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# Nutrition Environment Assessment of Convenience and Corner Stores within Targeted Areas of Miami-Dade County

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## Abstract:

Recent increases in health disparities exacerbated by limited physical inactivity and poor diet have led to a re-examination of the built environment in health outcomes. Socio-economic factors such as race, income, and location have inextricable links to housing, education, transportation choices, environmental conditions, and the ability to easily access recreation opportunities and healthy foods that allow us to live healthier lives. Elected officials, policy makers, and public health and planning professionals are recognizing and attempting to redress the correlation between neighborhoods with high diet-related diseases and limited or no retail food establishments that sell fresh fruits and vegetables and other healthy foods.

A nutrition environment assessment of 44 convenience and corner stores within targeted areas of Miami-Dade County, Florida was conducted over a five-week period concluding February 2012. A modified; electronic-version of the Nutrition Environment Measures Survey for Stores (NEMS-S) instrument was developed to determine the availability, price, and quality of fresh produce and other food items. Vendor interviews were conducted to determine storeowners and managers attitudes towards offering healthy food options or adopting strategies that would promote the purchase of healthy food options for their stores. An observational assessment of elements of the physical environment was also performed to identify barriers to accessing the stores.

The target areas were organized into four geographical areas or zones. A Healthy Food Index Score was developed to quantify healthy food availability within the zones. While some zones had better access to healthy foods, the availability of healthy food items within all zones is limited. Data from the vendor surveys offer opportunities to increase the availability and access of healthy foods in the targeted communities.

Keywords: health disparities; nutrition environment; corner/convenience stores; healthy food availability, CPPW

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## Background

The disciplines of medicine and planning have historically sought to address public health issues by attempting to improve housing and other general physical conditions. The legal foundation provided by the Supreme Court in *Euclid v. Ambler*<sup>1</sup> is that zoning is a local government's exercise of its police power intended to protect the public health, safety and the general welfare of the community. This affords local planning and zoning entities the opportunity to support improved health outcomes by addressing the physical environment and infrastructure as a key social determinant of health.

Recent increases in health disparities exacerbated by sedentary lifestyles and poor diet have led to an examination of the social determinants of health. Socio-economic factors such as race, income, and location are inextricably linked to housing, education, transportation choices, environmental conditions, and the ability to easily access recreational activities and

healthy foods that allow us to live healthier lives.<sup>2</sup> Limited access to healthy foods in poor and minority neighborhoods has been thought to contribute to the prevalence of diet-related health disparities such as obesity and diabetes.

Today, there is a greater understanding and acknowledgment of how the places that are planned and built can inadvertently affect their occupants in a negative manner. Anecdotally, the lack of fully integrated planning across issue areas such as mobility, recreation, and access to healthy foods has resulted in higher health care costs for employers and their employees and reduced productivity due to illness.

Elected officials, policy makers, and public health and planning professionals are recognizing and attempting to redress the correlation between neighborhoods with high diet-related diseases and limited or no retail food establishments that sell fresh fruits and vegetables and other healthy foods.<sup>3</sup> In an

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<sup>2</sup><http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=39>

<sup>3</sup> PolicyLink. Designed for Disease: The Link Between Local Food Environment and Obesity and Diabetes.

<sup>1</sup> Village of Euclid, Ohio v. Ambler Realty Co., 272 U.S. 365 (1926)

attempt to improve the healthy food landscape more studies of local food environments and opportunities to increase healthy food retail are being conducted.

While it is important to show consumer interest in healthy foods, the costs of food production and distribution help determine feasibility of stocking or increasing the availability of fresh fruits and vegetables in small retail food establishments. The food retailers' location analysis considers what foods will be carried and how much consumers will be willing to pay while allowing owners to recoup costs and make a profit. Neighborhood income is also a determinant of the quality and selection of foods offered by a food retailer. Fresh fruits and vegetables are often more expensive than canned and frozen alternatives. Low-income households may make food choices based on cost instead of nutrition.<sup>4</sup> Some households may choose immediate food options, which are usually highly processed foods.

Limited access to healthy foods for all residents have contributed to health disparities (such as obesity, diabetes, and hypertension) and created a disproportionate social burden that has a deleterious effect on our communities. Improving social health determinants was the impetus for conducting the Nutritional Environment Measures Survey as a key step in improving access to health foods across Miami-Dade County

## Study Rationale

Several priority areas in Miami-Dade County were identified through a food access study conducted by the Food Trust on behalf of the Miami-Dade County Health Department (cite document). These areas have limited food retail options selling healthy food items to the community. The Centers for Disease Control and Prevention (CDC) identifies areas such as these as food deserts. Available stores may not be accessible by walking or transit and many residents do not have the means to travel outside of their communities to purchase healthy food items.

Food deserts are defined by the Centers for Disease Control and Prevention as "areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a

healthy diet, because of the paucity of supermarkets or other healthy food sources."<sup>5</sup> High poverty rates present an additional challenge to the availability of healthy foods for low-income communities<sup>6</sup>.

Miami-Dade County has a poverty rate of 18% compared to the state average of 15% and national average of 14%. The Overtown and Model City neighborhoods of Miami are two priority areas with poverty rates of 53% and 44%, respectively.<sup>7</sup> Thirty percent of the households in the priority areas have incomes less than \$25,000, which is considerably lower than the national average of \$50,221.<sup>8</sup>

The correlation between poverty and health disparities prompted The Miami-Dade County Health Department in part to apply for funding from the Centers for Disease Prevention and Control's (CDC) Communities Putting Prevention to Work (CPPW) grant, to identify opportunities to increase community access to healthy foods, "by facilitating policy, system, and environmental changes" in the study's defined priority areas.

