Center for a Livable Future

THE BALTIMORE CITY FOOD ENVIRONMENT

Center for a Livable Future
Johns Hopkins School of Public Health

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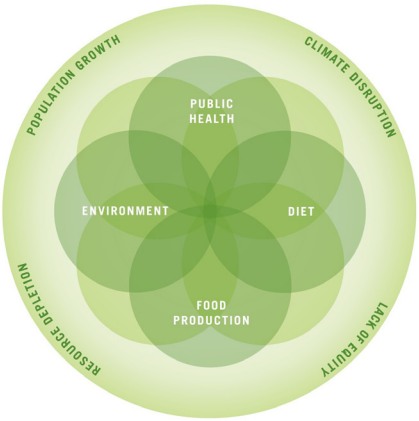
About the Johns Hopkins Center for a Livable Future

Founded in 1996, the Johns Hopkins Center for a Livable Future promotes research and communicates information about the complex interrelationships among diet, food production, the natural environment and human health. As an interdisciplinary center it serves as a resource to solve problems that threaten the health of the public and hinder our ability to sustain life for future generations.



The Johns Hopkins
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Baltimore City Hall
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Contents

Introduction

A growing body of public health evidence suggests that differential access to healthy foods contributes to racial health disparities—and elimination of these disparities is one of two goals established by the US government in Healthy People 2010, a comprehensive health promotion and disease prevention agenda. Public health research on food environments (and specifically food stores) has increased in the last decade, but the conclusions of many studies have been hindered by the number of stores examined or the sizes of the sample areas. Using multiple researchers and collaborating with residents, community organizations, and business owners, we have collectively been able to examine nearly every food store within the City of Baltimore.

Three categories of stakeholders with varying experiences, knowledge, and influence are working to improve the Baltimore City food environment. The first group is made up of residents, advocates, community groups, and local businesses. The second is the City of Baltimore, composed of elected officials, policymakers, educators, and regulators. The third is public health researchers, represented locally by the Johns Hopkins Center for a Livable Future but also supported by national and international investigators concerned with diet, nutrition, food security, food production, and environmental and human health.

In Just and Lasting Change: When Communities Own Their Futures Taylor-Ide and Taylor describe the key collaborations ("the three-way partnership") that must develop among communities, governments, and research experts to produce and sustain positive change (Taylor-Ide & Taylor, 2002). The three groups described above are at a critical juncture for enacting change: Local data has been collected, and communities are reaching tipping points of both need and demand. Public health researchers have a crucial role to play—along with Baltimore City and its communities— in crafting new programs that will be effective, efficient, just, and sustainable.

This report reflects some of the results of our research, numerous case reports, and recommended interventions to improve the Baltimore City food environment.

Chapter 1
Food Stores in Baltimore

A. Types of Food Stores

In studies conducted 2006-2008 in Baltimore City, food stores were initially categorized according to the US government coding system, the Standard Industrial Classification (SIC). The SIC system utilizes the following food store classifications: convenience food stores, food markets, grocery stores, and supermarkets. This taxonomy does not, however, adequately describe features unique to groups of stores that heavily influence the Baltimore City food environment. There are several reasons for this gap.

One is function: Food stores in Baltimore City differ not only between store types (convenience stores versus supermarkets, etc.) but also within store types. In the SIC system, a grocery store may resemble a convenience store with regard to the types of food for sale, or it may have minimal food offerings and focus more on generic merchandise and tobacco products. The result is that many of the food stores originally coded as grocery stores in Baltimore City are actually general merchandise stores with limited food offerings. The second reason the SIC taxonomy does not adequately depict Baltimore food stores is structural: The city has a substantial number of "behind-glass stores," whose floor plan significantly influences the food environment in the neighborhoods they serve. Failing to provide a separate category for these stores would lead to diminished insight into the food environment. Additionally, farmers markets, covered markets, and "Arabbers," which are not included in the SIC classifications, contribute significantly to the Baltimore City food environment. To resolve these issues, we have modified the SIC coding system (as reflected in this report) so that each food store is placed in one of the following categories: supermarkets, convenience stores, corner stores, or behind-glass stores.

Supermarkets are food stores differentiated from others on the basis of size: They have a staff of more than 50 employees and, generally, national or regional name brand recognition. Adapting the classification system to Baltimore's food environment, we labeled as supermarkets food stores with five or more cash registers (regardless of name recognition and staff size). Convenience stores are differentiated from others by their being franchises of nationally recognized chains; they do not fit into the category of supermarket, however, because the individual store is small (e.g., 7-Eleven). Such stores generally have long hours of operation and well-established distribution systems, as well as name recognition beyond their immediate location.

Corner stores are different from supermarkets and convenience stores in that they are typically operated by the owner, friend-employees, or the owners' family members, and their names are generally not recognized outside the neighborhoods they serve. As their category suggests, these stores have historically been

Figure 1. Behind-Glass Store

Figure 2. Behind-Glass Store Customer's Perspective Consumer Interaction Through Revolving Glass Window

positioned at the corner of city blocks, though this is not always the case. Within the corner store category, there are wide variations with regard to the quantity of food versus general merchandise that is stocked.

The final category of stores, behind-glass stores, is an important subset of corner stores. They are characterized by having barriers of Plexiglas walls separating the consumer on one side from the retail items and owner/workers on the other side. See Figures 1 and 2 below. (See glossary in Appendix A.)

B. Distribution of Food Store Types

Rationale and Methodology for Assessing Food Store Type Distribution

Given its history as a highly segregated city, it is not surprising that Baltimore is plagued by the racial health disparities typical of many modern US cities. This context is important when considering Baltimore's food environment. In this chapter, we 1) examine the distribution of food store types and how it relates to the geographic racial segregation in Baltimore today and 2) evaluate the availability of healthy foods both within and between food store types.

When we studied the distribution of food stores in Baltimore City, we characterized neighborhoods by their racial composition (the word "neighborhood," as frequently used in public health research as well as in this report, refers to a US census tract). Neighborhood racial composition was calculated using 2000 US census data. Following prior public health research, census tracts in which >60 percent of the residents were either white or black were defined as predominantly white or predominantly black (Moore & Diez Roux, 2006). Tracts that did not fall into either of these categories were classified as racially mixed areas.

Distribution of Food Store Types: Part I Supermarkets, Corner Stores, and Behind-Glass Stores

Figure 3, on the next page, depicts the distribution of supermarkets, corner stores, and behind-glass stores in Baltimore City. Neighborhood racial composition is portrayed as follows: blue—predominantly black population; green—mixed black and white population; red—predominantly white population.

The distributions of corner stores and behind-glass stores are uneven across Baltimore City neighborhoods. As seen in Figure 3, corner stores (labeled "grocery stores" in the figure's legend) and behind-glass stores are primarily located in predominantly black neighborhoods, depicted in light gray. These two types of stores typically do not carry fresh produce, skim milk, or whole wheat bread, foods recommended by the Dietary Guidelines for Americans (Franco, Brancati, & Diez-Roux, 2007; Franco, Nandi, Glass, & Diez-Roux, 2007). While there is a presence of supermarkets in Baltimore's predominantly black neighborhoods, they typically have lower levels of healthy food availability, as demonstrated in the case report presented later in this chapter (see "Case Report: Comparison of Two Supermarkets," below).

Distribution of Food Store Types: Part II Convenience Stores, Farmers Markets, and Covered Markets

Figure 4, on the page 6, depicts the distribution of convenience stores, farmers markets, and covered markets. As in Figure 3, neighborhood racial composition is portrayed as follows: blue—predominantly black population; green—mixed black and white population; red—predominantly white population. The distributions of convenience stores, farmers markets, and covered markets—like corner stores and behind-glass stores—

Figure 3. Baltimore City Food Store Map–Distribution of Supermarkets, Small Groceries & Corner Stores, Behind-Glass Corner Stores, and Convenience Stores among Neighborhoods Denoted by Racial Composition

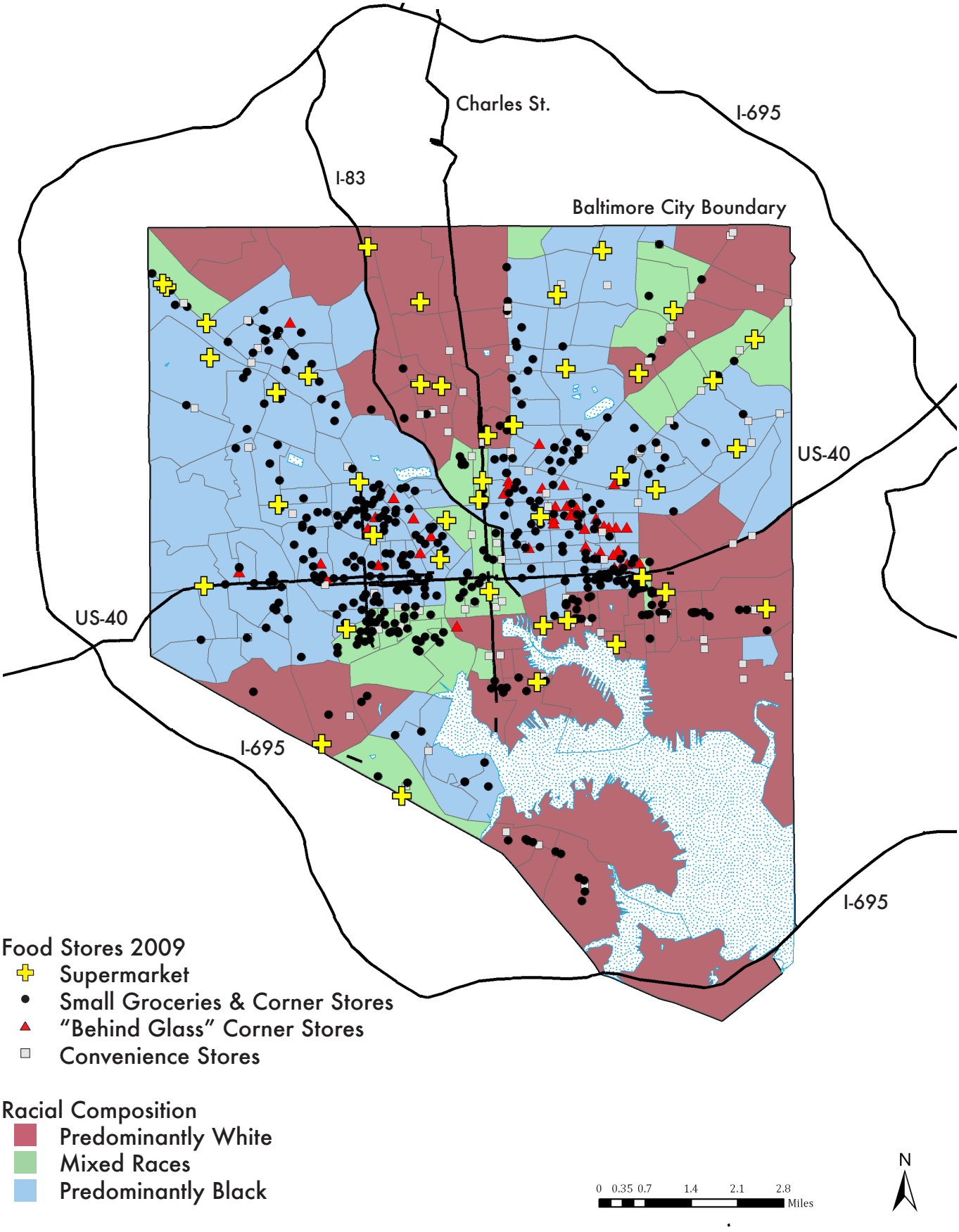


Figure 4. Baltimore City Food Map—Distribution of Farmers Markets and Covered Markets in Neighborhoods Denoted by Racial Composition

