Maryvale Nutrition Environment Measures Survey:

Availability and Affordability of Healthy Food Options in Maryvale and Canyon Corridor – Phoenix, Arizona

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Executive Summary

Researchers from the Local Food Working Group at Arizona State University, Greenzona, St. Luke's Health Initiatives, and members of the Maryvale and Canyon Corridor communities carried out a research study to examine the food environment in the west Phoenix communities in the summer of 2011. This endeavor was part of the broader project, Maryvale on the Move, which is a community-based effort to improve the viability of healthy eating and active living in the Maryvale and Canyon Corridor communities. This report provides a snapshot of the availability and affordability of healthy food in the area surrounding the three community centers involved in the project: Golden Gate Community Center, Rehoboth Community Development Community Life Center, and the Amigos Center of Wesley Community Center.

Key Findings:

- There were 101 food stores in the study area, however 54% of these were convenience stores and another 16% were dollar stores or pharmacy-type stores.
  There were only 13 grocery stores in the region.

- Accessibility to food outlets was fairly high. However, for many, grocery stores are beyond comfortable walking distance.

- Availability of healthy food was low. On average, stores scored just 9 out of a possible 38 points in terms of availability of healthy food.
  Just 5 stores (all grocery stores) were categorized as having *high availability*. Two of these were concentrated at a single intersection.

- Affordability of healthy food options was very poor. On average, stores scored only 1 out of a possible 21 points in terms of affordability of healthy food items.
  None of the stores had what could be considered a 'good' affordability rating.

- Less than one-third of the stores carried any sort of fresh vegetables, or any healthy varieties of chicken, beef or cheese.

- Healthy options for beef, chicken and juice were more expensive than less healthy options in most stores.

Introduction

Access to affordable, healthy food plays a critical role in the long term health of a community and its children. For the first time in centuries, children in the United States may have shorter life expectancies than their parents, due to the rising epidemic of obesity that plagues the nation (Olshanksy, 2005). The rate of childhood obesity in the U.S. has more than tripled in the past three decades, and in Arizona it doubled between the years of 2003 and 2007 alone (Singh, 2010).

A healthy diet which emphasizes fresh fruits and vegetables and whole grains has been shown to reduce the risk of obesity and its associated chronic diseases (Hung, 2004). However, maintaining a healthy diet remains a challenge. For many Americans, healthy food options are unavailable, difficult to access, or unaffordable (Azuma, 2010; USDA, 2009). Low-income neighborhoods and neighborhoods of color commonly have lower access to supermarkets and higher access to convenience stores that tend to lack affordable healthy options. Residents of these neighborhoods are less able to maintain a healthy diet and have higher rates of obesity as a result (Powell, 2007; Glanz, 2007).

The Maryvale on the Move community seeks to transform the food environment in its west Phoenix neighborhoods in such a way that makes living a healthy lifestyle a real possibility for Maryvale and Canyon Corridor residents and their children. The first step in any transformation is understanding where the community sits in the present day. What does the food environment look like? What are its strengths? What are its weaknesses? Where can the community focus its energy to bring healthy, affordable food to all residents?

This report provides a snapshot of the retail food environment around three of Maryvale and Canyon Corridor's key community centers: Golden Gate Community Center, Rehoboth Community Development Community Life Center, and the Amigos Center of Wesley Community Center. The report first provides a broad overview of the issue of food access, and introduces the three study neighborhoods. It then reviews the method used to collect the data. The body of the report summarizes the key findings regarding the availability, accessibility and affordability of healthy, culturally appropriate food options in the region's stores. Finally, the report concludes with recommendations for future action.

The Building Blocks of a Healthy Food Environment

To be able to make the choice to eat healthy food, a person must first live in a community where making this choice is a realistic option. The "food environment" in which someone lives can dramatically influence how easy or difficult it is to obtain healthy food and maintain a healthy diet. The types of stores present in a community, their accessibility to residents, and the quality and affordability of the food available in these stores all play a significant role.

Low-income and neighborhoods of color in urban areas are particularly at risk for being located in a "food desert" - defined in the 2008 Farm Bill as an area:

> *"with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities"* - USDA, 2009.

Availability

For many Americans, healthy food is simply unavailable in their area. Following World War II, the spread of the automobile led to a steady migration of those with mid to upper incomes out of urban centers and into the suburbs. Food outlets followed the affluent customer base, leaving many urban areas without a proper grocery store (Winne, 2008). Low-income neighborhoods contain only 75% as many chain supermarkets as compared to other neighborhoods, and Latino neighborhoods have only 32% of the chain supermarkets as compared to non-Latino neighborhoods (Powell, 2007). Those stores that do remain in low-income areas and urban areas of color are often smaller stores that provide an abundance of high-calorie convenience foods but little in the way of fresh produce or whole grains. This can be a significant barrier to healthy eating as studies show a significant correlation between the availability of healthy foods in nearby stores and the quality of residents' diets (Glanz, 2007; Powell, 2007).

Access

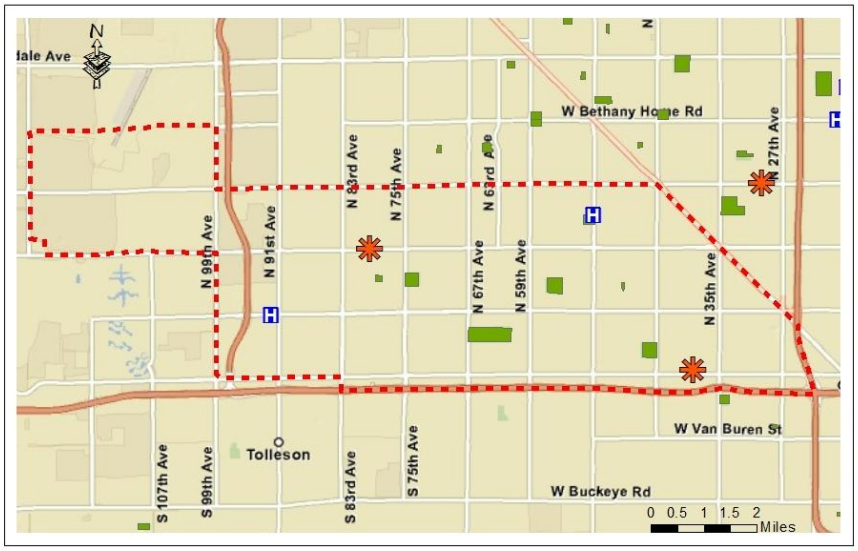
Availability of healthy food in a community does not always mean that everyone has access to it. One of the key problems facing many low-income residents is lack of access to a personal vehicle with which to travel to a store which sells quality, healthy food. Walking or biking may or may not be viable options depending on just how far away a given market is, and how much spare time the resident has to spend commuting to and from the food outlet (Clifton, 2007). Phoenix's hot, desert climate creates an additional barrier to those without access to an automobile. The walkability and/or bikeability of a region can play a significant role in the accessibility of the community's food outlets.

Affordability

For those fortunate enough to live in an area where healthy food is available and physically accessible, there may be an additional barrier – cost. The small stores which often dominate the food retail landscape of urban areas are typically unable to purchase items from distributors in the volumes required to secure the lowest prices, and therefore pay 5-15% more for their goods – a premium which they are forced to pass on to their customers (Teton Sands, 2006). Studies also show that healthy foods are often more expensive than their high-calorie, high-fat counterparts, due in part to highly subsidized livestock feeds, and corn syrup (Drewnowski, 2004; Monsivais, 2010). Those needing to save money on their grocery bill therefore often have to select cheaper but less healthy options that are calorie-rich but nutrient-poor.

The Maryvale Community

Maryvale is a 37.6 square mile community in west Phoenix, the first master-planned community in Arizona following WII. While its western side has seen increasing development in recent years, the older neighborhoods to the center and east are experiencing urban decay. The poverty rate of 17% is high compared to some other regions of Phoenix, but is not considered a "poverty area" as defined by the U.S. government. There is a vibrant Latino community in the region, comprising 58% of the total population as of the 2000 Census. Nearly one-third of Maryvale's residents were born in another country (ASU, 2007).



Maryvale Village

Hospitals
Community Center
parks
Maryvale Village Boundary

This study sought to explore the food environment within three distinct regions of greater Maryvale. Specifically, the regions surrounding Golden Gate Community Center, Rehoboth Community Development Community Life Center, and the Amigos Center of Wesley Community Center.

Methods:

The project was carried out through a partnership between Greenzona, members of the Local Food Working Group (LFWG) based out of Arizona State University, and the Phoenix-based St. Luke's Health Initiatives (SLHI) via its Maryvale on the Move initiative. The project sought to involve the Maryvale and Canyon Corridor communities throughout the process, both in the selection of the research methods as well as in collecting the research data.