The South Florida Regional Planning Council (Council) responded to a Request for Proposals from the Miami-Dade County Health Department to evaluate the nutritional environment of corner and convenience stores in targeted areas of Miami-Dade County. The Council decided to partner with the Florida International University's Herbert Wertheim College of Medicine (HWCOC) Green Family Foundation NeighborhoodHELP<sup>9</sup> Program to leverage the program staff's outreach expertise to

<sup>5</sup> Beaulac J, Kristjansson E, Cummins S. A systematic review of food deserts, 1966-2007. *Prev Chronic Dis* 2009;6(3):A105. [http://www.cdc.gov/pcd/issues/2009/07jul/08\\_0163.htm](http://www.cdc.gov/pcd/issues/2009/07jul/08_0163.htm). [Accessed 1/14/2012].

<sup>6</sup> Cook JT, Frank DA. Food Security, Poverty, and Human Development in the United States. *Annals of the New York Academy of Sciences*. 2008 (OnlineEarly Articles). doi:10.1196/annals.1425.001. <http://www.blackwell-synergy.com/doi/full/10.1196/annals.1425.001?cookieSet=1>. [Accessed: 1/21/2012]

<sup>7</sup> 2011 American Community Survey data

<sup>8</sup> 2008 Miami-Dade County Health Department Maps from the Office of Epidemiology and Disease Control

<sup>9</sup>The NeighborhoodHELP program provides longitudinal homecare visits to families North Miami-Dade, including areas of the cities of Miami Gardens, Opa-locka and unincorporated Miami-Dade; using interdisciplinary teams of students from nursing, social work, public health, law and other disciplines. The NeighborhoodHELP Program is part of HWCOC's outreach unit in the Division of Policy and Community Development in the Department of Humanities, Health & Society.

<sup>4</sup> <http://jn.nutrition.org/content/135/4/900.full>

engage communities and solicit their participation in the surveys.

To assess the food environment two main questions needed to be answered: 1) what healthy food items are available and 2) are store owners willing to increase their supply of healthy food items? The Nutrition Environment Measurement Survey (NEMS)<sup>10</sup>, an evaluation tool designed by Emory University to assess the availability, price, and quality of pre-defined food items in supermarkets and restaurants, was revised to reflect Women Infant and Children (WIC offerings) and used to answer the first question. The NEMS was administered at forty-four corner/convenience stores to assess the availability, price and quality of their healthy food items.

The Council and HWCOC's Division of Policy and Community Development developed a vendor survey to answer question and to better understand corner/convenience stores business models; since recent literature on food deserts has focused on access and affordability of healthy food items, while paying limited attention to the fundamental business model that drives consumer-grocer relationships and fluctuations in price models from one community to the next. An observational assessment of the surveyed stores was also added to the Vendor Survey to determine how the surrounding physical environment may impact access.

Electronic formats for all surveys were created to simplify data collection efforts. NeighborhoodHELP's community outreach workers served as the "data collection team" and were responsible for conducting the vendor interviews and completing the NEMS via electronic tablets.

Findings were used to develop fact sheets and policy papers to inform policy initiatives aimed at improving access to fresh produce in local corner/convenience stores through coordination with farmers markets and community gardens. Study documents will be disseminated to elected officials, area agencies, study participants, as well as the community at-large.

## Methodology

Prior to the assessment of healthy food availability at corner/convenience stores, The Food Trust conducted a Geographic Information System (GIS) study of the overall food environment in Miami-Dade County. The Food Trust identified areas with an increased likelihood of reliance on corner/convenience stores, high diet-related deaths and high percentages of low-income households. The resulting map showed a cluster in the northeastern section of Miami-Dade County that was identified as the "Areas with Greatest Need."<sup>11</sup>

### *Store Selection*

A listing of food retailers that accepted Supplemental Nutrition Assistance Program (SNAP) benefits was downloaded from the United States Department of Agriculture (USDA) website<sup>12</sup>. A list of stores that accepted WIC vouchers was obtained from the Miami-Dade County Health Department. Both lists were compared to the Food Trust's database of corner/convenience stores identified in Miami-Dade County. Supermarket retailers and drug stores were removed from the original list and the remaining stores were geocoded to determine their location with respect to the Food Trust's defined priority areas.

To ensure equal representation of stores throughout the county with a small sample size (n=44), the target areas were organized into four geographical zones or clusters. **Zone 1** includes the Cities of Hialeah and Opa-Locka. **Zone 2** encompasses the City of Miami neighborhood of Liberty City and Unincorporated Miami-Dade County. The City of Miami neighborhoods of Allapattah/Bronwnville, Little Haiti and Model City are part of **Zone 3**. **Zone 4** includes parts of the Liberty City and Overtown neighborhoods within the City of Miami; unincorporated Miami-Dade County and the municipality of Florida City. Convenience sample was used since the total number of corner/convenience stores accepting WIC and SNAP vouchers within the target areas was low. Sixty-two stores were insufficient to ensure that an average ten stores would be successfully recruited in each of the four zones.

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<sup>10</sup> NEMS <http://www.med.upenn.edu/beat/docs/NEMStoresAIPM.pdf>

<sup>11</sup> Food Trust's methodology is available in the Appendix of their report; A Healthier Future For Miami-Dade County.