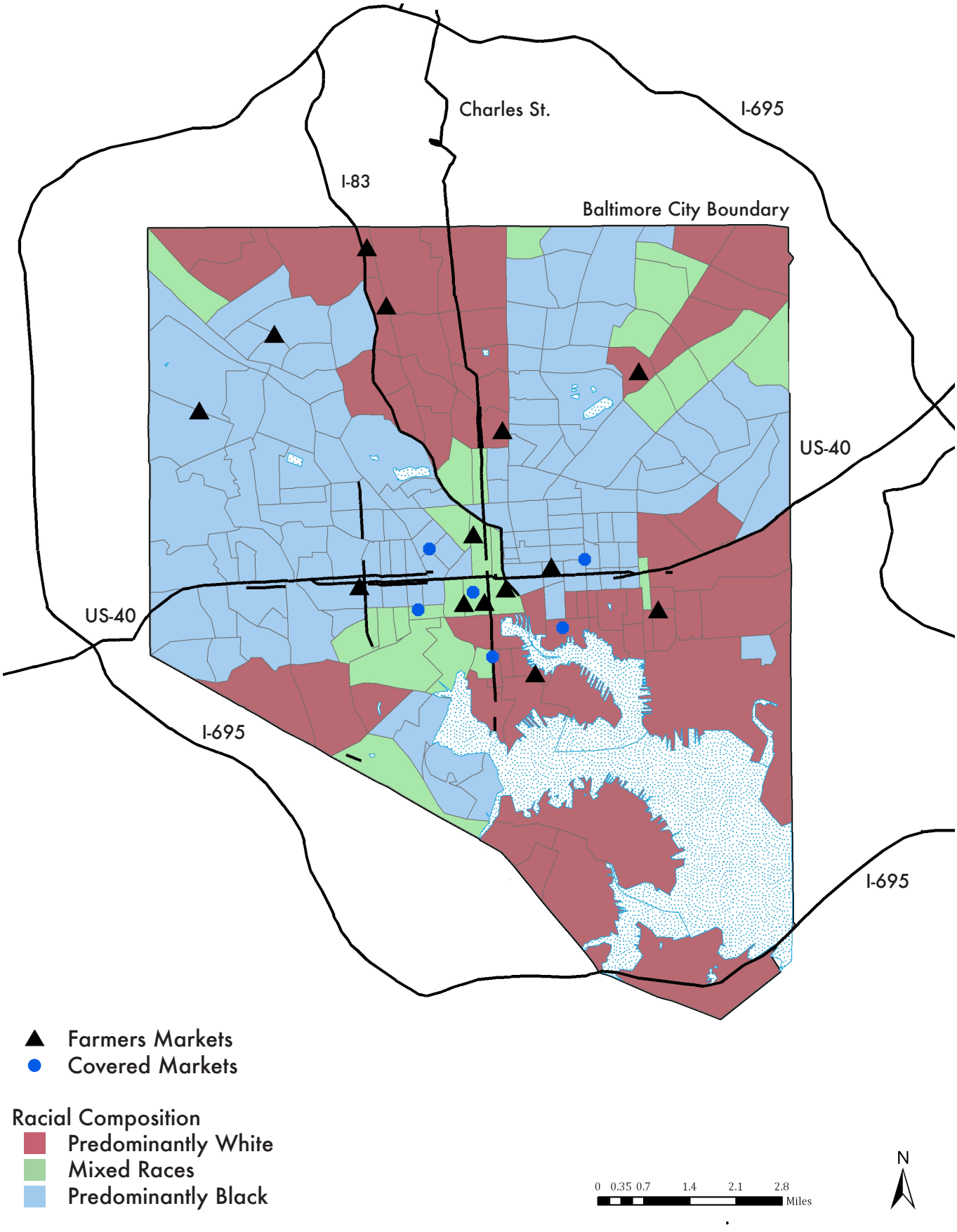
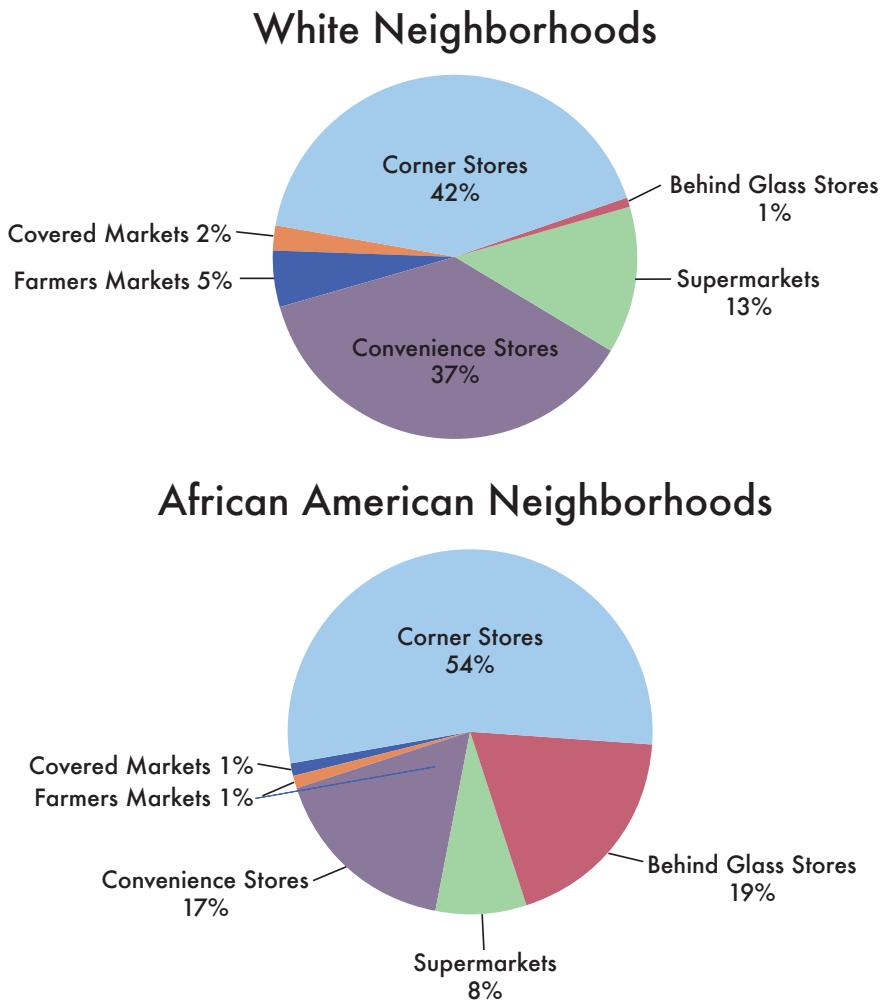


Figure 5. Percentage of Food Store Types by Neighborhood Racial Composition



are also uneven across Baltimore City neighborhoods. As seen in Figure 4, convenience stores are more heavily concentrated in predominantly white and mixed neighborhoods compared to predominantly black neighborhoods. Farmers markets are more or less evenly distributed, while covered markets are more commonly found in predominantly black and mixed neighborhoods.

The distribution of food store types varies enormously between predominantly African American neighborhoods and predominantly white neighborhoods. See Figure 5, above. Of all food stores in white neighborhoods, 42 percent are corner stores, 37 percent are convenience stores, 13 percent are supermarkets, and 5 percent are farmers markets; only 2 percent are in covered markets and 1 percent are behind-glass stores. In African American neighborhoods, 54 percent of food stores are corner stores, 19 percent are behind-glass stores, and 17 percent are convenience stores; only 8 percent of food stores in African American neighborhoods are supermarkets, while farmers markets and vendors in covered markets each make up 1 percent of food stores.

The charts in Figure 5 readily demonstrate the much greater percentage of behind-glass stores in African American neighborhoods compared to white neighborhoods and the greater percentage of supermarkets, convenience stores, and farmers markets serving white neighborhoods.

Distributions of food store types describe one aspect of food availability. Variations of healthy foods between and within food store types, geographic barriers, and organizational obstacles must also be considered in order to understand the challenges that many Baltimore City residents face when trying to access healthy foods. The next sections explore these aspects of the Baltimore City food environment.

C. Food Stores in Baltimore City: Healthy Food Availability

Methodology for Assessing Availability of Healthy Foods: The Healthy Food Availability Index

We measured the availability of healthy foods in Baltimore food stores using the Nutrition Environment Measurement Survey (NEMS) (Glanz, Sallis, Saelens, & Frank, 2007). Using the NEMS instrument, we produced a Healthy Food Availability Index (HFAI). In a study of two Baltimore City supermarkets in different neighborhoods (below), we looked at eight food groups: milk, fruits, vegetables, meat, frozen foods, low-sodium foods, bread, and breakfast cereals. The HFAI score in

Table 1. Comparison of Healthy Food Availability Index (HFAI) Scores in Two Baltimore City Supermarkets Located in Racially and Economically Polar Neighborhoods

Predominant Race (%)	African American (97%)	White (93%)
Median Household Income	**$ 20,833**	**$ 57,391**
Food Group	**HFAI Points**	**HFAI Points**
Milk	2	3
Fresh Fruits	2	4
Fresh Vegetables	3	4
Ground Beef Chicken	2	4
Frozen Foods	0	2
Low-Sodium Foods	0	2
Bread	2	4
Breakfast Cereals	2	2
Healthy Food Availability Index Total Score	**13**	**25**

this study could range from 0 to 27 points, with a higher score indicating a greater availability of healthy foods (Franco, Diez Roux, Glass, Caballero, & Brancati, 2008).

Case Report: Comparison of Two Supermarkets, in Racially and Economically Polar Neighborhoods

We compared two supermarkets located within Baltimore City, one in a predominantly white, high-income neighborhood, the other in a predominantly black, low-income neighborhood. The difference in the availability of healthy options is summarized in Table 1, below.

The HFAI score for the supermarket in the predominantly African American, low-income location was about one-half that of the supermarket in the predominantly white, high-income location. This markedly lower score indicates considerably lower availability of healthy foods in the African American supermarket. In every category except low-sugar cereal (specifically, for milk, fruit, vegetables, beef and chicken, frozen foods, low-sodium foods, and bread), the availability of a healthy option was much lower in the African American supermarket compared to the supermarket in the white neighborhood. Please refer to Appendix B for a table more fully detailing the Healthy Food Availability Index as it pertains to these two supermarkets.

An organizational barrier discrepancy (in this comparison, hours of operation) was also present: The supermarket in the African American, low-income neighborhood was open 12 hours a day while the supermarket in the white, high-income neighborhood was open 24 hours a day; both were open seven days a week.

Farmers Markets

Farmers markets are regaining popularity in the United States and are an important feature of Baltimore's food environment. Offering fresh produce, these markets enable customers to acquire items necessary to follow the foundations of the US Dietary Guidelines for Americans. But numerous barriers to accessing farmers markets exist.

All of Baltimore's farmers markets accept Women, Infants, and Children (WIC) checks and WIC Farmers Market Nutrition Program (FMNP) coupons. But food coupons from the Supplemental Nutrition Assistance Program, previously known as the Food Stamp Program, are usually not accepted at Baltimore's farmers markets. Limited operational hours are another barrier; farmers markets are generally held one day each week and only during a portion of the year. Additionally, geographic barriers, combined with the organizational barrier of limited or absent public transportation for the days and to the sites the farmers markets operate, further diminish the accessibility for many low-income Baltimore residents. Finally, it is uncertain how much is being done to inform low-income communities about the presence of farmers markets and the food they offer.

