Analysis of Food Preferences for Policy:

A Case Study of the Latino Community in Somerville

An Honors Thesis for the Department of International Relations

Emily Caplan

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Problem Statement:

Extensive research has shown that obesity rates are progressively rising in the United States. Current literature provides information on some of the causes of the obesity epidemic and suggestions for successful policies to prevent this issue from continuing. It has been shown that shopping preferences are linked to obesity, and that healthier food choices are negatively correlated with weight gain. But this research lacks a culturally-specific analysis of what drives food preferences. The present study aims to provide the information to fill this gap in knowledge and to determine what drives food preferences in one Latino community in New England. More specifically, I want to determine whether buying preferences are molded more by culture of origin or by U.S. culture. I shall do so by comparing the results from the Nutrient Environment Measure Survey for Stores (NEMS-S) survey created for use in the United States to a NEMS-S survey created for stores in Quetzaltenango, Guatemala, and through qualitative interviews of consumers. Knowing what drives food preferences is important in the future formulation of policy. Based on my results, I shall make culturally-specific policy suggestions to improve the availability of healthy food options in these stores.

Literature Review:

NEMS Background

The obesity rate is on the rise in the United States (Sharpe, 2013). While the causes of the obesity epidemic in the United States are complex, the lack of healthy food options in grocery stores is considered to be a contributing factor (Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). If healthy foods are not offered in sufficient quantity, people may buy less healthy alternatives; a diet consisting of energy-dense items leads to weight gain. In response to this problem, the Nutrition Environment Measures Survey (NEMS) was created as a quantitative method to determine the availability of healthy food options in both grocery stores (NEMS-S) and restaurants (NEMS-R) (Glanz, 2009). Since the development of NEMS in 2007, the surveys have been modified for use in a variety of food-environment related studies around the United States (Calloway, Khan, Maida, & Rakel, 2012; Gloria & Steinhardt, 2010; Krukowski, West, Harvey-Berino, & Prewitt, 2010).

The Nutrition Environment Measures Survey for Stores (NEMS-S) was developed as a well-defined measurement tool to examine the availability of healthy options, price, and quality of foods in grocery and convenience stores (Glanz, Sallis, Saelens, & Frank, 1997). Survey food items were chosen based on the types of products that contribute the most fat and calories to the American diet (Nielsen & Popkin, 2003), and those that are recommended for healthy eating based on publications of federal agencies, health professional organizations and researchers (Glanz et al., 1997; Guenther, Reedy, & Krebs-Smith, 2008). Eleven indicator food categories were selected based on national food sales and/or food-consumption data (Putnam, Allshouse, & Kantor, 2002): fruit,

vegetables, milk, ground beef, hot dogs, frozen dinners, baked goods, beverages (soda/juice), whole grain bread, baked chips, and cereal (Glanz et al., 1997). For each food category on the survey, healthy and unhealthy sections were included (e.g. skim milk vs. whole milk) to determine availability of healthier options. The quality indicator for produce was an acceptable/unacceptable rating based on the appearance of the majority of fruits and vegetables displayed in the bins. Finally, the survey examined cost for both healthy and unhealthy items based on non-sale prices (Glanz et al., 1997).

A case study of the utilization of NEMS-S to study a specific nutrition environment was published in the *American Journal of Health Education* on the Latino Community in Milwaukee, Wisconsin (Calloway, Khan, Maida, & Rakel, 2012). In this particular study, researchers used both the NEMS-S and the Block food-frequency screeners to determine the food intake of consumers in the area and the consumer nutrition environment of stores in the community. The results of that study found that all surveyed stores sold healthy food options, but that price differed significantly between healthy and unhealthy options for a number of items (Calloway et al., 2012). Therefore, the authors suggested that price may function as a limiting factor for choosing healthy food options in lower-income Latino communities (Calloway et al., 2012). In the discussion of study limitations, authors stated that the NEMS-S survey is not specific to a Latino population, and suggest a more Latino-focused modification of the NEMS-S survey to more accurately measure these particular food environments (Calloway et al., 2012), to ultimately create more applicable policies. The study discussion highlights the TxNEA-S as an example of a survey modified to appeal to the Latino population in Austin, Texas (Gloria & Steinhardt, 2010). In order to accurately analyze a different ethnic community,

systematic assessment of the food environment should be based on prior enumeration of the setting to determine relevant aspects of the physical, consumer, and social environments (Gittelsohn & Sharma, 2009).