<sup>12</sup> SNAP Retail Locator <http://www.snapretailerlocator.com/>

The population of eligible stores was expanded to include stores that satisfy all of the criteria of low-income areas, high diet-related death rates and low sales in large retail stores but were outside of the study defined priority areas. Stores that fell outside of the areas of greatest need were designated as “NFT” or non-Food Trust stores. These zones were coded NFT1, NFT2, NFT3 and NFT4. All NFT stores are in low-income communities.

#### *Instrument Development*

Two data collection instruments were used for this study; the Nutritional Environment Measures Survey (NEMS) and the Interview of Vendor Attitudes (IVA). The NEMS was used to evaluate the nutrition environment of corner/convenience stores by assessing the type and location of food outlets, availability, pricing, quality, and placement of healthier food products. The NEMS-S instrument for supermarket was amended to include WIC nutrition offerings such as tuna, beans, and eggs. The final NEMS instrument included the following items: milk, fresh fruit and vegetables, cheese, ground beef, hot dogs, canned tuna, canned beans, eggs and peanut butter, frozen dinners, bagels, muffins, danish, bread, tortillas, potato chips, rice, and cereal. The availability of healthier versions or alternatives to pre-packaged items was also included.

The IVA was designed to measure vendor attitudes toward selling additional healthy food options and willingness to serve as a site of nutrition education for their respective communities. The interview of the vendor attitudes survey was developed using a collection of retail and vendor surveys. Items were selected based on their appropriateness for the target audience and its ability to inform a long-term county plan aimed at increasing the visibility of fruits and vegetables in corner/convenience stores. The survey was distributed to researchers with expertise in the area of community nutrition, survey research and the project evaluator for face validity. A mini-observational assessment of the physical environment surrounding the stores was also added to the IVA. The observational component focused on characteristics such as: store location, proximity to transit, parking availability, cleanliness, and safety features.

Data entry structures for both instruments were created in Adobe Form Central facilitating real-time data collection. Electronic data collection eliminated

the time typically necessary for data entry or scanning completed surveys.

#### *Pilot*

Piloting occurred at three store locations outside of the study target area. The objective of the pilot was to test the script used by the survey team to introduce and explain the study to vendors, test the functionality of tablets in performing data collection, assess if the wording of the IVA is appropriate and easily understandable and provide the survey team with an opportunity to provide feedback on the electronic NEMS and IVA instruments. Following day two of the pilot test, the instruments and script were modified based on feedback received during the debriefing sessions.

#### *Data collection*

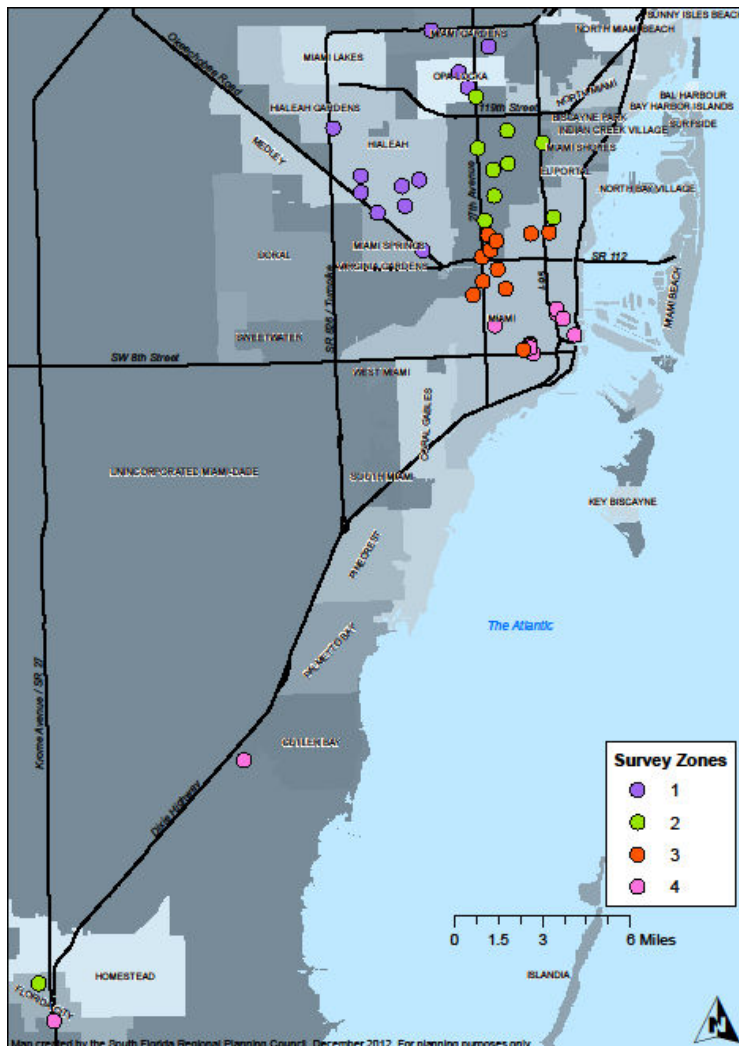
Since data collection was going to be conducted by Florida International University staff the university required study approval by the Institutional Review Board to ensure human subject rights are protected. The data collection team consisted of three community outreach staff members who completed the online NEMS training modules for stores. In class review and field-testing of the instruments were also conducted. Two data collectors visited each store to conduct the IVA and NEMS in tandem. This approach allowed for both instruments to be tied to one store for a more comprehensive data analysis and provided a safety function for the data collectors.

