of magnitude, scale, and long-term impact loom large in this assumption.

Perhaps most important, and best illustrated by this study, is the challenging nature of evidence-based public health the practice of place-based policy. As was described by a former food systems policymaker in Southern California, politics introduces a "fast moving current;" officials have little time to wait for outcomes. Thus, a more-true-than not litmus for policymaking is often adopted, as has been described elsewhere as "satisficing." Critically, these early insights may inform future funding mechanisms; indeed, this was the case in fresh food financing, as the National Institutes of Health called for time-sensitive proposals to measure the health effects of new supermarket development in underserved areas with specific regard to obesity. As the tautology in health research goes, "What gets funded, gets measured."

Simultaneous to the trend in research funding is a trend in community development, embracing early, associative findings that connect access to healthy food and health outcomes, and disseminating program models across multiple cities and states. Given the possibility of achieving multiple community goals at once, and attracting additional sources of capital, these types of projects seize opportune moments to move forward. The corollary tautology in community development is “What gets funded, gets built.”

Changing Development Narratives

Much as the original Progress Plaza development was rooted in progressive values of black capitalism, other sources, including white-owned or dominated institutions, were key financial partners in the initial development. Years later, the Plaza’s owners would come to embrace healthy food financing as a new means of bringing a grocery store back to the site. This hardly diminishes the authenticity of the Plaza, though highlights a tension within the broader black capitalist movement, and provides an example of the trade-offs made by all community developers in practice. For the contemporary food access movement, even if neighborhood residents do not get healthier, supermarket projects may still be warranted by other measures; the narrative of health may have simply expedited this process.

The market conditions in the mid-to-late 2000’s were distinctly different than those at present, with little credit available to any developers, much less those for urban and marginal sites. Retailer and developer willingness to pursue in non-conventional forms of capital, such as fresh food financing, may have shifted as the economy has started to recover. Furthermore, the outlook on urban real estate and development has shifted significantly in the last decade, with some cities, such as Washington, D.C., witnessing a market-driven reappearance of supermarket retailers in rapidly gentrifying areas.

There would not be a need for fresh food financing programs if retailers were already sufficiently interested and able to easily operate in food desert locations. This circumstance inherently creates a power differential between retailers, developers, and food access advocates. Within this context, early fresh food financing programs were careful to not include requirements for retailers to participate in evaluations; thus much of the literature focusing on single intervention retailers focuses on a handful of cases. One could also reasonably argue that as private companies, retailers should not be expected to participate in evaluations that require any investment of their limited resources.

“Zero-Sum Game” of Food Retailing

Food consumption is relatively constant on a per capita basis; thus, retailers are fighting for a fixed amount of food dollars, and new stores cannot be expected to generate new demand for these goods. Instead, one must expect that a new food retailer will (and indeed, must) have some effect on the existing marketplace as shoppers change their behavior from one retailer to another. Because of this microeconomic condition of supply-and-demand, the industry is commonly cited as hyper-competitive. Retailers are able to keep few trade secrets, as their stores are freely accessible to competitors (who are known to visit rival stores to note new features, promotions, or other efforts). Within this “open door” system, it is relatively straightforward to document certain outcomes, such as item price, placement, and promotion, as these data are expected to be regularly monitored by competitors.

Beyond these open-door characteristics, retailers hold few, but significant advantages. One major advantage is derived from point-of-sale (POS) shopper data. At a minimum, these data allow retailers to monitor dynamics around item sales (i.e. rate of sales, commonly-bundled items, such as ketchup and mustard, and average size of sale), allowing for adjustments in pricing, placement, or promotions to increase sales volume. More sophisticated shopper data exist at the individual or household level, rather than anonymous transactions. These data are collected through loyalty programs, which are typically free to join and allow the customer to benefit from particular “members-only” discounts or promotions. These data not only provide retailers with a stronger understanding of how particular products are bought, but it allows for tailored marketing approaches based on previous transactions.