Covered Markets

Over half a century ago, most US cities had numerous covered markets that simultaneously served as centers of community interaction and food acquisition. Baltimore is unique in that many of its covered markets remain vibrant centers of community interaction and food sales. Baltimore's six indoor markets are open to the public, and all of them house vendors of general merchandise (e.g., clothes, men's and women's accessories, cell phones, etc.) as well as vendors of food – both ready-to-eat and foods to be taken home for preparation. All the covered markets include vendors of fresh foods (fruits, vegetables, meat, and seafood), but the number and percentage of vendors, as well as the types of food available, vary from market to market

and vendor to vendor. For example, while eight of the 16 stalls (50 percent) at Hollins Market sell fresh foods, only one (or 6 percent of all stalls) sells produce. By comparison, 28 percent of all stalls at Lexington Market (which is considerably larger than the Hollins Market) sell fresh foods, with a substantial number of stalls offering fresh produce. The presence of these markets in neighborhoods that frequently lack other healthy food options positions them as potentially critical sites for healthy food intervention. As our study in Southwest Baltimore reveals (see Chapter 3), only 6 percent of study participants' monthly food expenditures were spent in these markets, demonstrating underutilization of this resource.

Arabbers

Arabbers (pronounced AY-rabbers) are traditionally African American men who ply the streets of Baltimore selling produce from horse-drawn carts (some now use trucks). Due to dwindling resources and the difficulties of stabling horses in an urban environment, only a few Arabbers remain in the city. While the Arabbers once had the ability to move fresh produce from distributors to city dwellers quickly and efficiently, the lack of adequate stables for their horses in the city, as well the presence of stationary and ubiquitous corner stores potentially capable of stocking fresh foods (but generally not doing so), diminishes the prospects of present-day Arabbers serving as a retail source of fresh produce in the manner and degree to which they have served historically.

Uncertain routes and schedules, difficulties with changing weather patterns, and problems with storing produce to prevent decay, all challenge the existence of Arabbers, yet they remain a resilient part of the Baltimore City food landscape. Although our study in Southwest Baltimore (discussed later) suggests that only a small percentage of visits and food purchases are made via Arabbers, the degree to which they currently contribute to the healthy food environment, as well as their interests and potential capabilities of enhancing the environment, has not yet been fully explored.

Figure 6. Baltimore City Arabber
(http://www.baltimoremd.com/arabber/)

Community Gardens

Like farmers markets, community gardens are experiencing a resurgence of interest among urban dwellers. They represent an important source of economically accessible fresh produce. With Baltimore City assistance, a number of nonprofit organizations have started managing community gardens in the city, thereby providing fresh foods in some of the city's poorest neighborhoods. These programs, such as Baltimore Green Space, are effective ways to reduce municipal maintenance of abandoned lots, as well as to engage residents in civic beautification while producing both nutritious food and enhanced community ties.

Limited geographic access to viable gardens, time constraints on households with single parents, and uncertainty among urban dwellers of how to attain and utilize gardening space contribute to underutilization of this resource. The potential of communal gardens to contribute healthy foods to residents' kitchens is limited, as it is with farmers markets, by seasonal growing patterns. Another limit to the present usefulness of both community gardens and farmers markets is the uneven efforts to promote them.

Relationship of Healthy Food Choices to Demographic Characteristics

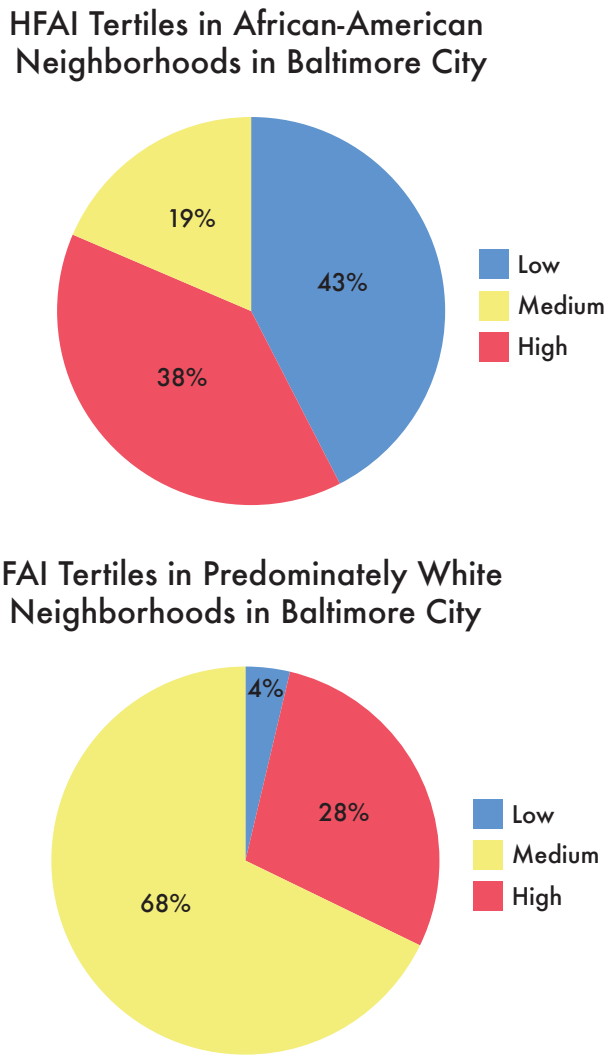
To study the association between the availability of healthy foods in neighborhoods and possible health consequences, we determined the aggregate level of healthy food availability in Baltimore neighborhoods. A cross-sectional study was conducted to determine differences in the availability of healthy foods across 200 neighborhoods (census tracts) in Baltimore City and the 443 food stores within them.

In a sample of 78 neighborhoods in Baltimore City, we carefully assessed 177 food stores with the Nutrition Environment Measurement Survey (Glanz et al., 2007) (see prior discussion). With this instrument, a Healthy Food Availability Index (HFAI) score was determined for each food store. Potential scores range from 0 points to 27 points, with higher scores indicating higher degrees of availability of health food options (see Appendix B for an example). From the sample of 177 stores for which HFAI scores were directly measured, and from the average score for each store type within each neighborhood type (by racial composition), we imputed the HFAI of 266 additional stores. Neighborhood healthy food availability was then summarized by the mean HFAI for the stores within each census tract. Using the results for each Baltimore City neighborhood, we produced a map of Baltimore census tracts characterized by a low, medium, or high level of healthy food availability. Figure 8, on the next page, depicts this map.

Neighborhoods in the highest third of HFAI scores (best healthy food availability) are depicted in light yellow; those in the middle third are peach-colored; and those in the lowest third (poorest healthy food availability) are in orange. Neighborhoods with no stores are shown in white (brown areas are parks).

We then matched each neighborhood according to its racial composition and its HFAI score and found striking differences between predominantly African American and predominantly white neighborhoods. Forty-three percent of predominantly African American neighborhoods were in the lowest (worst)

Figure 7. Neighborhood Healthy Food Availability by Racial Composition



African American neighborhoods were in the lowest (worst) category of healthy food availability, while only 4 percent of predominantly white neighborhoods had this distinction. On the contrary, 68 percent of white neighborhoods were in the highest category of healthy food availability compared to only 19 percent of African American neighborhoods. Figure 7 shows these differences.

Thus, in Baltimore City, predominantly African American neighborhoods have lower availability of healthy foods than white neighborhoods due to differential placement of types of stores as well as differential offerings of healthy foods within similar store types.

Figure 8. Food Map of Baltimore City Neighborhoods by Their Healthy Food Availability Index

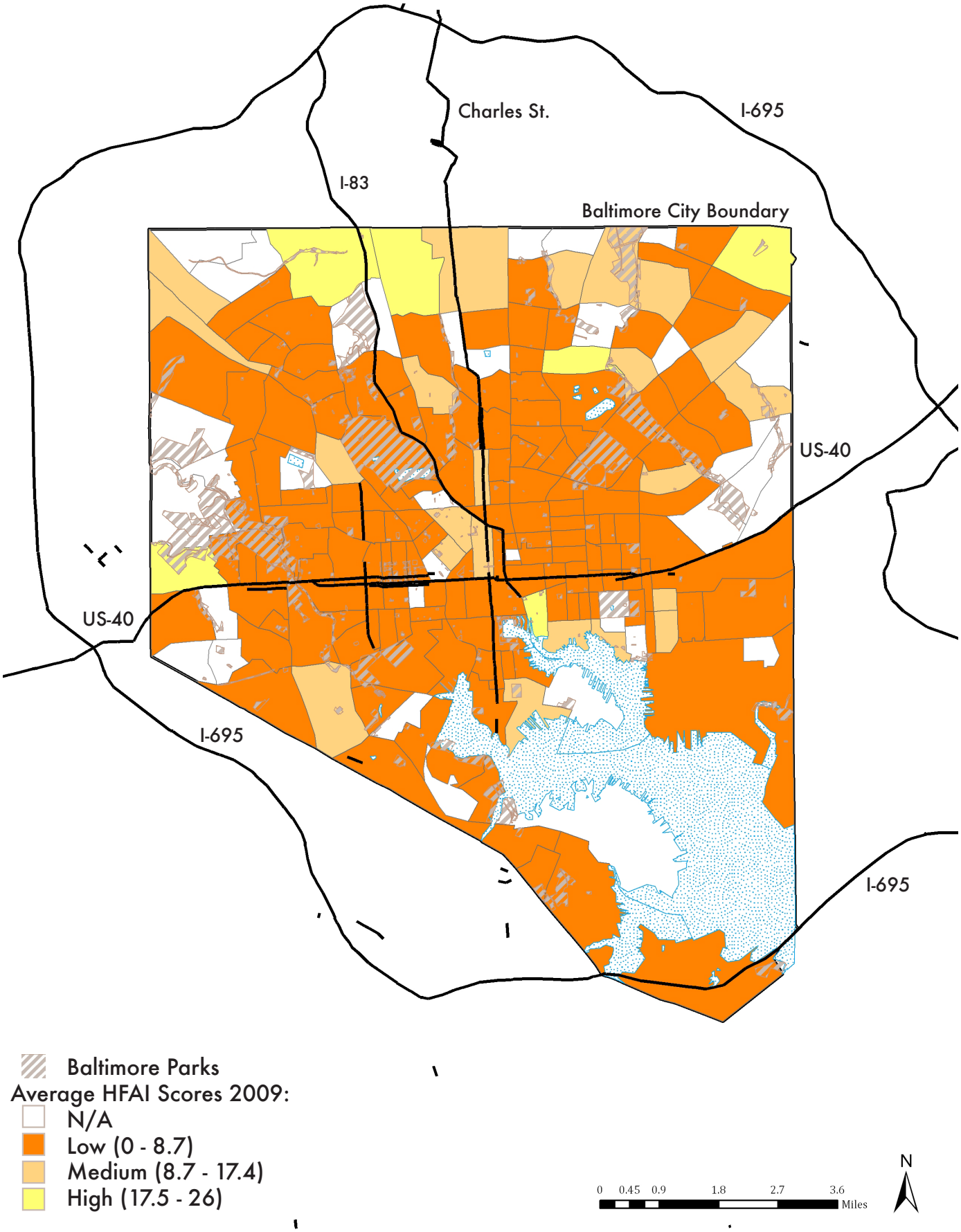
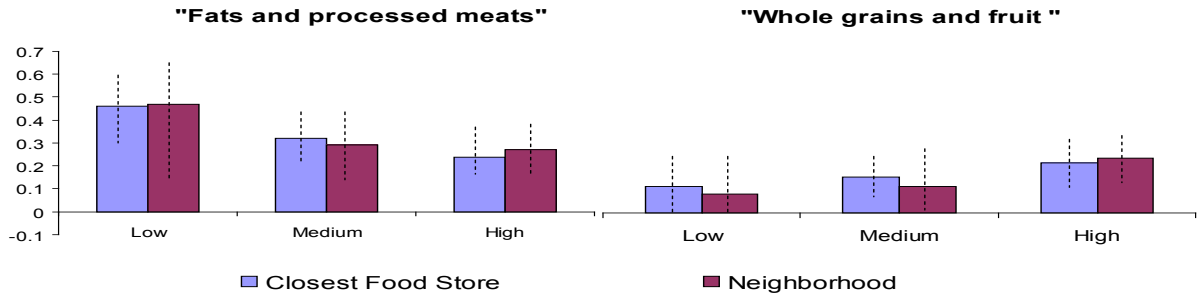


Figure 9. Dietary Consumption of Two Types of Foods Relative to Characterization of Nearest Store and of All Stores in Neiahborhood



D. The Availability of Healthy Foods and the Diet Quality of Neighborhood Residents

Along with other national public health researchers, we participated in a study designed to evaluate the risk factors for heart disease in ethnically diverse people (Franco et al., 2009). This included a study of 759 Baltimore City residents to examine the relationship between the availability of healthy foods and diet quality. A "food frequency questionnaire" was used for each participant, and we grouped survey results into two dietary patterns reflecting low- and high-quality diet. The availability of healthy foods was assessed by examining food stores within each participant's neighborhood (census tract), at each participant's closest food store, and at all food stores within one mile of each participant's residence. The main findings are depicted in Figure 9, on the next page. The study reveals that participants who live in neighborhoods with low healthy food availability are more likely to consume a lower-quality diet (as evidenced by a pattern of high consumption of fats and processed meats).