Phase 1: Research Method Selection

With a goal of gaining a deeper understanding of the availability, affordability, and accessibility of healthy food in the Maryvale and Canyon Corridor communities, various options for researching the site were considered. Developed and evaluated in a collaborative effort between several universities under a grant from the Robert Wood Johnson Foundation, the Nutrition Environment Measures Survey (NEMS) is a tool designed to assess the availability and affordability of healthy food options in a given community. This tool was recently adapted by ASU researchers to better assess healthy food options within Latino neighborhoods, making the instrument a good fit for the predominantly Latino Maryvale and Canyon Corridor communities This Latino NEMS survey instrument assesses food availability and affordability of healthy and less-healthy options in sixteen categories: milk, fruits, vegetables, ground beef, beefsteak, chicken, hot dogs, frozen dinners, baked goods, juice beverages, bread, tortillas, chips, cereal, cheese, and beans. After presenting the Latino NEMS survey instrument to the Maryvale and Canyon Corridor communities at a series of community meetings, it was determined that this would be a good tool to provide a snapshot of the current food environment in Maryvale and Canyon Corridor.

Phase 2: Study Boundaries & Store Database

The Maryvale community as a whole is a very large area that spans a number of smaller neighborhoods. To scale the project to a size that was financially and physically manageable, the Local Food Working Group (LFWG) team established three core study neighborhoods. Each study region was comprised of a 1.5-mile radius centered around one of the three community centers that are involved in the Maryvale on the Move project: Golden Gate Community

Center, Rehoboth Community Development Community Life Center, and the Amigos Center of Wesley Community Center.

Using the Maricopa County Food Establishment permit listings, a database of all retail food outlets in the greater Maryvale was compiled and mapped, and those falling within the study boundaries were identified. The study boundaries were also extended in places to include retail stores that fell just outside the original boundaries, but that would in reality be utilized by community members. Per the NEMS organizational system, each store was categorized as a grocery store, convenience store, carnicería, ethnic food store, or other (dollar store, pharmacy etc).

In May, the LFWG research team physically drove the streets of the neighborhoods to confirm that the stores listed in the database were still present and in current operation. At this time, additional food outlets were discovered in the area and added to the database. In total, the finalized database included 101 stores, with 24 in the Amigos Center neighborhood, 33 in the Golden Gate neighborhood, and 44 in the Rehoboth neighborhood. Within the study area there were 55 convenience stores, 14 carnicerías, 13 grocery stores, 10 dollar stores, 6 pharmacy-type stores, and 3 ethnic food stores.

Phase 3: Training and Data Collection

Typically, NEMS data collection is performed by university researchers that have been trained in the method. However, the Maryvale and Canyon Corridor NEMS project set a new precedent by drawing from local residents to perform the data collection – empowering the Maryvale and Canyon Corridor communities to perform future NEMS assessments in their area (or to market themselves to other regions) with minimal outside assistance. Because many Maryvale and Canyon Corridor residents identify Spanish as their first language, the project became the first in the history of the NEMS approach to translate the materials and perform all training and data collection in Spanish. This exciting step opens up a previously barred avenue for other Spanish-speaking communities to perform the NEMS assessment themselves.

NEMS Trainers from the Maryvale community preparing to teach a NEMS workshop

An intensive two-day NEMS workshop was held in late June to train bilingual community members as NEMS trainers. This training was performed in English by a certified NEMS trainer. At the completion of the workshop, the community members were certified as NEMS trainers themselves. Several weeks later, in early July, a second 2-day workshop was held with community members and the workshop was carried out in Spanish by the bilingual community trainers.

Data collection was performed by the raters and the trainers from the Maryvale and Canyon Corridor communities over a 4-week period from July 9th-Aug 6th, 2011. On average, the NEMS raters spent a total of 40 minutes rating each convenience store, 1 hour rating each carnicaría, and 2 hours and 40 minutes rating each grocery store.

Fieldwork Day! Community members rate a local store

A total of 79 surveys were completed out of the original 101. All 24 of the original 24 stores in the database were surveyed in the Amigos Center area, 25 of the original 33 were completed in the Golden Gate area, and 30 of the original 44 were completed in the Rehoboth area. There were several reasons that stores were unable to be surveyed. Some stores were found to be out of business on the survey date, other stores did not allow the NEMS raters to access the stores for surveying. Still other surveys could not be completed within the limited 4-week timeframe required by the NEMS study. Most of the stores that could not be surveyed were convenience stores (15), while some were carnicerías (4), a few were grocery stores (2), and one was an ethnic food store.

Phase 4: NEMS Scoring & Data Analysis

Once the NEMS data was collected, it was entered into a database by members of the Local Food Working Group at ASU. The NEMS scoring rubric was used to calculate the availability and affordability scores for each store. Produce quality could not be accurately assessed in this study due to lack of reported data.

Within the scoring rubric, the Availability score (ranging from 0 to +38) is calculated for each store based on the number of healthy options that are sold in the store. Zero to three points are awarded per food category (e.g. milk, fruits, vegetables, chicken, bread, etc) depending on the presence and variety of healthy options available.

Likewise, the Affordability score (from -12 to +21) is calculated based on a cost comparison between healthy food items and their unhealthy equivalent. For example, if the lowest-fat milk in a store was sold at a lower price, 2 points were awarded. If the price was the same for the low-fat and regular milk, 1 point was awarded. If the low-fat milk was more expensive, a negative score (-1) was given.

The Quality score is assigned based on the percentage of fruits or vegetables that the raters considered to be of acceptable quality. One point is assigned if there are less than 8 items in stock which are 75-100% acceptable. Two points are given for 8 to 12 items, and three points if more than 12 items which are 75-100% acceptable.

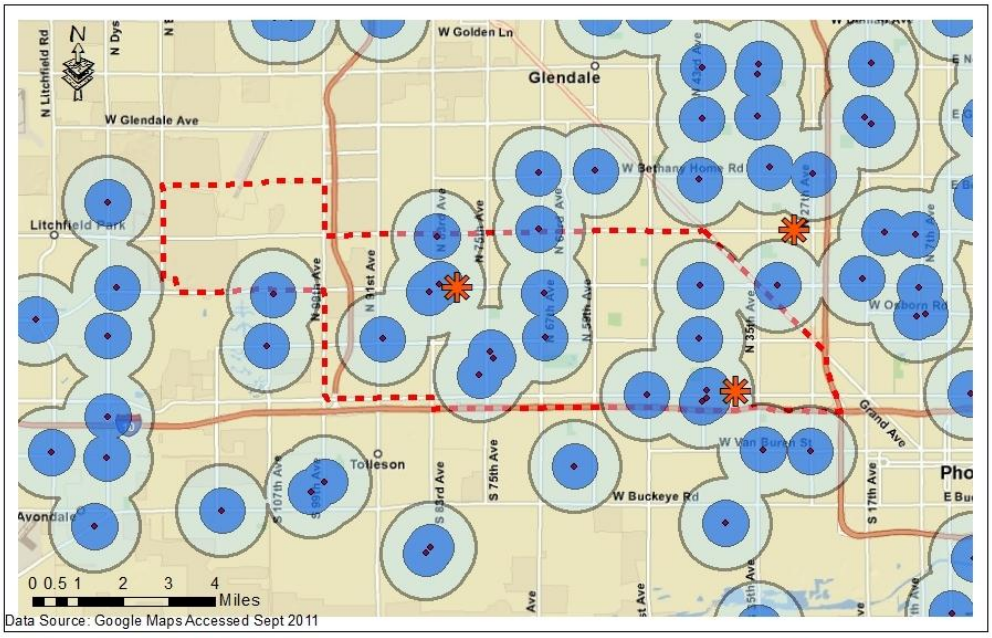
Other descriptive statistics were calculated using the database as well, to give a more detailed illustration of the availability and affordability of specific types of food within the stores.

Findings

The findings reveal that there is much work to be done to establish a healthy food environment in the Maryvale and Canyon Corridor communities While there is a substantial base of food outlets (grocery stores, convenience stores, carnicerías, and other food stores) in the area, these stores typically offer a very limited amount of healthy options, and the healthy options that do exist are often less affordable than their unhealthy counterparts.