Retailers must also negotiate with food manufacturers and wholesalers to keep their shelves stocked with the most relevant products for their customers. Larger food manufacturers can exert more influence in these negotiations, and may receive more favorable positions within the store (i.e. endcaps) or aisle (i.e. eye-level) as a result. Additionally, these negotiations may prevent retailers from sharing item-level sales data that includes their products. While some researchers have successfully accessed these data, they still only offer a single-store and purchasing-based perspective of consumption and diet (Foster, et al., 2014).

Recommendations for Practice

In terms of Frieden’s health impact pyramid (2010), environmental interventions, like developing grocery stores in food deserts, can be considered as context-changing efforts, improving the food environment where residents make food choices. However, as reinforced by this research, multiple contexts are involved in this single intervention. Indeed, by bringing grocery stores closer to where low-income people live, the context of the food shopping trip is altered, resulting in perhaps shorter, less-complicated or costly trips to the grocery store, or even increasing the number of trips an individual can reasonably make. Nonetheless, residents were familiar with supermarkets before the intervention, and intervention stores do not necessarily offer a different in-store context. Choices could reasonably be influenced by changed trip context.

Higher up on the health impact pyramid are individual counseling and educational efforts. These are common recommendations as follow-ons to new supermarket development, and are popular in the larger supermarket industry trend of “health and wellness” programming, though seemingly offered as a conceptual afterthought and not an integrated business strategy. In practice, these types of interventions require the greatest individual effort and have the smallest population-level impact (Frieden, 2010). Furthermore, as Chapter IV describes, many shoppers are highly aware of the healthfulness of fruits and vegetables, and how these foods can support overall bodily health. At least in terms of this sample of shoppers, it is uncertain how education could communicate additional value of eating fruits and vegetables than is already understood.

Perhaps more concerning and more important to the everyday lives of low-income individuals are the challenges of managing chronic illness through food choices. For these shoppers, considerations extended far beyond fruits and vegetables, and had far more to do with sugar and sodium content of particular products, and the availability and acceptability of reduced-sugar and reduced-sodium options. If shopper education is to be part of the advocacy for developing new stores in food deserts, these specific, daily needs should be incorporated. Otherwise, as a pent-up demand for healthy foods was presupposed in conceptual models for physical access-health

connections, so too may there be an assumed demand for generic in-store health education that goes unmet.

Improving Models of Change

For a new store to generate health outcomes, both health and community development change models must be true (see Figure 1). As fresh food financing programs are currently designed, theories of change focus primarily on opening the new store. However, in terms of health behavior change, most of the required steps occur once these community development efforts are complete, unless the store is receiving continued financial support to remain in business (something that is discouraged by fund administrators). Overarching factors, such as macroeconomic conditions or federal welfare policies (especially SNAP benefit allocations), may further complicate what is presented here as a linear, path-dependent process (Chrisinger, 2014).