This present proposed study hopes to overcome the fact that the original NEMS-S was not designed for specific use in Latino populations by utilizing a version of the NEMS-S that was designed for use in Quetzaltenango, Guatemala. The modified NEMS-S survey contains items more popular in a Latino diet, including selected fruits and vegetables, canned beans and boxed fluid milk. The conduct of the Guatemala NEMS-S should result in a more thorough analysis of the availability of healthy and unhealthy foods in stores in Latino communities in the United States because the items on the survey will match those being sold in these culturally specific stores. The present study will test the Guatemala NEMS-S to examine the food environment in East Somerville, in which there is a large Latino population, primarily of Central American origin.

Food Environments Background

Karen Glanz, one of the main researchers in the development of NEMS, defines food environments as "virtually all the potential determinants of what people eat that are not clearly individual factors, such as cognitions, attitudes, beliefs, and skills" (2009, p. S93). Two types of food environment are critical in the analysis of people's food choices: 1. community and; 2. consumer nutrition environments (Glanz, Sallis, Saelens, & Frank, 2005). The *community* nutrition environment refers to the "number, type, location, and accessibility of food outlets," whereas the *consumer* nutrition environment consists of "what consumers encounter in and around places where they buy food" (Glanz et al., 1997, p. 282). A "food desert" refers to a community nutrition environment

that lacks adequate food outlets, or a consumer nutrition environment that offers limited healthy food. Food deserts are an example of a "supply-side" explanation for health disparities and are seen as predisposing to nutrient deficiencies in "low income communities of color" (Alkon et al., 2103).

Extensive research indicates that diet plays a substantial role in the causation and prevention of obesity and other chronic diseases (Consultation, 2000; Human Services, 2000; Drewnowski, 2004; Swinburn, Caterson, Seidell & James, 2004). Recent changes in the modern food environment such as an increase in fast-food restaurants, poorer quality school lunches, and an increase in the marketing of unhealthy, energy-dense foods has negatively influenced the food consumption of our generation (McGinnis, Gootman, Kraak, 2006). These environmental changes are believed to have played a substantial role in the current obesity epidemic (McGinnis et al., 2006). It is therefore critical to focus on food environments to understand the dietary factors that lead to obesity, as a way to put a halt to the obesity epidemic.

Although food environments often form as the result of market-based factors, consumer preferences, and cultural associations, policy can be created to improve the health of the consumers (Glanz, 2009). Environmental and policy interventions may be among the most effective strategies for creating population-wide improvements in eating behavior. Improving dietary and lifestyle patterns and reducing obesity will require a sustained public health effort with the ultimate goal of structuring neighborhoods, homes, and the institutional environments so that healthy behaviors are the optimal defaults (Story et al., 2008)

Through analysis of the food environment of the Latino community in Somerville, the present study aims to determine the availability and accessibility of healthy food choices, as defined by the 2010 Dietary Guidelines for Americans (Ahmed & Blumberg, 2009). If healthy foods are lacking, the discussion section will provide policy suggestions to improve the nutrition environment of this particular community. Understanding the food preferences of consumers as determined through interviews can help propose policies that appeal to this specific Latino population, which can ultimately be generalized to create policy that appeals to other different ethnic populations.

Food Preferences Background

Food preferences are determined by a number of economic, social, and cultural factors (Zukin & Maguire, 2004). Socioeconomic status has a significant influence, as low-income individuals tend to favor energy-dense foods because of their low cost (Cortés, Millán-Ferro, Schneider, Vega, & Caballero, 2013). Study findings indicate that households with unemployed or retired members have attitudes towards shopping consistent with a 'subsistence' approach to shopping, involving the selection of stores based largely upon 'economic' criteria (Guy, 1985; Piacentini, Hibbert, & Al-Dajani, 2001). For a marketing program to be effective, it must be designed to reach the social class that fits one's product or service, since it has been demonstrated that social class can classify consumer buying behavior (Rich & Jain, 1968). Thus, it is necessary to understand the socioeconomic status of the consumer of interest to know where to target policy initiatives.

