HUNGER TASK FORCE

Twinkies, Tomatoes, and Tomatillos

A Quantitative Assessment of Healthy Food Accessibility in Milwaukee County

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Table of Contents

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I. Executive Summary

As poverty continues to grow in Wisconsin, the question of "what's for dinner?" is an often unanswerable one in many households. The Supplemental Nutrition Assistance Program (SNAP) is the first line of defense against food insecurity, and is a crucial resource for nearly 25 percent of Milwaukee County residents. However, the receipt of this financial assistance does not guarantee that a household can purchase enough food, particularly healthful foods such as fresh fruits and vegetables. The quality and affordability of food in the retail food stores available to a low-income consumer strongly impact how far a dollar can stretch.

This study surveyed 128 food stores in Milwaukee County to determine if the availability, quality, or price of food items differs depending on the size or location of the stores. Affordability and nutritional quality scores were quantitatively assigned to each store, and then analyzed in relation to racial and socioeconomic demographics using Geographic Information Systems (GIS) and Statistical Package for the Social Sciences (SPSS). Qualitative interviews with FoodShare recipients were also conducted.

Primary findings:

- **As poverty in an area increases, food affordability in the stores in that area decreases.** Residents in the highest poverty areas in Milwaukee County have to pay more for food in nearby stores, or travel farther to reach affordable food. Low-income Milwaukeeans with limited transportation face a double-bind: high prices for food yet the fewest resources to expend.
- **Overall food affordability was low in most SNAP-authorized stores.** This was especially true in small stores (convenience stores, gas stations, and drugstores), which had higher prices than large stores for both healthy and unhealthy foods.
- **Availability of healthful food options seems to be a stronger barrier to healthy food consumption than price.** Although price is a deterrent in several key food areas (e.g. ground beef and bread), availability of healthful food options is low across all store types, with the exception of large grocery stores.
- **Current levels of SNAP benefits may be inadequate to ensure that recipients can obtain a healthy, balanced diet.** Food affordability is low in high SNAP-usage areas, and healthful options are scarce. In the qualitative interviews, SNAP recipients often identified high food prices and insufficient SNAP benefits as the barriers to healthy eating.
- **The majority of the stores located in predominately African American census tracts have low or very low quality nutrition environments.** This was not the case in predominately Latino areas, however, where nutrition score appears to actually increase with an increased Latino population.
- **Large grocery stores offer a basic selection of fruits and vegetables that are culturally relevant for Milwaukee's large Black and Latino populations.** Midsize stores like El Rey and Lena's also serve the dietary preferences of those communities.
- **Small corner stores seem to be responsive to the racial demographics of their neighborhoods, particularly in Latino neighborhoods.** Small stores in predominately Latino areas are more likely to offer Latino culturally-specific foods. Spatial analysis indicates that a similar trend may be present in predominately Black areas, but the relationship was not found to be statistically significant.

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II. Background and Overview

The Role of the Nutrition Environment

The question "what's for dinner?" inevitably crosses the minds of the nearly 315 million Americans every day. The individual answers, however, are astoundingly diverse and their causes are difficult to trace. The composition of each dinner plate is influenced by a myriad of factors including the eater's culture, religion, socioeconomic status, environment, and personal taste preferences.

There is little doubt that "good nutrition" has a positive impact on one's health. Americans are bombarded with messages from both the public and private sector about the importance of "healthy eating"—a barrage that is particularly relevant today, when over 30 percent of American adults are obese and millions suffer from chronic health issues that are directly linked to poor nutrition, such as diabetes, heart disease, and some cancers (NIH 2008). However, targeting individual behavior alone has been relatively unsuccessful in addressing these issues; researchers and policymakers alike now recognize the influence of an individual's environment as an important factor to consider when determining causes of and potential solutions to chronic diet-related health issues.

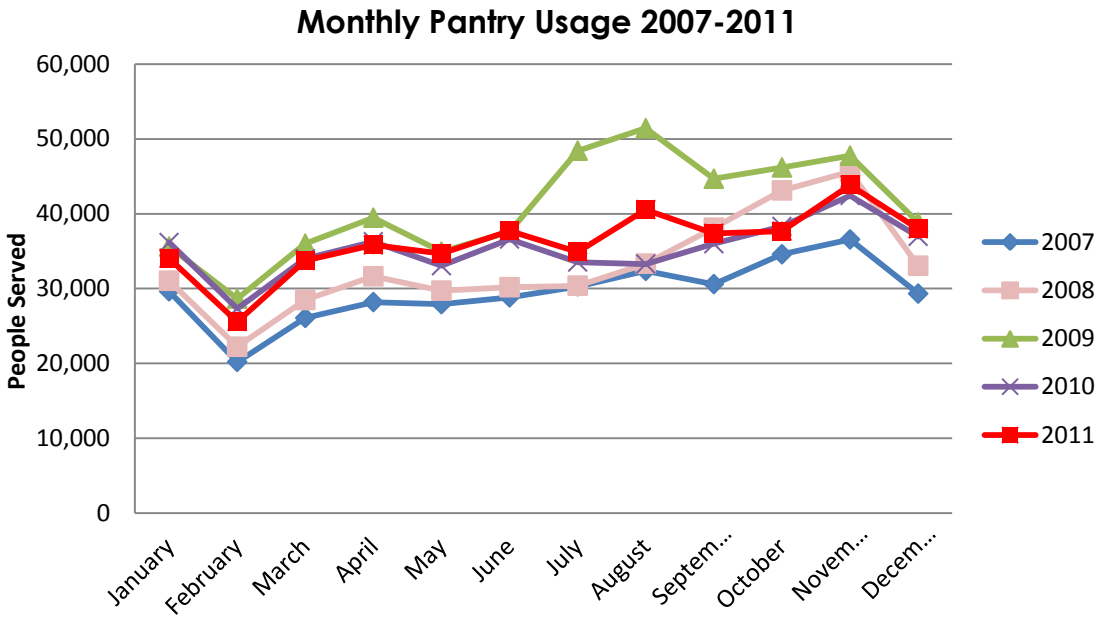
In recent years, research has demonstrated a significant link between the social and built environments and an individual's access to affordable, healthful food. Studies from across the country have found that smaller, non-chain stores are disproportionately located in low-income, urban areas, whereas large chain grocery stores are located in higher income suburban areas (Walker et al 2010). Prices in these small stores are higher than in large stores, and the selection of goods is narrower. (Glanz et el 2007; Chung and Myers 1999). Milwaukee is no exception—a study commissioned by Hunger Task Force in 1994 found that the majority of micro-sized food retail outlets (i.e. corner stores) in Milwaukee County were located in the census tracts with the highest poverty rates (inner city areas). Additionally, micro-sized stores represented a full 72 percent of all food retail outlets operating within those areas.

The persistent existence of these "food deserts"—regions that lack large supermarkets and instead have only small corner stores or gas stations—has a major impact on the dietary options of low-income urban dwellers, particularly in communities of color (Raja et al 2008). Residents who live in these areas generally find it much more difficult to purchase healthful foods at an affordable price within their neighborhood, especially fresh produce. (Rose and Richards 1994; Hendrickson et al 2006). When convenience stores and gas stations are the neighborhood food outlets instead of supermarkets, residents have increased exposure to energy-dense foods (Twinkies, for example) which are nutrient-deficient and often associated with poor health outcomes (Block et al 2004; Lewis et al 2005). This exposure is potentially significant, since some research has shown that people tend to make food consumption choices based on the options available in their immediate vicinity (Drewnowski and Specter 2004). For individuals without access to a car or reliable transportation—a situation that nearly 10 percent of Milwaukee households face—food outlet options are limited (ACS 2010).

Food deserts also represent overlooked economic opportunities; in addition to the significant community health benefits, improving fresh food access in underserved communities can have valuable economic potential. Although research into food retailers' economic impact is still limited, a growing number of studies are revealing promising results. In Philadelphia, an assessment of new supermarkets on the surrounding neighborhoods' home values found that homes located within half a mile of the new supermarkets rose an average of 6 percent in value—a small number that gains significance considering that most of the other homes in the area were declining in value. (Goldstein et al 2008).

Hunger and Poverty in Milwaukee

In Milwaukee, poverty—and consequently food security—is a grave daily reality for many, particularly since the recession began in 2009. One out of every three adults lives in poverty in the county; for children, that number is one in two[1]. Like many cities hit hard by the recession, Milwaukee's unemployment rates remain high, at 7.5 percent for the county overall[2], but nearly 56 percent for African American men, according to a recent UWM study (Levine 2012). The rise in poverty drove an increased demand on emergency food providers such as Hunger Task Force, Milwaukee County's largest local food bank. Hunger Task Force's pantry and meal network continues to serve a notably higher number of people than it did in pre-recession years, with estimated average of 41,800 unduplicated clients per month in 2011.[3]



Recognizing the emergency food pantries are only a short-term solution for a hungry household, Hunger Task Force also dedicates significant resources towards improving Milwaukee residents' access to the FoodShare program, which provides financial assistance for food purchases for low-income residents who meet the program's eligibility requirements. FoodShare benefits are a crucial resource for nearly 25 percent of Milwaukee County residents[4]. FoodShare not only buffers families against food insecurity, but also allows families to improve the nutritional quality of their diets. Multiple nation-wide studies have found that participation in the SNAP program plays an important role in reducing the risk for overweight and increasing fruit and vegetable consumption for food insecure households (Webb et al 2007; Karnik et al 2011; Mabli et al 2010).

However, the receipt of FoodShare benefits does not guarantee that a household can purchase an adequate amount of healthful and culturally appropriate food. The types of stores that a household has access to—and the price and availability of healthful foods at those stores—strongly impact how far a dollar can stretch. In a study of food pantry clients conducted by Hunger Task Force, 67 percent of respondents who received FoodShare (n=491) reported that their benefits only lasted 2-3 weeks out of a month (Hunger Task Force 2011). As an additional stressor, the cost of food has risen nearly 5 percent in 2011 and is expected to rise further in 2012 (USDA 2011). An insufficient food budget pushes a household into food insecurity, which means not only less food but an overall diet of lesser nutritional quality. Research has shown that food security

[1] American Community Census, 2010.
[2] Wisconsin Department of Workforce Development, December 2011.
[3] Hunger Task Force, 2012.
[4] Wisconsin Department of Health Services, November 2011.

is clearly linked to low birth weight, birth defects, immune deficiencies, and poor educational performance (Carmichael et al 2007; Alaimo et al 2001; Jyoti et al 2005). Similarly, poor diet is associated with some of the most serious and costly health problems in the United States, including diabetes, heart disease, and depression (Fitzergerald et at 2011; Vozoris & Tarasuk 2003). Thus, the type of stores that a FoodShare recipient has access to may greatly impact the effectiveness of his or her FoodShare dollars—a reality that has serious impacts on the quality of life in low-access areas.

Description and focus of the quantitative study

The aim of this study is to ascertain if the availability, quality, or price of food items differs depending on the size or location of the retail food stores within Milwaukee County. The study also assessed 1) the availability and price of healthful food options relative to regular food options, and 2) the availability and price of culturally appropriate foods in those stores that operate in areas with significant ethnic minority populations. Only stores that accept FoodShare dollars were surveyed. Focus questions of the study:

- In SNAP-authorized stores in Milwaukee County, what is the relationship between store size/type and the price, quality, and availability of a given basket of food items?
- Which type(s) of store offer healthful alternatives to regular food items?
- Across all stores, are healthier food items more or less expensive than their regular alternatives?
- In areas with significant Black and Latino populations, to what extent are culturally appropriate fruits and vegetables available? How do their prices compare to other "normal" fruits and vegetables?

The last major comprehensive study of food pricing and food quality in Milwaukee County was Hunger Task Force's 1997-98 Food System Assessment Study, conducted by a team of researchers at UW Milwaukee.

Summary of the key findings from Hunger Task Force's 1997-98 Food System Assessment Study:

- The majority (57%) of micro-sized food retail outlets (ie, corner stores) operating in 1994 in Milwaukee County were located in the census tracts with the highest poverty rates (inner city areas).
- Micro-sized stores represented 72 percent of all retail food stores in this high poverty target area.
- The availability of food items was greater in larger outlet stores than in smaller stores, i.e. you were more likely to reliably find all the components of a nutritionally balanced basket in a large store than a small one.
- Quality of produce was generally high in medium and large grocery stores, while poor quality produce was common in smaller stores.
- Smaller sized stores charged higher prices for many individual food items than large stores. Based on the results of this study, the research team concluded that size of store (rather than location or type of clientele) is the strongest determinant of store prices.

The 2011-12 study is not comparable to the 1997-98 in scope or methodology; therefore, the results of the two studies cannot be objectively compared. However, subjective comparisons of the primary conclusions of the two can be made regarding the location of grocery stores, the availability of food items, and the prices of food items in stores of different sizes.

Qualitative survey description and objectives

As a complement to the quantitative supply-side survey of stores, qualitative interviews with SNAP recipients were conducted at four of the emergency food pantries in Hunger Task Force's network. The interviewees' answers provide a glimpse into the food purchasing preferences, habits, and challenges of low-income consumers in Milwaukee County. This was not a comprehensive study and should be considered a "pilot" study for future research. Focus areas of the interviews:

- From which food outlets do FoodShare-assisted consumers obtain their food? Why?
- Do those primary outlets meet all their food needs?
- Are there informal food outlets (street vendors, farmers market, etc) that individuals obtain their food from?
- Do FoodShare-assisted consumers buy the store brand or name brand items?
- How important is the availability of certain culturally appropriate foods for underserved populations?
    - Does this availability affect those consumers' decisions of where to shop?

III. Quantitative Store Surveying Methods

Survey tool

We selected a pre-existing survey instrument to conduct the store assessment. The Nutrition Environment Measures Survey (NEMS) was developed by a team of nutritionists and MDs at Emory University in 2007 and has been used in over twenty food outlet assessments across the country. The primary benefits of using the NEMS tool are twofold: first, it greatly reduces the research design development and revision time that would normally be required to conduct a study of this nature and size; second, it adds to the growing number of city-level assessments that all use the NEMS tool, thus allowing standardized comparison of results across many populations. This standardization allows researchers and policymakers to compare results, identify nutrition disparities trends at a national level, and seek policy solutions that address those common challenges. There are 10 food groups included in the NEMS survey: milk, fruits, vegetables, ground beef, hot dogs, frozen dinners, baked goods, bread, beverages (soda and juice), and cereal. These foods were selected based on their prominence in the American grocery basket and their role in creating nutritionally balanced diets (Glanz et al 2007).

Several modifications were made to the NEMS tool in order to account for the specific context of Milwaukee County and the research interests of Hunger Task Force. Because Milwaukee has significant Black and Latino populations (27 percent and 13 percent, respectively, of Milwaukee's population), we felt it was important to include foods that are culturally appropriate for those communities. Many nutrition and food access studies do not account for cultural variation in food preference (particularly in fruits and vegetables), which often leads researchers to overlook its potentially significant influence on healthy food access and availability in low-income communities of color. A store may offer a wide selection of produce, but if the consumer is not familiar with or does not enjoy the available options, she may choose to forgo purchasing produce or go to a different store to find the preferred items (Yeh et al 2008). A total of 10 fruits and vegetables that are culturally relevant to African American and Latino communities were added to the assessment tool. Mango and papaya were added to the list of fruits included in the assessment; okra, collard greens, black beans, avocado, tomatillos, sweet potatoes, and black-eyed peas were added to the list of vegetables. These items were selected through informal interviews with several Black and Latino residents of Milwaukee and through consideration of the procedure of similar studies (Grigsby-Toussaint et al 2010; Zenk et al 2011).

Second, we added a measurement of the price and availability of store brand items for the bread, soda, and cereal categories, since many larger stores offer store brand versions of those food items at greatly reduced prices. Our interest was not only in the availability of healthy foods, but also the overall affordability of foods across different store types; the availability of store brand items may have a significant impact on a SNAP recipient's store and product choice.

Our final modification was to include drugstores, gas stations, and supercenters in our store sample group. Most previous studies have only looked at food options in convenience stores and grocery stores, and compared the results between the two types. However, it is becoming increasingly common for traditionally non-food stores to offer staple food items such as milk, bread, and cereal, indicating that consumers are purchasing their groceries at a wider variety of outlets. Little research has been done to understand how this broader diversity of food outlet types is affecting consumers' purchasing habits. We felt it was important to include these potentially important sources of food for low-income consumers in our survey of the landscape of nutritional quality and affordability.

Store selection

A list of SNAP-authorized food retail outlets in Milwaukee County was obtained from the USDA. This list was then cross-referenced with a store list purchased from InfoUsa.com in order to ensure accuracy of current store names and addresses. The resulting list of 458 stores was then divided up by store size, which roughly correlates with store type. A representative random sample of stores was identified from each category, thus producing a final list of 131 stores. Natural foods stores (such as Outpost and Whole Foods) and specialty food stores were excluded from the sample.

Surveying procedure

The selected stores were surveyed between October 4, 2011 and December 2, 2011. Surveying was conducted Monday through Friday between the hours of 10am and 4pm. Convenience stores, drugstores, and gas stations took on average 28 minutes to complete; grocery stores and supercenters took an average of 45 minutes. In convenience stores and gas stations, the surveyor briefly explained the project to the store clerk upon entering the store and asked permission to complete the survey. In grocery stores and supercenters, it generally was not necessary to obtain permission to conduct the survey. The completed paper store surveys were entered into an Excel database by trained volunteers.