This research, involving Baltimore City residents, demonstrates that place of residence relative to location of stores with healthy food options plays a larger role in healthy diets than previously estimated. Thus, we have demonstrated that in Baltimore City where one lives is a major determinant of dietary quality, which, in turn, is a major determinant of overall health.

E. Recommendations

The following recommendations to improve the food environment for Baltimore City residents are based on the findings in this section.

- **Establish and promote a Baltimore City Food Store Rating Program,** which would identify food stores according to the availability of healthy foods. Numerous scoring systems exist; public health researchers could work with city policymakers, health care providers, and community stakeholders in adapting and modifying an existing system or developing one *de novo*. The Food Store Rating Program should be based on existing public health research methods (e.g., the Nutrition Environment Measurement Survey), with emphasis on foods essential for complying with the US Dietary Guidelines for America. The Food Store Rating Program could be used for establishing minimum requirements, providing city tax incentives, and encouraging proprietors to advertise and attract consumers. During the introductory period, incentives for store owners might be needed to assist with development of infrastructure and with purchases of healthy foods. Educational and social marketing campaigns should be included to shift consumers' food-purchasing patterns toward healthy choices.

- **Develop the concept of food deserts** (defined as geographic regions in which there is a dearth of access to healthy foods) as it pertains to Baltimore City neighborhoods. Development of this concept would involve analyses of the root causes and key determinants of barriers (economic, organizational, and geographic) to access to healthy foods for neighborhoods and regions of Baltimore. Such analyses would then suggest specific, feasible, and effective interventions that would be both sustainable and coherent with community justice. Resolution of food deserts might be accomplished by Baltimore City and researchers providing technical assistance to store owners; by city grants for infrastructure improvement (e.g., enhancing storefronts, supporting the purchase of refrigerator systems, etc.); and by community organizations encouraging the support of local businesses (see **Recommendations** in Chapters 2 and 3 for elaboration).
- **Support the work of Arabbers,** who should not be viewed merely as Baltimore historical and cultural icons but as resilient, sustainable sources of distribution of fresh produce directly to points of consumption. Such support could come in a number of ways. Arabbers could be linked with additional distributors, such as regional vendors, local farms, farmers markets, or newly developed distribution systems (discussed in **Recommendations** in Chapter 2). Their routes and schedules could be coordinated with specific sites that have limited access to food and/or that have large numbers of people (e.g., senior centers, community centers, government offices, hospitals and medical centers, private businesses) to promote the ease of purchase of fresh produce by people constrained by geographic barriers and by workers constrained by time. Adapting projects that have proven successful in other venues (green carts program in New York City; Kaiser-Permanente hospital–farmers markets collaborations in Oakland, CA) could be a starting point for this intervention.
- **Expand Baltimore City community gardens,** which simultaneously reduce city expenditures on maintenance of vacant lots, enhance community cohesion, and produce nutritious foods for residents. This expansion could include identification of interested residents and community groups, and increased collaborations with Maryland Cooperative Extension Agency, Baltimore City Public School System, and others.
- **Promote existing farmers markets,** which offer fresh produce that is generally derived locally. One aspect of this promotion would be to advertise the acceptance of Women, Infants, and Children (WIC) checks and of WIC Farmers Market Nutrition Program coupons to program participants. The second aspect of this recommendation would be to determine and accomplish the steps to enable the acceptance of

Figure 10. A Baltimore City Community Garden
(From www.growit.umd.edu/Images/comm_gdn_bc.jpg)

Figure 11. One of Baltimore's Covered Markets

food coupons (formerly known as food stamps) at farmers markets, thereby reducing the financial barrier to these markets for Baltimore City residents receiving food coupons. These two aspects would increase the support and utilization of these markets by the urban poor. Physical access to farmers markets could be enhanced by coordinating public transportation for dates, times, and sites of operation (perhaps as part of a "Farmers Market Transportation Program" established in collaboration with community, faith-based, or medical centers). More should be done to encourage and inform communities about the presence of farmers markets and the food they offer.

- **Promote vendors of healthy foods located in covered markets,** by including these vendors in the Baltimore City Food Store Rating Program and by offering them technical and other assistance recommended for corner stores (see recommendations in subsequent chapters).

Chapter 2
Wholesale Food Distribution: Challenges and the Promise of Local Produce Distribution

The methods by which food is harvested, transported, and distributed to food retailers have important consequences in shaping the overall food environment in urban areas. To investigate how different types of stores in Baltimore City negotiate food purchasing and accomplish stocking food inventory, we conducted interviews with store managers at food stores ranging from large chain supermarkets to neighborhood corner stores. We also examined the Maryland Food Center Authority at Jessup, MD. Distribution schemes for fresh produce vary greatly by the size and purchasing power of stores, factors that influence the type, quality, quantity, and price of foods available in stores.

Generally supermarkets have regular deliveries from company-owned and outsourced wholesale warehouses. The regional and global food production networks overwhelmingly cater to the larger food stores, while smaller stores have greater difficulty in stocking healthful foods. If owners of the smaller corner stores want to stock items other than those delivered by large national distributors (limited to snack foods), they must personally travel to purchase and transport foods on their own: through wholesalers like Costco, larger supermarkets featuring sales on particular items, or private distribution warehouses.

Recent consumer interest in local food systems may provide an opportunity for small food stores to obtain and sell high-quality fresh foods at competitive prices. Operating on a smaller economic scale gives corner stores and covered market vendors certain advantages over larger supply chains. For example, they may have more flexibility than their counterparts who are not locally controlled, and this flexibility may allow them to more easily introduce locally farmed goods. Still, stocking perishable and healthful pantry items is frequently more difficult and expensive, and small food vendors may require technical assistance and/or financial assurance to initiate changes.

A. The Maryland Food Center Authority[1]

The Maryland Food Center Authority (MFCA) was established in 1967 by the Maryland Legislature as a public-private partnership for food distribution in the state of Maryland. The MFCA built the 400-acre Maryland Food Center in the early 1970s and, at that time, the center served as the main fresh produce and fish distribution center for the Middle Atlantic states. Terminal markets, like MFCA, were established as a means of getting fruits and vegetables grown in the southern and western regions of the US to markets located along the eastern seaboard. At one point, the MFCA was responsible for about two-thirds of the produce in a five-state region. Vertical integration of supermarkets has diminished the terminal market's role in distribution. Twenty years ago, the Maryland Wholesale Produce Market (Maryland's terminal produce market) was home to 40 vendors; today there are 24.

The MFCA began the development of the Food Center, which includes the Maryland Wholesale Produce Market and the Maryland Wholesale Seafood Market, when food distribution occurred at a local, regional, and national level. The evolution of Maryland's wholesale markets reflects changes in the national food distribution system. For example, during the first 20 years of its existence, the Maryland Wholesale Produce Market primarily distributed produce from outside the Maryland region because local farmers could not or would not box and palletize their products for wholesale distribution. Additionally, conflicts arose between the farmers and the wholesalers about pricing, leading to a level of distrust between them. This situation changed around 2001, when regional supermarkets like Giant started their Buy Local campaign. This campaign stimulated a new local supply chain, which continues to grow nationally in scope.

Another trend is the consolidation of the food distribution industry, which has resulted in a change in both the number and type of farms that supply the market. Smaller farms were consolidated into large corporate farms that now make up national supply chains. These conglomerates have designated distribution centers serving the large national chains (stores), both food service (restaurants) and food retailers. While this model creates economies of scale, it puts undue pressure on locally owned and operated restaurants and food retailers. Increased regulation in the name of food safety may require such large capital expenditures that small shop owners are driven out of business.

Don Darnall, executive director of the MFCA, offers a vision of what the MFCA could support that would help farmers and circulate funds into the local economy. He envisions a regional supply chain that is developed and serviced by regional growers, suppliers, and retailers. Such an organization would provide a competitive strategy that would allow regional food suppliers to compete with the national supply chain and weaken the current negative impact of consolidated distribution. This regional supply chain could cater to locally harvested products and support their sale at the retail or wholesale level. It would require standardization in storage and shipping areas at a farm. Trucks that are transporting the products from the farm through a local supply chain could become more efficient if a standardized logistics model is developed and then coordinated with the most efficient transport routes. In order to create a local supply chain, a feasibility study is needed to gather input from area stakeholders and determine the steps that should be followed to move forward. In the absence of a regional food distribution network, the large national and international food companies will continue to grow, and we run the risk of permanently damaging our local food production system. These supersized food retailers are destroying opportunities for local markets. Darnall notes, "The way communities stay connected with one another is by breaking bread—not sourcing from huge food conglomerates. Locally focused wholesale markets play a vital role in making sure that the locally grown and harvested food gets to the local people."

Although there are no wholesalers at the Maryland Wholesale Produce Market devoted strictly to distribution of locally grown produce, if a store owner or food service customer desires locally grown produce, a market wholesaler will attempt to locate and purchase it from a local farm for the customer.

1 Don Darnall, executive director of MFCA since 1983, provided the information for this section.

While most people say they prefer buying local food products, the same people often do not make such a choice when purchasing food. As current demand for local product continues to grow, Darnall recommends bringing all the food and agricultural advocates together to develop a consensus about what state policies and actions will support the distribution and consumption of local food products. In addition, states in the same region could develop agreements to work together to support their respective local food economies.

Overregulation will continue to put downward pressure on the local and regional food businesses, forcing many of them out of business. Darnall maintains that the biggest challenge at the local level is not replicating the national food supply chain model but rather developing a regional food supply chain that supports locally grown and harvested food in an efficient and effective manner so consumers can enjoy all the region has to offer. He claims that the large international food companies such as Wal-Mart will always use the "safety" approach as rationale for why consumers should choose them over local suppliers. A question we as consumers must ask is: Are we as a society going to sacrifice all the richness of locally grown and harvested food because of the remote chance that someone will attempt to contaminate food being sold at a local market? A safety-focused food supply chain does not always guarantee the healthfulness, provenance, taste, or freshness of its products—only their traceability. While we would all agree that we want our food supply to be safe, we must take steps to fully understand the impact that certain food regulations claiming to offer greater food safety are having on our food choices.