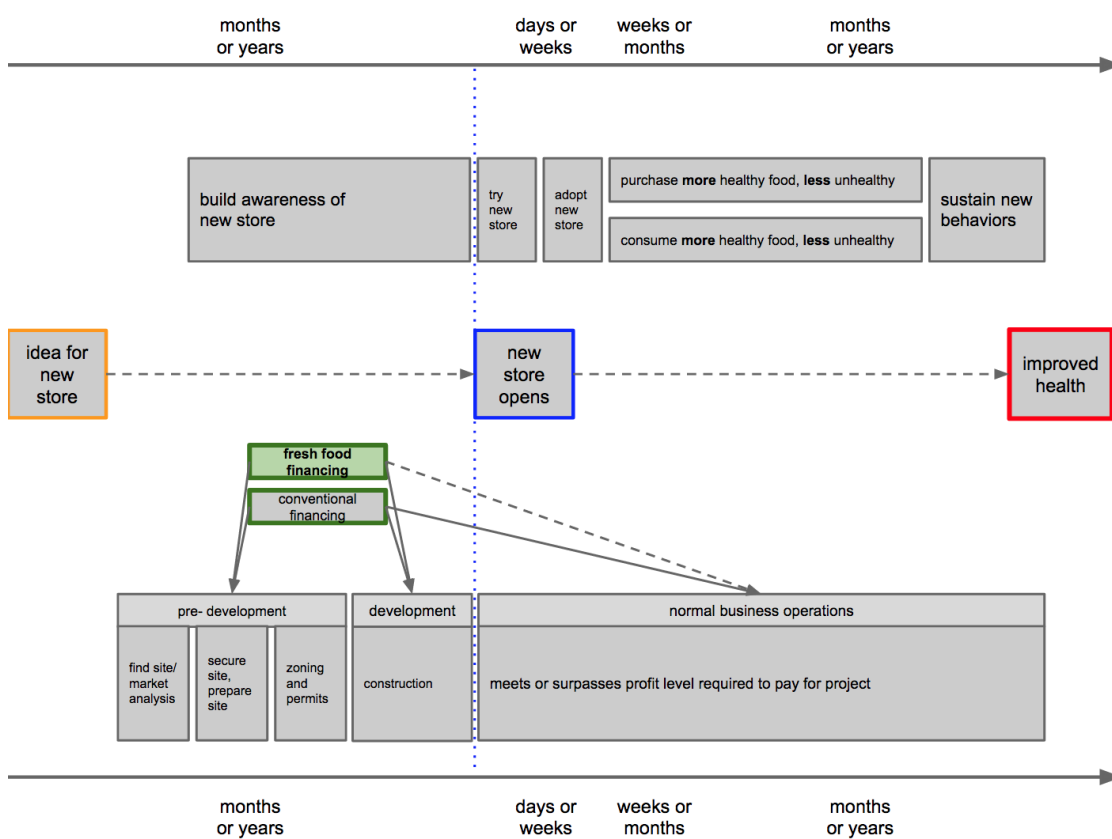


Figure 20. Theory of Change for a New Neighborhood Supermarket Improving Health

A revised model would include the possible interdependencies between health and community development variables, and identifies further points of intervention for fresh food financing to achieve greater change (see Figure 2). This reflects a systems science framework encouraged by leaders in public health, though it also introduces great uncertainty into the model. Nonetheless, one can interpret much of this uncertainty originating from the side of health, rather than community development; development does not rely on health, but health relies on development. This model illustrates much of what was emphasized by practitioners in Chapter II.