Data analysis procedure

Four separate composite scores were produced from the store data: quality of nutrition environment (QNE), availability of fruits and vegetables culturally appropriate to the Latino population, availability of fruits and vegetables culturally appropriate to the Black population and overall food affordability. The NEMS tool provided the basis and scoring for the QNE score, while the other three scores were created by Hunger Task Force. The maximum possible score was 56; the minimum was -9.

The two culturally appropriate food scores were based on the number of fruits/vegetables available and the percentage of those fruits and vegetables that were of acceptable quality. Price was not considered. The maximum possible score was 8, and the minimum was 0.

The food affordability score was calculated using large grocery store prices as the benchmark for "affordability." In each food category, the food item with the lowest average price was chosen (for example, white bread was on average cheaper than wheat bread) and then all those lowest average prices were added up to determine which type of store had the lowest overall "shopping cart cost." Supercenters and large grocery stores were within 5 percent of each other, so we decided to use grocery store prices as the benchmark due to the relatively broader distribution and higher density of large grocery stores in the county compared with supercenters. The maximum possible score was 40; the minimum was -40.

Gradients for each composite score (*A detailed explanation of the 3 scores is available in Appendix F*):

Quality of Nutrition:	**Availability of culturally appropriate foods:**	**Food affordability:**
-9 to 3.99 points= very low quality 4.00 to 16.9 points= low quality 17to 29.9 points= moderate quality 30.0+ points= high quality	0-2 points= low availability 3-5 points= moderate availability 6-8 points= high availability	-28.0 to -5.01points= low affordability -5 to 9.99 points= moderate affordability 10+ points= high affordability

Limitations

There were several limitations in the collection of the quantitative data that should be taken into consideration.

First, there was only one surveyor conducting the information, which introduces the possibility of surveyor bias. However, we decided that this was not a significant risk because the NEMS survey tool was designed to optimize surveyor reliability (Glanz et al 2007). Second, each store was only visited once, so any seasonal or monthly price fluctuations were not accounted for. Fresh produce prices in particular generally change depending on the season.

In examining the availability of culturally-specific foods items, we only surveyed a sample of produce (only 5 for each group) which does not capture the full dietary cultures of those communities. Those also only represent two of Milwaukee many ethnic minority groups.

When calculating the overall affordability of a food stores, the benchmark was based on the average prices of items in large grocery stores, which is a rough, fluctuating baseline and is based on the assumption that items in large grocery stores are affordable to low-income consumers. This assumption should be critically examined in future measures of food affordability in Milwaukee.

IV. Qualitative Interviewing Methods

Interview and data collection procedure:

The interviews were conducted in four different emergency food pantries within Hunger Task Force's network. All pantry clients were asked whether they are receiving FoodShare benefits as part of the standard intake interview; clients who answered in the affirmative were then asked if they would be willing to participate in a voluntary interview. Aside from SNAP participation, there were no demographic constraints. Clients' receipt of emergency food was in no way dependent on their participation in the interview. If a client agreed to participate, he/she was escorted to a private area (usually a small room or unused office) to conduct the interview in a place where he/she could not be overheard. This was done in order to protect their privacy and the potential sensitivity of the answers. Before starting, the interviewer read the participant a short description and purpose of the study, stating that (with their permission) the interview would be recorded with a small audio recorder. Interviews lasted between 15 and 40 minutes, depending on the willingness of the interviewee. The qualitative research design was approved by the Institutional Review Board in October 2011.

V. RESULTS

Description of store sample:

In the process of on-the-ground surveying, we encountered a number of stores that were specialty stores for a particular cuisine (i.e. Indian or Middle Eastern). A total of 11 stores had to be replaced with other stores of a similar size selected from the master store list. Two stores refused to allow the survey. Ground surveying also exposed problems in our original store size/type classification system. Many stores' sizes were misclassified in the InfoUSA listing and did not reflect the actual amount of food items offered. We revised the system to use only type classifiers (gas station, drugstore, etc) which also served as rough size classifiers. The grocery stores were divided into two categories based on number of cash registers, a classification method that has been used in other NEMS studies (Glantz et al 2007).

Below is the description of the final sample, after reclassifying the store sizes and removing several stores. Each store type sample size is approximately statistically significant, though convenience stores are slightly undersampled and midsize grocery stores are slightly oversampled.

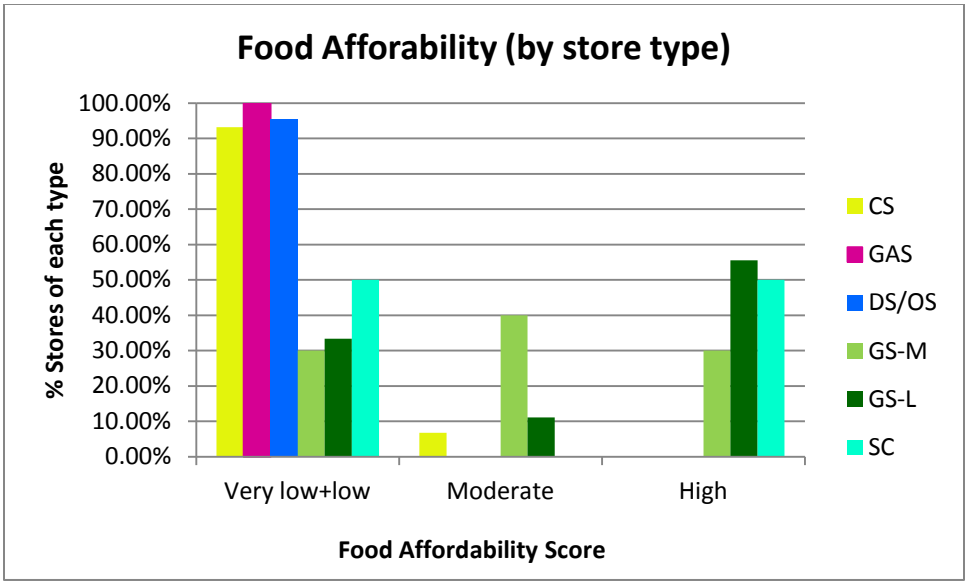
Type of store	Number of stores	# surveyed	% of total possible stores
Convenience Stores (CS)	231	59	25.54%
Gas Stations (GAS)	85	24	28.24%
Drug stores (DS) and Other stores (OS)	68	22	32.35%
Midsize Grocery Stores (GS-M)	26	10	38.46%
Large Grocery Stores (GS-L)	31	9	29.03%
Supercenters (SC)	13	4	30.77%
TOTAL:	454	128	28.19%

Overall Food Affordability in SNAP-authorized Stores

"Affordability" in each store was calculated using large grocery store prices as the benchmark. Each food item price in a given store was compared to the average price of that same item in large grocery stores. Points were assigned based on how the price of the item in question compared to benchmark price. If the price fell below the benchmark (i.e. less expensive), positive points were given. If the price went above, points were taken away. (A full explanation of the affordability scoring is available in Appendix E.) It should be noted this is a crude way to calculate overall affordability of a store, and the margins of error are quite large. This method is reliant on a rough, fluctuating baseline (prices in large grocery stores), and is based on the assumption that items in large grocery stores are affordable to low-income consumers, which is not necessarily true. Recommendations for how to improve this method in future research endeavors can be found in Section IX.

Over 90 percent of all small stores (CS, GAS, DS) fell into the "low affordability" category. Only 19 stores (15%) achieved moderate or high affordability.

Figure 1

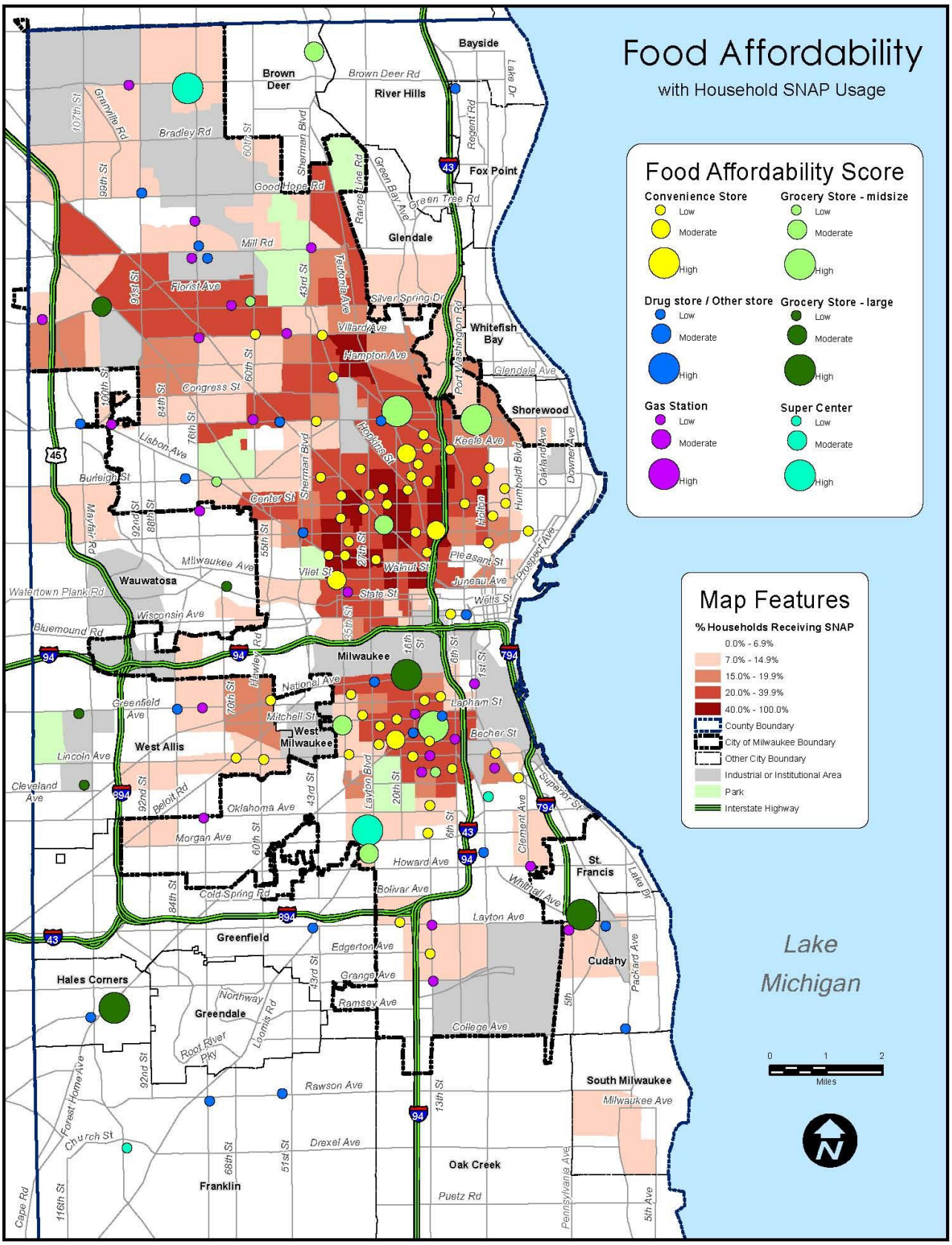


The map of food affordability with household SNAP usage (Map 1) clearly shows the concentration of low affordability stores in the northern end of the city where SNAP usage is the highest.

The same trend is not as strong in the southern part of the city, however, where there is moderate to high SNAP usage. There are still a high number of small stores, but there are also several large stores that scored a moderate or high affordability ranking, suggesting that access to affordable food is not as restricted in that region. County-wide, there was no statistically significant correlation between affordability and SNAP usage. Therefore, there may be some areas of high SNAP usage in the county where food affordability is low in most stores, but the trend does not hold across the whole county.

We did find, however, that a low affordability score correlates with high poverty. As poverty increases, food affordability decreases ($r= -0.301$, $p<0.001$). This result is more conclusive and significant than looking at the SNAP usage data, because the poverty data is taken from the U.S. Census (much larger sample size) and SNAP usage numbers can fluctuate significantly.

Map 1



SNAP Usage data is from U.S. Census 2005-2009 ACS data.

BDF - Food Access Maps - 2011 - Food Affordability w SNAP Usage - Mapsv2012_01_18

What is the relationship between store size/type and the price, quality, and availability of a given basket of food items?

Consistent with the findings of the 1997 Hunger Task Force study and of many other studies across the country, food prices are higher in small stores (convenience stores, gas stations, and drugstores) than in large stores (grocery stores and supercenters). Differences in price based on store size were most notable for hot dogs, frozen dinners, baked goods, and bread.

For most food items surveyed, large grocery stores offered the lowest food prices. Supercenters had lower prices for black beans, hot dogs, baked goods, soda, bread, chips, and cereal. However, fruit and vegetables were notably more expensive in supercenters than in large grocery stores.

Fruit

Of all the stores surveyed, 57 percent had at least one type of fresh fruit available. Drugstores and gas stations had the lowest fruit availability (31% and 33%, respectively). 61 percent of convenience stores had at least 1 type of fruit. Availability of fruit dropped off dramatically after 2 varieties. Only 2 percent of convenience stores offered 5 or more varieties, while over 80 percent of large stores (GS-M, GS-L, SC) had 5 or more varieties. (There were no drugstores or gas stations with more than 3 varieties). Large grocery stores had the highest average number of varieties (10.5).

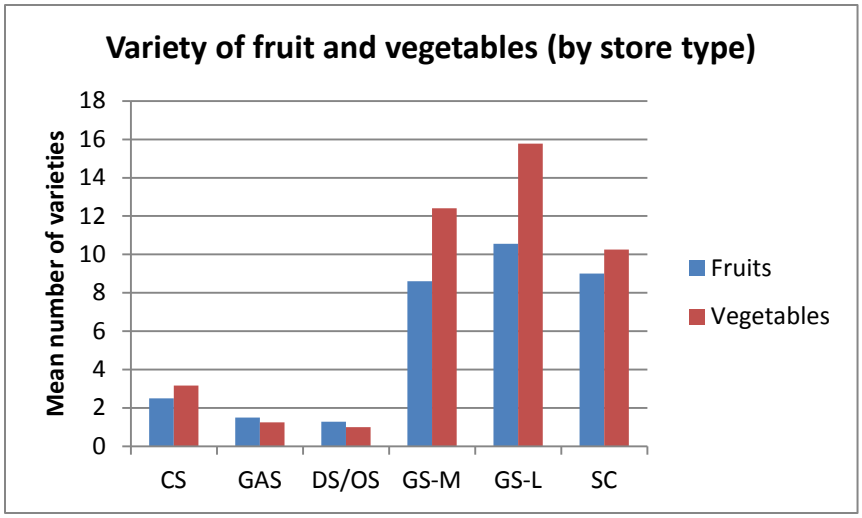
For most types of fruit, large grocery stores had the lowest prices while drugstores had the highest (88% higher than the large grocery stores). For common fruits like apples and oranges, the price difference between convenience stores and large grocery stores was not significant. Interestingly, fruit prices at supercenters were higher than large grocery store prices and occasionally even higher than convenience store prices. The average price of oranges, for example, was 46 percent higher at supercenters than large grocery stores and 17 percent higher than the price at convenience stores.

Convenience stores offered few varieties of fruits and vegetables, and usually had higher produce prices. Produce quality was high across all stores.

Produce quality was high at most of the stores surveyed. Quality was measured subjectively by the surveyor as "acceptable" or "unacceptable." If the fruit or vegetable was brown, wrinkled, highly spotted, or otherwise inedible, it would be marked as "unacceptable". Tables 2 and 4 show that most fruits and vegetables offered were of high quality. Convenience stores and drugstores had the lowest rates of acceptability—of the 73 convenience stores that offered fruit, 7 of them (19%) did not have any fruit of acceptable quality. In contrast, 100 percent of the fruit and vegetables at all of the midsize and large grocery stores were of acceptable quality.

As mentioned, most stores surveyed had between 75 and 100 percent acceptability. This indicates that low produce quality is not a significant barrier to healthful food consumption in Milwaukee County; instead, low availability and higher prices of produce in small stores are stronger barriers.

Figure 2



Abbreviation	Store type
CS	Convenience store
GAS	Gas station
GS-M	Grocery store (midsize)
GS-L	Grocery store (large)
SC	Supercenter
OS	Other store

Large stores offer a much greater selection of fruits and vegetables than small stores do, with the exception of supercenters, which on average offered significantly fewer varieties than grocery stores. Only one small store offered 5 or more varieties of fruitQuality of fruit was high across all store types.