B. Supermarkets

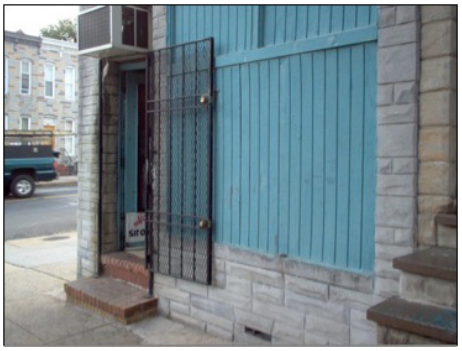
For large supermarket chains, like the Giant located in Reisterstown Road Plaza, deliveries are made daily from company-owned regional distribution centers (a regional center in Landover, MD, and a local warehouse in Jessup, MD), as well as privately owned warehouses throughout the region. Most produce is trucked to the Reisterstown Road Plaza Giant from the warehouse in Jessup, which receives shipments from around the country and the world via plane, train, and truck. In the past, Giant was more vertically integrated, but it has since begun outsourcing its bakery and dairy goods. The produce department of this Giant store occasionally purchases locally grown food, but such produce always represents a very small percentage of store sales. When the Giant does purchase local foods, they are delivered to the store in pickup trucks or in flat-bed trucks. The way food is procured by larger chain supermarkets, like the Reisterstown Road Plaza Giant, is indicative of how US food distribution schemes favor the largest grocery enterprises. With greater purchasing power, chain supermarkets can provide goods at lower prices than smaller grocery stores.

Only a few large, independent supermarkets exist in Baltimore. For these stores to remain competitive with national chain stores, all purchasing decisions require careful consideration of potential economic risks and benefits. La Bandera, an independently owned small supermarket located in East Baltimore, obtains all its fresh produce from the MFCA in Jessup. The meat products at La Bandera are supplied by various wholesalers. Unlike Giant, which receives many of its products from company-owned warehouses, La Bandera is completely reliant on privately owned food distribution warehouses, and it makes all purchasing decisions based exclusively on price. For a supermarket like La Bandera to begin selling locally grown produce, the prices of such goods would need to be competitive with those of conventionally distributed produce.

C. Corner Stores

Owners of small independent food stores have a much more difficult time stocking their shelves. Instead of relying on a delivery system that brings products to their stores, on the model of Giant and La Bandera, small store owners must transport items themselves from the source to their stores, as their limited purchasing power does not enable them to have foods delivered. While products like soda, potato chips, and candy bars are generally delivered directly by the producer to the store, the lack of simplified food distribution hinders the ability of small stores to sell fresh, perishable goods.

Figure 12. A Corner Store in Southwest Baltimore



The following three case reports demonstrate some of the challenges confronting corner store owners.

Case Report 1: Sun Grocery

At Sun Grocery, a small Korean-owned store on Monument Street in East Baltimore, food purchasing involves trips to several venues: wholesale food stores such as Costco or Sam's Club, larger supermarkets having sales on specific products, and privately owned food warehouses. Sun Grocery store owners find that stocking perishable goods is particularly difficult, as they have experienced uneven (or absent) demand for such merchandise, their profit margin is very narrow, and any loss they must take on perishable items can threaten the store's economic viability.

As a food store that accepts Women, Infants, and Children checks and Supplemental Nutrition Assistance Program food coupons, Sun Grocery is required to stock specific food items. Some of these items, like carrots, are perishable. The store owners lament that most of the produce items almost always spoil instead of being sold, but they must continue to purchase and stock them in order to maintain their WIC participation status.

Case Report 2: Hernandez Latino Grocery

Hernandez Latino Grocery, a newly opened store one block from Sun Grocery, has a distribution scheme similar to Sun Grocery's and similar problems with perishable items. Despite these drawbacks, the Hernandez store stocks more perishable food items than Sun Grocery. To increase the amount of fresh produce the store carries, the owner, who previously had a store in Brooklyn, NY, explained that they would need an open refrigerator to keep the produce fresh and attractive. According to the store owners, they are not willing to invest in this infrastructure improvement because they are uncertain of the market demand for such goods in their Baltimore City neighborhood.

Case Report 3: Eddie's Market – An Example of Successful Local Food Distribution

Eddie's Market in Mount Vernon is an independent grocery store located in the heart of Baltimore's Mount Vernon neighborhood. Eddie's merchandise ranges from standard convenience store fare (e.g., processed, high-sugar and high-fat snacks; sodas, etc.) to organic, health-oriented, higher-priced products. According to Dennis Zorn, the manager at Eddie's, this range of items is a reflection of the diversity of customers he serves. Although Eddie's is characterized as a corner store, its merchandise offerings rival those of large supermarkets, from the sizable selection of its produce to its quality fresh meats and the diverse selection of brand name products.

Eddie's main distributor for dry groceries, dairy products (other than milk), and frozen foods is Super Value, a distribution wholesaler based in Virginia that sends shipments to the store twice a week. Eddie's uses Super Value for some meat supplies, though it also purchases from other suppliers, such as the national meat supplier Boar's Head Provisional. Cloverland Green Spring Dairy, a regional milk distributor, supplies the store's entire selection of milk. Bread at Eddie's comes from one of three suppliers: Schmidt, Martin's, or Arnold's, which all ship directly to the store. In the past, most of the fresh fruits and vegetables came from Super Value or from Lanasa Produce, a local Baltimore distributor, which delivers fresh vegetables to Eddie's three times a week.

Beginning three years ago, store manager Dennis Zorn began purchasing limited quantities of fresh fruits and vegetables from a local farm, Stanley's, located 12 miles from the store's

downtown location. The farm is near Zorn's home, and he started stopping there in the mornings on his way to work. He says that he began stocking local produce, in addition to more conventional produce items, for a very simple reason: price. To his surprise, he discovered the wholesale produce available from Stanley's farm was less expensive than that of his normal suppliers. Zorn said that he continued to stock local produce not only because of the low wholesale price but also because of customers' demands: Customers remarked that they appreciated that he was buying products from a local farmer, and they also noted that the produce at Eddie's was fresher and tasted better. The produce bought each day had either been picked that morning or the day before, while the average vegetable from his regular suppliers usually sat in storage for several days before being shipped hundreds of miles to the Mount Vernon store.

The results of Zorn's initially limited experiment were remarkable. The produce from the local farm was not only less expensive but also fresher, more appreciated, and better tasting. Zorn subsequently increased wholesale purchases and retail sales of locally grown produce. "Last year, we doubled our produce sales for squash, corn, kale, strawberries, apples, and peaches, which we began sourcing locally," said Zorn. When asked if he would recommend to other stores to begin sourcing from local farms, his answer was an unequivocal yes.

Three years after his initial experiment with purchasing foods from a local farm, Zorn now purchases produce wholesale from Stanley's six days a week (as long as there are products available to purchase). Because of increased produce sales, Eddie's has nearly doubled the space it dedicates to fruits and vegetables, and now it systematically includes local produce in its weekly advertisements. Pictures of Maryland farmers and farmland are on display at the store entrance and in the produce section. In addition, Zorn has begun purchasing other locally sourced goods, such as fruits from a nearby orchard and pasture-raised beef from a Baltimore County farm. On the day of our visit, Eddie's had local peaches, several varieties of squash, corn, and tomatoes available—all at prices comparable to, or lower than, conventionally sourced produce found at large supermarkets.

Businesses near Eddie's Market are beginning to realize the benefits of purchasing locally grown food. Because of the convenience, quality, and price of the produce that Zorn purchases from local farms, a nearby brewpub and restaurant, The Brewer's Art, has begun ordering produce from Stanley's through Zorn. The distribution of local foods, however, has room for improvement. "I have to drive and get the produce every day," Zorn explains. "It [the distribution scheme of local foods] could be more efficient."

D. Recommendations

As seen in the prior section (refer to Figures 1, 2, and 3), independent, small food stores (mostly corner stores) dominate the Baltimore City landscape, especially in economically deprived, African American–predominant neighborhoods. This section reflects both the challenges of Baltimore City independent corner store owners and the success of one of them in making available produce from a locally grown source. The following are recommendations to facilitate mimicking the success of the one by others:

- **Develop a Baltimore City small-scale distribution network,** which will utilize new methods of local distribution, catering specifically to small corner store owners. Current networks, such as the Korean Storeowners Association, centralize deliveries of fresh produce to specific locations throughout the city; linking corner store owners to distribution centers closer to their stores may encourage them to experiment with purchasing more fresh produce. In addition, through collective purchasing power, smaller corner stores may be able to persuade local farms to deliver produce with their own trucks.
- **Establish a distribution network among local farms and urban corner stores,** which would exploit rising consumer interest in locally grown foods, the flexibility of corner stores in purchasing and stocking, and the economic necessity of local farms to successfully compete with large agri-businesses. Utilization

of Arabbers and inclusion of food vendors located in covered markets (as well as farmers markets, seasonally) should be a part of the development of this network. This network could be distinct from, or part of, the network described above.

- **Provide infrastructure improvement incentives to corner store owners and covered market vendors,** to assist them in purchasing, properly utilizing, and maintaining appropriate refrigeration units. Since corner stores and covered markets are conveniently located for many Baltimore City residents—who often do not have access to private transportation—utilizing them to carry local produce is a prudent step toward improving the consumption of healthy foods. Corner stores and covered market vendors must, however, have the means to safely store perishable foods and to display them in an appealing way.

Chapter 3

A Neighborhood Community Perspective: The Operation Reachout Southwest 2006-2007 Community Food Assessment

Operation ReachOut SouthWest (OROSW) began in 1997 as a committee of community members interested in improving the quality of life in Southwest Baltimore. This resident-led grassroots organization has grown to a coalition of not only residents but also churches, businesses, nonprofit organizations, and other stakeholders from 13 neighborhoods. To date, they have identified the most pressing problems in their community and are developing workable solutions to address these problems. One of OROSW's targets is health disparities.

Statistics on health disparities between socioeconomic and racial groups in the urban environment are well-established. African American, ethnic minority and lower-income populations have higher rates of hypertension, diabetes, and obesity than ethnic majority, higher-income communities. In Southwest Baltimore, rates of obesity, hypertension, and diabetes are significantly higher than in the general US population. In 2003, OROSW partnered with the Morgan-Hopkins Center for Health Disparities to investigate the health of community members in Southwest Baltimore, a predominantly African American, low-income community. This 2003 Southwest Baltimore Community Health study found that 32 percent of residents rated their health as only "fair or poor," compared to the national average of 12 percent. In the same community, 62 percent of women were overweight or obese, compared to 54 percent in the general US population. Hypertension in Southwest Baltimore was also found to be statistically higher than the national average—29 percent of respondents had been diagnosed with hypertension compared to 21 percent in the general population. Of great concern was that 78 percent of respondents who had been diagnosed with hypertension did not have their blood pressure under control. Additionally, among those community members who had not been diagnosed with high blood pressure by a physician, 60 percent had elevated blood pressure readings.

Healthy diet is a critical intervention for the prevention and treatment of chronic diseases such as hypertension, type 2 diabetes, and obesity. As discussed in prior chapters, access to healthy foods in Baltimore's poor, largely African American neighborhoods is a prohibitively limiting factor for many residents. In an effort to understand the existing food environment and possible food- and diet-related preventive measures targeted toward reducing these chronic diseases, OROSW partnered with the Johns Hopkins Center for a Livable Future (CLF) to conduct a community food assessment in Southwest Baltimore.

A. OROSW Community Food Assessment

The specific aims of the project were to 1) identify institutional barriers and strengths regarding access to fresh, healthy foods; 2) identify individual barriers and strengths inhibiting and/or encouraging healthy food consumption; and 3) identify educational and communication opportunities to increase awareness of the benefits of a healthy diet. For this community food assessment, a food store survey was conducted in OROSW to measure the availability of healthy foods. In addition, a community residents' survey was conducted to investigate the food purchasing and eating behaviors of community residents.