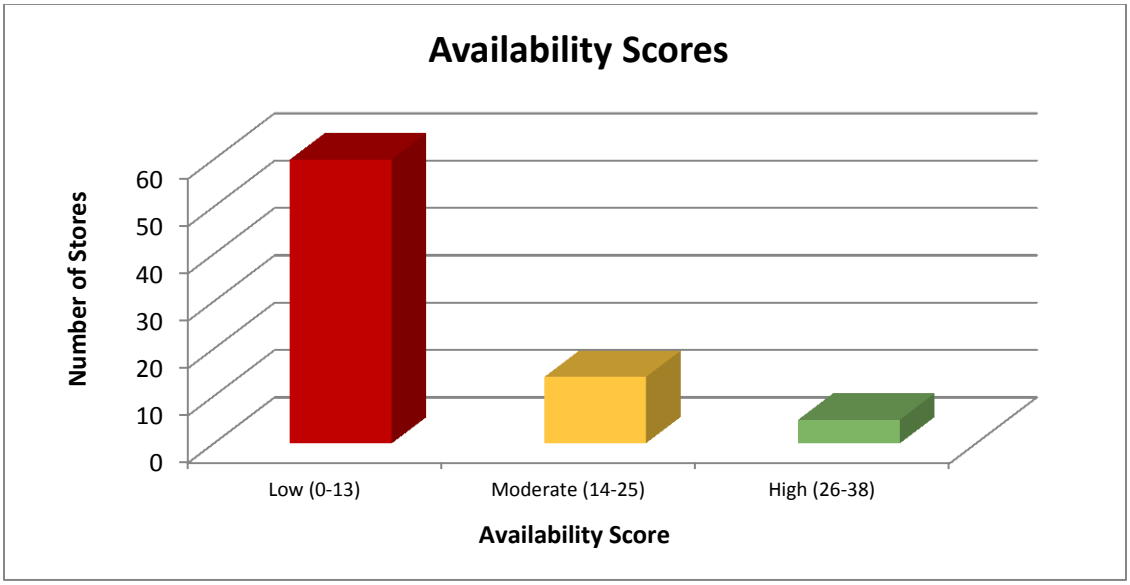
Overall Accessibility of Food Stores:

In total, 79 stores were surveyed in the study area. Most (44) of these were convenience stores. Only 11 of the stores in the area could be considered grocery stores. Additionally, there were 10 carnicerías, 2 ethnic food stores, and 12 stores that fell in the 'other' category (primarily pharmacy and/or dollar stores). Many areas of Maryvale and Canyon Corridor have adequate access to a full service grocery store. However, as the Maryvale NEMS survey will reveal, having physical access to a grocery store does not necessarily mean that healthy food items are available or affordable within the store itself.

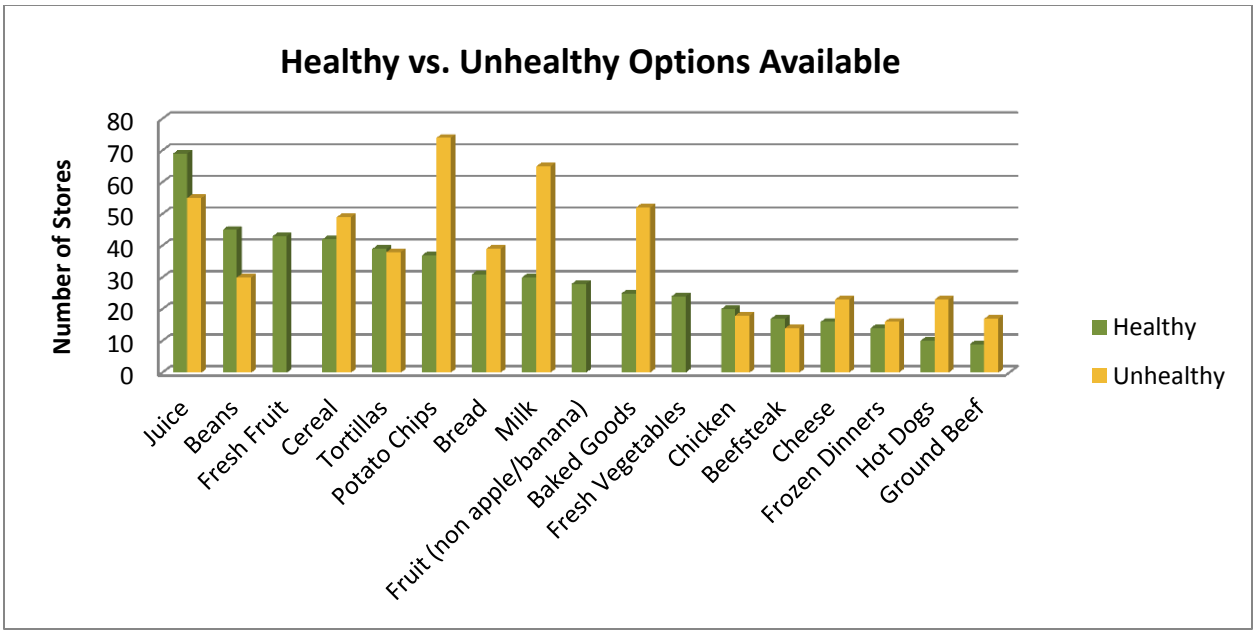


Overall Availability: Low

In many stores few healthy options were available for purchase. The stores surveyed were rated on a healthy food availability scale that ranged from 0 to 38. A score between zero and 13 is considered low availability, a score of 14 to 25 is considered moderate availability, and a score of 26 or above is considered high availability. On average, stores in the Maryvale and Canyon Corridor areas scored 9 out of a possible 38 points in terms of availability of healthy food options, and therefore were classified as having *low availability*. Scores ranged from a low of zero to a high of 30. Most (60 of the 74) stores were found to be rated as low availability, while 14 had moderate availability and just five had what could be considered high availability of healthy food options. This illustrates the substantial need for improved availability of healthy food options in the Maryvale and Canyon Corridor areas.



Certain healthy items, however, were available in many stores. Eighty-seven percent of stores carried a 100% juice beverage, 57% sold low-fat and/or whole beans, 54% sold fresh fruit, and 53% sold low sugar cereal. However, in most instances healthy items were available in less than half the stores. Only 49% of the stores carried corn or whole wheat tortillas, only 39% sold whole wheat bread, just 38% sold low-fat or non-fat milk, and just 35% of the stores carried any type of fresh fruit other than apples and bananas. Less than one-third of the stores sold fresh vegetables, any sort of healthy option for baked goods, chicken, beefsteak, cheese, frozen dinners, hot dogs or ground beef.

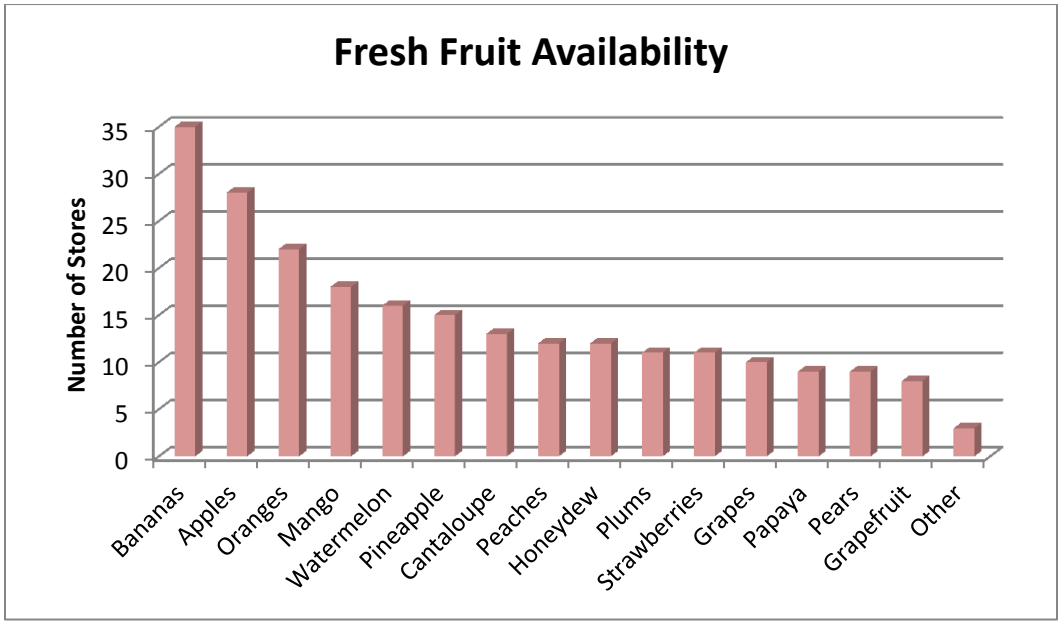


In reality, many stores in the Maryvale region seemed to carry very little food at all – healthy or otherwise. The most commonly found items included potato chips, whole milk, juice, and baked goods – not exactly the makings of a healthy diet. Several common staple items such as fresh vegetables, and low-fat chicken, beefsteak, ground beef and cheese were found in less than one-third of the stores.