For a store to participate in the study the owner or manager had to willingly consent to participate in both the NEMS and IVA assessments and speak English, Spanish or Haitian Creole. The electronic informed consent form was reviewed with the storeowner or manager who consented by using an online tick button and then a paper copy was given to the storeowner or manager for their reference. The entire survey and interview process combined required 35-40 minutes of the participant's time.

#### *Nutrition Environment Measures Survey*

NEMS assessments were conducted at 44 corner/convenience stores and gas marts that accept Supplemental Nutrition Assistance Program (SNAP) and Women Infants and Children (WIC) vouchers within the Miami-Dade County study-defined priority areas. The availability and price of the regular version of an item and its healthy equivalent were examined. The availability, price, and quality of fresh fruit and vegetables were also indicated.

Map 1: Location of Surveyed Stores within MDC



Map created by the South Florida Regional Planning Council, December 2012. For planning purposes only.

**Inter-rater Reliability**

The primary surveyors worked together for the first two weeks of the investigation to facilitate consistency in NEMS scoring. Subsequently, the primary surveyors would pair with other outreach staff to form two teams. One person would complete the NEMS survey and while the other conducted vendor interviews. Periodically throughout the survey process the primary surveyors would reassemble and double score a particular convenience store to test NEMS inter-rater reliability.

**Observation of Physical Environment**

An observational assessment of the surveyed stores' physical environment was also performed. Information was gathered on the surrounding environment, access to public transportation,

accessibility for the disabled, proximity to other businesses, as well as the amount of pedestrian and motor vehicle traffic in the area.

**Vendor Survey Results**

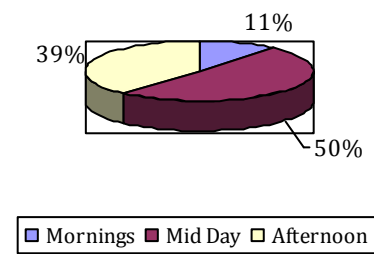
Forty-four of sixty-six vendors approached (67%) consented to participate in the IVA and NEMS surveys. The total represents stores across the 4 zones created to ensure that the minimum 40 convenience stores recruited for the study were evenly dispersed across the target areas. Participation across zones was as follows: Zone1: 12 stores, Zone2: 10 stores, Zone 3: 11 stores and Zone 4: 11 stores.

Eighty-two percent of respondents reported that customer requests best describes which items will be sold at their convenience store. Profit margin and distributor recommendations were the second most frequent responses (34% and 32% respectively), followed by sales history (20%). Marketing strategy was the least selected response (7%).

**Convenience store characteristics**

Forty-four convenience store vendors completed the interview of vendor attitudes.

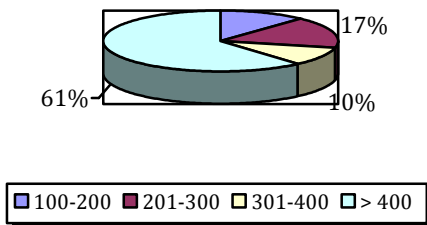
**Time of Day Interviews Conducted**



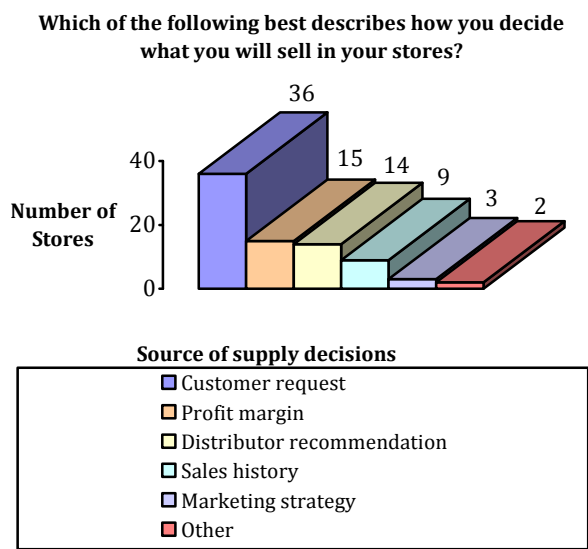
Eighty-nine percent of the interviews were conducted between the hours of 11:00 am and 5:00 pm. Few interviews (11%) were conducted in the morning. Interviews were not conducted in the late afternoon or the evening hours so as not to interfere with peak store operations.



**Number of Weekly Customers**



Most convenience stores (62%) reported maintaining customer levels above 400 customers per week (approximately 61 customers a day). The remaining 38% reported customer levels of 400 or less per week; 39%<sup>13</sup> reporting less than 300 customers per week (or less than an average of 43 customers per day).



All stores participating in the investigation accept WIC and SNAP vouchers however, less than half of the vendors interviewed agreed that a large percentage of their customers use WIC or SNAP (37.8%) benefits to pay for their purchases. Additionally, despite being listed as a WIC authorized location, few vendors confirmed their current acceptance of WIC vouchers.

**NEMS Analysis**

Descriptive statistical analyses were conducted in Microsoft Excel to assess the availability of pre-determined food items, consistency of pricing, and the quality of fresh fruits and vegetables. The Healthy Food Availability Index (HFAI) measures the healthfulness of the food environment by assigning a points system to the availability of various healthy food items within the stores assessed. A HFAI score was derived by assigning numerical values for the availability of and the number of varieties of fresh fruits and vegetables.<sup>14</sup> The availability of healthy versions of pre-packaged items was also considered.