Cultural factors also play a significant role in determining shopping preferences,

as food-related behavior is modified by culture[1] (Asp, 1999; James, 2004). Ethnic identity is positively correlated with consumption of traditional culturally significant foods, and negatively correlated with the consumption of 'convenience' or prepackaged foods (Laroche, Kim, & Tomiuk, 1998). Stores targeted to specific ethnic cultures serve as important sites for the preservation of native culture for shoppers. Consumers at these stores gain more than familiar foods from their shopping experiences; they gain a connection with their native cultures (Mankekar, 2002).

The present study will examine the cultural factors of shopping preferences in this particular community, but will exclude analysis of socioeconomic factors for food selection due to the risk of offending participants through personal interview questions. Shopping preferences will ultimately be used to make suggestions for healthy food policies to improve the health of consumers and to target the obesity epidemic.

Obesity Linked to Shopping Preferences

The food environment, including access to food outlets and the presence of healthy food choices is associated with eating behavior and obesity (Hartley, Anderson, Fox, & Lenardson, 2011; Babey, Diamant, Hastert, & Harvey, 2008). More specifically the presence of 'obesogenic environments' result in shopping decisions that favor low-cost food that is often calorie-dense and associated with obesity (Lake & Townshend, 2006). Low-income individuals tend to choose energy-dense foods because of their cheap cost, such that economic decisions made during food purchasing have physiologic repercussions (Cortés et al., 2013). In communities that are considered to be food

[1] Different ethnic cultures may have traditions or customs related to food that may predispose certain unique shopping or eating behaviors

deserts, such as some rural communities, the health implications of limited access to nutritious foods may be particularly severe (Yousefian, Leighton, Fox, & Hartley, 2011).

In urban areas similar to the study area in Somerville, poor food environments in low-income communities are associated with limited fruit and vegetable consumption in low-income households and with higher rates of obesity (Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007; Rose & Richards, 2004). Alternatively, healthy eating as influenced by local food environments can help reduce the incidence of obesity and diabetes (Babey et al., 2008). It is therefore important for lawmakers to enact policies that encourage healthy food options to improve shopping decisions, which may ultimately lead to decreased rates of obesity. The present study will examine the food environment in East Somerville, an area with a large Latino population.

Latinos in Somerville Background

Latinos began to immigrate directly to Somerville in the 1980's. This wave of immigration consisted mainly of Salvadorans, who came to the United States to escape a bloody civil war. During this time of massive immigration into Somerville and surrounding cities, the Sanctuary Movement was established to allow refugees to live and work in the city without being asked for documents by city employees (Chasan, Pistran, Santos, & Salazar, 2003.) Thus, the Latino business community flourished and expanded to include Guatemalans, Hondurans, Nicaraguans, Panamanians, and Costa Ricans (Chasan et al., 2003), leading to the present-day Latino consumer community found there.

According to the 2010 Census, the population of Somerville is 75,754 (census.gov). The Latino population makes up 10.6% of the population of Somerville,

whereas this number is 9.6% for Massachusetts as a whole. The majority of the Latino population in Somerville falls under the "other Hispanic or Latino" category (as opposed to the specified Mexican, Puerto Rican, or Cuban categories): or 8.2 percentage points out of the 10.6%. This "other" category on the census bureau tends to underestimate the number of Central Americans living in the United States compared to projections based on tracking immigration trends (Suro, 2002), so the Central American population in Somerville may actually be larger than recorded by the census. Hispanic-owned businesses make up 8.3% of total businesses in Somerville, and this number is significantly higher than 3.3% of Hispanic-owned businesses in Massachusetts as a whole(census.gov).

Because people have been emigrating from Central America to Somerville for over thirty years, the Latino residents of Somerville are at varying levels of assimilation to American culture. These differences in acculturation level have implications for food preferences.

Acculturation and Food Preferences

Dietary acculturation is defined as the process by which immigrants adopt dietary practices of the host country (Satia-Abouta, Patterson, Neuhouser, & Elder, 2002). Many studies on the Latino immigrant population in the United States have found that dietary quality among Latino children may be compromised as they assimilate to the U.S. 'mainstream' culture; including increased sodium intake, decreased breastfeeding, decreased healthfulness of diet consumed by children, adolescents, and adults, and increased risk for obesity (Pérez-Escamilla & Putnik, 2007; Wilson, Adolph, & Butte, 2009; Ayala, Baquero, & Klinger, 2008).