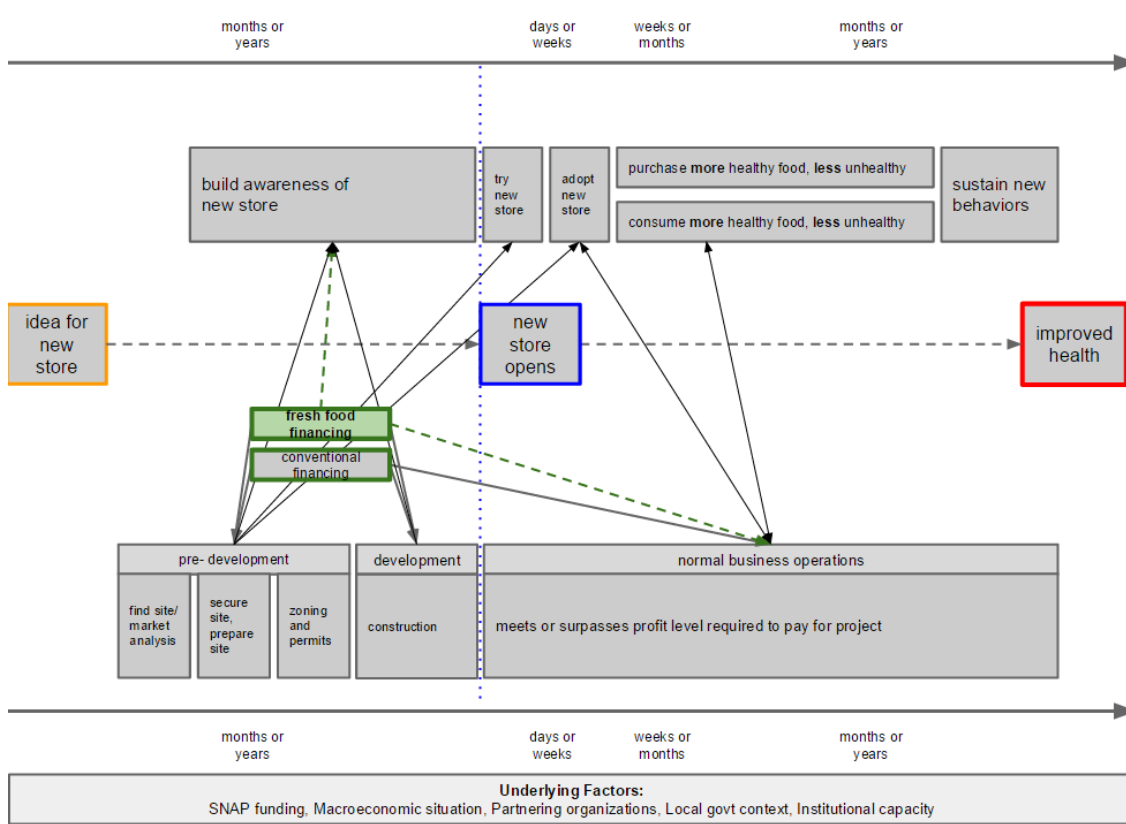


Figure 21. Revised Model of Change for New Supermarket Development and Health Outcomes, Incorporating Possible Interdependencies

Using two examples of outcomes from the Fox Street ShopRite development in Philadelphia’s Hunting Park neighborhood, let us consider the interdependencies that may have been influential. First, take the store’s large size (over 70,000 square feet) compared to its other urban competitors. The additional square feet provided by this development allowed the store owner to incorporate additional in-store services, including a health clinic, pharmacy, credit union, community room, in addition to traditional full-service supermarket departments and a large prepared foods section. We could imagine that the store’s attractiveness increases the chance that residents will shop there, thus being exposed to the in-store environment and supporting normal business operations. Once in the store, we might also imagine that services provided at the health clinic or the reduced-fat prepared foods might contribute, over time, to an individual’s improved health.

Setting aside the initiative of the store owner for a moment, these size-related outcomes are almost entirely determined very early in the development process, long before construction begins. They might also be influenced by the availability of very large sites in underserved neighborhoods, by the willingness of the city to negotiate development regulations, or by the availability of special financing, such as NMTCs, and experienced financial partners to broker such deals. In sum, while store size might significantly influence the health model of change, its determinants come early in the process and are highly contextual.

Now returning to the initiative of the supermarket's owner; in this case, Jeff Brown of Brown's Super Stores, Incorporated. Brown was an early participant in Pennsylvania's Fresh Food Financing Initiative, developing several stores in underserved Philadelphia neighborhoods in partnership with The Reinvestment Fund and The Food Trust. Additionally, his company formed a nonprofit consulting division, UpLift Solutions, that advises others around the country on this model of development, as well as ways to incorporate health and wellness into stores. Thus, perhaps before the predevelopment phase for the Fox Street ShopRite began, much of the store's ultimate health programming was determined when Jeff Brown, someone willing and able to incorporate health features as part of normal business operations, was identified as the operator. Furthermore, we might also imagine that some of the in-store features accommodated by a larger store footprint, such as the health clinic, were prioritized by Brown in ways that another, less-experienced or health-aware operator might not.

While the attitude of "store first, health second" follows a logical theory of change, it places much trust in possible, yet unguaranteed, interdependencies. As the example of Fox Street demonstrates, key steps in the community development process may have profound effects on the likelihood of the health process moving forward. The revised model should remind stakeholders that for health changes to be possible, the earliest phases of development may be the most important; otherwise, fresh food financing must be willing to continue supporting stores after they have opened by funding, promoting, or requiring that retailers pursue in-store health programming, or partner with outside organizations that can.