Table 1: Revised Healthy Food Availability Score Methodology

Food Item	Availability
Milk	1 point (pt) for 2% milk 2 points (pts) for 1% or skim milk
Fresh Produce - Fruits and Vegetables	4 pts for availability of produce 1 pt for < 5 varieties 2 pts for 5 - 9 varieties 3 pts for 10 or more varieties
Beverages	1 pt for diet soda 1 pt for 100% juice
Bread	2 pts for availability 1 pt for variety
Cereal	2 pts for healthier option
Chips	2 pts for baked chips 1 pt for variety
Eggs	2 pts for availability
Tuna	2 pts for availability 1 pt if packed in water
Beans	2 pts for availability
<b>TOTAL POSSIBLE SCORE</b>	<b>0 to 30 points</b>

Table 1 illustrates how the HFAI was modified for this study. The scores could range from 0 to 30 points. A higher score indicates that more healthy items are available.

*Study Limitations*

While the overall number of store surveys completed (44) was sufficient to produce reliable results, the tabulations by zone, with 10 to 12 stores in each, recommend caution in interpreting the results presented in this report.

<sup>13</sup> Figures rounded to nearest whole number and therefore do not total exactly 100%

<sup>14</sup> The Healthy Food Availability Index created for this project was adapted from the Nutrition Environment Measures Survey for Stores.

The price of healthy food items are usually compared to the less healthy items. Prices were not included in the HFAI score because cost of items was not consistently available for the same sizes of healthy items and non-healthy equivalent. Prices for bananas, apples, and oranges were usually visible. Vegetable prices were not generally displayed. Although the quality of fresh produce was assessed as acceptable or unacceptable, quality was included in the calculation of the HFAI score because it was not consistently documented.

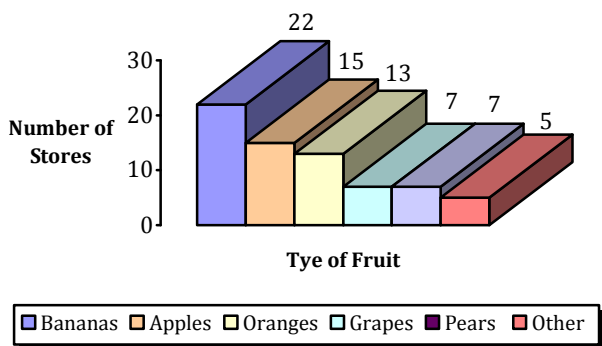
**NEMS Results**

The NEMS assessed the availability of the following items: milk, fresh fruit and vegetables, cheese, ground beef, hot dogs, canned tuna, canned beans, eggs and peanut butter, frozen dinners, bagels, muffins, danish, bread, tortillas, potato chips, rice, and cereal in 44 corner/convenience stores within Miami-Dade County.

*Fruits and Vegetables*

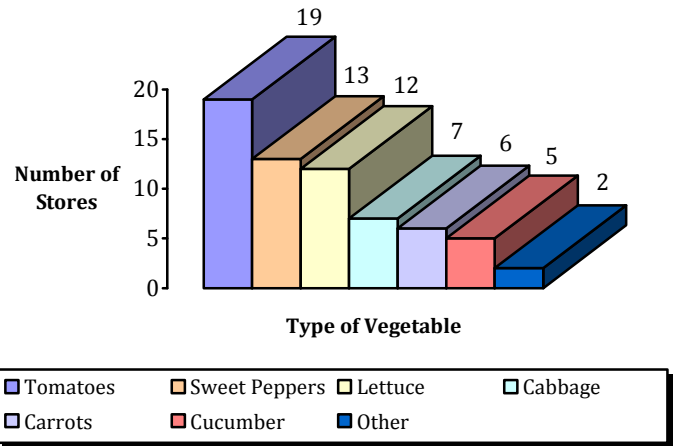
Bananas, apples, oranges, grapes and pears were the most commonly sold fruit. Bananas were sold at 50% of the stores that data collection was conducted.

**Fresh Fruit Availability**



At an average price of 55 cents each; bananas were approximately twice the price per unit compared to Target or Wal-Mart. The quality ranged from good to fair. Fifteen of the stores sold apples at 80 cents each, thirteen sold oranges at an average price of 46 cents each and 7 stores sold grapes and pears.

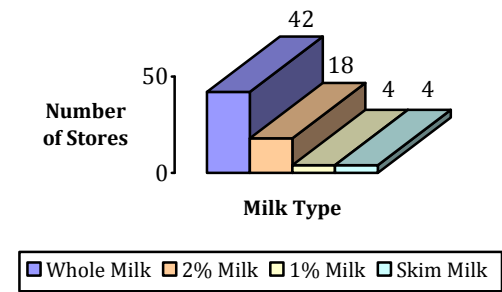
**Fresh Vegetable Availability**



Less than half of the store surveyed sold fresh vegetables. Tomatoes were the most popular vegetable; they were available at 43% of the stores. Twenty-nine percent of the stores sold sweet peppers, 27% carried lettuce, 15% had cabbage, and 14% sold carrots.