B. Food Store Survey

Using the Nutritional Environment Measurement Survey (NEMS) developed at Emory University (Glanz, Sallis, Saelens, & Frank, 2007) and modified to fit Baltimore's food environment, the OROSW study enlisted the participation of 41 food stores (39 corner stores and convenience stores, and two grocery stores). In each store, information was collected on availability of particular foods (such as skim milk, whole wheat bread, and fruits and vegetables). The survey also measured food quality, acceptance of WIC and food stamps, physical access to goods, and price. Of the 41 food stores, only 24 percent sold skim milk; 69 percent did not offer fresh vegetables; 76 percent did not offer fruit for sale; and 56 percent carried only white bread. In addition, many stores were found in violation of minimum Women, Infants, and Children (WIC) Program mandatory offerings even though they were WIC participating retailers. Physical access to store goods was also found to be problematic: six of the OROSW food stores (or 15 percent) were behind-glass stores, in which all products are kept behind impenetrable Plexiglas walls and are accessible only by the store owners/employees

C. Community Residents Survey

OROSW and CLF surveyed over 100 residents of Southwest Baltimore (96 were included in the final analysis), to inform the OROSW study about individual shopping and eating behaviors, as well as the perception of food access and availability of food stores. Eighty-six percent of the respondents were African American and 11 percent were white (compared to 71 percent and 25 percent, respectively, in the 2000 US Census). Households in OROSW average between three and four persons. About one-third of the respondents said they or someone in their household received food coupons (35 percent) or WIC assistance (32 percent). Half (49 percent) reported that they or someone in their household had high blood pressure. Only one-third (32 percent) of respondents said that neither they nor members of their household were free of the following conditions: diabetes, high blood pressure, heart disease, obesity or overweight, and cancer.

Responses about neighborhood food availability were consistent across the four variables measured: quality, selection, healthy food availability, and price. Approximately half of the respondents rated quality and selection as *somewhat satisfying;* and approximately 40 percent rated availability and price as *somewhat satisfying*. Of the four food variables evaluated, respondents were most satisfied with quality and least satisfied with price. The majority of respondents experienced financial barriers to accessing healthy foods: 52 percent of respondents were *sometimes* (35 percent) or *often* (17 percent) unable to buy healthy food because they were out of money or resources.
Ninety-five percent of respondents reported that they did not meet the US government Dietary Guidelines for Americans. When asked if there were certain foods that they would like to purchase but could not find, 40 percent of OROSW respondents reported yes. Most noted that fresh fruits and vegetables

and quality meat were not available in the OROSW area. Over four-fifths (82 percent) of survey respondents said they would buy food that was grown in the OROSW area at a farmers market in their neighborhood.

Three-fifths (60 percent) of respondents *strongly agree* that health is related to eating. When asked if there was anything they would like to change about their eating, 67 percent responded affirmatively. Most respondents stated they knew how to read all (34 percent) or most (32 percent) of nutrition facts labels and generally reported using their knowledge to read labels on purchased food *some of the time* (34 percent), or *most of the time* (27 percent).

As demonstrated in Figure 13 on the next page, 46 percent of OROSW respondents' visits to stores and restaurants were to neighborhood corner stores. The second most frequent visit for the procurement of food was to carryout establishments, at 17 percent (note: many of the OROSW carryout vendors are also corner stores). By comparison, only 12 percent of OROSW residents' visits were to supermarkets.

Although respondents reported moderate satisfaction with food availability in the OROSW area, when asked the name of the supermarket or grocery store where they purchased the majority of their food, only five of the 31 stores mentioned fell within the general OROSW area, indicating that residents routinely make longer-distance trips to purchase food outside the immediate community, including non-OROSW supermarkets. Despite the inconveniences, overall food purchasing by residents was higher at supermarkets than at corner stores—$280 versus $114 per month. Figure 14 on the next page demonstrates that nearly one-half of all food expenditures by OROSW residents were at supermarkets, while 20 percent of monthly expenditures were at neighborhood corner stores.

Although supermarkets in Baltimore City have proven to be the main source of healthy food for OROSW study respondents, both their distance from most OROSW neighborhoods and inconvenient public transportation stops make them difficult to access without a car. Since many of Southwest Baltimore's residents have limited or no access to private transportation, and since the public transportation stops are frequently not close to supermarket entrances, shopping for large quantities of groceries for families is an arduous task for many residents.

D. The Experience of OROSW Residents: Personal Reflections on their Local Food Environment

Paul Booth, Eunice Ross, and Joyce Smith are long-term residents of Southwest Baltimore, and have lived in the area through good and bad times. Through OROSW projects they have become interested in improving both their own health and the health of their community. According to Booth, 84, and Ross, 77, the dilemma of obesity and diabetes among younger people in Southwest Baltimore is the result of poor education as well as limited access to healthy foods. "We need to educate the community on how to eat and prepare healthy foods," said Ross.

> I'm 77 years old—when I learned how to read nutritional labels [just a few years ago], I was dumbfounded by how much sodium and sugar was in everything. We need to educate people, young people, now they've grown up with this processed food—we need training—then they would support it [purchasing and eating healthy foods].
>
> –Eunice Ross

For Booth and Ross, education is only a part of the equation. While Hollins Market, Arabbers and local corner stores used to be the main purveyors of fresh meats, seafood, and produce in Southwest Baltimore, most residents now rely on carryout restaurants, processed foods from corner stores, and occasional visits to supermarkets, both near and far, for their groceries. For them, additional issues, such as local availability of healthy foods and price, compound the problem. As Booth and Ross observe, there is simply a lack of quality, nutritious, affordable food in the neighborhood. "I do not shop at corner stores—the quality is terrible, the prices outrageous," said Ross. "The food quality at the supermarket nearby is also terrible. Meats and vegetables are better in the county—all the meat here is injected with colorings." Booth shares Ross' sentiments regarding local food stores:

Figure 13. Frequency of OROSW Residents' Visits to Food Store Types

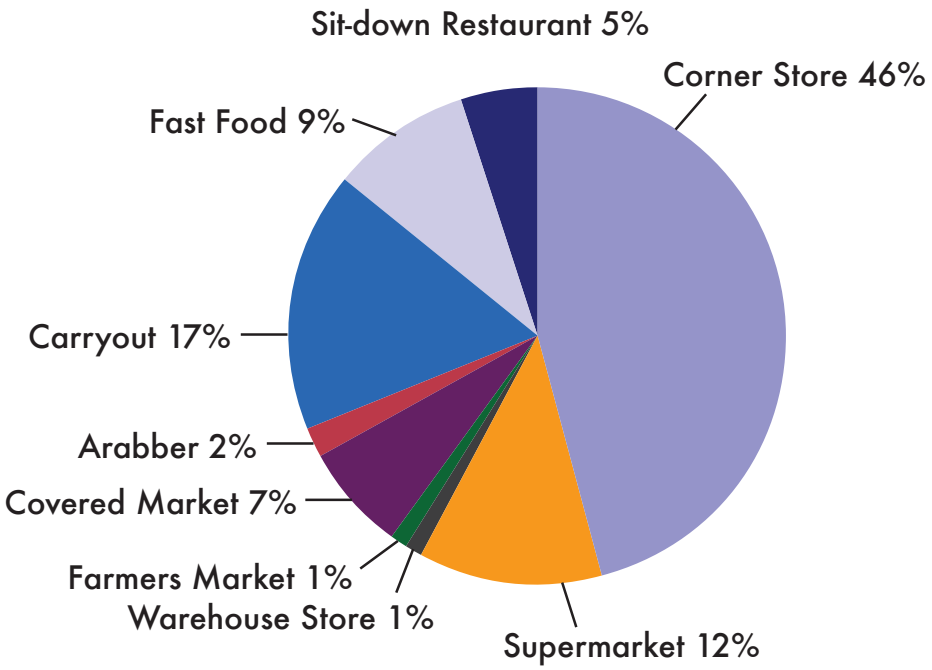
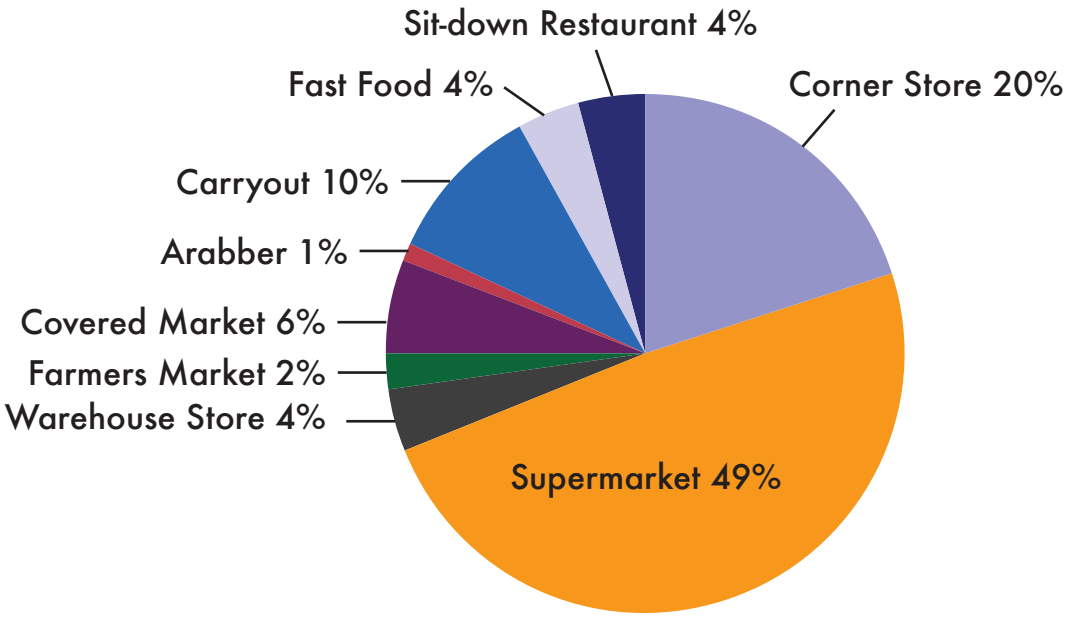


Figure 14. Percentage of OROSW Residents Average Monthly Food Expenditure, by Store Type



> I'm on a budget. I do my shopping Monday through Wednesday, in Baltimore County. I use the bus. I do that [go to Baltimore County] because of the quality and price. I'm a diabetic so I have to watch what I eat. To go shopping, I leave the house at quarter to eight to get it over with. If the bus is on time I can be home by 10. After 10 o'clock it would take two hours just to get there.
>
> –Paul Booth

Ross and Booth both express concern about how they will get healthy food when they are less able to transport themselves to and from stores. "I only have one child. What's going to happen to me when I can't drive? I don't want to be a burden," said Ross. "It would be a long way for me to go if I had to take the bus. I wouldn't be able to carry those items [groceries]."

But the food environment in Southwest Baltimore has not always been in its current state of affairs.

> Corner stores used to sell good food. When racial integration [of public schools] came, the quality of corner stores just disappeared. When I was a kid there would be one [fast food] carryout in 10 blocks, now they're on every block.
>
> –Joyce Smith, director of OROSW

The question of how to "fix" the problem of food deserts has been debated for some time. For Eunice Ross and Joyce Smith, a part of the answer lies in linking urban communities with farmers and teaching children how to cook and grow their own food.

> The city should try to connect with local farmers. The farmers could drive into the city for deliveries. Let's have farmers truck down food and have a farmers market at a church or school. Or the farmers may be able to do gleanings.
>
> –Joyce Smith

> People who are raised here just don't know about nutrition...a lot of girls are mothers at 15, grandmothers at 30. No one is teaching anyone how to cook, or eat healthy.…I grew up essentially on an organic farm. We knew how to grow our own food and cook it.
>
> –Eunice Ross

To this end, OROSW has turned a vacant lot into a community garden through the city's adopt-a-lot program. "The taste and texture of homegrown vegetables is so much better," Ross says, smiling. "I'm a diabetic, and I went off one of my medications after changing my diet. I did this after learning to read nutrition labels—my doctor never told me to change what I ate."