Different levels of immigrant acculturation, including nativity, length of stay in the United States, and language use lead to different levels of dietary acculturation (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006). As length of stay increases, immigrant consumption of Western food subsequently increases (El Hassan & Hekmat, 2012). It is therefore essential to develop distinctive culturally-appropriate and behavioral-change-based interventions and policy targeting Latinos with variable levels of acculturation (Ayala, Mueller, Lopez-Madurga, Campbell, & Elder, 2005; Pérez-Escamilla, Hromi-Fiedler, Vega-López, Bermúdez-Millán, & Segura-Pérez, 2008; Balcázar, Alvarado, Fulwood, Pedregon, & Cantu, 2009).

Through interview questions, levels of acculturation of some of the members of the Latino community in Somerville will be determined. This information will be important in formulating policy suggestions to improve healthy food options in this community.

Existing Healthy Food Policies

According to the June 2012 policy brief from the Public Health Law Center at the William Mitchell College of Law in St. Paul Minnesota (Nanney, 2012), several policies are currently being pursued to combat obesity by increasing access to healthy foods. These key policies occur at the local, state, and federal levels, and include food procurement policies, land use planning and zoning initiatives, local permits and licensing, financing and tax incentives, and local healthy food policies (Healthy Food, 2012).

These tactics have led to successful healthy food polices throughout the United States: Fruit and vegetable vouchers aimed at reducing price barriers and incentivizing

the purchase of locally grown fruits and vegetables has led to increased fruit and vegetable consumption in Wisconsin (Carlyn Hood, Martinez-Donate, & Meinen, 2012); The use of zoning laws, incentives for chain grocers to open stores in disadvantaged, underserved areas, and incentives for existing food retailers to offer healthier products has helped better the food environment in Marion County, Indiana (Chen & Florax, 2010); In Maryland an environmental intervention trial in local stores, aimed at increasing the availability of healthy foods and promoting these foods in a manner that will encourage acceptance, sustained use, and ultimately, lead to long term improvements in health has been implemented in bodegas throughout Baltimore City. (Gittelsohn et al., 2008).

Promising state and local obesity prevention policies incorporate certain foundational criteria: that they are evidence-based or evidence-generating policies, which are legally feasible, financially viable, responsive to health inequalities, practical to implement and enforce, targeted at changing social norms, and part of a bigger plan (Graff, Kappagoda, Wooten, McGowan, & Ashe, 2012).

If NEMS-S findings indicate that the three Latino-bodegas in East Somerville lack adequate healthy food options, policy recommendations will be formulated based on the information acquired from interviews about acculturation and food preferences. If the surveys find that healthy food options are available in these stores, policy changes may still be necessary to make these choices more appealing or affordable to consumers. These policy suggestions will be based on current successful policies aimed at targeting obesity through increased availability and accessibility of healthy food options for consumers.

Hypotheses:

Based on the current literature, I have come up with the following hypotheses regarding the present study:

1. The foods found in the three Latino Bodegas will apply more closely to the NEMS-S survey created in Guatemala than the general NEMS-S survey created for U.S. stores, meaning that consumer buying preferences in these stores are molded more by culture of origin.
2. There will be a general lack of healthy food options in these small stores indicated by the results of the NEMS-S surveys.
3. Consumers will have reasons other than the foods offered for why they choose to shop at these stores: e.g. for community, social, and cultural aspects.

Methodology:

Enumeration

It was necessary to carry out the enumeration process before administering the NEMS-S survey in selected stores in Somerville. The purpose of enumeration was to obtain adequate background information about the study area to have an initial snapshot of the study population, and to ensure that all types of outlets were accounted for. The creators of the NEMS system suggest six steps in the enumeration process: define the survey area, obtain a list of food outlets, map the survey area, categorize the food outlets, organize your lists, and assign ID numbers (NEMS online training). Although this study focused on only three bodegas of the four identified, it was still important to take note of other stores and the type of neighborhood in the surrounding areas to provide context for the types of consumers and their reasons for shopping at the selected stores.

The first step of the enumeration process was to define the survey area. I knew from previous discussions with friends who reside in Somerville that the Latino area is centered in the eastern side of town. West Somerville has been taken over by Tufts University, and is more of a college town environment, so I decided to exclude this half of the town from my study area. With a general idea that I wanted to focus my study on East Somerville, I moved on to the second step of enumeration, to obtain a list of food outlets.