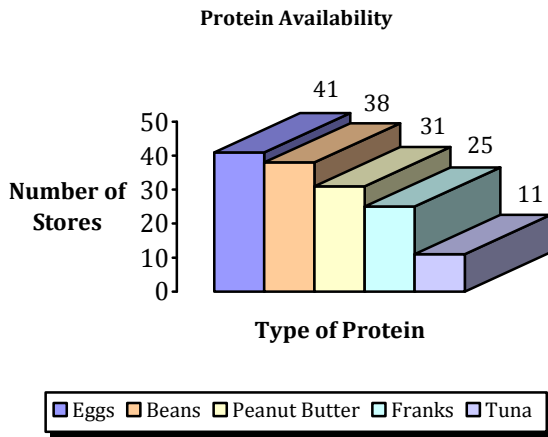
*Low-Fat Milk*

**Milk Availability**



Very few stores carried low-fat (skim or 1%). Skim and one-percent milk was only available at 9% of the stores. Forty-one percent of the stores sold 2% milk at an average price of \$3.57; three cents more than the average price for whole milk.

Proteins



Eggs were the most popular protein that could be purchased. Ninety-three percent of the stores sold eggs; 86% sold canned beans; 70% peanut butter, 57% franks and 25% tuna.

Other Items

Diet soda and 100% juice were readily available at 93% and 75% percent of the stores, respectively.

Low-Sugar Cereals (<7g of sugar/per serving) were available at 80% of the stores. Plain “Cheerios” was the most popular brand.

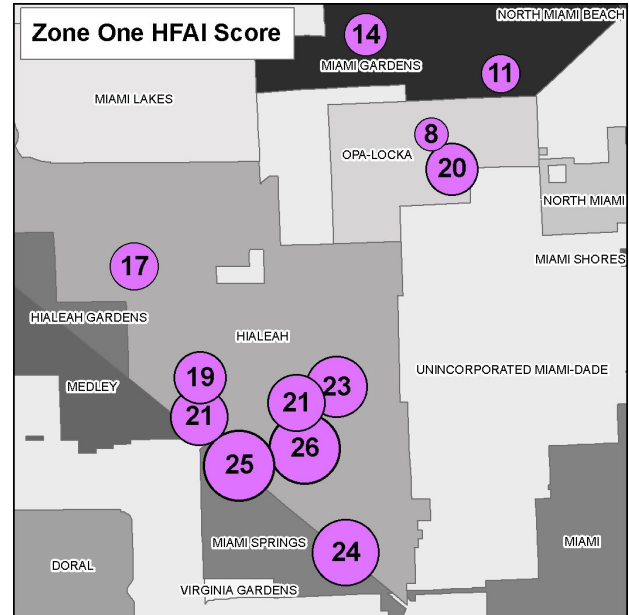
Less than half of the stores sold 100% whole wheat bread. Nature’s Own 100% Whole Wheat bread was the brand that was generally available.

The Healthy Food Availability Index

The resulting HFAI scores represent the level of healthy food selections in corner/convenience establishments. There is a direct relationship between the score and the availability of healthy foods; the higher the score, greater the availability. The HFAI score range for the entire study area was between 4 and 28. The mean score for the study area was 10, demonstrating limited availability of healthy food items such as fruits and vegetables. The HFAI scores were also calculated by geographic zones to

illustrate the distribution of healthy foods by neighborhood.

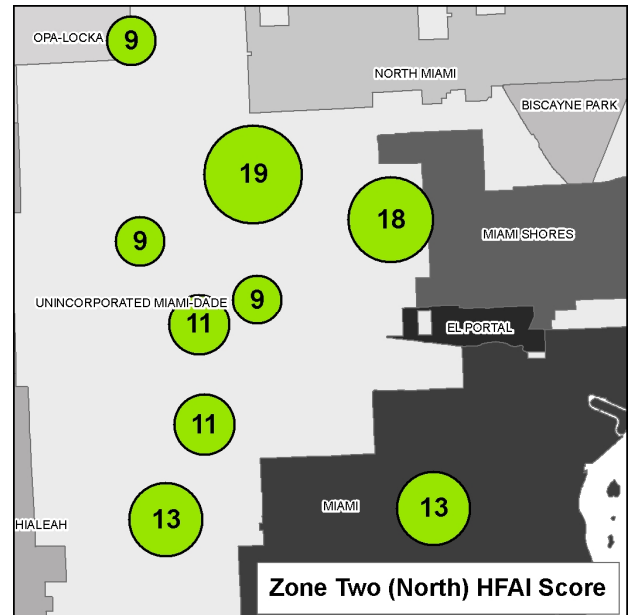
Zone 1



Zone 1 includes the Cities of Hialeah and Opa-Locka.

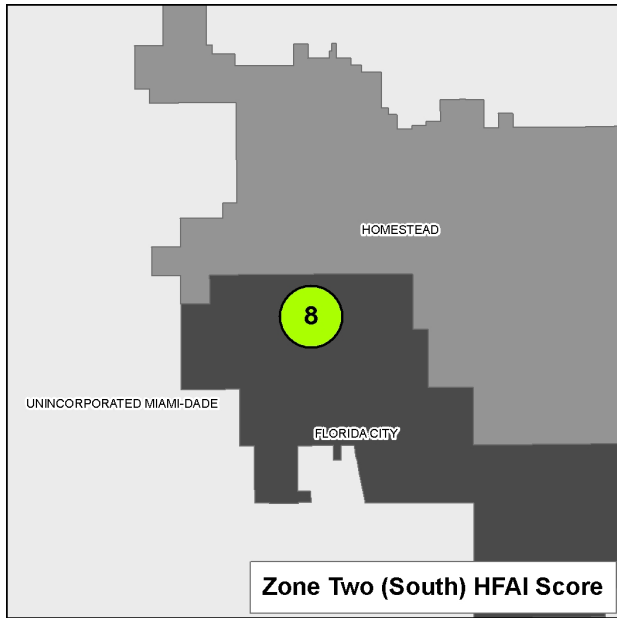
The Healthy Food Availability Index scores in Zone 1 range between 8 and 26 for this area. The mean HFAI score was 19.