Lessons for Community Development

Based on the findings of this dissertation, several specific mechanisms may hold promise for improving the health impact of new store developments: community health needs assessments, community benefits agreements, and health impact bonds. While community development organizations have only recently started considering the health effects of their projects, this research also suggests that evaluation of health outcomes is not the only approach to encouraging more explicitly health-oriented developments. Planners, policymakers, and community development officials exercise significant control over place-based interventions through development regulations. The mechanisms proposed here have been successfully applied in similar settings, and this research suggests that they may also be appropriate to move fresh food financing projects toward more thoughtful incorporation of community health outcomes.

Community Health Needs Assessments

Under the Affordable Care Act (ACA), nonprofit hospitals, including many academic medical centers, are required to complete a Community Health Needs Assessment (CHNA) at least once every three years (IRS, 2015a). The ACA outlines how CHNAs are developed, the topics and strategies areas which must be included, and the consequences for failing to meet CHNA requirements (IRS, 2015b). These documents could provide a conceptual basis for similar expectations of fresh food financing retailers. Based on the areas from which they hope to draw shoppers, retailers, in partnership with local officials or community groups, identify priority populations and conditions, and set forth a strategy for addressing these things. Additionally, measurable benchmarks can be identified and monitored over time.

Community Benefits Agreements

Employed in Pittsburgh's Hill District project, community benefits agreements (CBAs) are a type of legally-binding document that identifies developer promises in writing while a project is still being approved by local officials. It builds on a tradition of negotiation between developers and city officials called exactions, but places greater emphasis on community-articulated needs. Designated community groups may negotiate a set of benefits that must be rendered on a set timeline, and this agreement is given official status by local officials. For example, CBAs have been used to specify the number and type of jobs that will be made available to neighborhood residents. Extending these expectations to post-construction health efforts and programming is possible, yet untested.

Health Impact Bonds

Though this tool does not currently exist, the concept is similar to a Social Impact Bond, which is a financial instrument styled on performance-based loans. Essentially, the borrower must meet certain mutually agreed-upon and measurable targets for impact, or else repay part or all of the loan. In terms of a Health Impact Bond, targets could focus on short and long-range outcomes and community-identified health priorities. Metrics could include sales of certain healthy items, use of in-store promotions or marketing, or improvements in shopper health status. In collaboration with retailers, health experts can help stakeholders develop reasonable measurement strategies and appropriate targets.

Lessons for Supermarket Developers and Operators

Progressive retailers who are willing to accept the complexities of developing and operating stores in underserved neighborhoods while offering a high-quality environment and services stand to capture significant benefits. While fresh food financing officials have hesitated to require that retailers adopt health promotion efforts or evaluations, this should be seen as a broader opportunity for stores to connect with consumers. The Food Marketing Institute's assessment of major industry trends suggests that American shoppers are seeking health and wellness in supermarkets, and that grocers can be "trusted allies" in this navigation (FMI, 2014). For those who are grappling with the challenging of improving their health through dietary change, additional and thorough incentives and other support in the supermarket aisles may help individuals make and sustain these healthy behaviors. Furthermore, presence in low-income markets may qualify retailers and developers for additional funding to support community health, including FQHCs and SNAP-Ed programming. Nonetheless, this implies that retailer be active partners in health promotion and improvement, rather than sponsors or educators alone.

The transportation constraints of customers should be an additional consideration for retailers who aim to better serve their communities. For those who were able to use it, the store shuttle proved to be an attractive option, though potentially not without additional hassles of waiting and crowding into a van with other customers. Even with the availability of the shuttle, shoppers still modified their trips in terms of total price or quantity, most often reducing the size of their trip and suggesting they would return later or go elsewhere. The informal hack system seems to fill some of this need, though others perceived this service to be too expensive. Since these interviews were conducted, private ride-sharing services such as UberX and Lyft have entered the Philadelphia marketplace; though these require the use of a smartphone, they certainly may provide a more formal, low-cost option.