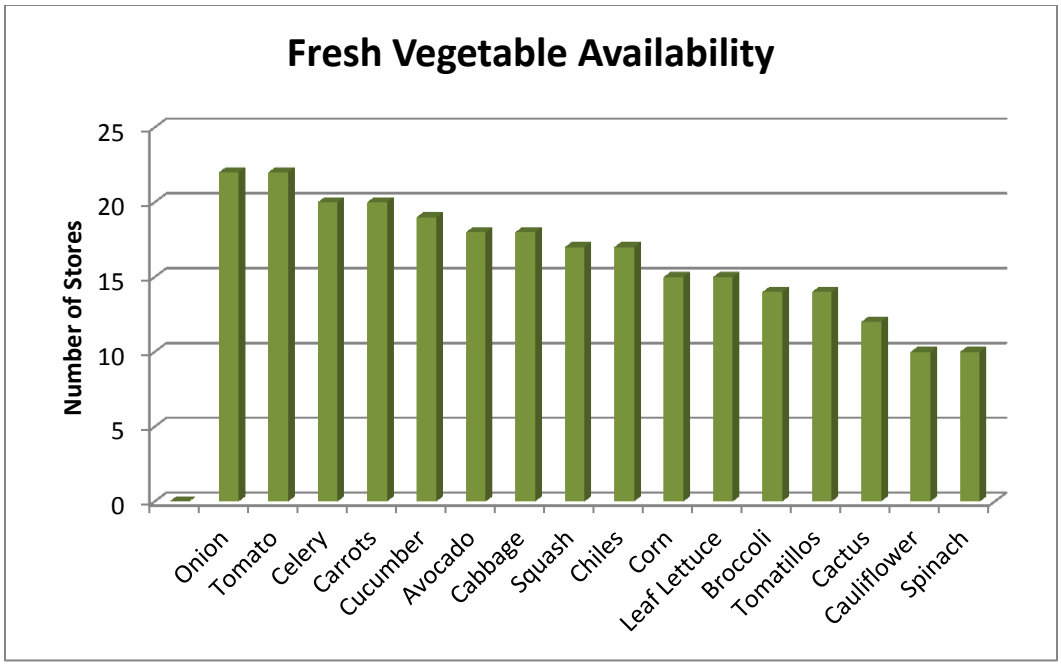
Stores Selling a Healthy Option

Item	# of stores	% of stores
Juice	69	87
Beans	45	57
Fresh Fruit	43	54
Cereal	42	53
Tortillas	39	49
Potato Chips	37	47
Bread	31	39
Milk	30	38
Fresh Fruit (non apple/banana)	28	35
Baked Goods	25	32
Fresh Vegetables	24	30
Chicken	20	25
Beefsteak	17	22
Cheese	16	20
Frozen Dinners	14	18
Hot Dogs	10	13
Ground Beef	9	11

Fresh fruit and vegetable consumption is often considered one of the key measures of a healthy diet. However, if a variety of fresh fruits and vegetables are unavailable in a community, it can be difficult for residents to meet the minimum daily requirement. While 43 (or 54%) of the stores in Maryvale and Canyon Corridor sold *some* kind of fresh fruit, the types of fruit offered were somewhat limited, depending on the store. On average, three types of fruit were available in each store. Bananas were the most commonly sold fruit, followed by apples and oranges, while other items such as grapes, papaya, pears, and grapefruit were only sold in a handful of stores.

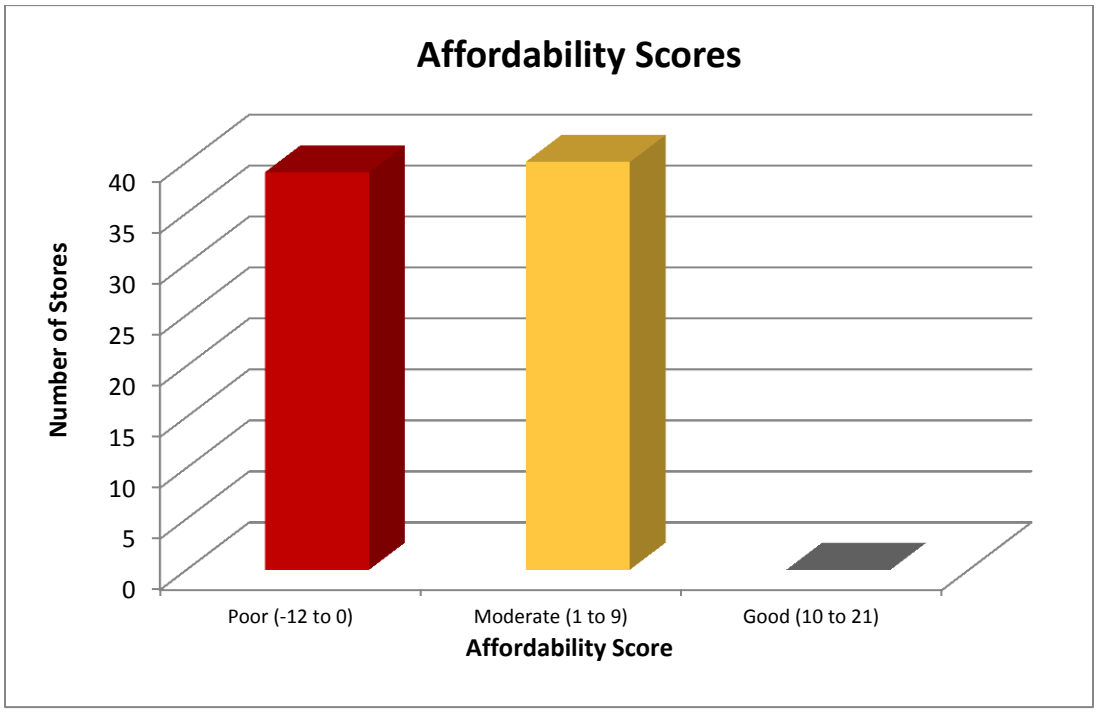


Only 24 stores (30% of the total number of stores) sold *any* sort of fresh vegetables. On average, three types of fresh vegetables were available per store. Onions, tomatoes, celery and carrots were the most commonly found items, while far fewer stores sold items such as cauliflower, spinach or jicama. Overall, the availability and variety of fresh produce available in the stores surveyed was fairly limited, indicating a key area for improvement in the community.

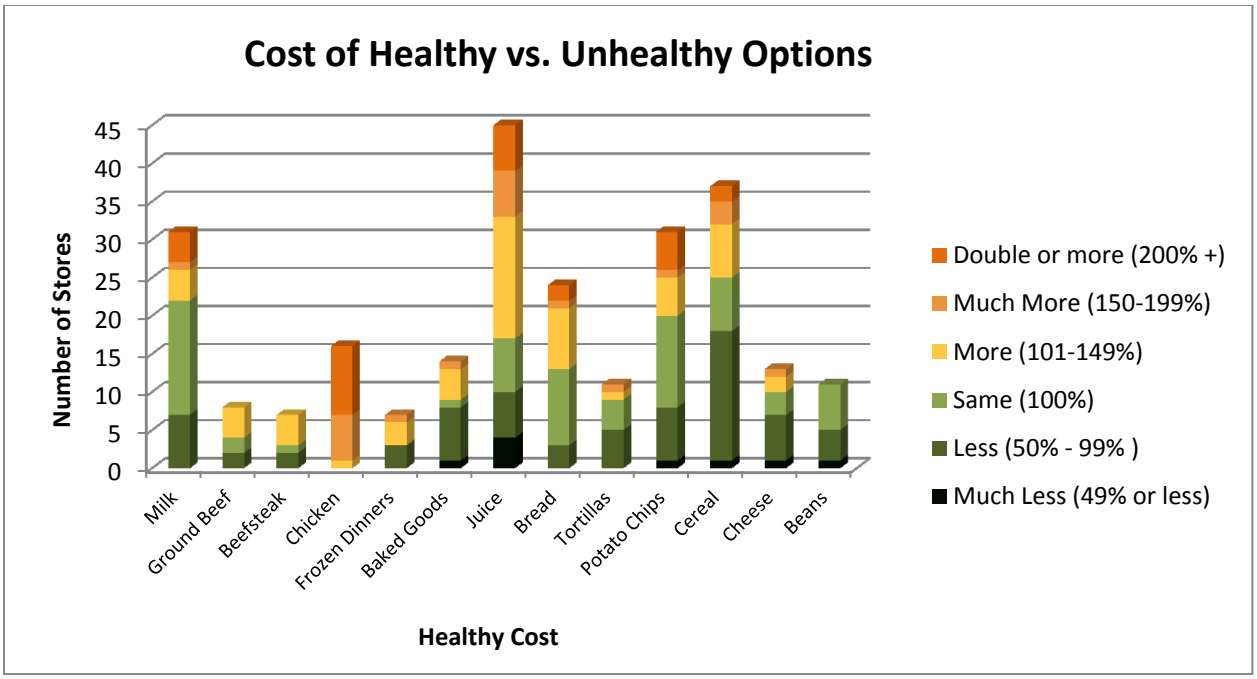

Fresh Vegetable Availability
Number of Stores
25
20
15
10
5
0
Onion
Tomato
Celery
Carrots
Cucumber
Avocado
Cabbage
Squash
Chiles
Corn
Leaf Lettuce
Broccoli
Tomatillos
Cactus
Cauliflower
Spinach

Overall Affordability: Poor

The affordability of healthy food options in Maryvale and Canyon Corridor was very low – meaning healthy food was nearly always more expensive than conventional, less healthy food. A score between -12 and 0 is considered poor affordability, a score of 1 to 9 is considered moderately affordable, and a score of 10 or above is considered good affordability. On average, stores scored only 1 out of a possible 21 points for the affordability of healthy food options. Scores ranged from a low of -5 to a high of only 9 points. Most (40) stores had *moderate affordability*, but nearly as many (39) received a poor affordability score. Notably *none* of the stores in the study were found to have what is considered a 'good' affordability score.