Table 1

STORE TYPE	Of stores that have fruit, what is the average # of types?	≥ 1 Type of fruit		≥ 5 Types of fruit		≥ 9 types of fruit		12 types of fruit	
	mean	n	%	n	%	n	%	n	%
All stores	4.37	73	57.03%	21	16.41%	17	13.28%	3	2.34%
CS	2.50	36	61.02%	1	1.69%	0	0.00%	0	0.00%
GAS	1.50	8	33.33%	0	0.00%	0	0.00%	0	0.00%
DS/OS	1.29	7	31.82%	0	0.00%	0	0.00%	0	0.00%
GS-M	8.60	10	100.00%	8	80.00%	7	70.00%	2	20.00%
GS-L	10.56	9	100.00%	9	100.00%	9	100.00%	1	11.11%
SC	9.00	3	75.00%	3	75.00%	1	25.00%	0	0.00%

Table 2

In the stores that have fruit available, what percent of the fruit is of acceptable (edible) quality?	0-49% of fruit acceptable		50- 74% of fruit acceptable		75-100% of fruit acceptable	
	n	% of stores	n	% of stores	n	% of stores
Convenience stores	7	19.44%	2	5.56%	27	75.00%
Gas Stations	1	12.50%	0	0.00%	7	87.50%
Drugstores	2	28.57%	0	0.00%	5	71.43%
Grocery stores (midsize)	0	0.00%	0	0.00%	10	100.00%
Grocery stores (large)	0	0.00%	0	0.00%	9	100.00%
Supercenters	0	0.00%	0	0.00%	3	100.00%

Vegetables

Across all store types, vegetables were more available than fruits. 50 percent of gas stations and 93 percent of convenience stores offered at least one type of vegetable. This can partially be explained by the high availability of dried black beans and/or black eyed peas across all stores. Stores that are WIC-authorized are required to carry certain healthful food items, including dried legumes. Availability dropped off sharply for more than one variety. Only 25 percent of convenience stores offered 5 or more varieties of vegetables. Large grocery stores offered an average of 16 varieties; supercenters, 10; and convenience stores, 3.

Similar to fruit, vegetable prices were highest in drugstores and lowest in large grocery stores. Tomatoes, for example, were over 200 percent more expensive in drugstores than in large grocery stores. Supercenter vegetable prices were also higher; tomato prices were twice as much as those in large grocery stores.

Table 3

STORE TYPE	Of stores that have veggies, what is the average # of types?	≥1 Type of veggie		≥ 5 Types of veggies		≥ 10 types of veggies		≥ 15 types of veggies	
	mean	n	%	n	%	n	%	n	%
All stores	4.98	94	73.44%	33	25.78%	22	17.19%	14	10.94%
Convenience stores	3.16	55	93.22%	15	25.42%	1	1.69%	0	0.00%
Gas Stations	1.25	12	50.00%	0	0.00%	0	0.00%	0	0.00%
Drugstores	1.00	12	54.55%	0	0.00%	0	0.00%	0	0.00%
Grocery stores (midsize)	12.40	10	100.00%	9	90.00%	9	90.00%	4	40.00%
Grocery stores (large)	15.78	9	100.00%	9	100.00%	9	100.00%	9	100.00%
Supercenters	10.25	4	100.00%	3	75.00%	3	75.00%	1	25.00%

Table 4

In the stores that have vegetables available, what percent of the vegetables are of acceptable (edible) quality?					
	0-49% of veggies acceptable		50- 74% of veggies acceptable		75-100% of veggies acceptable	
	n	% stores	n	% stores	n	% stores
CS	4	7.27%	8	14.55%	43	78.18%
GAS	0	0.00%	0	0.00%	12	100.00%
DS/OS	0	0.00%	0	0.00%	12	100.00%
GS-M	0	0.00%	0	0.00%	10	100.00%
GS-L	0	0.00%	0	0.00%	9	100.00%
SC	0	0.00%	1	25.00%	3	75.00%

Table 3 shows that most stores (73%) had at least one type of vegetable. Very few smaller stores, however, had 5 or more varieties of vegetables. Large grocery stores were the only ones that reliably offered more than 15 types; only 40 percent of midsize grocery stores and 25 percent of supercenters offered greater than 15 types of vegetable. Table 4 shows that the quality of the available vegetables was high across all store types. You are slightly more likely to find poor quality produce in convenience stores and in supercenters.

Which type(s) of store offers healthful alternatives to regular food items?

Overall, healthful food options were more readily available in large stores (GS-M, GS-L, SC) as compared to small stores. This availability gap was particularly notable for food items listed in Table 5. Of the 10 food categories surveyed, 6 of them had limited availability for the healthful option. This indicates that even if there is no price difference between regular and healthful items, lack of availability is a significant barrier to obtaining healthful food. This is particularly the case in smaller stores.

For example, only 16 percent of stores surveyed offered lean meat alternatives. The majority of midsize and large grocery stores had lean meat (70% and 89% respectively), but all other store types had availability rates of less than 25 percent. Only 2 percent of the gas stations had lean meat and none of the gas stations did. Similar drastic availability gaps were observed for reduced fat hot dogs and for baked chips.

Table 5

STORE TYPE	Lean Meat Available		Reduced fat hot dogs Available		Reduced Fat dinners Available		Reduced Fat baked goods Available		Whole wheat Available		Baked chips Available	
	n	%	n	%	n	%	n	%	n	%	n	%
All stores	20	15.63%	29	22.66%	73	57.03%	67	52.34%	73	57.03%	31	24.22%
CS	1	1.69%	6	10.17%	24	40.68%	24	40.68%	29	49.15%	3	5.08%
GAS	0	0.00%	3	12.50%	9	37.50%	8	33.33%	7	29.17%	1	4.17%
DS/OS	3	13.64%	0	0.00%	20	90.91%	14	63.64%	14	63.64%	10	45.45%
GS-M	7	70.00%	8	80.00%	8	80.00%	8	80.00%	10	100.00%	4	40.00%
GS-L	8	88.89%	9	100.00%	8	88.89%	9	100.00%	9	100.00%	9	100.00%
SC	1	25.00%	3	75.00%	4	100.00%	4	100.00%	4	100.00%	4	100.00%

Across all stores, are healthier food items more or less expensive than their regular alternatives?

Significant price gaps between the healthful and regular options were observed for the juice, ground beef, bread, and soda categories.

100% Juice: At large stores, the 100% name brand juice option was significantly more expensive than the regular name brand juice drink across all large store types. It was 81 percent more expensive in supercenters, and 65 percent more expensive in large and midsize grocery stores. Many of the stores offered a store brand 100% juice option, which was cheaper than the name brand 100% juice, but still significantly more expensive than the juice drink (40% more expensive in large grocery stores and 60% more in supercenters). At small stores, the price of a bottled juice drink and a bottle of 100% juice were approximately equal (within 5% of each other).

Lean ground beef: In the stores that offered both lean and regular ground beef, the lean option was at least 30% more expensive across all store types. Store size had no impact on the price gap.

Whole wheat bread: The price difference between wheat and white bread was greatest at gas stations (70% more expensive) and convenience stores (67%). Large grocery stores and supercenters were the only store types that did not have a significant price difference between whole wheat and white bread.

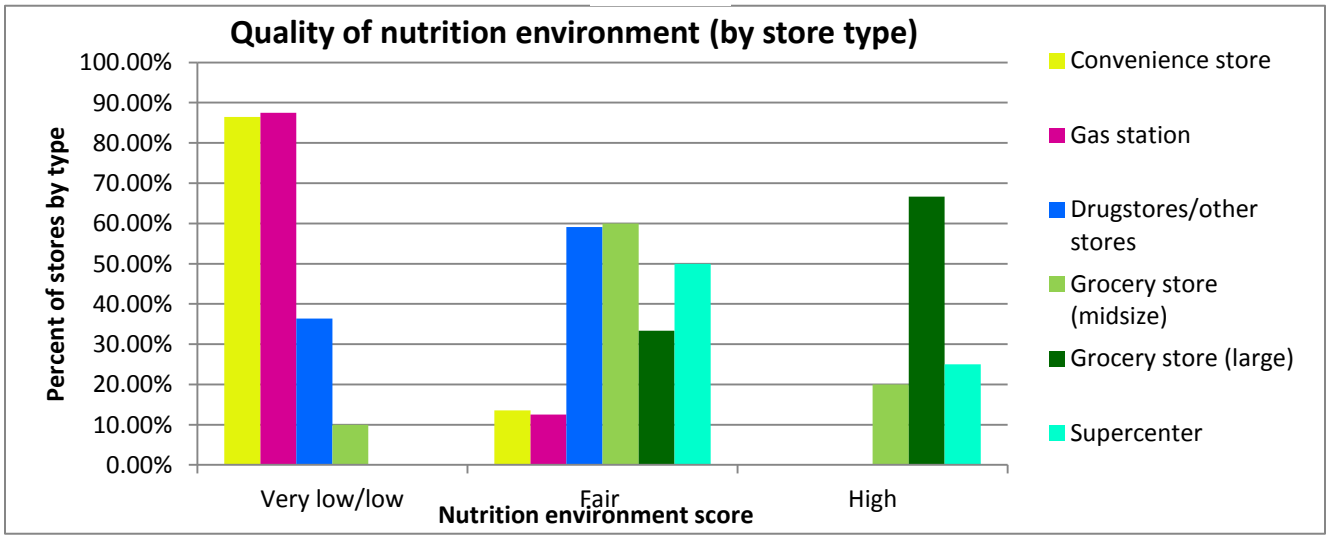
Soda (single bottle or can): Within small stores, there was no significant difference in price for cans and bottles of diet and sugared name brand soda. However, most convenience stores also carried Wildwood brand soda at significantly cheaper prices (e.g. $0.75 for a can of Coca Cola versus $0.35 for a can of Wildwood). This is significant because Wildwood does not offer any diet options, thus creating an incentive to consume sugared soda over diet soda.

However, for the majority of the food categories surveyed, the healthful and regular options did not differ significantly in price. In the case of milk and baked goods, the reduced fat option was actually slightly cheaper than the regular fat option. This indicates that although healthful food items are cost prohibitive in some important dietary areas, lack of availability of healthful alternatives (especially in smaller stores) may be a stronger barrier to healthy eating.

Overall Quality of Stores' Nutrition Environments

A composite score of the overall quality of its nutrition environment was calculated for each store surveyed. This score takes into account the availability of fruit and vegetables, the availability of healthful options (e.g. lean ground beef), and the price of those healthful options relative to regular items. The score gives an overall ranking of how many healthful alternatives a customer has in a given store, and how affordable those options are relative to the regular, unhealthful options. A full explanation of the scoring system is in Appendix E.

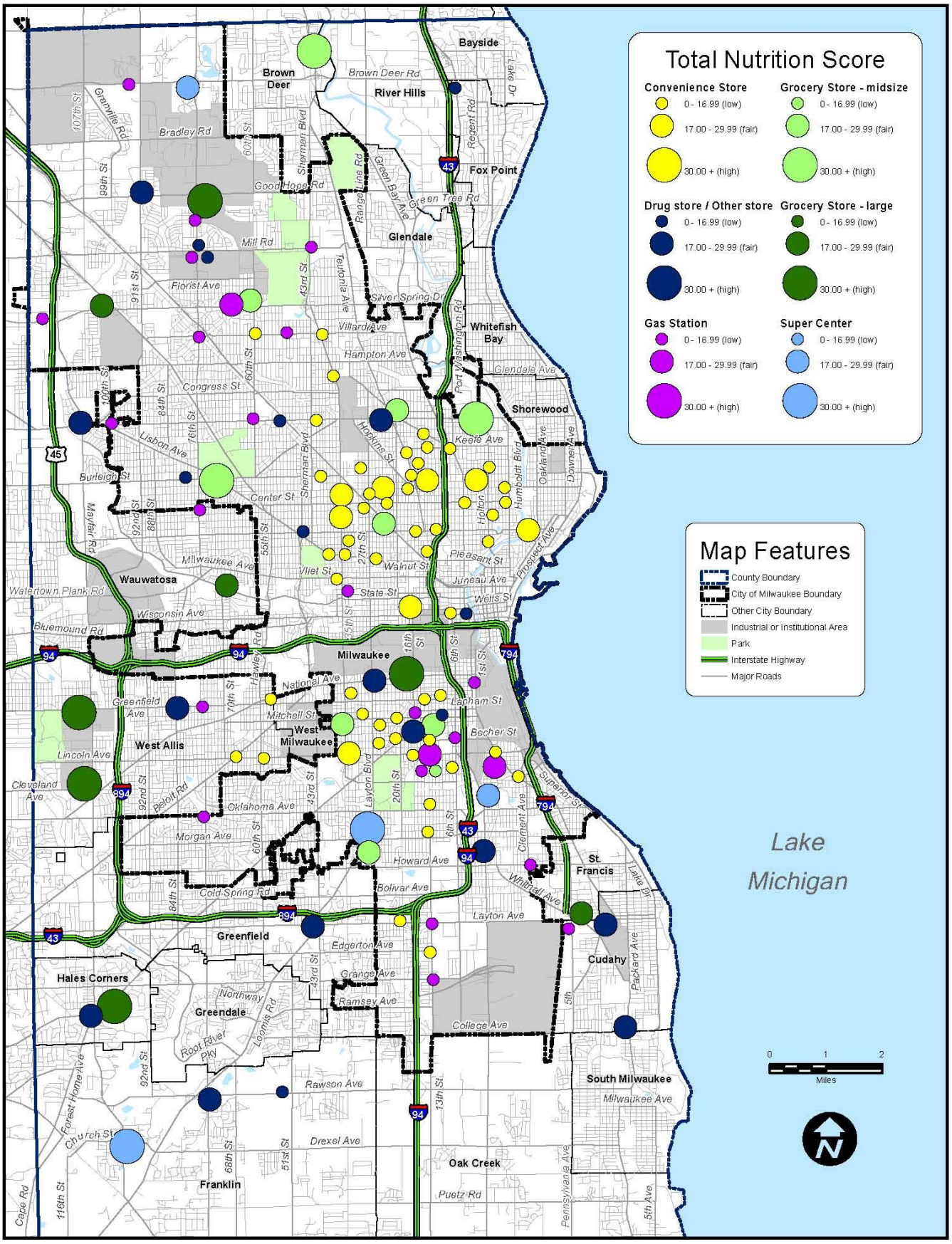
Figure 3



The map on the following page (Map 2) shows the spatial distribution of nutrition scores by store type. Store type is represented by color and the nutrition score is represented by the size of a circle. A bigger circle indicates a higher score: the higher the score, the better the nutrition environment.

Of the 128 stores surveyed, only 9 achieved a "high" score of 30 points or more. The majority (60%) of stores scored "low", and 3 percent scored "very low." The scores are broken out by store type in the bar graph above. (Figure 4). The majority of large grocery stores (67%) have a high quality nutrition environment, but supercenters and midsize grocery stores trail below. Convenience stores and gas stations overwhelming scored in "low" or "very low" category.

Map 2

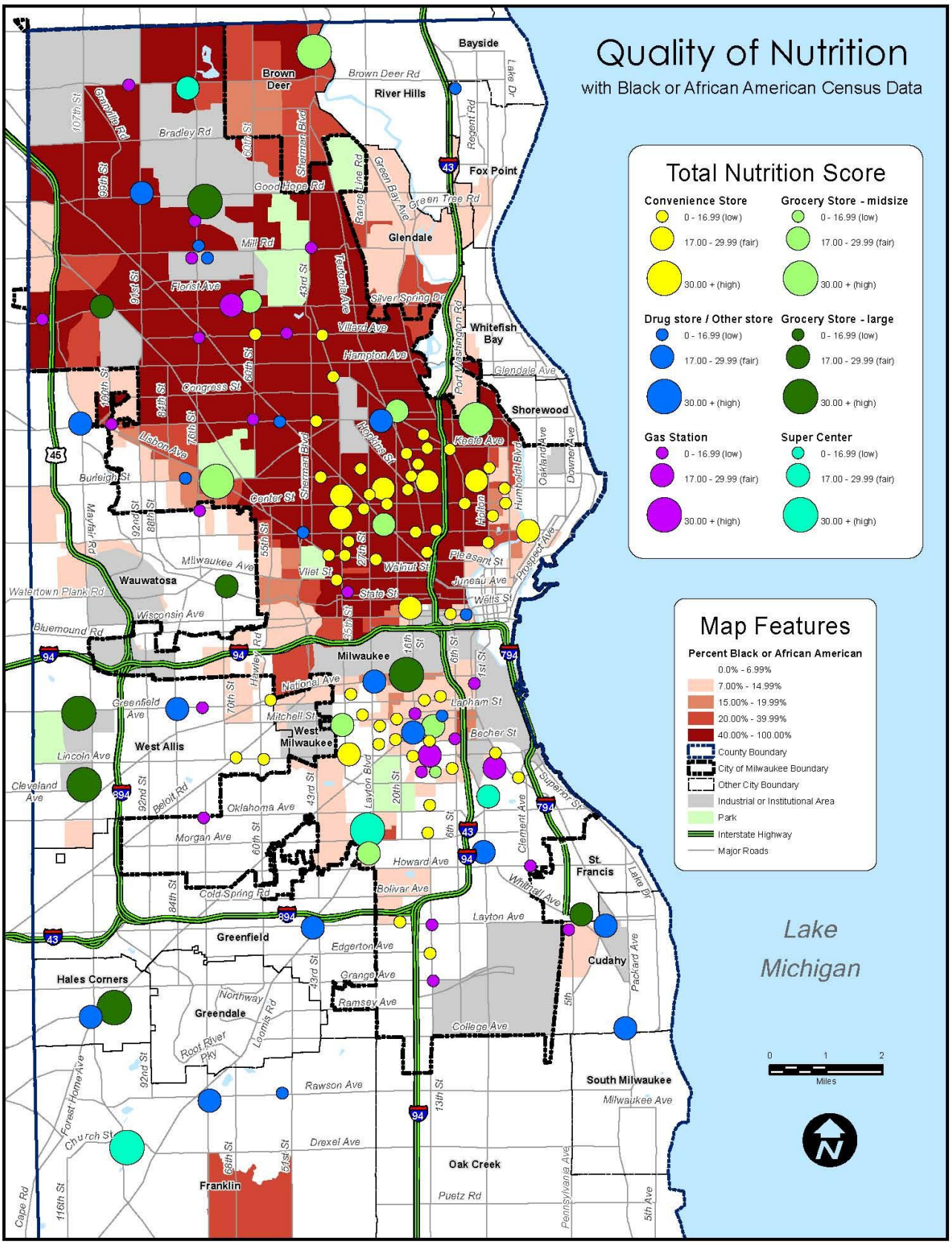

Total Nutrition Score
Convenience Store
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Grocery Store - midsize
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Drug store / Other store
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Grocery Store - large
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Gas Station
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Super Center
0 - 16.99 (low)
17.00 - 29.99 (fair)
30.00 + (high)
Map Features
County Boundary
City of Milwaukee Boundary
Other City Boundary
Industrial or Institutional Area
Park
Interstate Highway
Major Roads
Lake Michigan
Bayside
Brown Deer
River Hills
Fox Point
Glendale
Whitefish Bay
Shorewood
Wauwatosa
West Allis
Milwaukee
West Milwaukee
Greenfield
Hales Corners
Greendale
Franklin
Oak Creek
South Milwaukee
Cudahy
St. Francis
0 1 2
Miles
N

As we can see in Map 3, the majority (72%) of all the stores located in areas that are predominately African American or Black fall into the "low/very low" category. Statistical analysis in SPSS confirmed that areas with high African African/Black populations (greater than 40% of total population) are associated with low store nutrition scores. As the percentage of African American residents increases in a census tract, nutrition score decreases (r= -0.184, p=0.038). However, this correlation is only found at the census tract level; there is no statistically significant correlation at the block group level.