Lessons for Health Officials

As previously mentioned, early research on food access generated subsequent calls for evaluations by the National Institutes of Health and the Robert Wood Johnson Foundation, with specific attention to behaviors and outcomes which were not well-theorized in terms of supermarket shopping and dietary behavior. Thus, what was funded, was measured, finding little in terms of health. Yet, it is not a lack of methods or tools that limits health researchers from cleanly measuring the health outcomes of place-based developments; it is the contextual nature of the planning process itself. This research illustrates how more proximal health outcomes can be employed in research, and correspond to the community development outcomes which are required for the place-based intervention to even exist.

This is not to say that major granting institutions like NIH and RWJF should not support place-based health research and evaluation. Yet, it does observe the limits, both in terms of implementability and generalizability, of this type of research, at least as it is currently conceptualized by the health field. Stakeholders who oversee the production and use of spaces - including developers, planners, elected officials, financiers, and community groups - look to different bodies of evidence to inform their decision-making. Health is but one of many times of evidence that may be used. Constrained by time, elections cycles, and capital, among other things, these stakeholders will (and often must) act with incomplete information. They are opportunistic and, while no individual or institution exhibits perfect economic rationality, they will generally seek to seize opportunities to save time and money. However, borrowing from the leading edge of neighborhood-based research in interdisciplinary social and applied sciences (sociology, urban studies, city planning), social contexts can and must be included in these assessments. Indeed, the social and political history of Pittsburgh's Hill District have thrust a specific parcel toward supermarket development; how, then, is this retailer different than other sites and communities with less of a historical rallying cry toward fresh food?

While this increased collection of contextual information undoubtedly raises the cost of evaluation. However, given the importance of context in determining how stores are made, how they are adopted, and what they mean to shoppers, *not* collecting this information stands to hamper the generalizability of findings. By seeking to expanding our measurement and interdisciplinary analysis of context, we also improve the generalizability of evaluations beyond single cases, arguably providing the public with a greater return on NIH's investment of taxpayer dollars.

Limitations and Future Work

As with all case study research, this project has some limits to its broader generalizability. Whenever possible, efforts were made to solicit multiple perspectives, consider non-conforming cases, and reflect on researcher positionality. Nonetheless, my interpretation of this complex, constantly-evolving field is subject to error, including my own biases, some of which were described in the Prologue.

The data used to assess adoption of new stores by low-income shoppers leave much to be desired. USDA aggregates data at the ZIP level in an effort to anonymize retailer-level effects, though there is reason to believe that the magnitude of new supermarket development can be observed when SNAP shoppers adopt the store. These data were interpreted using a variety of metric to help identify a possible signal amid the noise. Retailer-level data is the only true method of

validating this process of new store adoption; nevertheless, these data are the best freely-available, spatial estimators of low-income shopping, and have never been applied to consider the effects of investments in food deserts.

The subset of cases included in this study could be expanded in future work, or by future researchers. The list of projects analyzed in Chapter III should be extended to more recently developed stores, as well as other states. With retailer buy-in and permission, walking interviews could be conducted at other retailers who have benefitted from fresh food financing efforts. While I aim to pursue this line of research, experts in food access research have suggested that the case retailer in this project is exceptional in terms of their willingness to permit in-store studies. In spite of this, I remain convinced that the voices of low-income shoppers are notoriously absent from conversations about new stores in food deserts. To the extent possible, I aim to continue this line of inquiry to better understand how place matters to the experience of food shopping.

Final Notes

Though no amount of innovative policy or public-private partnership can prevent a possible negative experience, bad luck, or consequences of a mistake or poor choice, it remains important to hear the experiences of those who fresh food financing set out to help in the first place. The practice of incentivizing new supermarket development in underserved areas is mature, but the frustrations and challenges of those who live out the experience of shopping in food deserts are renewed with each trip to the supermarket, even those that present a “sparkling” option amid an otherwise unfavorable retail landscape. For many low-income individuals, shopping for food is still far more stressful, nerve-wracking, inconvenient, expensive, and demeaning than for higher-income shoppers, for reasons that include proximity to quality stores, but are likely overshadowed by larger issues of employment, income, and persistent poverty. If low-income people are responsible for making these projects successful, we must appreciate the degree of difficulty this responsibility may signify for some.