Healthy options were often more expensive than their unhealthy counterparts. In most stores for which price comparison data was available, the healthy option was more expensive than the less healthy one for: beefsteak, chicken, frozen dinners, and juice. In some stores, these healthy items cost more than double than their conventional counterparts. However, there were some positive findings as well. Most stores sold healthier milk, baked goods, bread, tortillas, potato chips, cereal and cheese options at the same or lower price than the unhealthy options, and healthy beans were *always* sold at the same price or a cheaper price than their less healthy versions.

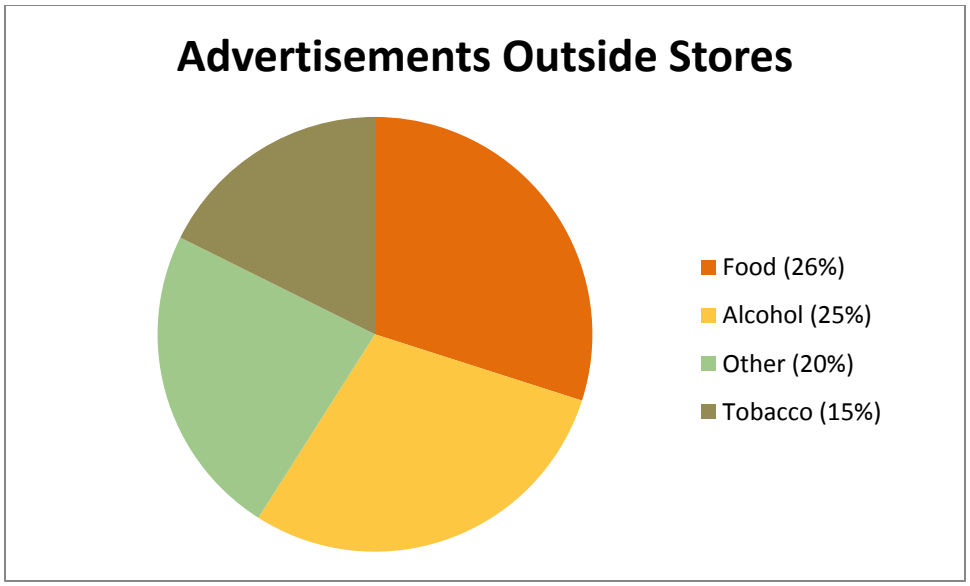


Overall Produce Quality:

In the 40 stores for which produce quality data was recorded, quality scores ranged from 0 to 6, and the average score was 2 out of a possible 6. However, it should be noted that the produce score is calculated based on the number of produce items that were considered to be of acceptable quality. Therefore, stores that had high quality produce, but only a limited variety of items (for example, only selling apples and bananas) would receive a low score, even though their produce was of high quality. Because many of the stores in the Maryvale and Canyon Corridor communities are not full-service grocery stores, but rather convenience stores with limited produce, this may have artificially lowered the score. It is worth considering a revision of this NEMS measure to account for areas that have stores with few produce items so that the quality score is not skewed.

Advertisements:

In addition to the measures specifically related to food, raters also collected information regarding the advertisements present outside the stores. On average, there were 10 ads per store. Overall, most (26%) of the advertisements were, in fact, for food items being sold in the stores, however, this was closely followed by ads for alcohol (25% of the exterior ads), ads for other goods and services (20%) and advertisements for tobacco (15%).



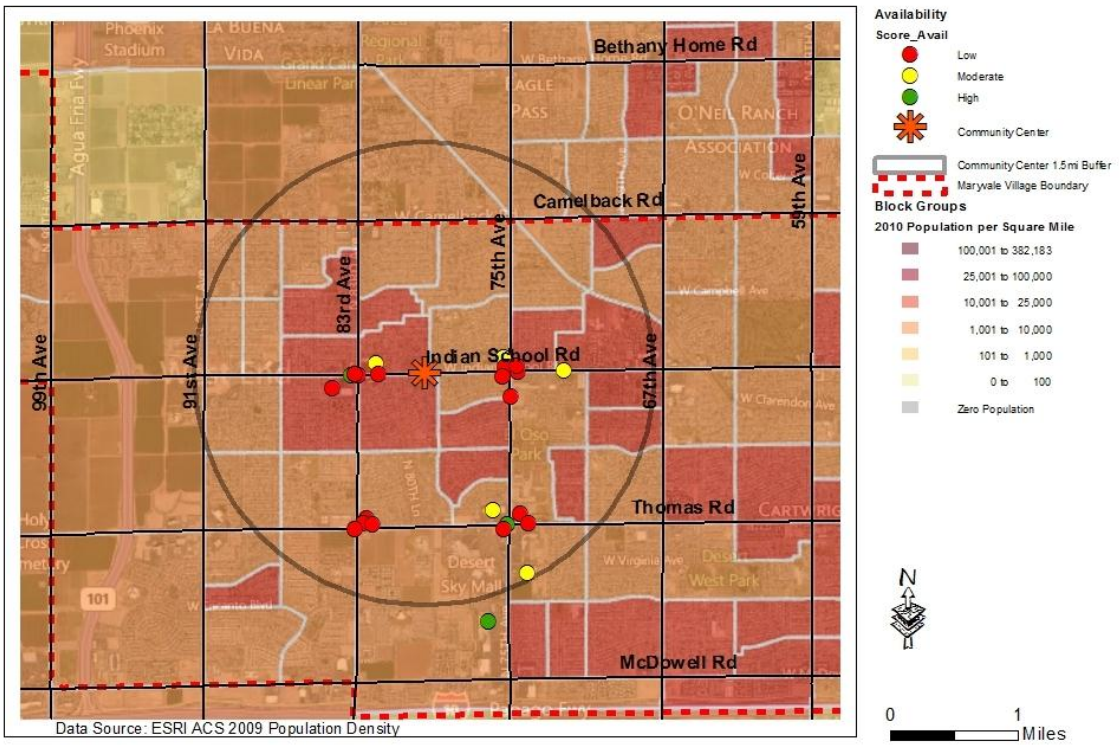
Neighborhood Profiles

Much of the poor availability and affordability of healthy items can be attributed to the high number of convenience stores and the low number of full service grocery stores, carnicerías and ethnic food stores in the region. However, a few stores scored moderately high on the rating scale in terms of availability and affordability. So where are these stores located? Who can access them? What does access to affordable, healthy food look like at the neighborhood scale? We now take a closer look at each of the three study neighborhoods.