To obtain a list of food outlets, I did some background research about Latino grocery stores in Somerville and found a study done on the Somerville Latino Business Community. The study included a spreadsheet with all grocery stores owned by Latinos

(Chasan et al., 2003). Using this information and Somerville census information (census.gov), I created my own spreadsheet of food outlets in the East Somerville area (see below):

Figure 1: Initial List of Food Outlets in East Somerville

Name	Type	Address
Star Market	Grocery	275 Beacon St
Market Basket	Grocery	400 Somerville Ave
La Internacional Food corp.	Bodega	318/322 Somerville Ave
Amigos Grocery Store	Bodega	86 Broadway
Stop & Shop	Grocery	775 Mcgrath Hwy
Natural Grocery	Bodega	507 Medford St
Latino Americas Market	Bodega	Medford St.
Hispana American Variety	Bodega	420 Medford St

Because I was focusing my study on grocery stores, I excluded restaurants from the enumeration process. The initial spreadsheet included five smaller bodegas and three large grocery stores: La Internacional Food Corp., Amigos Grocery Store, Hispana American Variety, Latino Americas Market, Natural Grocery, Star Market, Stop & Shop, and Market Basket. Once I obtained the list of outlets, I rode my bike around these stores and mapped out the survey area to validate the existence of the stores on my list and to search for other stores I had missed.

In the process of mapping out my survey area, I visited the area multiple times and created a map of the community using Geographic Information Systems (GIS). On my first visit, my plan was to go inside all eight stores on the list. I wanted to examine the Latino section of the larger grocery stores, to decide whether or not to include them in my study. I went into seven of the eight stores, as I was unable to find Hispana

American Variety. Instead, I found another Latino Bodega called Tony's Foodland. This store is similar to the other three Latino bodegas: La Internacional Food Corp., Amigos Grocery Store, and Latino Americas Market in that it carries products targeted to the Latino population. The other smaller bodega, Natural Grocery does not specifically cater the Latino population, so I chose to eliminate this store from the study. I also decided to exclude the larger grocery stores (Star Market, Stop & Shop, and Market Basket) from my study because the Latino sections were too small, and it would have confounded my results to compare the single "international" aisles in these stores to the bodegas directly targeted to the Latino population.

The next step in the enumeration process, categorization of food outlets, was simple in my selection of stores because I eliminated all of the larger grocery stores. Therefore all three chosen stores were categorized as bodegas. I organized the new list of stores in Excel and then assigned ID numbers following the NEMS 8-digit system described in the NEMS online training. The numbers included in the ID numbers below represent the following: 01: the study area in East Somerville; 1: the type of food outlet (store); 01: the type of store (bodega); and 001: the individual ID number. All three stores have the same first three numbers since they are all bodegas in East Somerville, and then their individual ID numbers differ based on each unique store.

I then returned a second time to the study area to take note of the area surrounding my stores of choice and to check that I had not missed any Latino Bodegas. I biked around the three-mile radius of the stores and took notes about the types of neighborhoods and surrounding restaurants. I also checked for walkability, i.e. how

friendly the area is to walking i.e. presence of sidewalks, residential areas, etc. (high walkability is more friendly to walking).

A couple of weeks later I returned to the study area to speak with store managers. I was able to speak with managers at three of the four stores on my first attempt: Latino Americas Market, Amigos Grocery store, and La Internacional Food Corp. At Tony's Foodland the manager was not present so I was told to come back at a later date. The managers I spoke to all gave me permission to carry out the NEMS survey and to recruit participants to interview in their stores.

Upon subsequent follow-up with Tony's Foodland, I was repeatedly turned down by the store employers and told that the manager was not present. The employers in this store appeared to not want me to carry out the NEMS-S. I ultimately decided to remove Tony's Foodland from my study. Therefore the three stores of study are La Internacional Food Corp, Latino Americas Market, and Amigos Grocery Store, with categorization below:

Figure 2: NEMS-S Stores and ID Numbers

	Store	ID Number
1.	La Internacional Food Corp	01-1-01-001
2.	Latino Americas Market	01-1-01-002
3.	Amigos Grocery Store	01-1-01-003

The Nutrient Environment Measures Survey (NEMS-S) was utilized in these three stores based on this categorization.

Store Layout

In addition to enumerating my study area, I also created store layouts of the items sold in the three bodegas. I returned to the stores on a later data and took note of the location of all of the different food products and other items sold in the stores. I then created detailed floor plans of the three bodegas using Excel.