Upon reflecting on these challenges, I distinctly remember my experience shopping with Cara, the 51-year old shopper who was devastated to learn that she could not use a store shuttle to take her groceries home. Time after time, she apologized to store employees who sensed her frustration. “It’s not you,” she would say. “It’s the system.”

Cara was less angry than she was exhausted. Exhausted with grocery shopping. Exhausted with the stress of budgeting for it. Exhausted with the multiple modes of transit it required. As she described her situation, she spoke with a sense of defeat: “Sad. See what we gotta go through? Goin' shoppin'? [...] You see what you go through, comin' places like this? That's crazy.”

For the sake of Cara’s health, and others like her, we - the planners, public health officials, advocates, and politicians - must listen to these voices.

APPENDIX

Supplemental Tables

Note: Green denotes cells with greater than 20.0%; Red denotes negative values

Table 6. Percent Change in SNAP Redemption for ZIPs Containing Projects

		% Change SNAP Redemption			
		Opening	2 months	5 months	10 months
CA01	Mandela Food Cooperative (Oakland)	6.8%	14.2%	9.1%	10.5%
CA02	Superior (Los Angeles)	1.1%	19.7%	16.7%	40.1%
CA03	Fresh and Easy (Los Angeles)	-5.6%	12.2%	13.4%	18.7%
CA04	Fresh & Easy (San Francisco)	5.2%	6.8%	6.0%	5.0%
CA05	Northgate Gonzalez - City Heights (San Diego)	7.0%	28.8%	28.7%	33.1%
CA06	El Rancho Marketplace (Pismo Beach)	103.3%	182.5%	256.4%	248.7%
CA07	Northgate Gonzalez - Mercado Project, Barrio Logan (San Diego)	18.0%	14.9%	22.1%	20.9%
CA08	Northgate Gonzalez (Inglewood)	3.8%	10.2%	10.6%	12.8%
CA10	Palomino Market (Los Angeles)	1.6%	-4.1%		
CA11	Urban Radish (Los Angeles)	-2.8%	-0.3%	4.1%	
CA18	Gazzili's Market (Oakland)	8.5%	22.4%	30.5%	34.9%
NJ01	Fresh Grocer (New Brunswick)	1.7%	6.3%	16.1%	14.6%
NJ02	Bottino's ShopRite (Vineland)	-0.7%	0.5%	-3.7%	
PA01	ShopRite Island Ave (Philadelphia)		149.6%	153.6%	122.9%
PA02	ShopRite Parkside (Philadelphia)	-1.0%	67.4%	88.0%	102.0%
PA03	Fresh Grocer La Salle (Philadelphia)	27.7%	130.9%	122.6%	146.6%
PA04	Fresh Grocer Sullivan Progress Plaza (Philadelphia)	17.5%	20.0%	28.5%	32.9%
PA05	Save-A-Lot Cheltan Plaza (Philadelphia)	5.0%	1.9%	5.0%	1.8%
PA07	Bakers Center ShopRite (Philadelphia)	2573.5%	2469.7%		
PA08	Centre Heldman Plaza Shop 'n Save (Pittsburgh)	376.7%	376.7%		
PA09	C-Town Supermarket (Bethlehem)	-11.4%	-11.4%		
PA10	Fare & Square (Chester)	11.9%	-1.6%		

Table 7. Percent Change in Share of Area SNAP Redemption for ZIPs Containing Projects