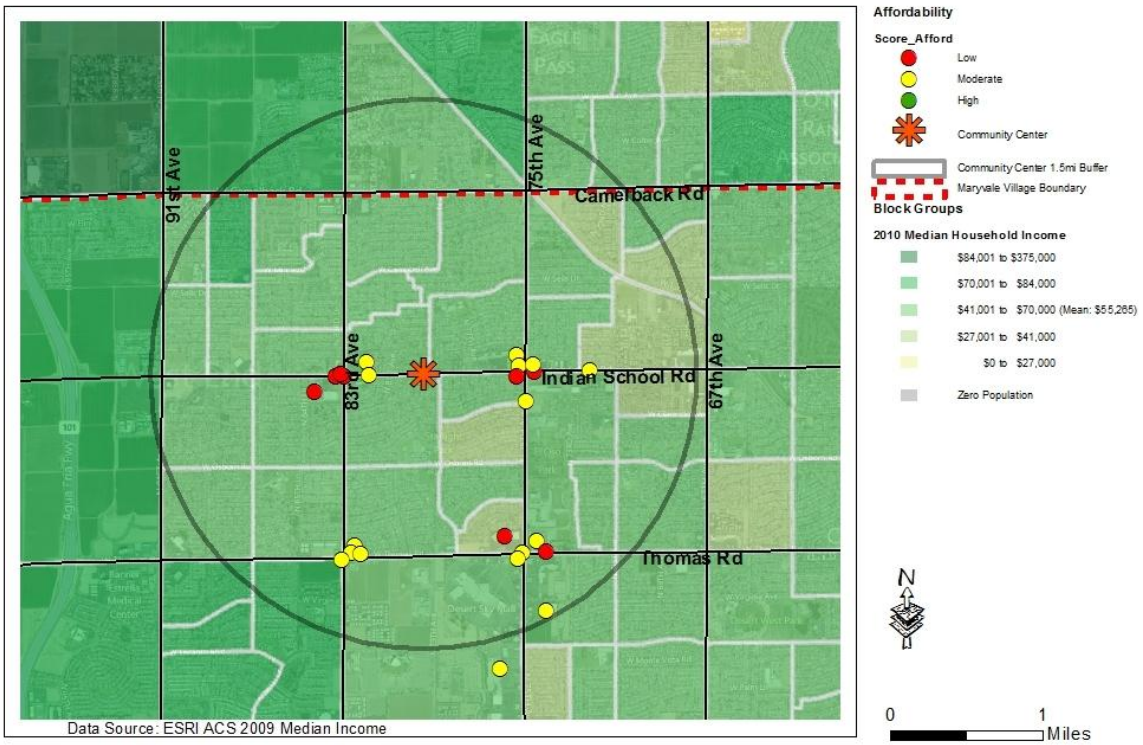
Amigos Center Neighborhood

Food outlets surveyed in the Amigos Center area consisted of 5 grocery stores, 10 convenience stores, 2 carnicerías and 7 'other' stores. Overall, the stores in the Amigos Center were clustered around four key intersections: Indian School & 75th, Indian School and 83rd, Thomas & 75th and Thomas & 83rd. This leaves a large area of the region out of reasonable walking distance (0.5 miles) of any sort of food outlet.

Few of the stores in the Amigos Center region scored well in terms of availability or affordability of healthy food options. On average, stores in the region scored 12 out of 38 in terms of availability, 2 out of 21 in terms of affordability, and 3 out 6 for produce quality. Three grocery stores were found to have high availability of healthy food, but while two (located near 75th Ave & Thomas, and 75th & Encanto) received a moderate affordability score – the other was found to have poor affordability.



Amigos Community Center: Healthy Food Availability and Population Density

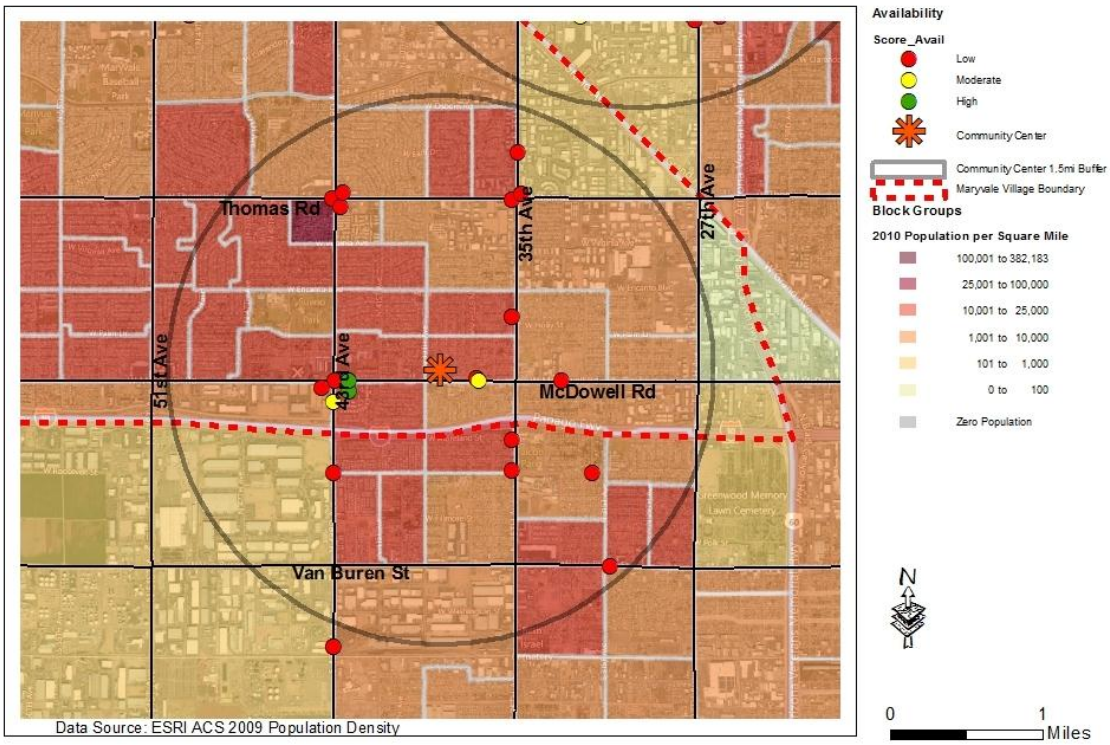


Amigos Community Center:
Healthy Food Affordability and Median Income

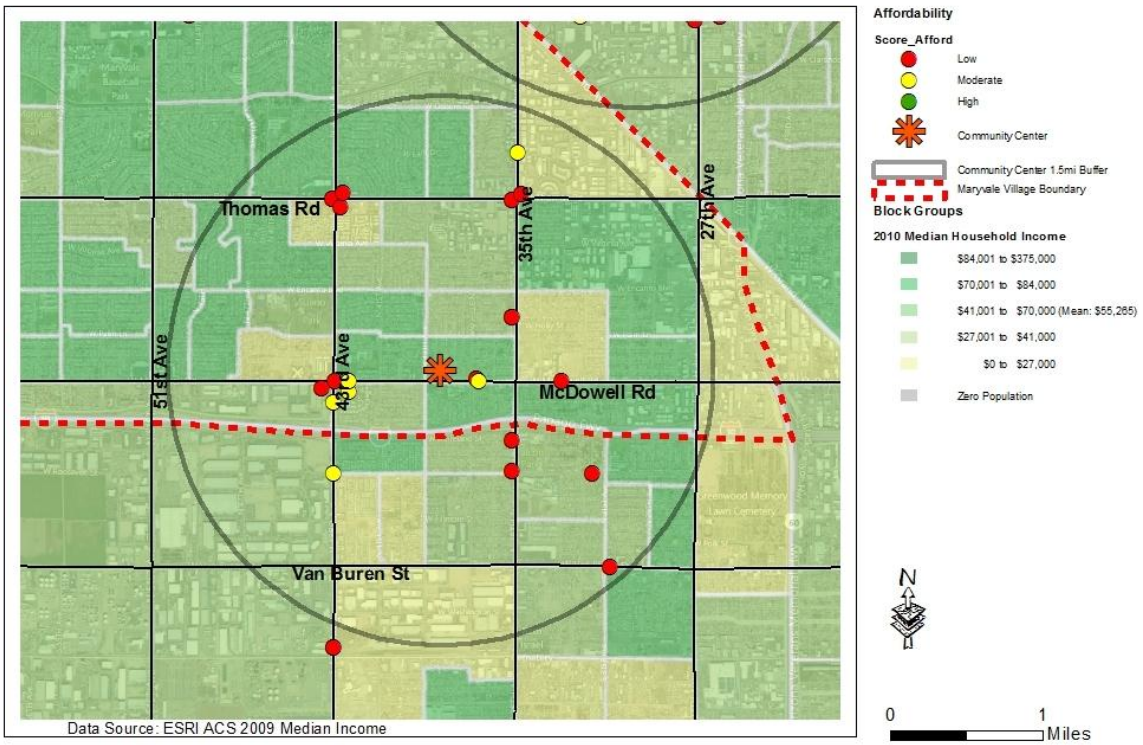
Golden Gate Neighborhood

Food outlets surveyed in the region surrounding the Golden Gate Community Center included 17 convenience stores, two carnicerías, three pharmacy or dollar type stores, and three grocery stores. The stores were primarily located along either 35th or 43rd Avenue, with a few scattered throughout. This distribution of stores provides more ready access to food than found in the Amigos Center neighborhood, but gaps still remain (particularly near 27th Avenue & Thomas, as well as in the southwestern portions of the study area).

The food stores in the Golden Gate community tended to score the poorest of all those in the study. On average, stores in the region scored 8 out of 38 in terms of availability, 1 out of 21 in terms of affordability, and 1 out of 6 for quality. Two stores were identified as having high availability of healthy food options, and both these were considered to have moderately affordable prices for these healthy options. However, both of these stores were located at the same intersection (43rd & McDowell), thereby leaving many residents well outside of walking distance of a store with many affordable, healthy options.