Quantitative: NEMS-S Store Analysis

Completion of NEMS-S

Nutrient Environment Measures Survey for Stores (NEMS-S) was the tool used to quantify the availability of healthy food options in the three Latino bodegas of study. To utilize NEMS-S for the purpose of this study, I completed NEMS online training to become a certified NEMS rater. The NEMS training is correlated with the original NEMS, which was created for use in stores in the United States. I then participated in the creation of a Guatemalan version of NEMS-S. This new survey was pilot-tested and verified in stores in Quetzaltenango, Guatemala, and proved accurate as a modification for items included in the Guatemalan diet.

After the verification of the NEMS-S Guatemala survey and the completion of online training, I had the tools to begin utilizing the surveys in the three Latino bodegas in Somerville. The selection and mapping of these stores was done through enumeration (see above).

NEMS-S measures the availability of foods in eleven categories (thirteen in the Guatemala version), with healthy and regular options for each item. The categories include: milk, fruit, vegetables, ground beef, hot dogs, frozen dinners, baked goods, beverages (soda/juice), bread, chips, and cereal. The categories added to the Guatemala

NEMS-S survey are boxed milk and canned beans. Within the categories, the individual items added to the Guatemala survey are papaya, pineapple, and plums for fruit, and green beans, zucchini, chayote, squash, radishes, and avocados for vegetables. These items were chosen to reflect the Guatemalan diet. The fruit and vegetable items are all considered healthy food options, and each additional category has regular and healthy options (e.g. whole milk vs. skim milk). The total number of healthy food options added to the Guatemala NEMS-S survey is 11, so the total number of healthy food items on the U.S. and Guatemala NEMS-S surveys is 30 and 41 respectively. Excerpts from NEMS-S U.S. and NEMS-S Guatemala survey are included in **Appendices I and II.**

The NEMS-S survey also includes a section to compare prices between healthy and unhealthy items. Unfortunately, prices were not available on many of the items in the stores (further discussion of this later), so I decided to exclude price analysis from my study.

The process of NEMS-S in the three stores was carried out on two separate occasions with my colleague Richelle. On Day 1 Richelle (rater ID 02) and I (rater ID 01) completed the NEMS-S surveys in Amigos Grocery Store and La Internacional Food Corp. I completed the NEMS-S U.S. survey and Richelle completed the NEMS-S Guatemala survey. On Day 2 we returned to the study area and completed NEMS-S in the final store, Latino Americas Market. I again completed the NEMS-S U.S. survey and Richelle completed the NEMS-S Guatemala survey.

Analysis of NEMS-S

The NEMS-S data aims to address my first two hypotheses: to determine whether items sold in stores more closely resemble the Central American diet or the United States diet, and to determine the availability or lack of healthy food options in stores. Survey data was inputted into Excel spreadsheets provided by the NEMS website. The spreadsheets contained columns for each of the three stores and rows for each of the items included on the survey. If an item was present in the store, a 1 was recorded on the spreadsheet. If the item was not present, a 0 was recorded. There were two spreadsheets included: one to record the availability of healthy food options, and one to track the availability of all items on the survey (see below **Table I** and **Appendix V** for spreadsheets)

To examine the first hypothesis, I compared the NEMS-S U.S. survey results to the NEMS-S Guatemala results, to see which survey more closely resembled the items sold in the stores. I took note of the availability of the 11 added items in the three stores and made a graph of the total availability of healthy items using the U.S. survey compared to the Guatemala survey. I then created an additional graph to compare the total availability of healthy items using the U.S. survey to the total availability of items out of the eleven added items. To examine the second question, I calculated total percentage availability of each item for the three stores. I also calculated the percentage of healthy items available in each store and included these percentages in the graphs mentioned above.

Qualitative: Interviews

To examine my third hypothesis and the second part of my first hypothesis, regarding the reasons why consumers choose to shop at the three bodegas, I utilized ethnographic interviews. My original goal was to administer five interviews per store (so 15 total) but the process of obtaining interviewees was more difficult than I had anticipated, so I was only able to complete 10 interviews. Because most of my interviews were done in Spanish, I had a native speaker, Yirat, as my translator. I completed most of the interviews myself, but Yirat was able to help me with some questions or explaining responses that I missed.