Reconnecting the city's urban communities with farmers may be only one part of the answer. Because of the proximity and frequency of corner stores in Southwest Baltimore, there is an interest in improving the local food environment through interventions in corner stores. The barriers to improving corner store food offerings, however, are many. According to Joyce Smith, "There is a preconceived notion that nobody in corner stores is selling healthy food, and they [corner store owners] don't think we'll buy it."

E. Recommendations

From the findings discussed in this chapter, there are several recommendations:

- **Assist corner store owners to stock healthy foods.** The OROSW 2006–2007 Community Food Assessment demonstrated a confluence of factors that could make corner stores viable, sustainable sources of healthy foods for residents. Corner stores are more convenient and accessible to neighborhood residents (for those who are aging and/or have limited or no access to private transportation). Currently, these stores do not offer the necessary healthy options for people to follow the Dietary Guidelines for Americans. Residents purchase their healthy foods at distant stores, but the frequency of their store visits is greater at local corner stores. And residents express a desire for corner stores to carry healthy food options.
- **Provide infrastructure improvement incentives to corner store owners.** As discussed in the previous section's recommendations, infrastructure improvement to provide for the safe and attractive storage of perishable foods is a critical step in the process of enhancing the Baltimore City food environment.

- **Improve relationships among corner store owners and residents, and enhance store owners' understanding of local consumers' desires** by encouraging store owners to attend community meetings (such as those held by OROSW). Residents could be encouraged and trained to kindly and consistently let neighborhood store owners know that they would prefer to purchase their healthy foods at the corner store. Corner store owners could learn how to enhance their layouts and their desirability in workshops conducted by city officials and public health researchers and attended by both store owners and residents. Corner stores that institute new policies and practices of stocking perishables should be economically supported by area residents.
- **Create educational programs to increase knowledge and positive image of fresh foods selection, preparation, and consumption,** which would address critical health needs with desires revealed in our study. In the OROSW survey, 95 percent of respondents did not meet Dietary Guidelines for fruit and vegetable consumption, and 60 percent of residents surveyed were interested in learning more about eating and preparing healthier foods. Advertising and informational campaigns should be developed to educate and promote healthy eating. Workshops, conducted in collaboration with Baltimore City Health Department and area nutritionists, could reinforce residents' understanding and practice of methods of selecting, preparing, cooking, storing, and eating fresh, healthy foods.
- **Identify and promote neighborhood champions of healthy foods,** so that residents will have local role models to emulate and consult. Such champions would have knowledge and skills in healthy food selection, preparation, storage, and consumption. Community organizations like OROSW could partner with city agencies and with nutrition-oriented federal programs like Women, Infants, and Children and the Supplemental Nutrition Assistance Program.
- **Create a citywide campaign to demonstrate and increase demand for healthy foods,** as the current obesity epidemic crosses all neighborhoods, races, ethnicities, and socioeconomic classes. Public health research shows there is demand for healthier choices, but such choices must be readily available. Too frequently, the consequences of poor choices and the knowledge and understanding of control for improving health is underappreciated. A citywide campaign is needed to change consumer demand as well as the available supply from corner stores.

Chapter 4
Corner Food Store Owners' Perspectives and Successful Interventions

In Baltimore City, corner stores play an important role in food access for many urban residents. Conveniently located, they are an integral part of neighborhood life, in ways unavailable to larger, remote supermarkets. As demonstrated in previous chapters, this is especially true in low-income, African American neighborhoods. At present, urban residents' reliance on corner stores has a major drawback: The stores typically do not stock food items of high nutritional value. The potential for change exists, however; the close relationships often formed between corner store managers and their particular communities suggest that the stores could serve as healthy food vendors in urban environments. To understand why these smaller neighborhood stores sell only limited quantities of nutritious items, it is important to understand the perspectives of corner store owners and their various decision-making processes. As is the case in many US cities, Baltimore has a large number of Korean food store owners. Understanding the perspective of Korean food store owners will shed light on the complexities of their contribution to the food environment.

A. Food Store Owners' Attitudes and Perceptions Regarding their Stocking Healthy Food Options

In a 2002–2003 we interviewed 10 food store owners in Baltimore City to develop our understanding of the economic, logistical, and cultural processes underpinning the operations of Baltimore City food stores, particularly with respect to how store owners' decisions impact the types of foods made available (J. Gittelsohn et al., 2008). In these interviews most corner store owners cited a lack of interest from customers as their main reason for not stocking items like fresh fruit and vegetables. At the same time, community residents cited poor quality and limited availability as the main reason for not buying such items from corner stores. Cycles of such misunderstandings and experiences make introducing healthy foods into corner stores unattractive for owners who cannot afford risking capital on foods that go unsold.

Consumer demand is only one of the factors determining food store owners' decisions about whether to stock certain items. Others include their capacity to refrigerate perishable items, the longevity and price of healthy food items, and delivery procedures for novel items. For some owners, the physical layout of their stores, which is designed to maximize safety, inhibits selling nutritious items. One store owner explains: "I have this bulletproof turntable which blocks direct face-to-face interaction with my customer. And so, it is impossible, it is too much trouble [to sell produce]." In addition, the small quantities of goods purchased from suppliers by corner stores pose difficulties for owners in negotiating competitive prices.

When corner store owners were asked about stocking and promoting healthier foods, most of them responded that consumers' attitudes and purchasing habits needed to change before they could begin stocking healthier items. One store owner explains this point of view:

> People who prefer healthy foods go to the market and purchase them from the big supermarket. They know that we [corner stores] don't sell much healthy foods. Thus, it is hard for us to sell healthy foods. In the past, I tried to sell bananas, but now I stopped doing that. It is because I needed to go to the market to purchase bananas and to stock them in my store, but I always ended up throwing out half of them. It didn't give me any profit. I also tried selling some oranges or apples, but same thing happened.
>
> –Baltimore City corner store owner

As this store owner describes, the profit margin for perishable, healthy foods such as fruits and vegetables rarely works in the favor of small corner store owners with limited purchasing power and the experience of having food spoil. Before store owners will consider stocking healthier items, most require assurance that there is indeed consumer demand in purchasing these food options.

B. Korean Store Owners in Baltimore

The Korean American Grocers Association (KAGRO) has 30 chapters with over 25,000 stores in the United States and Canada. The collective purchasing power of KAGRO is significant: KAGRO stores generate approximately $15 billion in annual revenue (www.kagro.com). In major urban cities with large African American populations, African Americans are often the primary clientele of Korean-owned stores. In Baltimore, Korean American merchants own a variety of businesses, including convenience stores, grocery stores, liquor stores, carryout restaurants, and dry cleaners. It has been estimated that there are up to 2,000 Korean American merchants in Maryland; there are approximately 750 KAGRO members from Maryland. Within this group, about 70 percent are engaged in grocery stores or food service areas. We are not aware of any interventions, prior to our study, in which food store–based interventions aimed at increasing healthy food availability successfully worked with Korean American corner stores. Because of the high prevalence of Korean American corner stores in Baltimore's impoverished neighborhoods, we have performed intervention studies targeting these owners and their customers.

In light of the need for increased access to healthy food in Baltimore and the potential for Korean corner stores to play a role in improving the food environment of urban communities, understanding the perspectives of Korean American store owners provides insight for future studies, ultimately leading to the development of a potential intervention model for low-income urban communities.

C. Baltimore Healthy Stores

Many health advocates have long viewed food stores as promising and potentially sustainable venues for providing health information and encouraging the purchase and consumption of healthy foods. Food store programs can impact point-of-purchase decision making, and once a change in consumers' food choices becomes established and widespread, local demand will fuel continued stocking of healthy foods. This change can be effected through supermarket intervention trials, which have shown success in increasing the purchase of healthy foods and improving consumers' knowledge and awareness. Food stores in low-income urban settings have been the focus of recent research, with a number of pilot trials showing some success in corner stores, bodegas, and small supermarkets. Among other findings, these studies have shown that in low-income populations, it is crucial that food source interventions address the issue of perceived and actual cost of healthy foods, in part by providing information on and options for affordable healthy food choices.

As discussed in section 3, there are many barriers to increasing the percentage of healthy foods sold in neighborhood corner stores. Customers' lack of interest in healthy foods (as perceived by store owners), lack of refrigerated storage, and inability of store owners to return unsold perishable goods all result in the reluctance of store owners to stock healthier food items. The work of Baltimore Healthy Stores (BHS) is expected to find solutions to these objections and increase awareness and interest in purchasing healthier foods among low-income Baltimore residents. It is hoped that, through these efforts, the goals of the program—to encourage store owners to stock healthier items while simultaneously encouraging consumers to purchase and consume those items—will be reached. By intervening in both food stocking and food purchasing, Baltimore Healthy Stores aims to break the vicious cycle of store owners' uncertainty of demand and consumers' limited options for healthy food in many of Baltimore's neighborhoods.

Beginning with 17 food stores in East and West Baltimore in 2006, we initiated the Baltimore Healthy Stores project, an intervention trial targeting local corner store and supermarket

owners to increase the availability and promote the purchase and consumption of nutritious foods such as low-fat milk, whole wheat bread, lean meats, and fruits and vegetables (J. Gittelsohn et al., 2009). In conjunction with working with stores to stock healthier foods, we used informative signs, coupons, giveaways, and taste tests to increase customers' awareness of these healthier alternatives. A novel aspect of our approach was the development of intervention materials targeting Korean American store owners that were written and delivered to the store owners in Korean.

Baltimore Healthy Stores uses a combination of health communications, anthropological, and community-based participatory research methods to produce culturally significant, effective intervention media. Using artwork by a local muralist, eye-catching posters highlight specific healthy foods. For example, posters with accurate nutrition information are placed near low-fat, low-sodium healthy snacks. Healthy foods "incentive purchasing cards" and information on methods to save money when purchasing healthy foods are provided to consumers at participating stores. By providing useful information and/or materials promoting healthy foods to both store owners and consumers, the BHS project has attempted to promote community support around a culture of healthy eating. In addition to signage and information for customers, materials created for store owners in Baltimore teach effective strategies for establishing rapport with clients and offer ideas on how to market healthier items. By targeting both consumers and store owners, the BHS project has been able to persuade store owners to stock healthier food items while boosting consumer demand for these products.

Figure 15. Sun Grocery Owner and BHS Researcher

Participating stores stock promoted foods and display print materials with moderate to high reliability. Interactive consumer taste tests are implemented with high reach and dose. Materials developed specifically for Korean American corner store owners are implemented with moderate to high fidelity and dose. Results indicate that small food store–based intervention programs are feasible to implement, are a viable means of increasing healthy food availability, and provide a good location for point-of-purchase promotions in low-income urban settings (J. Gittelsohn et al., 2009).

After the initial success of the first phase of Baltimore Healthy Stores program, it was expanded in early 2008 to include additional stores. Additional funding has been received to target adolescents and to work with local churches to further improve the food environment.

Case Report: Sun Grocery

Sun Grocery, located on busy and crowded East Monument Street, at first glance appears similar to typical corner stores in low-income urban communities. But there are two notable exceptions. There is no bulletproof Plexiglas enclosing the counter (separating the customer from the employee and most, if not all, of the merchandise). And there is a "wall of friendships," a section of wall filled with photos of community neighbors. Although there are several mid-sized stores and other corner stores near Sun Grocery, this store appears to be especially beloved by neighbors because of the quality of service provided by the store owners and the quality of food stocked.