Golden Gate Community Center:
Healthy Food Availability and Population Density

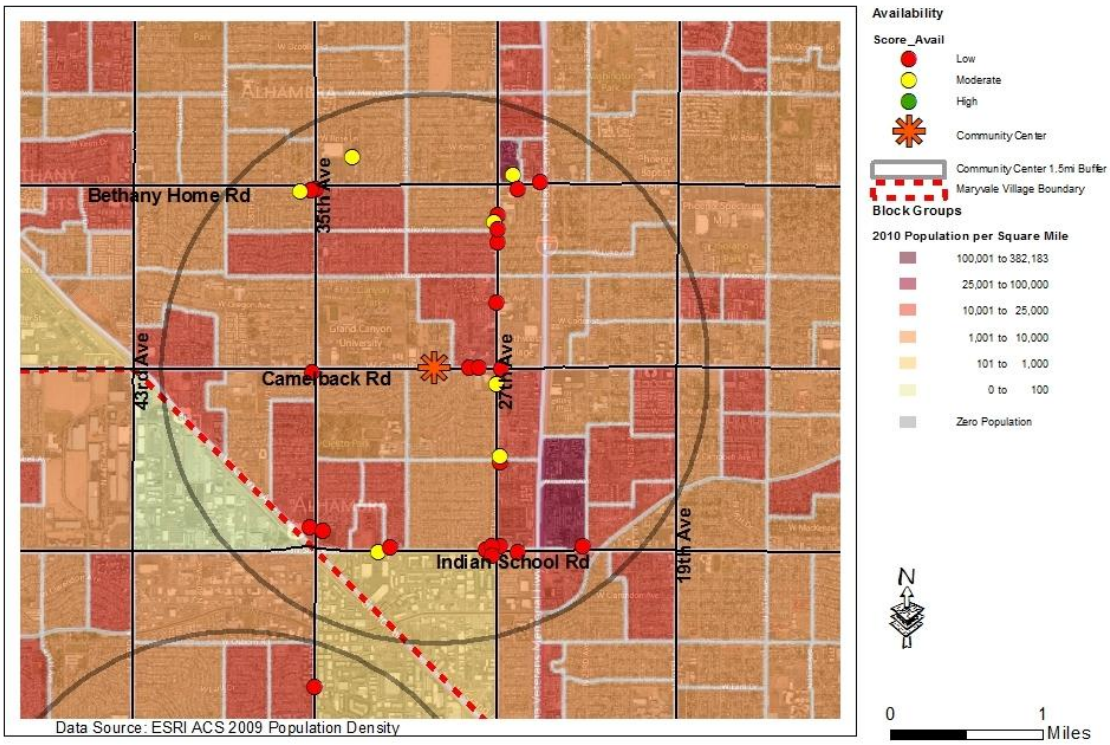


Golden Gate Community Center:
Healthy Food Affordability and Median Income

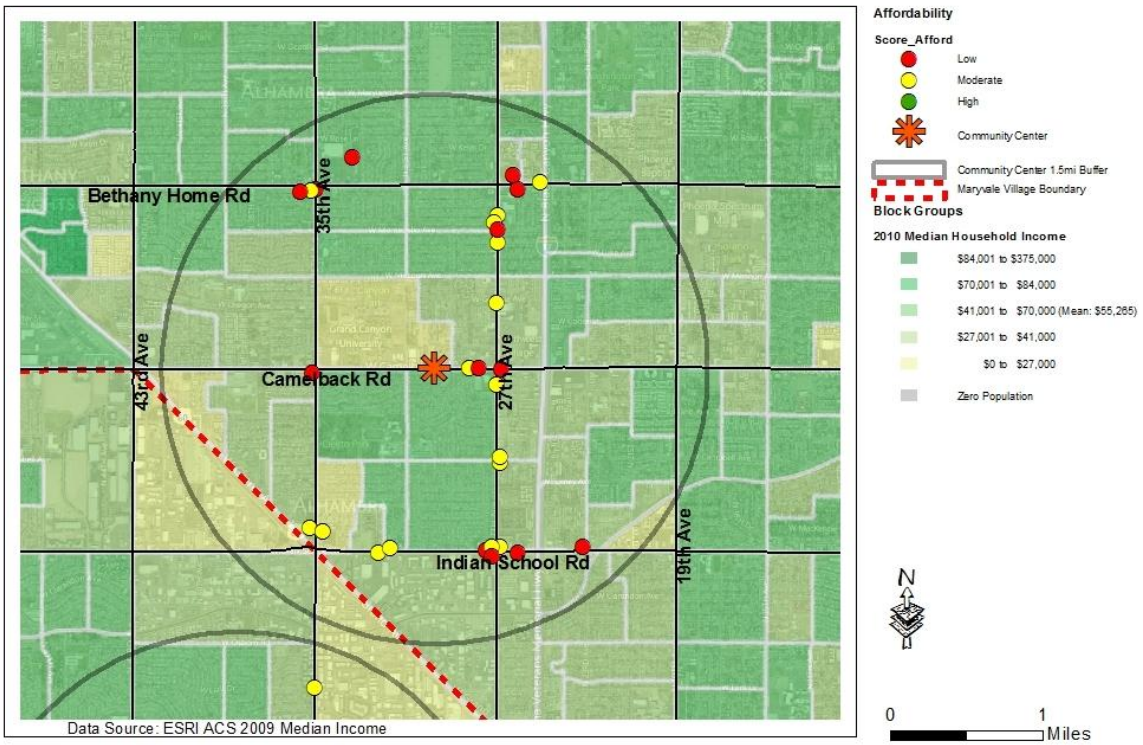
Rehoboth Neighborhood

Food outlets surveyed in the Rehoboth region included three grocery stores, 17 convenience stores, 6 carnicerías, 2 ethnic food stores, and 2 'other' stores. Most of the stores were located along 27th Avenue, with a cluster near 35th and Bethany Home Road as well, leaving the far western region of the study area with low walkable access to food outlets.

In general, the stores in the Rehoboth community scored lower than Amigos Center but slightly higher than Golden Gate in terms of availability and affordability of healthy food – with a 9 out of 38 availability score, a 1 out of 21 affordability score, and a 2 out of 6 quality score. However, in contrast to the other two neighborhoods, *none* of the stores in this region could be classified as having a 'high' availability of healthy food options. Of the stores that could be rated as having a moderate availability of healthy food options, four also had moderately affordable prices. Three of these were located along 27th Avenue, and one near 32nd and Indian School, leaving much of the western half of Rehoboth without walkable access to a store with a reasonable availability of healthy, affordable food.



Rehoboth Community Center:
Healthy Food Availability and Population Density



Rehoboth Community Center:
Healthy Food Affordability and Median Income

Summary of Key Issues across Maryvale and Canyon Corridor

- Low Availability: Only four stores had high availability of healthy options.
    - *Rare foods:* Less than 1/3 of the stores carried fresh vegetables, or other healthy staples such as low-fat chicken, cheese or beef.
    - *Limited variety:* Stores tended to sell apples and bananas but few other fruits.
- Poor Affordability: No stores had high affordability.
    - *Cost comparison*: In particular, healthy juice, chicken and bread options were often much more expensive than their less healthy counterparts.
- Neighborhood-Specific Problems:
    - Amigos Center – Low Affordability
    - Golden Gate – Low Affordability, locally concentrated Availability
    - Rehoboth – Low Availability

Recommendations

The NEMS survey found that in general healthy food options are neither widely available nor affordable for the Maryvale and Canyon Corridor communities. There are many options for Maryvale to pursue as it seeks to improve its food environment in order to promote healthy, active living in the community. The best solutions will be those designed and implemented by the community itself. To help inspire visions of what these solutions might look like, we present the following possibilities:

Grocery Store Improvements

The 13 existing grocery stores in the Maryvale region (11 of which were surveyed) could be a prime place to start increasing the availability and affordability of healthy options within the Maryvale and Canyon Corridor communities. While some communities suffer from lack of grocery stores this does not seem to be the problem plaguing most of Maryvale and Canyon Corridor. However, several healthy items are either not present, are too hard to find, or are simply less affordable in several Maryvale and Canyon Corridor grocery stores. Infrequently available and/or difficult to find foods included: cantaloupes, pears, grapefruit, corn and Jicama, low-fat ground beef, fat-free hot dogs, reduced-fat frozen dinners, and bulk dry beans. In terms of affordability, white meat chicken was always more expensive than dark meat, whole wheat bread was almost always more expensive than white bread, and 100% juice was often more expensive than juice-type drinks that were less than 15% juice.

What may be needed, therefore, is a coordinated effort to propose increased (a) availability of healthy options, (b) better signage and information directing customers to healthy options, and (c) competitive pricing schemes for healthier products. Lower prices for healthy options could perhaps be offset by raising prices for less healthy items. Store managers may respond well to a collective effort based out of one of the Maryvale and Canyon Corridor community centers as they will be aware that the community centers represent a large population in the area.