IRB/Ethics

As part of the interview process, I was granted IRB approval from the Tufts Institutional Review Board. This process took about a month, and included the need to re-apply for a waiver of documentation of informed consent form to protect the identity of interviewees. Before beginning each interview, I presented the informed consent form to the interviewee and instructed them to read it and to let me know if they had any questions. I then asked the participant if they wanted their name omitted from my presentation of interview results. Once the participant gave consent, I signed and dated the form, and kept all of the signed informed consent forms for my records.

Completion of Interviews

To recruit participants to interview, I initially created advertisements to have the store managers put up in the stores. Most of the managers did not put up the advertisements, so I then tried to approach consumers in stores to recruit them to interview. Many people were in a rush while doing their shopping, so this method was

also relatively unsuccessful. I then attempted to recruit participants through friends of friends, and to ask participants to pass on my phone number and information to other Latino consumers. This method was more successful. I also decided to interview storeowners to increase my number of completed interviews and to include their perspectives in my analysis. After struggling to obtain interviews for a few weeks, I ended up working with one of the storeowners to recruit many of his regular customers to interview. This method was also relatively successful because many of his regular customers trusted him and were more comfortable with the interview process.

I designed the 21 interview questions to examine the consumer's reasons for shopping at the Latino bodega, the items the consumer buys at the bodega compared to other bodegas or larger grocery stores, the reasons behind consumer food choices, and background and demographic information about the participant. (See **Appendices III and IV** for interview questions). Because this portion of the study was meant to be ethnographic, many of the questions were open-ended and modifiable depending on the course of conversation. I asked follow-up questions based on the participants' responses and omitted some questions that had been covered in other parts of the conversation. Because I could not record the interviews, I took notes, and typed up the responses after each interview.

Analysis of Interviews

To analyze the qualitative interviews, I came up with thirteen major themes/questions that came up in all ten interviews. The questions were developed after the completion of the interviews, and covered material relevant to my three hypotheses: The thirteen questions include:

1. Reasons for shopping at the bodegas?
2. How much of their shopping the consumer does at the bodegas?
3. Specific items bought at bodegas?
4. Where else the consumer goes for their groceries?
5. Items only bought at the larger grocery stores?
6. Differences between the different Latino bodegas?
7. If friends/family shop at the bodegas?
8. Reasons other than food for shopping at the stores?
9. Cultural aspect of stores?
10. If the consumer walks or drives to stores?
11. Priorities/considerations in choosing what to buy?
12. Impact of lack of price labeling?
13. If the consumer feels more connected to their country of origin or the United States?