The situation is not as clear for the predominately Latino areas of the city. Looking at Map 4 on page 20, we can see that 68 percent of all the stores within those areas have a "low" quality nutrition environment. However, the concentration of low-scoring stores is not as dramatic as in the African American areas. Statistical analysis in SPSS revealed a result different: As the percentage of Latino residents increases in a census tract, nutrition score also increases (r=0.20, p=0.024). However, this correlation was also only found at the tract level, and not at the block group level. Additional store sampling specifically focused on areas with significant Latino populations is necessary to better understand if there is any relationship between the nutrition quality of an area and the concentration of Latino residents in that area.

Stores in predominately African American areas of the county offered few healthful food options.

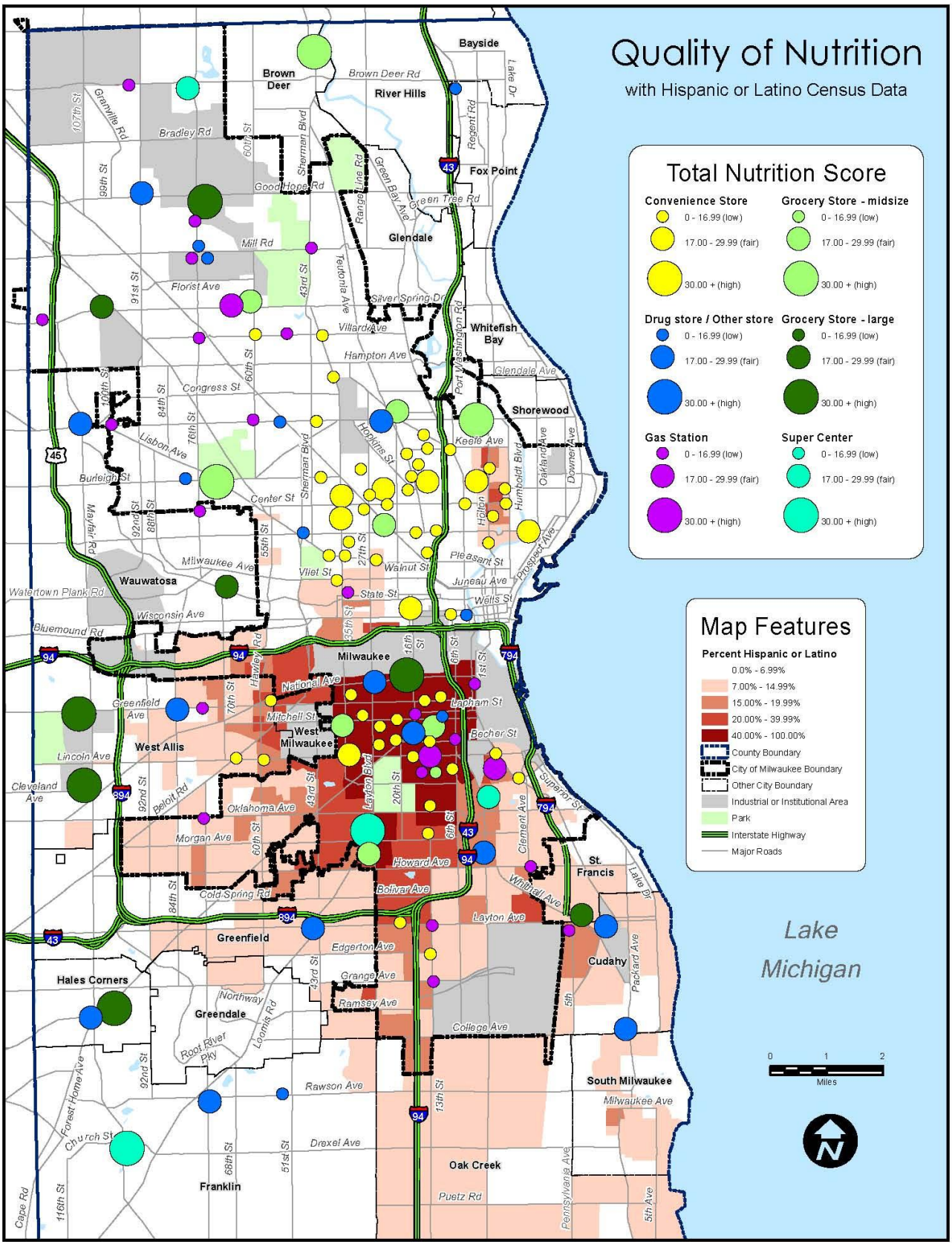
Map 3



Percent Black or African American is from U.S. Census 2010 blockgroup data.

BDF - Food Access Maps - 2011 - Quality of Nutrition w African American Data - Maps v2012_01_18

Map 4



Percent Hispanic or Latino is from U.S. Census 2010 blockgroup data.

BDF - Food Access Maps - 2011 - Quality of Nutrition w Hispanic Data - Maps v2012_01_18

In areas with significant Black and Latino populations, to what extent are culturally appropriate fruits and vegetables available?

For each store surveyed, a score for the availability of Black and Latino culturally-specific produce was calculated. Stores received points for the number of types of produce and the quality of the available produce. For example, stores that offered between 2 and 3 varieties of culturally-specific produce of good quality (not brown, spotted, or otherwise damaged) obtained a "moderate" rating.

Overall, large grocery stores offered a significantly greater variety of both Black and Latino culturally-specific fruits and vegetables surveyed. As Figure 4 shows, all of the large grocery stores achieved a "high availability" score for Black culturally-specific foods. The situation is similar for the Latino population, though there are more types of stores that offer a "moderate" variety, and not as many large grocery stores offer a full selection of Latino-specific fruits and vegetables.

Figure 3

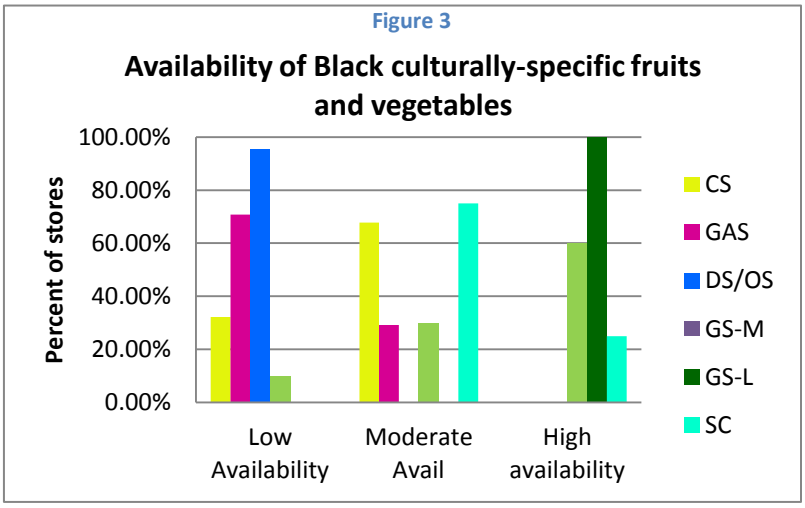
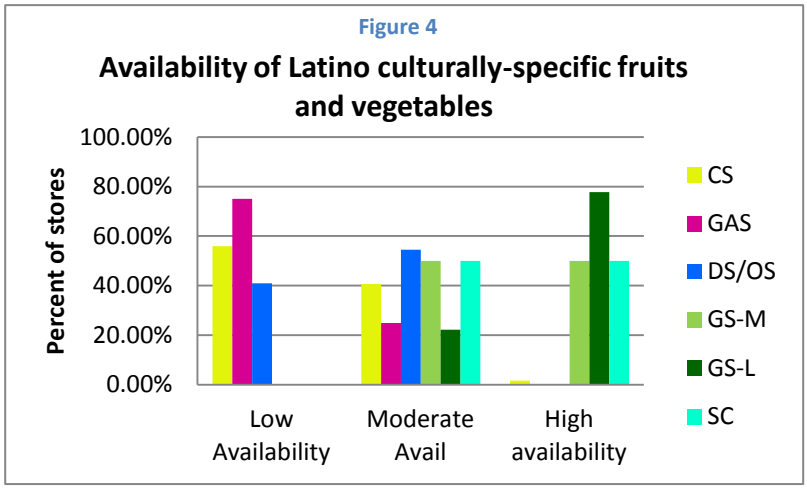


Figure 4

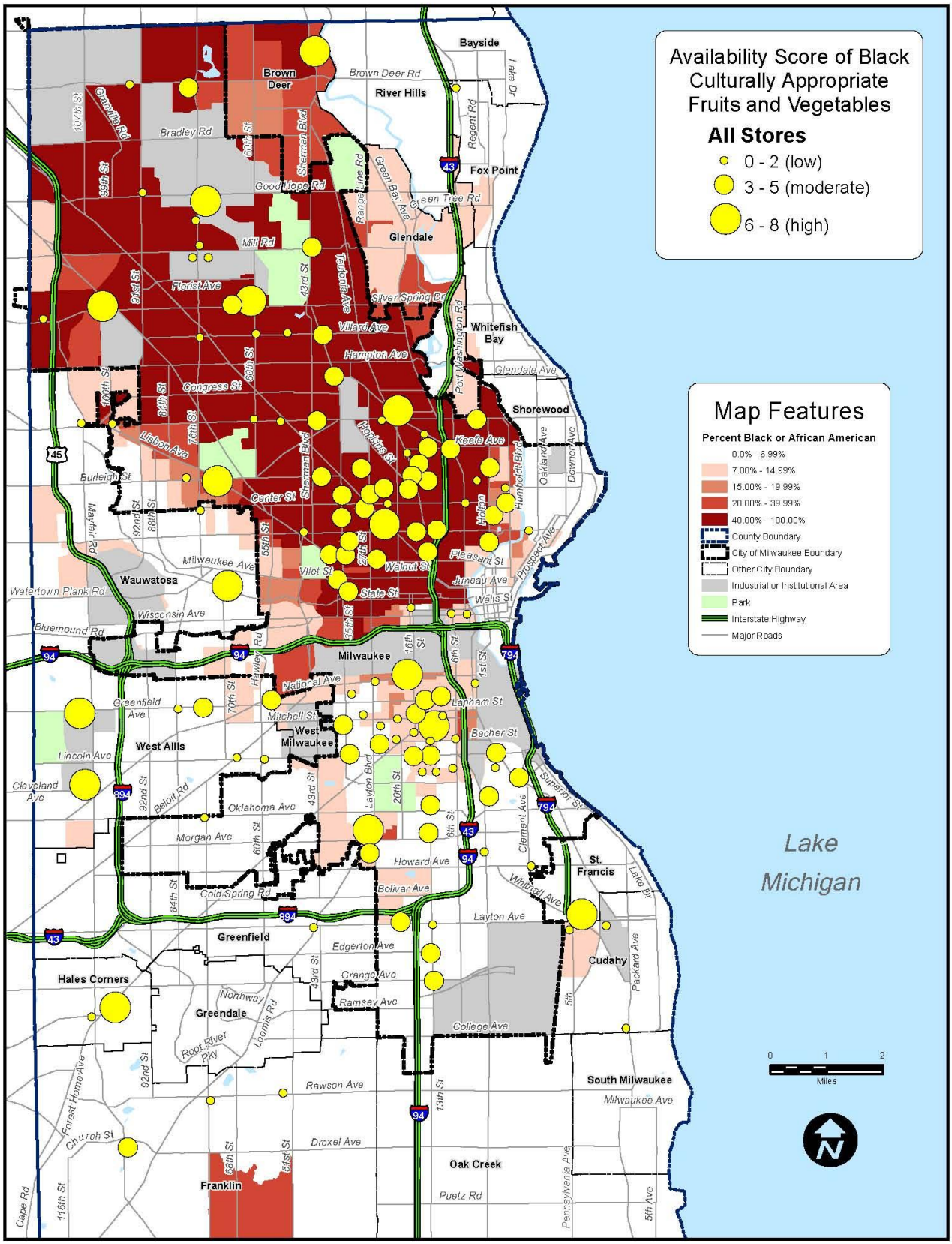


Of the stores surveyed, 63 were located in areas where 20 percent or more of the population is Black. Seven of those stores (11%) offered a "high" variety of culturally-specific produce. We found no correlation between the percentage of Black residents in an area and the availability of Black culturally-specific fruits and vegetables. In other words, stores in predominantly Black census tracts do not offer more culturally-specific fruits and vegetables compared to stores in areas with a lower percent of Black residents.

Thirty-eight of the stores surveyed were in areas with significant Latino populations. The majority of the stores (58%) had a "moderate" selection of culturally-specific produce, and ten stores (26%) had a "high" variety. In contrast to the African American areas, statistical analysis in SPSS revealed that stores in predominantly Latino census tracts do offer more culturally specific produce than stores in areas with a lower percentage of Latinos. As the percentage of Latino residents increases in a census tract, so does the availability of Latino-specific fruits and vegetables ($r=0.476$, $p<0.01$).

As we can see in the two maps on the following pages (Map 5 and Map 6), small stores located in predominately Black areas are more likely to offer fruits and vegetables that are culturally specific to the Black population compared with the stores in the Latino area. The reverse is true for culturally-specific Latino produce, though the contrast is not as large—there are several stores located in the predominately Latino area that offer a high variety of produce that are culturally-specific to both Black and Latino populations. The combination of these two types of analyses (spatial and statistical) indicate that small corner stores are mildly responsive to the racial demographics of their neighborhoods by offering items that are culturally appropriate to those groups. This appears to be particularly true in Latino neighborhoods, where the correlation is stronger.