Convenience Store Transformations:

With approximately 60 stores in the area (44 of which were surveyed), Maryvale and Canyon Corridor have no shortage of convenience stores. In general, these types of stores do not stock a wide variety of healthy options. Less than half the convenience stores carried any sort of fresh fruit, and this was nearly always a banana or perhaps an apple as well. Just three convenience stores carried any fresh vegetables. This presents an interesting opportunity. Convenience stores are often wary of adding healthy items to their stock, because they are not confident that these items will sell. Coordinated efforts by community members, including pledges to frequent the store when the healthy items arrive have been proven to work well in other areas,

such as in NYC's Adopt-A-Bodega program (NYC, 2010). The key here is to keep in mind that convenience stores, like other stores, will stock what people will buy. "Adopting" a few key stores in areas that lack other food outlets could be an ideal place to start. Several intersections stand out as potential locations, due to the lack of grocery stores or carnicerías in the area. Specifically, ideal candidates might be convenience stores located at: 75th and Indian School, 35th and Indian School, 27th and Indian School, 83rd and Thomas, and 43rd and Thomas.

Farmers' Markets:

Starting up a farmers' market in the Maryvale region could be an interesting and viable option, given that there are no farmers' markets currently operating in the area. There may be several ways to approach this. One unique design that is currently being tested in Lane County, Oregon, is to host a mini farmers' market in the parking lot of a convenience store (Jaworski, 2011). This can be an attractive option for the host store, as it will draw customers to their business, while providing a product that does not compete with its typical offerings: fresh produce. Partnership with an existing, highly successful market such as the Downtown Phoenix Public Market or Old Town Scottsdale Market might be a good approach as these markets will already have a number of farmer contacts, and could be looking to expand to a second location.

Another option might be to pursue a more mobile version of a farmers' market: a produce and/or prepared food market-on-wheels that can set up in different areas of the community on different days of the week or month. This can take on a variety of forms – from a truck stocked with items from a single farmer, such as FarmMobile in Atlanta, GA (Riverview, 2011), to San Joaquin's Mobile Farmers' Market van that provides not only produce but also a variety of educational programs and cooking demos (PPH, 2011).

Community Gardens

Maryvale and Canyon Corridor residents have already expressed extensive interest in community gardens. While this would not solve issues regarding lack of healthy options in terms of meats, grains, or prepared foods, development of community gardens in the area could make significant impact in providing a constant source of fresh produce for the community. Furthermore, community gardens (depending on how they are managed) can provide *organic* produce at a fraction of the cost that one might find in stores. As Maryvale and Canyon Corridor residents have expressed a keen interest in seeing more organic produce in the community, this could be an important contribution. Several community gardens already exist in the area, and community members recommend additional promotion of these gardens and their locations as well as classes to help residents feel more confident about growing in the gardens and/or in their own homes.

Education & Advertising

In some regions of Maryvale, the availability and affordability of healthy options may be adequate to provide the means for a healthy diet. However, consumers may not be aware which options are healthy and which are unhealthy. Here, classes, programs, or information booklets regarding what to look for when reading nutrition labels may be beneficial.

Furthermore, within the stores themselves, placement of healthy food options and the signage and advertising used to attract attention to healthy food may be inadequate. In short, customers may simply not realize that the healthy option is there because it is not well marked. The Adopt-A-Bodega program in New York City utilizes special signs in the aisles of the stores reminding customers what to look for (NYC, 2010).

Conclusion

Like many other communities in the U.S. that have performed NEMS assessments, the Maryvale and Canyon Corridor communities have limited access to healthy, affordable food options within its stores. However, there is thankfully a substantial base of grocery stores and carnicerías to work from. While in some cities, solutions may require going through the difficult process of attracting a new supermarket to the region, this does not seem to be necessary in the case of Maryvale and Canyon Corridor. Rather, working with existing stores to expand offerings, developing the community gardens and exploring the possibility of a permanent or mobile farmers' market, in addition to educational efforts may provide the best solution for Maryvale and Canyon Corridor. In reality, the best approach will involve a variety of efforts – there is no one single solution, but rather many small projects that can begin to take shape and become part of the final, broader transformation.

Performing follow-up NEMS assessments every few years would help keep the findings relevant and allow progress to be tracked over time. Members of the Maryvale and Canyon Corridor communities have now been trained not only to perform the surveys themselves, but also to train additional community members in the method as well. Preliminary feedback indicates that in subsequent assessments, community members are particularly interested in examining not only the conventional items currently present on the Latino NEMS survey, but also specifically looking at the availability and affordability of *organic* products in their region. Additionally, to complement the store-based food environment studies such as NEMS, other studies may want to explore the ways in which community members utilize their food environment: shopping and eating habits, as well as community nutrition and health. These sorts of research efforts may help reveal additional ways to increase the potential for healthy, active lifestyles in Maryvale and Canyon Corridor.

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Photos from the NEMS Workshop

NEMS Trainers from the Maryvale and Canyon Corridor communities preparing to teach a NEMS workshop

Fieldwork Day! Community Members rate a local store.

Selecting stores to survey

Maryvale and Canyon Corridor community NEMS raters - Reviewing survey materials following the NEMS workshop

Summary Statistics Tables

Availability Statistics Table			
	Number of Stores	Percent of Stores w/ Any Option*	Percent of Total Stores (n=79)
High Availability	5	-	6
Moderate Availability	14	-	17
Low Availability	60	-	80
Milk – Healthy Option (nonfat or 1%)	30	44	38
Milk – Any	68	-	86
Fruit – Fresh	43	90	54
Fruit - Any	48	-	61
Vegetables - Fresh	24	83	30
Vegetables - Any	29	-	37
Ground Beef – Healthy Option (less than 10% fat)	9	53	11
Ground Beef – Any	17	-	22
Beefsteak – Healthy Option	17	55	22
Beefsteak - Any	31	-	39
Chicken – Healthy Option (white meat)	20	53	25
Chicken - Any	38	-	48
Hot Dogs – Healthy Option (less than 10% fat)	10	40	13
Hot Dogs - Any	25	-	32
Frozen Dinners – Healthy Option (less than 10% fat)	14	67	18
Frozen Dinners - Any	21	-	27
Baked Goods – Healthy Option (less than 5g fat per serving)	25	44	32
Baked Goods - Any	57	-	72
Juice – Healthiest Option (100% juice)	69	96	87
Juice – Healthy Option (40%+ juice)	72	99	91
Juice - Any	73	-	92
Bread – Healthy Option (whole wheat)	31	65	39
Bread – Any	48	-	61
Tortillas – Healthy Option (Corn Tortilla)	38	90	49
Tortillas – Healthy Option (Whole Wheat)	13	31	16
Tortillas - Any	42	-	53
Potato Chips – Healthy Option (baked)	37	50	47
Potato Chips - Any	74	-	94
Cereal – Healthy Option (less than 7g sugar)	42	81	53
Cereal - Any	52	-	66
Cheese – Healthy Option (less than 5 g saturated fat, less than 7 g total fat)	16	70	20
Cheese - Any	23	-	29
Beans – Healthy Option (low-fat refried beans or whole beans)	45	82	57
Beans - Any	55	-	70
*Calculated using n=the number of stores with *either* a regular or healthy option in that food category.			

Affordability Statistics Table

	Number of Stores	Percent of Stores
Good Affordability	0	0
Moderate Affordability	40	51
Low Affordability	39	49

	Average Price of Healthy Option	Average Price of Regular Option	Healthy is same or less cost (# of stores)	Healthy is same or less cost (% of stores)*	Healthy is more expensive (# of stores)	Healthy is more expensive (% of stores)*
Milk	$3.33/gal	$3.38/gal	22	71	9	29
Ground Beef	$3.33/lb	$2.94/lb	4	50	4	50
Beefsteak	$4.20/lb	$3.92/lb	3	43	4	57
Chicken	$2.49/lb	$1.24/lb	0	0	16	100
Frozen Dinners	$0.28/oz	$0.27/oz	3	43	4	57
Baked Goods	$0.40/serving	$0.65/serving	9	64	5	36
Juice	$0.10/oz	$0.09/oz	17	38	28	62
Bread	$0.17/oz	$0.12/oz	13	54	11	46
Tortillas	$0.25/tortilla	$0.24/tortilla	9	82	2	18
Potato Chips	$0.54/oz	$0.51/oz	20	65	11	35
Cereal	$0.35/oz	$0.39/oz	25	68	12	32
Cheese	$0.33/oz	$0.38/oz	25	68	3	23
Beans	$0.09/oz	$0.11/oz	11	100	0	0

*Calculated using n=the number of stores for which price comparison data was collected for that food category.