Zone 2



Zone 2 North encompasses the City of Miami neighborhood of Liberty City & Unincorporated Miami-Dade County.

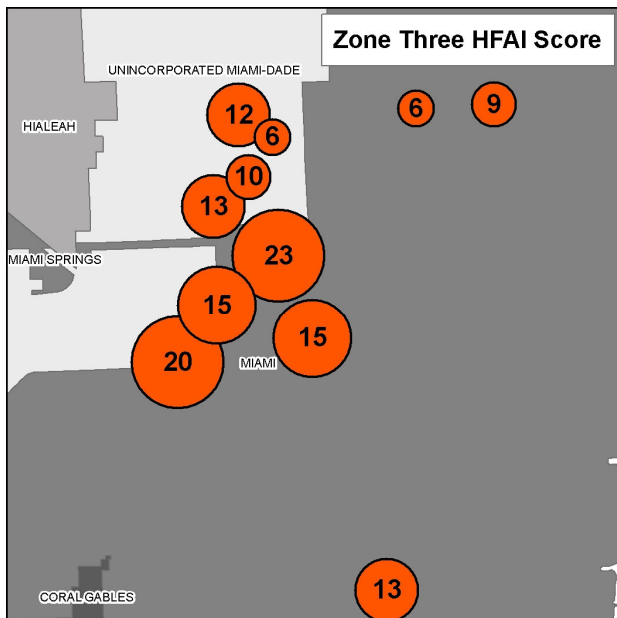




Zone 2 South includes Florida City.

The Healthy Food Availability Index score for Zone 2 ranged from 8 to 19. The mean HFAI score was 12. For illustrative purposes Zone 2 had to be split into two sections (North and South).

*Zone 3*

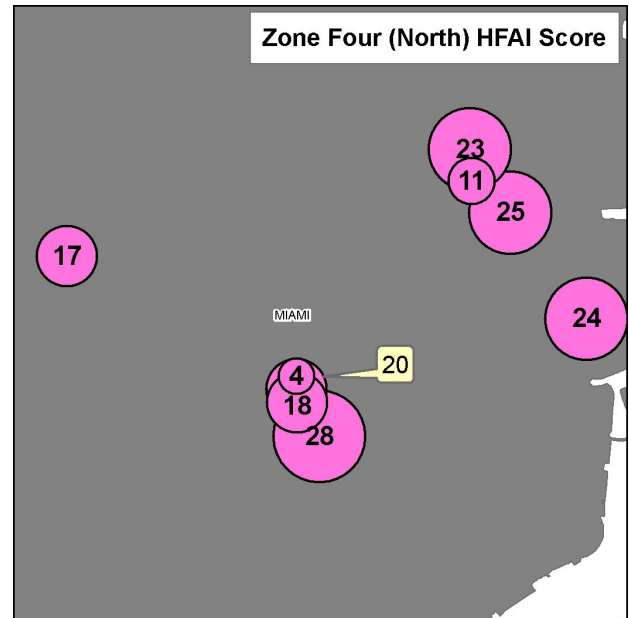


Zone 3 includes Allapattah/Brownsville, Little Haiti, and Model City neighborhoods within the City of Miami.

The Healthy Food Availability Index score for Zone 3 fall between 6 and 23. The mean HFAI score was 13.

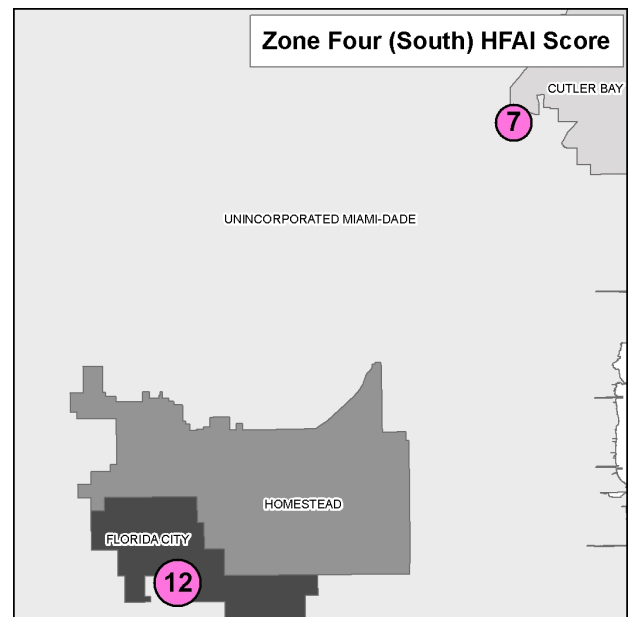
*Zone 4*

The Healthy Food Availability Index score for Zone 4 ranged from 4 to 28. The mean HFAI score was 18. For illustrative purposes Zone 4 had to be split into two sections (Northeast and Southwest).



NE area of Zone 4 includes Liberty City and Overtown neighborhoods of the City of Miami.

The Healthy Food Availability Index score for the Northeast section of Zone 4 ranged from 4 to 28. The mean HFAI score was 18.