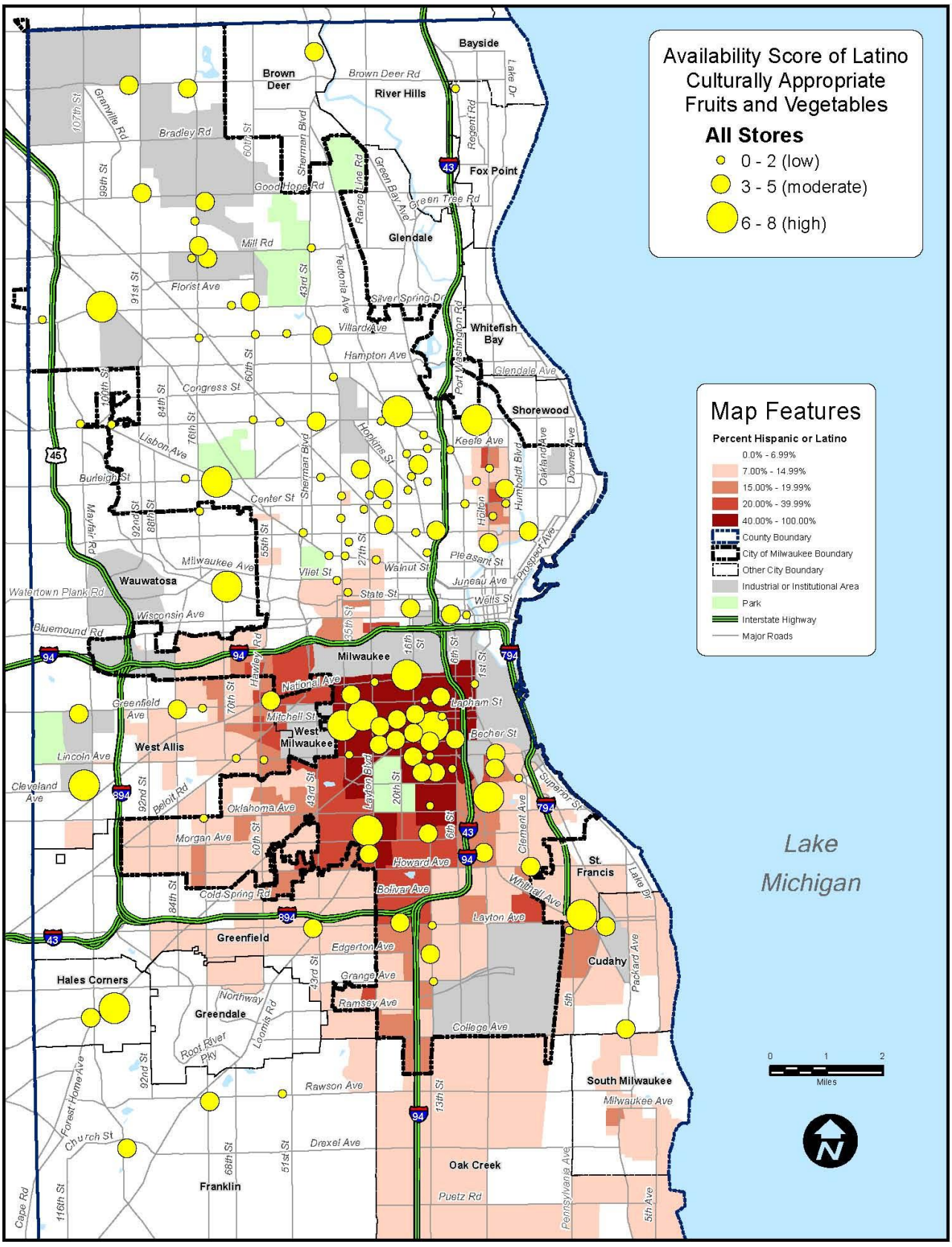
Map 5



Percent Black or African American is from U.S. Census 2010 blockgroup data.

BDF - Food Access Maps - 2011 - Culturally Appropriate w African American Data - Maps v2012_01_18

Map 6



Percent Hispanic or Latino is from U.S. Census 2010 blockgroup data.

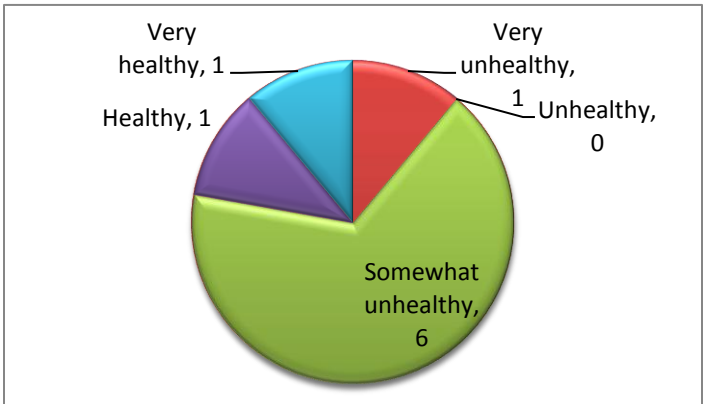
BDF - Food Access Maps - 2011 - Culturally Appropriate w Hispanic Data - Maps v2012_01_18

Summary of Qualitative Interviews

A total of 10 interviews were conducted. We initially hoped to conduct at least 20 interviews, but encountered several logistical limitations. At all the pantries, the majority of clients came at the beginning of the two hour period that the pantry was open; since there was only one interviewer, only one or two clients could be interviewed during that period. In addition, FoodShare benefits are distributed during the first two weeks of the month, so pantries are much less busy at the start of the month, and then get more clients at the end of the month when peoples' benefits are sufficient to cover the rest of their monthly groceries. The allotted window of time for this research was during early December and early January; thus, pantries had relatively few clients. However, the answers that we did manage to gather provide an interesting glimpse into the consumption habits and barriers that low-income consumers face. These interview results should be considered a "pilot" set, and represent a potential precursor to a larger study of pantry clients in the Hunger Task Force network.

Key themes from the interviews:

Unaffordability of fresh items—all but two of the interviewees said that they wished that they could provide more fresh food to themselves and their families. Fruits and vegetables were mentioned most often, but fresh items like meat, fish, and milk were also mentioned. When asked what currently prevents them from providing those desired items, all the respondents identified a lack of funds as the primary cause. Two also specifically said that the "fresh produce is too expensive."



"On a scale of 1-5, please rate the overall healthiness of the food you are able to provide for yourself and family"

Preference for large grocery stores— Seven of the interviewees said that they shopped primarily at large grocery stores (Pick N' Save, specifically) and midsize stores (Lena's and Aldi's). Three identified Walmart as their primary sources, supplemented by midsize stores. One also said that she went to Fondy's Farmers Market 2-3 times per month. When asked about convenience stores or gas stations, all respondents said that they almost never shopped there because the prices were so much higher and the selection was poor. One woman explained that she purchased all her dry goods like bread, flour, and cereal at Walmart, but purchased her produce at Aldi's. Pick N' Save was preferred because it has "lower prices, fresher items, a larger selection." The benefit of the sales and coupons that Pick N' Save offers was also mentioned. When asked about store brand items versus name brand items, nearly all respondents (9 out of 10) said that they purchased store brand bread and cereal "most of the time" or "always." There was not a clear preference for soda—some said they bought name brand, while others preferred store brand.

Transportation—Of the ten clients interviewed, only two said that their primary from of transportation to and from food stores was their own cars. "Walking" or "public bus" was the primary method for seven people, and two people said that they got ride from relatives or friends.

Lack of income—All interviewees identified either inadequate income or lack of income (unemployment) as the primary challenge they faced in obtaining enough food. One woman had serious health problems that prevented her from getting to the grocery stores. When asked what changes or resources would give them the ability to purchase the kinds of food they wanted to, three of the participants said that increased FoodShare benefits

would help. The situation of benefits running out at the end of the second or third week of the month was repeated in several interviews.

Importance of culturally appropriate foods— In an attempt to better understand what types of foods are important to different ethnic groups in Milwaukee, participants were asked about foods or dishes that were part of family tradition and if they continue to prepare those dishes. Seven participants spoke about foods that were important them. Six identified as African American/Black and one identified as White. Their answers about the types of foods and frequency of consumption were as follows:

Participant	Foods Identified	Frequency of Consumption
1	Okra, collards, yams ("southern cooking")	1-2 times per month
2	Greens	Special occasions
3	Watermelon, pomegranate	Special occasions
4	BBQ	1-2 times per month
5	Sweet potatoes and spinach	Special occasions
6	Collard greens	Every week
7	Green beans, pinto beans, lima beans, black-eyed peas	Every week

All the participants said that they could find those identified foods in the stores they shopped at; Participant 7 said she would go to a different store specifically to buy them, if necessary, and Participant 2 said that those items were "often unaffordable, but I still buy them anyway."

Midsize grocery stores like Lena's and El Rey offer a high number of culturally-appropriate fruits and vegetables for Black and Latino communities in Milwaukee.

VI. Conclusions and Discussion

Summary of conclusions:

- **As poverty in an area increases, food affordability in the stores in that area decreases.** Low affordability may be due to the fact that the majority of the convenience stores are located in high poverty areas. This means that residents in the highest poverty areas in Milwaukee County have to pay more for food in nearby stores, or travel farther to reach affordable food.
- **Overall food affordability was low in most SNAP-authorized stores.** This was especially true in small stores (convenience stores, gas stations, and drugstores), which had higher prices than large stores for both healthy and unhealthy foods.
- **Smaller stores offer significantly fewer healthful food options.** Large grocery stores consistently offer a wide variety of food items (healthful and regular) at lower prices.
- **Availability of healthful food options seems to be a stronger barrier to healthy food consumption than price.** Although price is a deterrent in several key food areas (e.g. ground beef and bread), availability of healthful food options is low across all store types, with the exception of large grocery stores.
- **As the percentage of African American residents in an area increases, the nutrition quality of the stores in that area decreases.** The majority of the stores located in predominately African American census tracts have low or very low quality nutrition environments. This was not the case in predominately Latino areas, however, where nutrition score appears to actually increase with an increased Latino population.
- **Current levels of SNAP benefits may be inadequate to ensure that recipients can obtain a healthy, balanced diet.** Food affordability is low in high SNAP-usage areas, and healthful options are scarce. In the qualitative interviews, SNAP recipients often identified high food prices and insufficient SNAP benefits as the barriers to healthy eating.
- **Fruit and vegetable prices are often higher at supercenters like Walmart and Target**. Although prices for most other food products (cereals, bread, meat, etc.) are lower at these stores, fresh produce prices are surprisingly higher. This has interesting implications for the role of these stores in addressing urban food deserts
- **Produce quality was high at most of the stores surveyed**. This indicates that low produce quality is not a significant barrier to healthful food consumption in Milwaukee County; instead, low availability and higher prices of produce in small stores are stronger barriers.
- **Large grocery stores offer a basic selection of fruits and vegetables that are culturally relevant for Milwaukee's large Black and Latino populations.** Midsize stores like El Rey and Lena's also serve the dietary preferences of those communities.
- **Small corner stores seem to be responsive to the racial demographics of their neighborhoods, particularly in Latino neighborhoods.** Small stores in predominately Latino areas are more likely to offer Latino culturally-specific foods. Spatial analysis indicates that a similar trend may be present in predominately Black areas, but the relationship was not found to be statistically significant.

DISCUSSION:

This study shows that convenience stores and gas stations have poor quality nutrition environments in which healthy foods are often not available, and can be significantly more expensive than regular options when they are available. We also see that most of these small stores are located in high poverty urban areas, many of which are also communities of color. In short, the Milwaukee residents who have the least resources and limited transportation options are the ones who are paying the most for food, most of which is of poor dietary quality.

Although these results clearly outline the nature of the challenge Milwaukee faces, they also hint at some possible components of the solution. First, it is encouraging that small stores are responsive to neighborhood racial/ethnic demographics. These neighborhood food outlets could play an important role by offering fresh produce and culturally appropriate foods. In informal conversations during the store surveying, many of the clerks and owners of small stores expressed eagerness to provide more fresh fruits and vegetables, but often identified price, lack of adequate or proper refrigeration for produce, and an apparent lack of customer interest as barriers to providing those fresh items. Formal, in-depth interviews with storeowners would be extremely valuable in understanding what barriers they face and what incentives might be needed to shift the types of products they offer to include healthier options.

Second, the store surveying showed that mid-size grocery stores are relatively evenly distributed across the county and in the inner city areas, as opposed to large stores which are generally located on the outskirts of the city. Many of these stores already have a high availability of produce, particularly culturally appropriate produce, but are lacking in other healthful options, such as baked chips. Working with midsize grocery stores to improve the availability and affordability of healthful options might be a strategic piece in the food access effort.

Overall, the results of the study are not particularly surprising—the same situation has been documented in city after city across the country. This camaraderie in nutrition disparities is sobering, but it also provides a foundation for potential inter-municipal discussion and solution-sharing, if the political will exists. Local policymakers must see reducing food access disparities as a political and economic priority. Fortunately, city governments across the country are beginning to take interest in the issue as a result of the convergence of grassroots food justice advocacy efforts and the top-down, high profile efforts of public figures like Michelle Obama and her *Let's Move!* campaign to end the intertwined issues of childhood hunger and obesity. San Francisco, Baltimore, New York, and Chicago are just a few of the cities where local governments are working with diverse stakeholder groups to address fresh food access disparities. In Baltimore, where 20 percent of the residents live in food deserts, a project called The Virtual Supermarket lets low-income residents order groceries online and pick them up at their neighborhood library. Here in Milwaukee, projects like the Mobile Market initiative are working to address food access disparities. Mobile Market, run by SHARE Wisconsin, is a mobile food sale service that brings high quality, healthy foods at affordable prices (30%-50% less than retail prices) to Milwaukee neighborhoods. By partnering with local organizations, SHARE sets up a temporary food store for approximately 2 hours once a month in 13 different locations in the city. Although they are small-scale, creative projects like these are being crafted out of local-level collaboration and a growing recognition of the urgency of food access disparities.

The Consumer Perspective on SNAP and Food Affordability

Though only a small sampling, the qualitative interviews with SNAP recipients provided some valuable consumer perspective and confirmed several of the results that were found in the store surveys.

First, the unaffordability of fresh, healthful foods was repeatedly identified as the primary barrier to consumption of a healthier diet, even though all the participants stated that they shopped in larger stores (which offer lower prices), used coupons and sales, and often bought store-brand items. This could mean that those

foods were still at an unaffordable price, or that "healthier foods" are in general automatically perceived to be unaffordable—most likely it's a combination of the two (plus other unaccounted factors). Although it is only possible to speculate on the latter at this point, existing research supports the former. The monthly SNAP allotment is based on the Thrifty Food Plan (TFP), and multiple research studies have found that, even with the maximum monthly benefits, most recipients cannot afford the plan (Bradbard et al 1997; Seefalt & Castelli 2009; Wiig & Smith 2009). Without enough SNAP dollars to last through the month, recipients have a difficult time buying enough food in general, let alone healthful foods.

Second, these results also underscore the reality of food insecurity and poor dietary quality for families with limited transportation options. Most of the interviewees stated that they did not have their own car—a situation that approximately 95,000 Milwaukeeans face.[5] In a survey of pantry clients in 2010, only 40 percent identified a personal car as their primary method of transportation (n=467).[6] For a family without reliable transportation living in a high-poverty area, this research clearly shows that food is expensive and that the availability of healthful food options is very low. Areas with high Black populations had the lowest quality nutrition environments, and a high concentration of small stores; combined with the highest rate of unemployment (66%) in decades for African American adult men, food insecurity and limited diet choice are serious and increasingly urgent challenges for those underserved communities.

Finally, the interviewees' answers provided a glimpse into the complex and often central role of cultural food traditions for Milwaukee's racially and ethnically diverse population. The quantitative survey results confirmed that stores are responsive to the demographics of their consumers, particularly in the Latino neighborhoods. Consideration of the diversity of culinary traditions is important as Hunger Task Force and other Milwaukee organizations seek effective strategies to improve healthy food access in the areas of the county that need it most.

The Role of Supercenters in Food Retail

The results of this study also indicate that supercenters such as Walmart and Target may be playing a significant role in supplying food to Milwaukee at affordable prices. Three of the clients identified Walmart as their primary source of groceries, although it was relatively far from their neighborhoods. Indeed, the draw felt by those interviewees is echoed around the nation—Walmart has become one of the most powerful forces in our food system. It has rapidly risen from having just 6 percent of U.S. grocery sales in 1998 to capturing 25 percent in 2010. As Figure 6 shows, 35 percent of the SNAP dollars were spent at supercenters like Walmart. In 29 metro markets, it accounts for more than 50 percent of grocery sales (Grist, 12/30/2011). Walmart has made strong public statements about their stores' role in eliminating food deserts, alongside Michelle Obama and her Let's Move! campaign.

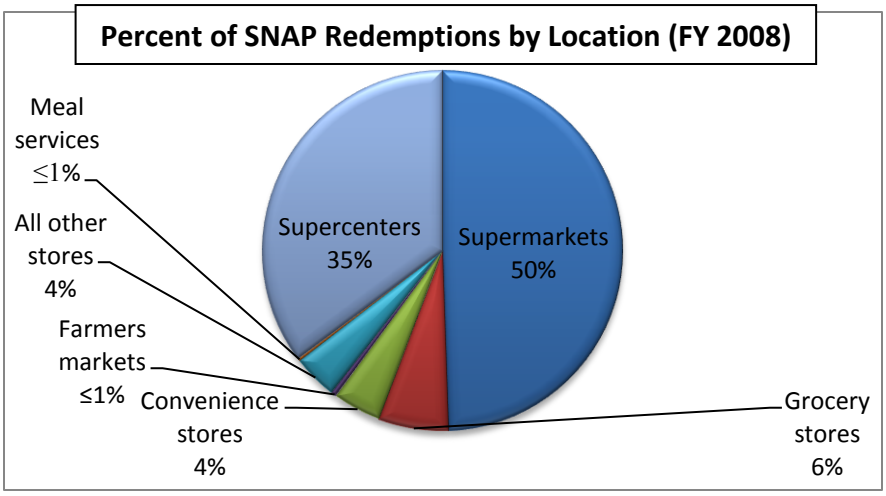


Figure 6 Source: Government Accountability Office, July 2008

However, academics and community leaders alike are wary of Walmart as the food desert "solution"; it brings the benefit of a wide array of affordable food into

[5] American Community Census 2010.