Sun Grocery has been owned and operated for the past 20 years by Mr. and Mrs. Kim. The market is open six days a week from 8am to 7pm. Like most corner stores, snack foods such as chips, soda, and candy are the most popular food items. The store's location on a well-traveled, high-traffic street and the store owners' friendly attitude make the store socially and economically viable. After the first round of the Baltimore Healthy Stores program was implemented, Mr. Kim agreed that the community may benefit from the program, even though he saw neither positive nor negative results regarding his sales.

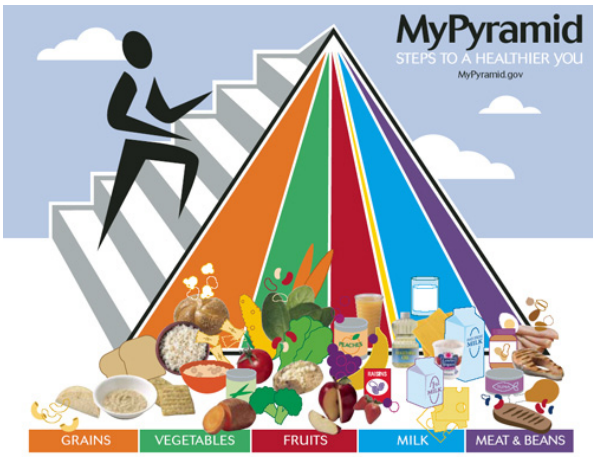
When asked to comment on the Baltimore Healthy Stores program, Sun Grocery owners said:

> If this program is continued, at first, it may not work well, but if continuously pursued, they [customers] will understand [the benefit of the program]. Twenty-three years ago, no corner stores sold water. When we started selling water, they mocked and laughed. Gradually, the number of people who looked for water became increasing. Now water becomes one of popular beverages.
>
> There seems to be no apparent program effect, but it has been known to many people. [Q. How did you perceive that?] There are some customers who start looking for [wheat] breads, low-sugar cereals. Very few people did before the program, but now there are some. I've never sold [wheat bread], but now I stock wheat breads.
>
> Customers don't mention about the program directly, but I can feel that they also notice the difference since they talk about how the image of my store has improved [after the program]. Also, they talk to us that the program like this should be done [in the community].
>
> –Sun Grocery owners

D. Recommendations

- **Improve relationships between store owners and their communities,** by providing store owners and their employees with information and training on quality customer service and by encouraging community organizations to invite store owners to their meetings (and to conduct meetings at times and locations accessible to store owners). Working with corner store owners has been critical to the success of the Baltimore Healthy Stores program because store owners not only make direct decisions about foods that are stocked but also exert influence on customers' purchasing patterns by offering advice on healthy food options. Since influence and advice will only be understood and appreciated in the context of trusting relationships, store owners and their employees should have training in communications and customer service that addresses cultural differences between store owners and their customers.
- **Support the Baltimore Healthy Stores (BHS) program:**
  - **Through subsidies** via the city, the state of Maryland, and foundations. Supporting funds are especially critical during the initial phases in order to create healthy food environments centering on neighborhood corner stores in low-income urban communities. The initial support could go toward purchasing necessary infrastructure (e.g., refrigeration units), improving the quality of stores to make them more attractive and customer-friendly, and assisting store owners in stocking novel and perishable foods during the stage in which community knowledge of healthy food availability is low and store owners' concerns of financial loss high.
  - **Through technical support** of store owners for learning processes to improve their purchases, display foods, market their stores, disseminate information, and maintain new equipment.
- **Establish and promote a "Baltimore City Food Store Rating Program,"** as discussed in **Recommendations** in Chapter 1. This program would simultaneously support the social cohesion created by the recommendation above, while enhancing the incentive of food store owners to improve the availability of healthy food options via the recommendation below.
- **Advocate for US agricultural policies that support sustainable, health-outcome oriented practices that are rooted in social justice.** Changing the food environment of low-income urban communities is a cornerstone of addressing health disparities that emanate from substandard food environments, but these actions should coincide with careful evaluation and modification of larger systematic influences. For example, current US agricultural policy is

focused on reducing the price of farm commodities like corn and soybeans by subsidizing these products. As a result, farmers focus their resources on subsidized products in lieu of fresh produce essential for healthy diets. Subsidized production of corn, meanwhile, reduces the market cost of high-fructose corn syrup, which is a sweetener used in a multitude of processed snack foods and beverages; thus federal subsidies make these low-nutrient-value foods less expensive for the consumer. Low-income consumers, meanwhile, will naturally purchase foods that are less expensive, which means that they will purchase fewer foods that are not highly subsidized, i.e., fruits and vegetables that have high-nutrient value, and are healthier. US policies that directly or indirectly support the purchase and consumption of low-nutrient foods should be replaced by policies that support the purchase and consumption of foods recommended by the US Dietary Guidelines for Americans (such as fruits and vegetables). Advocacy for such common-sense policies must occur at all levels of society.



"The MyPyramid Food Guidance System translates nutritional recommendations into the kinds and amounts of food to eat each day. MyPyramid was released in April 2005 and replaces the Food Guide Pyramid (1992), the widely recognized nutrition education tool." (From http://www.cnpp.usda.gov/MyPyramid-breakout.htm)

Summary Remarks

The research studies, case reports, and interventions discussed in this report were all conducted in Baltimore City.

The research studies (and one of the case reports) demonstrate that Baltimore City is similar to other US cities: The quality of the food environment in neighborhoods can be predicted by the predominant racial and socioeconomic categories in census tracts. Not surprisingly, the areas of the city with the lowest healthy food availability have some of the highest diabetes, obesity, and hypertension rates. For residents of these areas, an amalgam of economic depression, geographic distribution of food sources, limited access to transportation, and limited knowledge of healthy food selection and preparation and/or inability to afford healthy food options, contributes to the growing public health crises of preventable, nutrition-related diseases. And this amalgam of conditions underpins the health disparities suffered by racial and ethnic minorities.

One of the research studies, several of the case reports, and the intervention study reveal that there is a desire among community residents for improvement in their food environments and that there are methods by which the food environment of a neighborhood can be dramatically improved. The studies indicate that there are additional potential interventions (in the **"Recommendations"** section at the end of each of the four chapters) that residents, community organizations, businesses, city policy-makers, and public health researchers should consider for improving the Baltimore City food environment.

Continued collaboration and development of the three-way partnership (among communities, the city government, and research experts) are crucial in order to maximize resource utilization for projects and programs that are effective, efficient, just, and sustainable for the economy, human health, and the environment.

Appendix A Glossary/Descriptors of Terms in this Report

Arabbers: Traditionally African American males who sell produce from horse-drawn carts, although some now use trucks. Once a common sight in Baltimore, only a few Arabbers (pronounced AY-rabbers) remain in the city. The term Arabber is most likely derived from early 21st-century slang, possibly referring to the nomadic lifestyle of some Arab communities.

Baltimore Healthy Stores (BHS): An initiative led by researchers from the Johns Hopkins Bloomberg School of Public Health, the Baltimore Healthy Stores project began in 2004 to improve access to nutritious foods and healthy eating habits in underserved communities.

Behind-Glass Stores: Small corner stores (found almost exclusively in Baltimore's poorer, African American neighborhoods) in which all access to goods is limited by thick walls of Plexiglas serving as a barrier between the customers on one side and the cashiers and merchandise on the other. Considered a necessary safety measure by many store owners, behind-glass stores have the lowest availability of healthy foods in Baltimore as measured by the Healthy Food Availability Index ratings.

Convenience Stores: Food stores that are franchises of nationally recognized stores yet much smaller than a supermarket, typically 7-Eleven or 7-Eleven–like stores. They generally have long hours of operation, well-established distribution systems, and name recognition beyond their immediate area. While the stores are generally homogeneous in appearance, their offerings vary greatly, based on the socioeconomic and racial composition of neighborhoods. Convenience stores are found in greater concentrations in predominantly white communities.

Corner Stores: These are small "Mom-and-Pop" food stores, lacking national franchise affiliation and having fewer than five cashiers. While some may stock healthy food options, most do not. Typical items include Ramen Noodles, high-sodium canned goods, snack foods, sodas, and candy. Corner stores are generally managed by the owner (or his family), have a limited supply network, and do not have name recognition outside their neighborhood. Many have been converted to behind-glass stores over the past 50 years.

Covered Markets: Once commonplace in nearly every American city, covered markets house multitudes of vendors of fresh fruits and vegetables, seafood, meats, other food staples, and, increasingly, non-food items. Baltimore is unique in that six covered markets are still in operation; they have varying numbers of vendors who sell fresh produce, meats, and seafood.

Farmers Markets: Open-air markets which take place seasonally or year-round. Farmers markets vary greatly in size and availability of fresh produce; most have multiple fresh produce vendors, as well as dairy and meat vendors. Farmers markets focus on the sale of locally grown or crafted items, although this is not universally true.

Food Deserts: A term originated in the United Kingdom research arena of food security and debated as to the validity among policy-makers; typified by urban areas lacking access to healthy and/or fresh foods. The term is gaining acceptance, but the precise definition is under development.

Healthy Food Availability Index (HFAI): A quantified measurement using the Nutrition Environment Measurement Survey (Glanz et al., 2007). Adapting the NEMS instrument to Baltimore food stores, we used the Healthy Food Availability Index (HFAI) in some of our studies to assess eight food groups: milk, fruits, vegetables, meat, frozen foods, low-sodium foods, bread, and breakfast cereals. HFAI scores range from 0 to 27 points in these studies, with a higher score indicating a greater availability of healthy foods (Franco et al., 2008).

Supermarkets: Food stores with 1) an annual staff of 50+ employees or 2) more than five cash registers. Most have national, or at least regional, name recognition; their size enables them to offer many products, though their healthy food options vary; they typically belong to extensive supply networ

Appendix B
Detailed Healthy Food Availability Index

Detailed Healthy Food Availability Index for Two Baltimore City Supermarkets

Racial Composition		97% Black		93% White	
Median Household Income		$ 20,833		$ 57,391	
Type of stores in the neighborhood		1 supermarket Open 9 am-9 pm		1 supermarket Open 24x7	
Food Group	**Availability scores**	**Avail.**	**Points**	**Avail.**	**Points**
Non-fat/low fat milk (Fat free and 1%)	YES skim or 1% = 2 pts Proportion shelf space (non or low/total) ≥ 33% = +1 pt Proportion shelf space (skim/total) > 50% = +2 pt	Yes	2	Yes	3
Fresh Fruits	0 varieties = 0 pts 1-10 varieties = 1 pt 11-25 varieties = 2 pts 26-50 varieties = 3 pts >50 varieties = 4 pts	17 (total number of varieties)	2	59 (total number of varieties)	4
Fresh Vegetables	0 varieties = 0 pts 1-10 varieties = 1 pt 11-25 varieties = 2 pts 26-50 varieties = 3 pts >50 varieties = 4 pts	38 (total number of varieties)	3	74 (total number of varieties)	4
Lean ground beef (≥ 90% lean) Chicken	YES lean meat = 1 pts ≥ 2 varieties ≤ 10% fat = +1 pt Yes Boneless Skinless Breast=1 pt ≥ 2 varieties Skinless = +1 pt	No Yes	2	Yes	4
Frozen foods	YES TV dinner low-fat types = 1 pt Proportion shelf space low fat/total >33% = +1pt Proportion vegetables/ice cream >15% = +1pt	No	0	Yes	2
Low Na foods	YES low Na canned tuna= 1 pt YES low Na canned soup= 1 pt	No No	0	Yes Yes	2
100% whole wheat bread	YES 100% whole wheat bread = 2 pts >2 varieties 100% whole wh. bread = +2 pts	Yes	2	Yes	4
Low sugar cereals	YES low sugar cereal = 1 pts ≥ 2 varieties low sugar cereal = +1 pt	Yes	2	Yes	2
Food availability index (0 to 27)			**13**		**25**

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