SW Area of Zone 4 includes Unincorporated Miami-Dade County and the municipality Florida City.

The Healthy Food Availability Index score for the Southwest section of Zone 4 ranged from 7 to 12. The mean HFAI score was 9.

Table 2: HFAI Score Summary

Measure	All Stores	Zone			
		1	2	3	4
Number	44	12	10	11	11
Minimum	4	8	8	6	4
Median	14.5	20.5	11.0	13.0	18.0
Mean	15.5	19.1	12.0	12.9	17.2
Maximum	28	26	19	23	28
Std Dev	6.38	5.63	3.83	5.30	7.81

**Summary**

Healthy food items were more frequently available in the stores located in Zones 1 and 4 than in the other two Zones. This was confirmed in the median HFAI scores for the two (20.5 and 18, respectively), when compared to Zones 2 and 3 (11 and 13, respectively).

**Discussion**

Vendors represent an important stakeholder in the accessibility of fresh produce in low-income communities. Determining how vendors decide what they will sell in their store can yield valuable insight into which health promotion strategies may be successful or are most appropriate. The study findings suggest that strategies aimed at increasing consumer’s request for fresh produce would be the most likely way of increasing access to as local convenience stores.

Our findings confirm the current literature on vendor attitudes towards offering healthy food options in their stores. Similar to findings reported in the literature, the vendors interviewed attributed their stock decisions primarily to current consumer demand<sup>15</sup>. There exists an opportunity to impact their decisions by implementing strategies aimed at creating strategic alliances with distributors who support increasing healthy food options in retail stores. Pairing these strategies with profit incentives for the vendors would likely be perceived as more impactful as currently unhealthy snacks are

perceived as being profitable and fruits and vegetables the contrary.

Our study suggests that vendor education is needed and potentially welcomed if it pertains to alternative sourcing strategies and to a lesser extent purchasing, pricing and handling of fresh produce. Alternative sourcing is preferred more than updated equipment to display healthy food options. Indeed such a strategy is perfectly aligned with current initiatives to develop sourcing relationships between corner/convenience stores, farmer’s markets and community gardens. There appears to be subtle interest in more interactive strategies of engaging customers that are commonplace among the fresh market and community garden sectors. A significant minority of vendors expressed that such interactive activities as cooking demonstrations and outdoor fruit and vegetable stands could be embraced by select corner/convenience stores. Investigation of potential policy barriers to the creation of healthy food sourcing loops among corner/convenience stores, farmer’s markets and community gardens is necessary to understand whether such relationships can occur currently.

Few vendors expressed interest in monitoring sales of fruits and vegetables in their stores, which could present a challenge in demonstrating the impact of a county plan aimed at enhancing the visibility of fruits and vegetables. Adopting strategies with integrated monitoring systems such as tax incentives may offer a solution. District of Columbia<sup>16</sup>, Maryland<sup>17</sup>, New York<sup>18</sup> and Philadelphia<sup>19</sup> all have tax incentive programs aimed at either encouraging existing retailers to offer healthy food options or the creation of new retail outlets that offer healthy food options. These strategies could provide vendors an indirect incentive for tracking and monitoring fruit and vegetable sales to either maintain or qualify for the tax incentive.

While many store vendors currently perceive minimal consumer demand and profit in promoting healthy food option, IVA responses suggest that

<sup>16</sup> District of Columbia FEED Act 2010, (D.C. Code § 2-1212.01 *et seq.*)  
<sup>17</sup> Maryland Grocery Store Property Tax Credit 2010, (Md. Code Ann., Tax-Prop. § 9-254).  
<sup>18</sup> New York City FRESH Program <http://www.nyc.gov/html/misc/html/2009/fresh.shtml> [Accessed 2/21/2012]  
<sup>19</sup> Philadelphia Fresh Food Financing Initiative [http://www.trfund.com/resource/downloads/Fresh\\_Food\\_Financing\\_Initiative\\_Comprehensive.pdf](http://www.trfund.com/resource/downloads/Fresh_Food_Financing_Initiative_Comprehensive.pdf) [Accessed 2/21/2012]

<sup>15</sup> Andreyeva, T. et. al., (2011) Food retailer practices, attitudes and beliefs about supply of healthy foods. Public Health Nutrition: 14, 1024-1031.

vendors are willing to implement strategies aimed at offering healthy food option but Policy changes must drive consumer demand for healthy food options and thereby offer an analogous convenience in purchasing healthy foods as currently exist with

unhealthy snack foods. In areas similar to the ones surveyed, community safety may serve as a risk factor for poor health outcomes given its role in impeding access to vital resources, in this case food. Policy aimed at increasing healthy food access cannot be separate and distinct from policies aimed at improving the social and physical landscape of the community.

The sale of healthy food options should also be convenient for vendors. Andreyeva et al reported distributors of unhealthy snack foods were more likely to deliver directly to stores and often times shelved the items whereas healthy food items are often self-stocked. Future policy changes aimed at improving healthy food access may increase their likelihood for successful health outcomes if the perceptions and roles of both consumers and vendors are considered.

Healthy communities that allow for regular physical activity and a variety of healthy food options are socially desirable. The social and economic attractiveness of the Region can be improved by planning and implementing policies and projects that ensure and sustain safe and efficient mobility, and equitable access to healthy foods and recreational activity. South Florida's economic health can be improved with modifications to the physical environment to promote more active and healthy lifestyles.

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