		% Change Share of Area SNAP Redemption			
		Opening	2 months	5 months	10 months
CA01	Mandela Food Cooperative (Oakland)	2.3%	3.6%	-4.0%	-3.6%
CA02	Superior (Los Angeles)	1.6%	15.3%	15.4%	25.4%
CA03	Fresh and Easy (Los Angeles)	-0.4%	10.9%	8.2%	8.7%
CA04	Fresh & Easy (San Francisco)	-0.8%	-1.9%	-1.0%	-1.9%
CA05	Northgate Gonzalez - City Heights (San Diego)	3.2%	23.0%	20.7%	23.6%
CA06	El Rancho Marketplace (Pismo Beach)	108.6%	158.3%	209.7%	252.6%
CA07	Northgate Gonzalez - Mercado Project, Barrio Logan (San Diego)	17.8%	16.0%	17.2%	13.0%
CA08	Northgate Gonzalez Market (Inglewood)	4.1%	7.7%	8.0%	8.3%
CA10	Palomino Market (Los Angeles)	0.2%	-0.8%		
CA11	Urban Radish (Los Angeles)	-3.7%	1.2%	8.7%	
CA18	Gazzili's Market (Oakland)	5.5%	15.0%	11.8%	14.3%
NJ01	Fresh Grocer (New Brunswick)	2.3%	6.5%	8.9%	4.0%
NJ02	Bottino's ShopRite (Vineland)	0.5%	1.8%	2.5%	
PA01	ShopRite Island Ave (Philadelphia)		120.9%	123.7%	98.0%
PA02	ShopRite Parkside (Philadelphia)	-0.4%	66.3%	64.0%	70.6%
PA03	Fresh Grocer La Salle (Philadelphia)	21.6%	116.6%	105.8%	119.0%
PA04	Fresh Grocer Sullivan Progress Plaza (Philadelphia)	14.3%	20.4%	22.1%	19.8%
PA05	Save-A-Lot Cheltan Plaza (Philadelphia)	0.8%	3.0%	-0.3%	1.8%
PA07	Bakers Center ShopRite (Philadelphia)	3889.2%	1522.9%		
PA08	Centre Heldman Plaza Shop 'n Save (Pittsburgh)	404.8%			
PA09	C-Town Supermarket (Bethlehem)	-3.7%			
PA10	Fare & Square (Chester)	8.6%	3.6%		

Table 8. Improvement in by Total SNAP Redemptions for ZIPs Containing Projects

		Improve Rank for Share of SNAP				
		Openin g	2 months	5 months	10 months	Tota l
CA01	Mandela Food Cooperative (Oakland)	0	0	0	0	0
CA02	Superior (Los Angeles)	0	0	0	2	2
CA03	Fresh and Easy (Los Angeles)	0	3	0	0	3
CA04	Fresh & Easy (San Francisco)	0	0	0	0	0
CA05	Northgate Gonzalez - City Heights (San Diego)	0	1	0	0	1
CA06	El Rancho Marketplace (Pismo Beach)	0	0	0	0	0
CA07	Northgate Gonzalez - Mercado Barrio Logan (San Diego)	0	0	0	0	0
CA08	Northgate Gonzalez Market (Inglewood)	1	0	0	0	1
CA10	Palomino Market (Los Angeles)	0	0			0
CA11	Urban Radish (Los Angeles)	0	0	0		0
CA18	Gazzili's Market (Oakland)	1	0	0	1	2
NJ01	Fresh Grocer (New Brunswick)	0	0	0	0	0
NJ02	Bottino's ShopRite (Vineland)	0	0	0	0	0
PA01	ShopRite Island Ave (Philadelphia)		4	0	0	4
PA02	ShopRite Parkside (Philadelphia)	0	6	0	1	7
PA03	Fresh Grocer La Salle (Philadelphia)	1	2	0	0	3
PA04	Fresh Grocer Sullivan Progress Plaza (Philadelphia)	0	1	0	0	1
PA05	Save-A-Lot Cheltan Plaza (Philadelphia)	0	0	0	0	0
PA07	Bakers Center ShopRite (Philadelphia)	11	1			12
PA08	Centre Heldman Plaza Shop 'n Save (Pittsburgh)	10				10
PA09	C-Town Supermarket (Bethlehem)	0				0
PA10	Fare & Square (Chester)	0				0

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CHAPTER I

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