[6] "2010-2011 Assessment of Food Pantry Clients." Hunger Task Force. August 2011. http://www.hungertaskforce.org/fileadmin/htf/learn_about_hunger/publications/QLP_2010_survey_report_Final.pdf

underserved areas, but evidence also suggests that the establishment of a Walmart store actually increases the rates of poverty and food stamp usage in the surrounding neighborhood, possibly due its effect of lowering wages and decreasing net employment (Goetz and Swaminathan 2006; Neumark 2007). Additionally, not everything is cheaper at supercenters like Walmart—fruits and vegetables were notably more expensive in the supercenters surveyed in Milwaukee County, and studies from other states show the same trend. If increasing access to *affordable* fresh produce is the primary goal, supercenters may not be the best way to do it.

Supercenters like Walmart are grabbing a larger share of grocery sales, but their impacts on the surrounding communities are complex and troubling

Overall, more qualitative research is sorely needed to understand what strategy should be employed to effectively improve fresh food access and consumption in Milwaukee County. This study only provided a snapshot of the store landscape—we know very little about what decisions low-income consumers actually make within that landscape. How far do people travel to do their grocery shopping? Do they shop at only one store or go to multiple stores? Does the availability of culturally appropriate fruits and vegetables impact the overall amount of fresh produce that a consumer purchases? These are just a few of the questions whose answers would significantly impact our understanding of the best options for action. The sampling of qualitative interviews conducted in conjunction with this quantitative store survey provided a glimpse of the diversity of consumer habits—a longer-term project with a larger interviewee pool is necessary in order to draw any solid conclusions.

VII. Preliminary Recommendations for Advocacy and Organizing to Improve Healthy Food Access in Milwaukee

The diagram below (Figure 6) serves as a framework for thinking about how to build the infrastructure for access to healthful foods and to actively address nutrition disparities. Three key strategic angles are blue, with examples of each strategy listed inside the boxes. The ultimate combined outcome in a healthy, balanced diet and improved overall health—none of the three could work effectively without the others. Specific recommendations pertaining to each of the three areas are outlined on page 31.

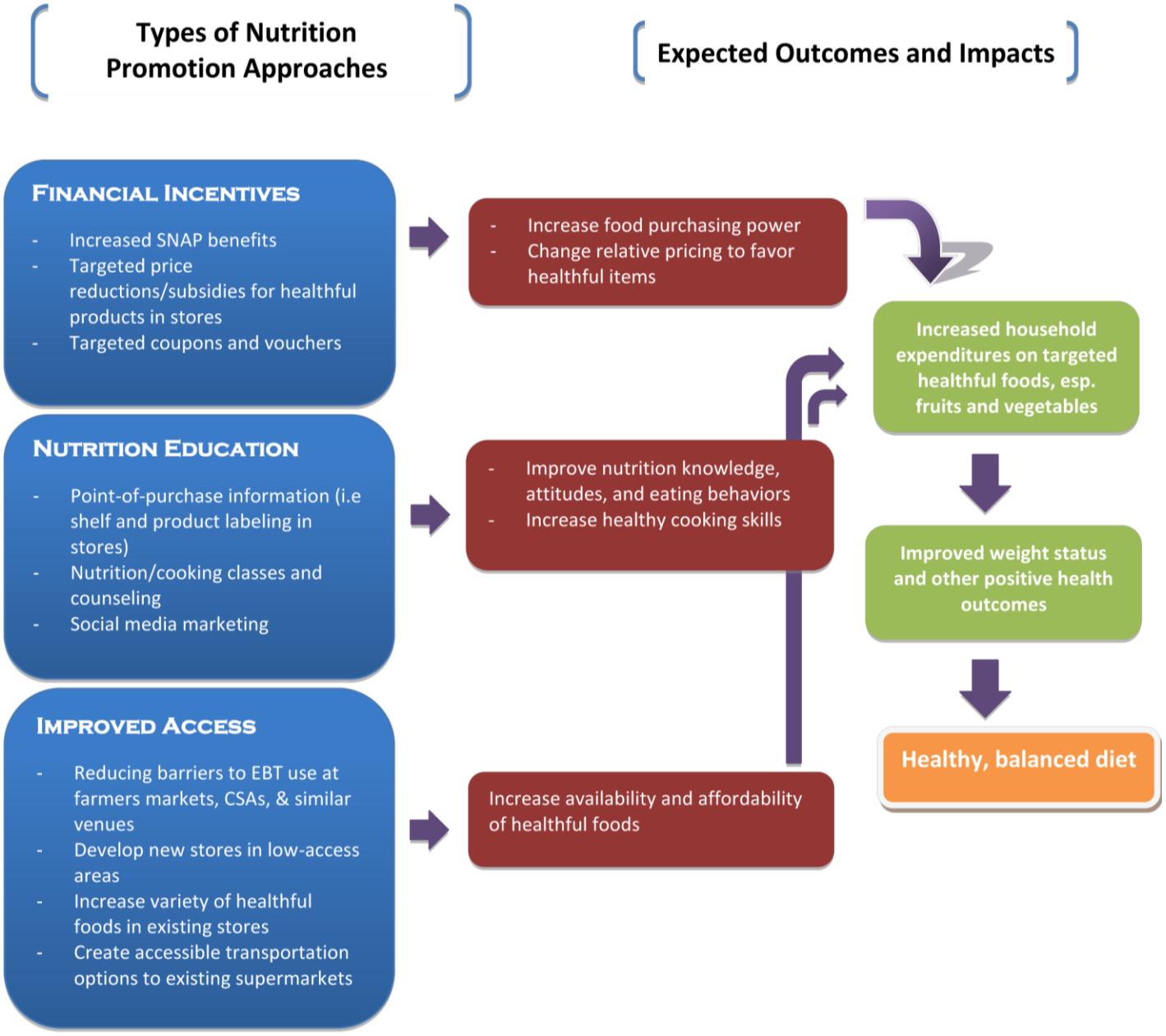


Figure 6. Modified from a GAO model, with information from FRAC

Financial Incentives

- **Oppose cuts to FoodShare benefits and measures to make FoodShare less accessible.** FoodShare is a vital tool to fight food insecurity and improve the nutritional quality of the diets of thousands of Milwaukee residents. Restrictions on the program both at the state and federal level are unnecessary and expensive and will only make it harder for those who need it most to receive help. Hunger Task Force can use the results of this report to highlight the fact that the most expensive food is located where the highest level of poverty is. Insufficient levels of SNAP benefits make food in general in these areas unaffordable, putting healthful foods even further out of reach.
- **Integrate a metric of nutrition environment quality into the HTF service area ratings calculator**, thus giving a more comprehensive picture of what the food availability, quality, and affordability situation in a neighborhood is.
- **Determine whether the current level of SNAP benefits allows Milwaukee families to obtain an adequate, healthy, culturally appropriate diet.** The results of this report suggest that current SNAP benefits are insufficient, but targeted research is necessary. Recommendations for how to design such a research project are in the following section (Section IX).

Nutrition Education

- **Expand the SNAP Education Program, particularly in the areas that need it most.** Priority areas are those that have high poverty and high SNAP usage. This report shows that food affordability is lowest in those areas and healthful food availability is low; thus it is important to pair the SNAP education outreach with direct and concrete opportunities for low-income families to affordably obtain fresh produce and other healthful foods.
- **Revise Hunger Task Force's nutrition education curriculum to recognize and incorporate Milwaukee's diverse culinary traditions,** particularly those of the Latino and African American communities. Including culturally appropriate foods and recipes increases the accessibility and thus the effectiveness of the education program by connecting with many students' family practices.
- **Identify opportunities for creative nutrition and culinary adult education for the clients that Hunger Task Force serves in its QLP network.** Adult education is often overlooked in favor of the more "malleable" children's education, but is just as important and has a big role in changing at-home eating behaviors. Education paired with direct opportunities to obtain those fresh foods is often a more successful strategy than simply preaching "should's" and "shouldn't's". Some examples of innovative educational programs are included in Appendix B.

Improving Access

- **Engage in a dialogue with other stakeholders** to determine the most effective and appropriate course of action to improve fresh food access for the city and county of Milwaukee. As Figure 6 demonstrates, a challenge of this complexity inherently cannot be strategized or executed alone. These partners would include other non-profit organizations, community or neighborhood associations, pantry clients and SNAP recipients, agriculturalists, and local government officials. Several examples of innovative projects are listed in Appendix B. A list of recommended local partners and stakeholders is in Appendix C.

- **Work to improve the nutritional quality of school meal and snack programs, and increase the amount of fresh fruits and vegetables served.** Explore the feasibility of a "farm-to-school" model for Milwaukee Public Schools. This model increases the amount of fresh produce in schools by sourcing from local producers, and has been implemented in many communities around the country.
- **Increase the amount of fresh produce that clients in Hunger Task Force's QLP network receive.** Here are two ways to go about achieving that:
  - **Optimize the distribution of the produce from Hunger Task Force's farm**. Distribution is currently uneven and inefficient; pantries sometimes receive a huge amount of one vegetable and then go long periods without any fresh produce. Instead, we could create a CSA-style program with the farm's products so that pantries would receive boxes of mixed produce on a weekly or bi-weekly basis to distribute to their clients.
  - **Consider asking Hunger Task Force donors to sponsor fresh food, rather than donating processed food.** Donors could, for example, help subsidize the cost of community-supported agriculture (CSA) weekly boxes for low-income families, similar to how people can sponsor a turkey at Thanksgiving or a ham for Christmas. For example, Donors could choose to sponsor a 6 month or one year reduced-price CSA subscription for a family in need. If even a fraction of the thousands of donors participated in this, the impact would be significant for local families and for local farmers.

Looking ahead and leading the way

Hunger Task Force already engages with vital components of the strategic model presented on page 30; every year, Hunger Task Force spends a great deal of energy advocating against often-proposed reductions in SNAP benefits and other methods to deter people from applying for benefits. As discussed earlier, food insecurity has been repeatedly been found to correlate with poor diet and other detrimental health outcomes. SNAP is the strongest line of defense that our nation has to prevent millions of Americans from falling into that situation.

Not just full stomachs, but healthy bodies and communities

At minimum, Hunger Task Force should maintain these existing advocacy efforts, and consider incorporating an understanding of the potential nutrition and health impacts of these federal assistance programs into how it approaches its advocacy work. Its SNAP and FoodShare- focused advocacy helps put many low-income citizens in a position to afford a better diet for themselves and their families.

However, as a leader in anti-hunger advocacy, Hunger Task Force has the capacity to move beyond the simple minimum. It has a unique opportunity to spearhead the exploration of the strategic model envisioned in Figure 6 through partnering with other players in Milwaukee's regional food system and together increasing the amount of healthy, affordable food available to low-income consumers and SNAP recipients. Hunger Task already has active relationships with many stakeholders in Milwaukee's food system and can use that unique position to introduce food access/nutrition disparities as a focus issue. A preliminary list of stakeholders and potential community partners are listed in Appendix C (with full contact information).

Leadership in research is a key contribution that Hunger Task can offer to a healthful food access coalition. With the resources, capacity, and experience, we can help design and execute research projects that bridge the current data gaps in order to create a strong, research-based advocacy approach to address the complex issue of food access. A list of recommended research priorities is listed in the next section. Several innovative case studies from other cities can be reviewed in Appendix C.

Through dialogue, strategic research, and political commitment, the three angles of improved access, nutrition education, and financial incentives will be effectively implemented.

Working to make healthy food access a policy priority

Hunger Task's Force experienced Advocacy Department can use its resources and skills to translate the results from studies like this one for local policymakers, showing them the sharp reality of food (un)affordability and low nutritional quality in Milwaukee County, particularly in Milwaukee's African American neighborhoods.

The results are stark and the inequities are obvious—but the data cannot speak for itself. Hunger Task Force can take advocacy on behalf of its clients to a dramatically new level by taking a leadership role in researching, recognizing, and seeking to rectify the structural health disparities created by lack of access to healthful food. In doing so we could move significantly closer to the vision of ensuring the fulfillment of every Milwaukee resident's right to adequate, healthy, and culturally appropriate food obtained with dignity.

Fondy's Farmers Market, located in the north side of Milwaukee, provides fresh produce at reasonable prices from local farmers

VIII. Recommendations for Future Research

1. **Design a more accurate survey to specifically address the question of food affordability for SNAP recipients in Milwaukee County.** One way to do this would be to compare actual food costs and availability in SNAP-authorized stores to the Thrifty Food Plan market basket and the maximum SNAP allotment for a family of 4.

Basic questions to answer:

- Does the Thrifty Food Plan actually reflect food affordability in Milwaukee County?
- Can a family of 4 receiving the full SNAP allotment actually afford to provide enough food based on the TFP?
- How does affordability vary by store type and store location?

There was a small but effective study done by the Center for Hunger-Free Communities in Philadelphia that would provide a good research design model.

"The Real Cost of a Healthy Diet: 2011" (http://www.centerforhungerfreecommunities.org/media/news/maximum-snap-benefit-still-falls-short-families)

2a. **Engage with the question of transportation**—To what degree is limited transportation a barrier to healthful and/or affordable food? The answer to this question has a big impact on how we will go about developing a solution strategy to the nutritional inequities. According to the American Census Survey 2010, approximately 95,000 people in Milwaukee County are without cars. Are those people concentrated in specific areas? What percentage of them are low-income? If those low-income consumers would like to shop at large grocery stores, then perhaps an adaptive transportation system is the answer to their need, rather than offering more produce in stores near them. The two methods are of course not mutually exclusive, but it is important not to assume that bringing the food to the consumer is the only answer—a better public transportation system or more bus routes through a certain area might alleviate significant need in the short and long run. For example, Lena's, a midsize grocery store on Milwaukee's north side, offers free transportation home from the store for customers who buy $75 or more of groceries.

2b. **Conduct a larger ethnographic study to better understand the consumption habits of SNAP-recipients in Milwaukee County.**

Questions to answer:

- From which food outlets do FoodShare-assisted consumers obtain their food? Why?
- How far to FoodShare-assisted consumers travel to do their grocery shopping?
- Do those primary outlets meet all their food needs?
- Are there informal food outlets (street vendors, farmers market, etc) where individuals obtain their food?
- What is the consumption breakdown of fresh or frozen fruits and vegetables in the households of FoodShare recipients?
- What percentage of meals do consumers prepare from raw ingredients, as opposed to purchased pre-prepared (frozen dinners) or at a restaurant?

The ideal option to complete this ethnographic study would be to repeat the phone survey done by the UWM research team in 1997 or use the questions from that survey to design an in-person paper survey.

Varela, O; Haider-Markel, D; Percy, S. "Perceptions and Experiences of Consumer Access to Milwaukee's Inner City Neighborhoods". Center for Urban Initiatives and Research, UW Milwaukee. (Prepared for Hunger Task Force of Milwaukee). March 1998.

A shorter version of the aforementioned survey was prepared and used by Theo Gibbs-Plessl to conduct the qualitative interviews in conjunction with the quantitative store survey. All those materials are openly available for use upon request. Please contact Jon Janowski, Director of Advocacy at Hunger Task Force (jon@hungertaskforce.org)

3. **Make the NEMS survey tool openly accessible for neighborhood groups to use to collect store information specifically about the quality of the nutrition environment in their own neighborhood.** This would directly build on the research results of this study and expand the data set, thus giving an even stronger and more precise picture of food price, nutritional quality, and availability all over Milwaukee.

4. Conduct a series of interviews with small store clerks and owners to identify the supply-side barriers that they face in providing fresh produce and healthier food items

Questions to answer:

- How do owners of convenience stores decide which items to stock in their stores?
- How do they make pricing decisions?
- How do store owners acquire the items they sell in their store? (What supply chains do they use? Do they purchase items at wholesale stores or grocery stores and then re-sell them?)
- What are primary difficulties store owners face in operating their store? Any there any barriers that prevent them from offering fresh produce in their stores?
- How do inter-racial/inter-cultural tensions between store clerks and customers affect store owners' perceptions of their clients?

5. **Use the NEMS survey developed for this study to focus on the stores (and perhaps fast food chains) located within 1 mile of Milwaukee public schools.** This would give a valuable picture of the nutrition environments surrounding public schools, and the variations based on school location. There is some evidence that the nutrition environment around a school impacts childhood obesity rates of the students.

Recommended Literary and Web Resources for Planning and Action:

"The Grocery Gap: Who Has Access to Healthy Food and Why It Matters." Policy Link; The Food Trust. 2010.

- A very readable report from PolicyLink and the Food Trust that comprehensively reviews 132 studies to date on food access in the United States and its implications. It reviews 61 academic journal papers and 71 published by policy researchers and organizations working on the ground (known as "grey literature"). The review includes three nationwide analyses of food store availability and local-level studies from 22 states. It outlines why healthy food access is important for healthy communities, and how food retail development can be a source of economic growth for underserved areas.

"Getting to Grocery: Tools for Attracting Healthy Food Retail to Underserved Neighborhoods." Planning for Healthy Places, a program of Public Health Law & Policy (PHLP).2009.

- A toolkit for advocates and community-based organizations trying to get more fresh food retailers in underserved areas. It specifically outlines the challenges, recommends strategies for overcoming them, and provides detailed examples and resources. Associated with the report are these valuable web resources:
  www.healthyplanning.org and www.healthycornerstores.org

" A Review of Strategies to Bolster SNAP's Role in Improving Nutrition as well as Food Security." Food Research and Action Center. October 2011.

- An excellent resource that specifically outlines how SNAP benefits impact the dietary quality and related health outcomes of the recipients. It concisely points out and dispells the imbedded negative stereotypes that exist in the American psyche when we think about poverty, obesity, and personal responsibility. Along with an extensive literature review, it provides specific advocacy recommendations about how to use SNAP to promote positive

"Real Food, Real Choice: Connecting SNAP Recipients with Farmers Markets." Community Food Coalition and the Farmers Market Coalition. June 2010.

- Excellent resource manual that outlines case studies and best practices from farmers markets around the country. Shows the diversity of models and tactics that can be used to meet the needs of a specific community or neighborhood.

"Feeding Young Minds: Hands-on Farm to School Education Programs." Marion Kalb, Kristen Markley, and Loren Gustafson. Community Food Security Coalition. March 2005.

- Focusing on educational activities that complement local purchasing for school meals, this booklet highlights farm to school experiential education programs from around the country. These range from cooking classes in New Mexico, to school fundraisers in Ohio, to kindergartners tasting watermelon radishes in Pennsylvania. Each program is unique, yet offers insights and possibilities of what can be achieved when farm-fresh products in the cafeteria are

"Linking Farms with Schools: A Guide to Understanding Farm-to-School Programs for Schools, Farmers & Organizers." Marion Kalb, Kristen Markley and Sara Tedeschi. Community Food Security Coalition. 2004

- Details the benefits, challenges, and strategies for success for building successful farm to school projects and includes case studies of innovative projects and an extensive resource list.

"Homeward Bound: Food-Related Transportation Strategies for Low Income and Transit Dependent Communities." Robert Gottlieb, Andrew Fisher, et. al; UC Transportation Center, 1996.

- The intersection of food access and transportation policy is explored in this report. Innovative transportation programs are highlighted.

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Appendix A: Glossary

Supplemental Nutrition Assistance Program (SNAP): The federal entitlement program (formerly known as "food stamps") administered by the United States Department of Agriculture (USDA) that provides financial assistance for food purchases to eligible individuals. In 2011, nearly 45 million Americans received assistance from the SNAP program at some point during the year.

After unemployment insurance, SNAP is the most responsive federal program providing additional assistance during economic downturns. It also is an important nutritional support for low-wage working families and low-income seniors and people with disabilities with fixed incomes.

The federal government pays the full cost of SNAP benefits and splits the cost 50/50 of administering the program with the states, which operate the program.

FoodShare: This is Wisconsin's name for the state-level SNAP program.

Nutrition environment— The development of a person's eating behaviors is a complex process, and study after study has shown that eating habits are not changed simply by increasing the amount of nutrition education that a person receives. The complex social and build environments that a person exists within constitute their "nutrition environment." The quality of the nutrition environment is widely thought to be a key contributor in the growing epidemics of childhood and adult obesity in the U.S. and around the world. Prominent organizations such as the World Health Organization, the Institute of Medicine, and the Centers for Disease Control have all identified environmental and policy interventions as priority strategies for improving large scale improvements in eating behavior and diet-related illness (Glanz et al 2005).

Appendix B: Example Projects to Address Nutrition/Health Disparities in Milwaukee

B1. Example Projects to Improve Healthy Food Access for Low-Income Communities

Here are a few strategies that HTF and other food advocates in Milwaukee may want to consider in the process of discussing a suitable strategy for the city and county. Please note that these are example projects that were successful in other cities, but that does not mean they would do well here. Feasibility and suitability analyses through community input and discussion needs to occur before any solid project is acted on.

Complete contact information for each listed "potential local partner" in provided in Appendix C

1. **Increasing the stock of fruits, vegetables, and other healthful foods at neighborhood convenience stores or small grocers.** Washington, D.C., for example, has used financial incentives like tax breaks for small stores who offer those products at reasonable prices.
    a. Successful case studies to examine:
        - The **District of Columbia** Healthy Corner Store Program, supported by the D.C. Department of Health
    b. Potential local partners:
        - Lindsay Heights Healthy Corner Store Initiative
        - United Neighborhood Centers of Milwaukee

2. **Implementing a SNAP voucher or dollar-matching program** for existing "non-traditional" retail outlets in Milwaukee, such as farmers markets and community-supported agriculture programs (CSAs). There are many variations of this program, but here are a few successful case studies to examine:
    - ❖ Double Up Food Bucks program—The Fair Food Network (FFN) is implementing a dollar matching program at 55 farmers markets state-wide in Michigan. SNAP shoppers use their benefits at a participating farmers' market and receive tokens for an equal amount to purchase any Michigan-grown fruit or vegetable from any participating vendor. In effect, SNAP recipients' food dollars are doubled, up to $20 per market day. Website: http://www.snaptohealth.org/snap-to-health-with-double-up-food-bucks/
    - ❖ Fresh Exchange—SNAP dollar matching program at the Portland Farmers Market http://www.portlandfarmersmarket.org/programs-and-services/snap-participants/

    a. Potential local partners:
        - ❖ The Mobile Market Initiative
        - ❖ Fondy Farmer's Market
        - ❖ Milwaukee Winter Farmers Market

    b. Literary Resources:

    Kramer, M., Zakaras, M. *Improving Nutrition for SNAP Recipients: A Roadmap for the Double Value Coupon Program.* Harvard Kennedy School of Government. Prepared for Wholesome Wave. March, 2011. Available at: http://www.innovations.harvard.edu/cache/documents/17144/1714473.pdf

3. **If necessary, work to develop additional "non-traditional" retail outlet options that require less infrastructure than a full supermarket.** Examples include farmers markets, cooperatives, farmstands, community-supported agriculture programs (CSAs), and mobile produce vendors. A number of these vendors already exist in Milwaukee, thus providing a valuable working network to examine and support. A need assessment would have to be conducted to see where in the city these additional outlets should be established.
    a. Successful case studies to examine:
        - ❖ The Virtual Supermarket (Baltimore): http://www.baltimorehealth.org/virtualsupermarket.html
        - ❖ The Green Cart Program (New York City): http://www.nyc.gov/html/doh/html/cdp/cdp_pan_green_carts.shtml
        - ❖ Arkansas Department of Agriculture allocated over $30,000 to help cover the infrastructure costs of the construction of new farmers markets
    b. Potential local partners:
        - ❖ The Mobile Market Initiative
        - ❖ Fondy Farmer's Market
        - ❖ Milwaukee Winter Farmers Market

4. **Diversify the number of management and staff within the various food security agencies so that they are representative of the populations that they serve.** This ensures that services are culturally appropriate and the historically underserved populations are given decision-making power over the contents of their dinner plates.
   Questions all food security organizations must address:
   a. Does your organization actively seek to move people of color and/or economically disadvantaged people into positions of leadership and decision making authority in your organization or in new organizations such that people are at the table, not on the table?
   b. Does your organization work in or promote alliances that bring people together across race, gender, class, ethnic, cultural, national etc. lines?
   c. Are you explicitly, formally and continually accountable to those people most affected by the problems your organization seeks to address in ways that ensure their voices are heard, amplified and respected and in ways that ensure your organization engages with the ideas and needs voiced? (Source: Dismangling Racims in Community Food Work)

B2. Examples of Innovative Nutrition Education programs

Nutrition education efforts quickly fail to be effective once the audience feels that it is being preached to about what it "should" and "shouldn't" eat, particularly when there are real economic barriers to obtaining those foods. Here are several examples of programs from around the country that use more effective engagement strategies:

1. **City Harvest, Nutrition Education Program**—City Harvest offers family-based nutrition classes that integrate cooking with nutrition education. They also have a special curriculum targeted to seniors, one of the most vulnerable populations in the city. The curriculum is designed to bring seniors together with a special focus on four components – nutrition education, cooking, physical activity, and money management.
   Website with program information: http://www.cityharvest.org/programs/nutrition-education
2. **"Harvest of the Month" Program, California**— Harvest of the Month provides materials and resources to support healthy food choices through increased access and consumption of fruits and vegetables as well as encourages daily physical activity. It uniquely supports core curricular areas through exploration and study. Harvest of the Month presents a strategic opportunity to bring together the classroom, cafeteria, home and community to promote a common goal and healthier habits for students, especially those in low resource schools.

The objectives of Harvest of the Month are for students to increase their:

- access to fruits and vegetables through school meal programs, classrooms, school gardens, farmers' markets, grocery stores, community gardens, etc.
- preference for selected produce items through classroom activities, such as taste testing, cooking in class and school garden activities, and through menu offerings in the school meals program.
- participation in daily physical activity and understanding of why it is important.

- knowledge of and familiarity with California grown fruits and vegetables and the rich agricultural bounty of the State.

Program website: http://harvestofthemonth.com/program-overview.asp

3. **Common Threads, Chicago**— Common Threads provides after-school programming to children between 8 and 12 years old. Students learn basic kitchen skills, cooking techniques, and the importance of fresh ingredients as they prepare healthy ethnic cuisines together. Chef Instructors incorporate nutrition tips and cultural information into lessons that teach our students how to connect with their bodies, their neighbors, and their world in a healthy way.

   Classes are offered in 10-week sessions throughout the school-year—fall and spring. Classes meet once per week and are free to students who qualify for free or reduced-price school lunches. Common Threads currently provides programs in sixteen locations in Chicago, four in Washington, D.C., four in Miami, and two in Los Angeles.

Appendix C: Contacts and Potential Advocacy Partners

Existing Groups and Initiatives to Contact and Collaborate With:

The Healthy Food Access Workgroup (part of the Milwaukee Food Council)—Representatives from various non-profits, local government offices, and academic institutions convene once a month to discuss healthy food access, develop projects, and share information. This group is a relatively new initiative. For more information, please contact Sarah O'Connor (soconnor@uncom-milw.org).

The Milwaukee Food Council-- Representatives from local government, businesses, non-profits, and academic institutions convene once every 3 months to share information and discuss strategic organizing around creating a more ecologically sustainable and socially just food system in Milwaukee and the greater Milwaukee area. (A broader lens and bigger grou than the Healthy Food Access group.) For more information, please contact Martha Davis Kipcak (Martha.DavisKipcak@resilientcities.org).

Lindsay Heights Healthy Corner Store Initiative—the Lindsay Heights group has partnered with three corner stores in their neighborhood to increase the availability of fresh produce in those stores and better understand the barriers that the storeowners face. The project is still at an early stage but has funding for implementation to begin this year. It will be a valuable initiative to observe, learn from, and support. For more information, please contact Jessie Tobin (Jessie.Tobin@lindsayheightshealth.org).

The Milwaukee Childhood Obesity Prevention Project-- This 4-year project, funded by the Robert Wood Johnson Foundation, works towards improving access to good nutrition and regular physical activity for all residents who attend, work at, and/or live near the neighborhood centers within the United Neighborhood Centers of Milwaukee. One of the project directors, Sarah O'Connor, coordinates the Healthy Food Access workgroup meetings.

Website for project: http://www.uncom-milw.org/MCOPP/index.html
Website for UNCOM: www.uncom-milw.org

The Mobile Market Initiative-- Provides affordable groceries to some low-income neighborhoods in Milwaukee. Local organizations in 13 locations in the city host "mobile food markets" once a month for approximately 2 hours. The food items are offered at prices generally 30-50% below retail price. Information about their services and a map of their locations can be found here: http://sharewi.org/SHAREMobileMarket.html

Local Milwaukee area farmers markets

- Fondy Farmer's Market (Executive director= Young Kim)
- Milwaukee Winter Farmers Market (Manager= Deb Deacon)

Individual Contacts

Name	Organization	Position	Relevant Projects and Interests	Contact Information
Martha Davis Kipcak	Center for Resilient Cities; Milwaukee Food Policy Council	Food Program Director	Involved with Lindsay Heights Corner Store Initiative Helped found the Milwaukee Food Council	Martha.DavisKipcak@resilientcities.org
Young Kim	Fondy Food Center	Executive Director	http://www.fondymarket.org/	young@fondymarket.org Phone: (414) 562-2282
Sarah O' Connor	Healty Food Access Group; United Neighborhood Centers of Milwaukee	Director, Milwaukee Childhood Obesity Prevention Project	Coordinates the Health Food Access workgroup meetings; works on initiatives to prevent childhood obesity in Milwaukee	Email: soconnor@uncom-milw.org Phone: 414-978-2023 (office)
Paulette Flynn	SHARE Wisconsin	Executive Director	SHARE coordinates the Mobile Markets program, which provides affordable fresh produce to neighborhoods.	PFlynn@SHAREWI.org
Alisha Klapps	SHARE Wisconsin	Mobile Market Community Liaison	Mobile Markets program provides affordable fresh produce to neighborhoods. A map of their locations can be found here: http://sharewi.org/SHAREMobileMarket.html	aklapps@sharewi.org
David Frazer	Center for Urban Population Health	Community Partnerships and Communications Manager	Good resource for research collaboration and community health data for Milwaukee	david.frazer@aurora.org

Jesse Tobin	Lindsay Heights Corner Store Initiative	Project leader	Organized and leads the Lindsay Heights Corner Store Initiative	Jessie.Tobin@lindsayheightshealth.org
Renee Walker	UW Milwaukee	Professor	Dr. Walker greatly assisted with both the qualitative and quantitative sides of this HTF research. Her general research interests are on health and nutritional disparities, particularly along racial/ethnic lines. She is an excellent academic partner and resource	walker36@uwm.edu
Paul Hunter	City of Milwaukee Health Department	Associate Medical Director	Founder of the Mobile Market project Conducts research about the improving fruit and vegetable consumption in low-income populations	PHUNTE@milwaukee.gov
Sharon McGowan	Neighborhood News Service	Editor	Local media contact; very interested in publishing about community projects related to healthful food, agriculture, and food access	smcgowan@milwaukeenns.org
James Causey	The Journal Sentinel	Journalist	Media contact; Participated in the Food Stamps Challenge and wrote an article about it. Interested in writing about food access and SNAP.	jcausey@journalsentinel.com
Thomas McGinnity	Milwaukee Teacher Education Center	Executive Director	O n Food Policy Council Steering Committee	tmginnity@mteconline.org
David A Nelson	Center for Healthy Communities	Assistant Professor	Conducts research on childhood obesity; interested in community-based health nutrition projects; good academic partner	danelson@mcw.edu
Clarene Mitchell	Institute for Health and Society (Health Equity and Urban Clinical Care Partnerships), Medical College of Wisconsin	Program Manager	Created and manages the *eHealth Equity Alert System* which often includes research and news articles regarding food insecurity.	cmitchell@mcw.edu Phone: 414-955-5656
Nik Kovac	Government, City of Milwaukee	Alderman (3rd District)	Local government contact, and is on Food Policy Council. Would be a good contact to reach out to discuss policy collaboration on healthy food access issues.	Phone: (414) 286-2221 Email: nkovac@milwaukee.gov

Appendix D: Complete Findings for Price, Availability, and Quality of Low-fat vs. Regular Food Items

FOOD CATEGORY	QUESTION	RESULTS
Milk	**Availability of low-fat option by store type:**	Of all store types, gas stations had lowest availability of low-fat milk (58%). All other store types had an availability rate of 70% or more.
	Price of low-fat option vs. regular option:	Across all store types, low-fat and whole milk were approximately the same price (no significant difference). In most stores low-fat milk was on average slightly less expensive than regular.
	Price differences between store types:	A half gallon of low-fat milk was 70% more expensive in gas stations than in large grocery stores.
	Shelf-space for low-fat vs. regular milk	In most gas stations and convenience stores, more shelf-space was dedicated to whole milk. The majority of all the other store types gave more shelf-space to low fat options.
Fruit	**Availability by store type:**	57 percent of all stores surveyed had at least one type of fruit available. Drugstores and gas stations had the lowest fruit availability (31% and 33%, respectively). 61 percent of convenience stores had at least 1 type of fruit.
	Variety by store type:	Availability of fruits drops offs dramatically after 2 varieties. Only 2% of convenience stores offered 5 or more varieties, while over 80 percent of large stores (GS-M, GS-L, SC) had 5 or more varieties. (There were no drugstores or gas stations with more than 3 varieties). Large grocery stores had the highest average number of varieties (10.5).
	Price differences between store types:	For most types of fruit, large grocery stores had the lowest prices while drugstores had the highest (88% higher than the large grocery stores). For common fruits like apples and oranges, the price difference between convenience stores and large grocery stores was not significant. Interestingly, fruit prices at supercenters were higher than large grocery store prices and occasionally even higher than convenience store prices. The average price of oranges, for example, was 46% higher at supercenters than large grocery stores and 17% higher than convenience stores.
Vegetables	**Availability by store type:**	Across all store types, vegetables had a greater availability than fruits did. 50 percent of gas stations and 93 percent of convenience stores offered at least one type of vegetable. This can partially be explained by the high availability of dried black beans and/or black eyed peas across all stores. Stores that are WIC-authorized are required to carry certain food healthful food items,

		and dried legumes are one.
	Variety by store type:	Availability dropped off sharply for more than one variety. Only 25 percent of convenience stores offered 5 or more varieties of vegetables. Large grocery stores offered an average of 16 varieties; supercenters, 10; and convenience stores, 3.
	Price differences between store types:	Similar to fruit, vegetable prices were highest in drugstores and lowest in large grocery stores. Tomatoes, for example, were over 200% more expensive in drugstores than in large grocery stores. Supercenter vegetable prices were also higher; tomato prices were twice as much as those in large grocery stores.
Ground beef	**Availability of low-fat option by store type:**	Only 16% of stores surveyed offered lean meat alternatives. The majority of midsize and large grocery stores had lean meat (70% and 89% respectively), but all other store types had availability rates of less than 25 percent. Only 2% of the gas stations had lean meat and none of the gas stations did.
	Price of low-fat option vs. regular option:	In the stores that offered both lean and regular ground beef, the lean option was a minimum of 30% more expensive across all store types. Store size had no impact on the price gap.
	Price differences between store types:	There was not a significant difference in price by store type
Hot dogs	**Availability of low-fat option by store type:**	82 percent of all stores surveyed had regular hot dogs, whereas only 23 percent of stores offered reduced fat hot dogs. The greatest difference was at convenience stores; 93% offered regular hot dogs but only 10% offered reduced fat hot dogs.
	Price of low-fat option vs. regular option:	The reduced fat option was significantly more expensive at convenience stores, large grocery stores, and supercenters. The prices were approximately equal at midsize grocery stores. Low fat options were not available at the gas stations and drugstores surveyed.
	Price differences between store types:	Gas stations had the highest prices for regular hot dogs, closely followed by convenience stores. Both had 50% higher prices than supercenters, and 27% higher than large grocery stores.
Frozen dinners	**Availability of low-fat option by store type:**	91 percent of stores surveyed offered regular frozen dinner meals, whereas only 57 percent had reduced fat options. Gas stations and convenience stores had the lowest availability (38% and 41%, respectively). All other types of stores had an availability rate of 80% or higher.
	Price of low-fat option vs. regular option:	In the large stores, the name brand reduced fat and regular fat frozen dinners (Stouffers and Lean Cuisine) were the same price, or the reduced fat were slightly less. Reduced fat dinners were more expensive in drugstores, but approximately the same price in convenience stores and gas

		stations. The main limitation was the availability of reduced fat dinners in smaller stores, rather than price.
	Price differences between store types:	Frozen dinners (regardless of fat content) were cheapest in supercenters. The range was 1.96 (SC) to 2.94 (DS).Reduced fat dinners were on average 31 percent more expensive in convenience stores than in large grocery stores. Regular fat dinners were 40% more expensive in convenience stores and 53% more expensive in gas stations. It is important to note that very few gas stations and convenience stores offered Stouffer's brand frozen dinners, whereas over 80% of large stores (GS-M, GS-L, and SC) did. Stouffer's dinners were generally more expensive than other brands available in the large stores, so its likely that the actual price difference between small and large stores is greater when you consider other brands. When only looking at Stouffer's brand prices, convenience stores were 57% more expensive than supercenters and 23% more expensive than large grocery stores.
Baked goods	**Availability of low-fat option by store type:**	Across all store types, regular baked goods were available in over 90 percent of stores surveyed. In contrast, reduced fat baked goods were only available in 40 percent of convenience stores and 33 percent of gas stations.
	Price of low-fat option vs. regular option:	In most stores, the reduced fat option was around the same price or slightly cheaper than the regular baked goods. In drugstores, the reduced fat option was fully 83% cheaper than the regular.
	Price differences between store types:	Overall, baked goods (regardless of fat content) were cheapest in supercenters, closely followed by large grocery stores. They were most expensive in gas stations and drugstores. The price was 74% higher in gas stations than in large grocery stores. Regular baked goods were 68% more expensive in grocery stores than in convenience stores. However, reduced fat baked goods were 23% cheaper in convenience stores than in large grocery stores
Soda	**Availability of diet soda option by store type:**	Bottles of both diet and regular sodas were available at over 85% of small stores (CS, GAS, and DS). Availability of diet and regular soda were approximately the same across all larger store types. Over 90 percent of all the larger stores (GS-M, GS-L, SC) had both diet and regular soda available.
	Price of low-fat option vs. regular option:	Diet and regular soda were exactly the same price at most stores; the overall average prices were within 2% of each other. The price of diet and regular 12 packs of name brand soda were the same across all store types.
	Price differences between store types:	Within small stores, there was no significant difference in price for cans and bottles of name brand soda. However, many

		convenience also carried Wildwood brand soda at significantly cheaper prices (e.g. $0.65 for a can of Coca Cola vs $0.35 for a can of Wildwood). Wildwood does not offer any diet options. Packs of name brand soda were priced approximately the same across larger stores (within 5% of each other). However, stores that offered store brand soda did so at greatly reduced prices. 90 percent of large grocery stores had store brand soda, while 50 percent of supercenters and 30 percent of midsize grocery stores did. Availability of store brand diet versus store brand regular soda did not differ. Store brand soda was 102% cheaper than name brand soda in supercenters, and upwards of 40% cheaper in midsize and large grocery stores.
Juice	**Availability of low-fat option by store type:**	Over 90% of all small stores (CS, GAS, DS) offered a 100% juice option. A 100% juice option was available is 100 percent of large grocery stores, 80 percent of midsize ones, and 75 percent of supercenters.
	Price of low-fat option vs. regular option:	At small stores, the price of juice drinks and 100% juice were approximately equal (within 5% of each other). At large stores, the 100% name brand juice option was significantly more expensive than the regular name brand juice drink across all large store types. It was 81% more expensive in supercenters, and 65% more expensive in large and midsize grocery stores. Many of the stores offered a store brand 100% juice option, which was cheaper than the name brand 100% juice, but still significantly more expensive than the juice drink (40% more expensive in large grocery stores and 60% more in supercenters).
	Price differences between store types:	Juice bottle prices in convenience stores were all about equal. Gas stations were slightly more expensive than convenience or drugstores (at $1.74 a bottle), but within 20% of the other prices. Supercenters had the cheapest prices for both 100% juice and sugar-added juice. However, the price difference among the stores was not significant.
Bread	**Availability of low-fat option by store type:**	While white bread was available at 93 percent of stores surveyed, wheat bread was only available at 57 percent. Convenience stores had the lowest availability of wheat bread (49%) while grocery stores of both sizes and supercenters had the highest (100%).
	Price of low-fat option vs. regular option:	The price difference between wheat and white bread was greatest at gas stations (70% more expensive) and convenience stores (67%). Large grocery stores and supercenters were the only store types that did not have a significant price difference between whole wheat and white bread.

	Price differences between store types:	Both types of bread were most expensive in drugstores. The price of white bread was 84% higher in drugstores than in large grocery stores; wheat bread was 86% higher. The availability of store brand bread made a big difference in price for both white and wheat. Store brand white bread was available more often than store brand wheat in midsize grocery stores and supercenters. Large grocery stores had 100% availability for both types. The price difference between store brand wheat and store brand white was not significantly different from that between name brand white and wheat.
Chips	**Availability of low-fat option by store type:**	While regular chips were available at 99% of stores, baked chips were available at only 24% of stores. Availability of baked chips was the lowest at convenience stores (5%) and gas stations (4%). In contrast, all of the large grocery stores and supercenters offered baked chips as an alternative to regular. Drugstores and midsize grocery stores fell in between, with 45 percent and 40 percent baked chip availability, respectively.
	Price of low-fat option vs. regular option:	Baked chips were more expensive across all stores except for midsize grocery stores. Significant price differences were seen in gas stations (baked chips were 54% more expensive than regular) and in supercenters (28% more expensive). No significant price difference was observed at drugstores or large grocery stores.
	Price differences between store types:	Baked chips were 40% more expensive in convenience stores than in large grocery stores. The price of regular chips was fairly uniform across all store types.
Cereal	**Availability of low-fat option by store type:**	Both regular and low sugar cereals were available in nearly all (95%)stores surveyed.
	Price of low-fat option vs. regular option:	Across all stores, there was no significant difference in price between regular and low-sugar cereals. In most stores, low-sugar cereal was slightly less expensive.
	Price differences between store types:	For name brand cereals, prices were approximately equal across all store types. The exception to this was supercenters, where both types of cereal were much less expensive than the large grocery store prices (37% less for regular and 56% less for low-sugar). The availability of store brand cereal had a notable impact on price. In midsize and large grocery stores, regular store brand cereals were much less expensive (55% less and 44 % less, respectively). Low sugar store brand cereals in large grocery stores were 61 percent less expensive than name brand low sugar options. Low sugar store brand options were available in over 75 percent of larger stores, but only 20 percent of convenience stores and 4 percent of gas stations.

Appendix E— Unit Standardization Procedure for Surveyed Food Items

Food Item	Size	Approx. Pieces Per Pound
Apple	Medium	3
Banana	Medium: 7-7 7/8” long Large: 8-8 7/8” long	4 3
Cantaloupe	Small: 4 ¼” diameter Large: 6 ½” diameter	1 ½ melon
Grapes, seedless		90
Honeydew	6” diameter	½ melon
Orange, seedless	2 5/8” diameter	3.5
Peach	Medium: 2 5/8”	4
Pear	Medium	2.5
Strawberries	1 pint weighs approx ¾ of a pound	
Tomato	Medium: 2 3/5” diameter	4
Mango	Medium	1
Papaya	Medium	0.6
Cauliflower	Medium head	0.77 heads
Cabbage	Medium	½ head
Broccoli	Medium head	0.77 heads
Iceberg lettuce	Medium head	0.8 heads
Green leaf lettuce	Medium head	1.25 heads
Black beans and black-eyed peas	1 lb dry	1.5 (or 24 ounces) cooked
Cucumber	Medium	1.4 pieces

Source: USDA nutrient database: http://www.nal.usda.gov/fnic/foodcomp/search/

Appendix F: Scoring Explanations for Composite Scores

F1: Store Affordability Scoring System

We set the food prices from large grocery stores as the benchmark (listed below). For the items that had healthful and regular options, the two prices were compared and then the lowest price was taken (for example, bagel instead of muffin). The price of each food item in each store was then measured against its corresponding benchmark price.

The average price of each surveyed food item in large grocery stores:

FOOD ITEM	AVG PRICE	FOOD ITEM	AVG PRICE
half gallon LF milk	1.78	**cabbage lb**	0.58
banana lb	0.51	**cauliflower lb**	1.16
apple lb	1.49	**collards lb**	1.13
orange lb	1.52	**okra lb**	3.09
grapes lb	2.16	**sweet potatoes lb**	0.85
cantaloupe lb	5.23	**tomatillos**	2.74
peaches lb	1.99	**avocados lb**	1.4
strawberries lb	3.73	**black beans lb**	0.98
honeydew melon lb	2.42	**black eyed peas lb**	0.84
watermelon lb	6.87	**ground beef lb**	3.57
pears lb	1.36	**hot dogs (regular)**	2.85
mango lb	1.45	**frozen dinner**	1.72
papaya lb	2.19	**bagel**	0.46
carrots lb	0.79	**soda (12 pack)**	3.99
tomato lb	1.22	**juice drink, half gallon**	1.99
peppers lb	1.59	**bread loaf (store brand white)**	1.29
broccoli lb	1.27	**chips**	4.29
lettuce head	1.28	**cereal (store brand healthy)**	2.75
corn piece	0.67		
celery lb	1.19		
cucumbers piece	0.59		
TOTAL COST:			76.98
MAX SCORE:			40
MIN SCORE:			-40

The scoring system:

<0% of GS-L price= 2 points

0-49% of GS-L price= 1 point

50-99% of GS-L price= 0 points

100-150% of the GS-L price= -1 point

>150% of the GS-L price= -2 points

F2: Availability of Culturally Appropriate Produce Scoring System

Separate scores were calculated for the Black culturally-specific fruits and vegetables and the Latino items. A total of 5 items were surveyed for each group. The two factors considered in the scoring were availability and quality (acceptable/unacceptable). Price was not considered. The maximum possible score was 8 for each score, and the minimum was 0.

Black Culturally-Specific Produce

Food Item	Availability Points
Collard Greens	1
Okra	1
Black-eyed peas	1
Watermelon	1
Sweet potatoes/yams	1
Total points	5

Latino Culturally-Specific Produce

Food Item	Availability Points
Tomatillos	1
Avocados	1
Papaya	1
Mango	1
Black beans	1
Total points	5

Quality points:

75%+ acceptability, 3 points

50%-75% acceptability= 2 points

25%-50% acceptability= 1 point

0-25% acceptability= 0 points

F3: Scoring System for the Quality of the Nutrition Environment

Food Item	Availability	Price	Quality
Milk	YES low-fat/skim= 2 points Proportion>=50%= 1 point	Lower for low-fat= 2 points Same for both= 1 point Higher for low-fat= -1	-inap-
Fruit	0 varieties= 0 points <5 varieties= 1 points 5-8 varieties= 2 points 9-11 varieties= 3 points 12 varieties= 4 points	Not applicable	25-50% acceptable= 1 pt 50-75% acceptable= 2 pts 75%+ acceptable= 3 pts
Vegetables	0 varieties= 0 pts <5 varieties= 1 pt 5-9 varieties= 2 pts 10-14 varieties= 3 pts 15+ varieties= 4 pts	Not applicable	25-50% acceptable= 1 pt 50-75% acceptable= 2 pts 75%+ acceptable= 3 pts
Ground beef	YES lean meat= 2 points 2-3 varieties <10% fat= 1 points >3 varieties <10% fat= 2 points	Lower for lean meat= 2 points Higher for lean meat= -1 point Same price= 1 point	-inap-
Hot Dogs	YES fat-free avail= 2 points Light but not fat-free= 1 point	Lower for fat-free= 2 points Higher for fat-free= -1 pt Lower for light= 1 point	-inap-
Frozen Dinners	YES all 2 reduced-fat types= 3 pts YES 1 or 2 reduced-fat types= 2 pts	Lower for fat-free= 2 points Higher for reduced-fat= -1 pt	-inap-
Baked Goods	YES low-fat items= 2 points	Lower for low-fat= 2 points Higher for low-fat= -1 pt; Same price= 1 pt	-inap-
Beverages	YES 100% juice= 1 point	Lower for diet soda= 2 points Lower for 100% juice vs juice drinks= 1 pt Higher for 100% juice= -1 point	-inap-
Bread	YES 100% whole wheat= 2 pts >2 varieties of whole wheat=1pt	Lower for whole wheat=2 points Higher for whole wheat= -1 pt Same price= 1 pt	-inap-
Baked Chips	YES baked chips= 2 pts >2 varieties= 1 pt	Lower for baked chips=2 pts Higher for baked chips= -1 pt	-inap-
Cereal	YES low-sugar cereal= 2 pts >3 varieties= 2 pts 2 varieties= 1 pt <2 varieties= 0 pts	Lower for low-sugar= 2 pts Higher for low-sugar= -1 pt Same price= 1 pt	-inap-
Total Summary Score: Up to 56 pts	**0 to 31 points**	**-9 to 19 points**	**0 to 6 points**

Appendix G: Availability of Culturally-Specific Fruits and Vegetables, By Store Type

Black Culturally-Specific Items

Total Stores	Store type	Collard greens			Okra			Sweet potatoes/yams			Black-eyed peas (per ounce)			Watermelon		
128		n	mean	% of stores	n	mean	% of stores	n	mean	% of stores	n	mean	% of stores	n	mean	% of stores
59	CS	0	na	0.00%	1	$1.99	1.69%	3	$1.24	5.08%	40	$0.07	67.80%	2	$7.45	3.39%
24	GAS	0	na	0.00%	0	na	0.00%	0	na	0.00%	7	$0.07	29.17%	0	na	0.00%
22	DS	0	na	0.00%	0	na	0.00%	0	na	0.00%	0	na	0.00%	0	na	0.00%
10	GS-M	6	$1.07	60.00%	2	$3.19	20.00%	8	$0.98	80.00%	7	$0.10	70.00%	6	$6.96	60.00%
9	GS-L	9	$1.13	100.00%	5	$3.09	55.56%	9	$0.86	100.00%	8	$0.08	88.89%	8	$6.88	88.89%
4	SC	2	$1.69	50.00%	1	$2.98	25.00%	2	$0.79	50.00%	2	$0.05	50.00%	3	$7.31	75.00%

Latino Culturally-Specific Items

Store type	Tomatillos			Avocados			Black beans (per ounce)			Mangoes			Papaya		
	n	mean	% of stores	n	mean	% of stores	n	mean	% of stores	n	mean	% of stores	n	mean	% of stores
CS	2	$1.15	3.39%	5	$1.53	8.47%	24	$0.09	40.68%	3	$1.79	5.08%	1	$1.79	1.69%
GAS	0	na	0.00%	0	na	0.00%	6	$0.09	25.00%	0	na	0.00%	0	na	0.00%
DS	0	na	0.00%	0	na	0.00%	12	$0.24	54.55%	0	na	0.00%	0	na	0.00%
GS-M	2	$0.94	20.00%	5	$1.05	50.00%	10	$0.08	100.00%	8	$1.49	80.00%	2	$1.49	20.00%
GS-L	6	$2.74	66.67%	8	$1.40	88.89%	9	$0.07	100.00%	9	$2.19	100.00%	4	$2.19	44.44%
SC	1	$2.18	25.00%	3	$1.30	75.00%	4	$0.05	100.00%	2	$1.48	50.00%	1	$1.48	25.00%