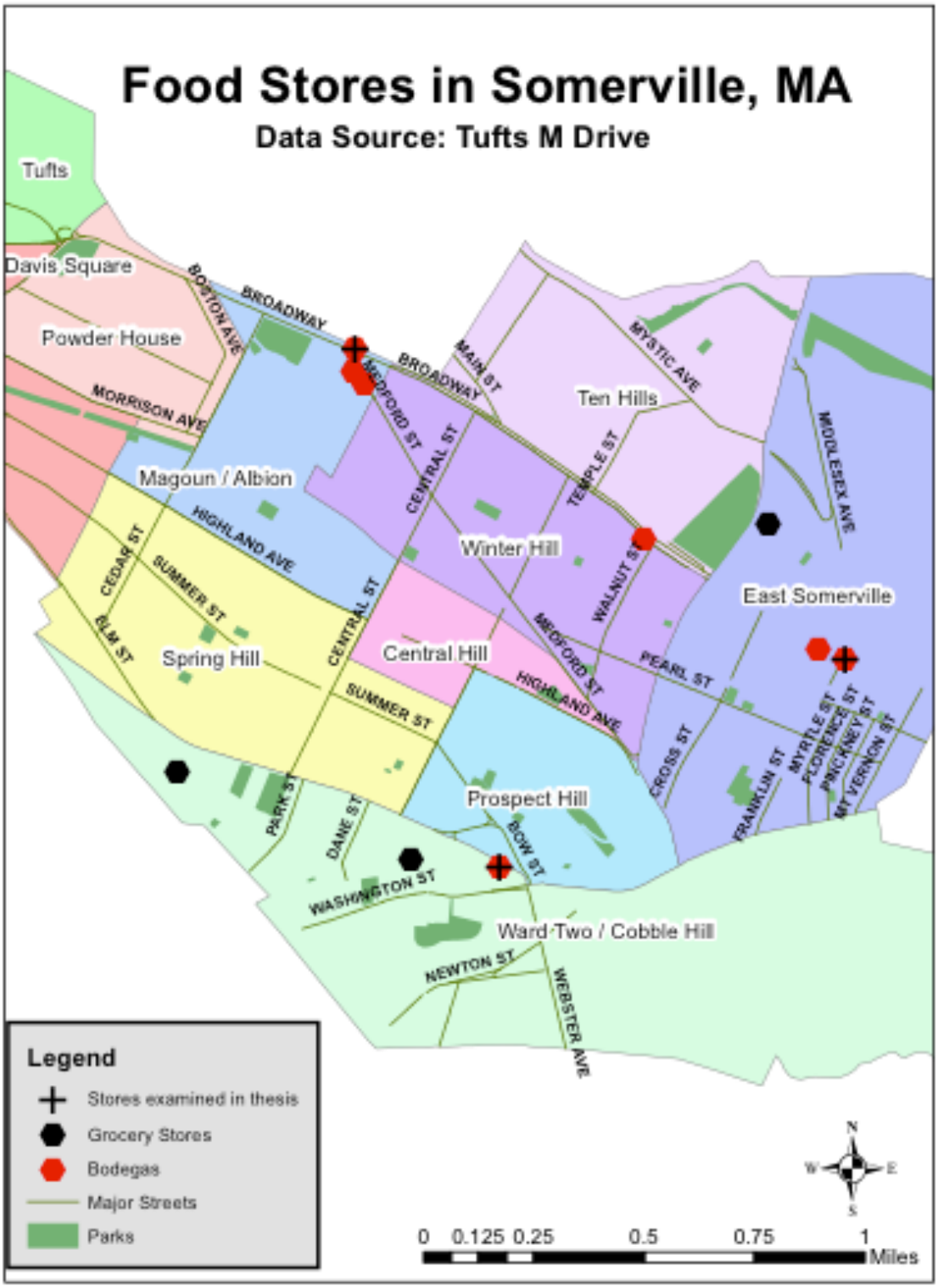
I went through the ten completed interviews and answered all of these thirteen questions for each interview. For each of the 13 themes above, I determined the majority response (response that came up in the most interviews), additional responses (responses that came up in other interviews) and unique responses (interesting responses that may have only come up in one interview) and grouped these responses into a table. I also included specific interviewee quotes for each of the questions. In addition to summarizing interview results in the table, I also described the overall story generated by the interview results, including more details of subject responses. I included quotes from the ten interviewees to emphasize overall main points generated by the interviews.

Results

Enumeration

Data was collected in three bodegas: Latino Americas Market, Amigos Grocery Store, and La Internacional Food Corp. Latino Americas Market and Amigos Grocery store are located on Broadway in East Somerville, surrounded by many Central American and Brazilian Restaurants and stores. La Internacional Food Corp is located in Union Square. Broadway Street had the highest walkability as there were a large number of stores and restaurants in close quarters and there were apartments on the opposing street. Broadway Street had multiple Mexican and Brazilian restaurants, a *panadería* (Latino bakery) and a *carnecería* (Latino butcher). There were also multiple other bodegas and stores in this area including Natural Grocery, K-2 Market, 350 Food Mart, Walgreens, and Rite Aid, although none were Latino focused. Between Broadway Street and La Internacional Food Corp, the level of walkability was low, as it was mostly highways I created a map of the study area using Geographic Information Systems (GIS). The map is included below:

Figure 3: Enumeration map of study area



Store Layout

All three bodegas had sections for many of the same items found in larger grocery stores: produce, refrigerated items, drinks, baked goods, snacks, canned goods, and household supplies. But the bodegas were small, with only one or two registers, and many of the sections were limited or lacking certain items, like meat or frozen meals. Latino Americas Market was the smallest of the three, with just one register. Both Amigos Grocery Store and La Internacional Food Corp were slightly larger with two registers each.

There were some unique properties to the bodegas: a MoneyGram station in Amigos Grocery Store and the sale of liquor and an adjoining liquor store in La Internacional Food Corp. Another interesting finding was the lack of price labeling on the majority of food items. The floor plans of the three stores are as follows:

Figure 4: Floor Plan of Latino Americas Market

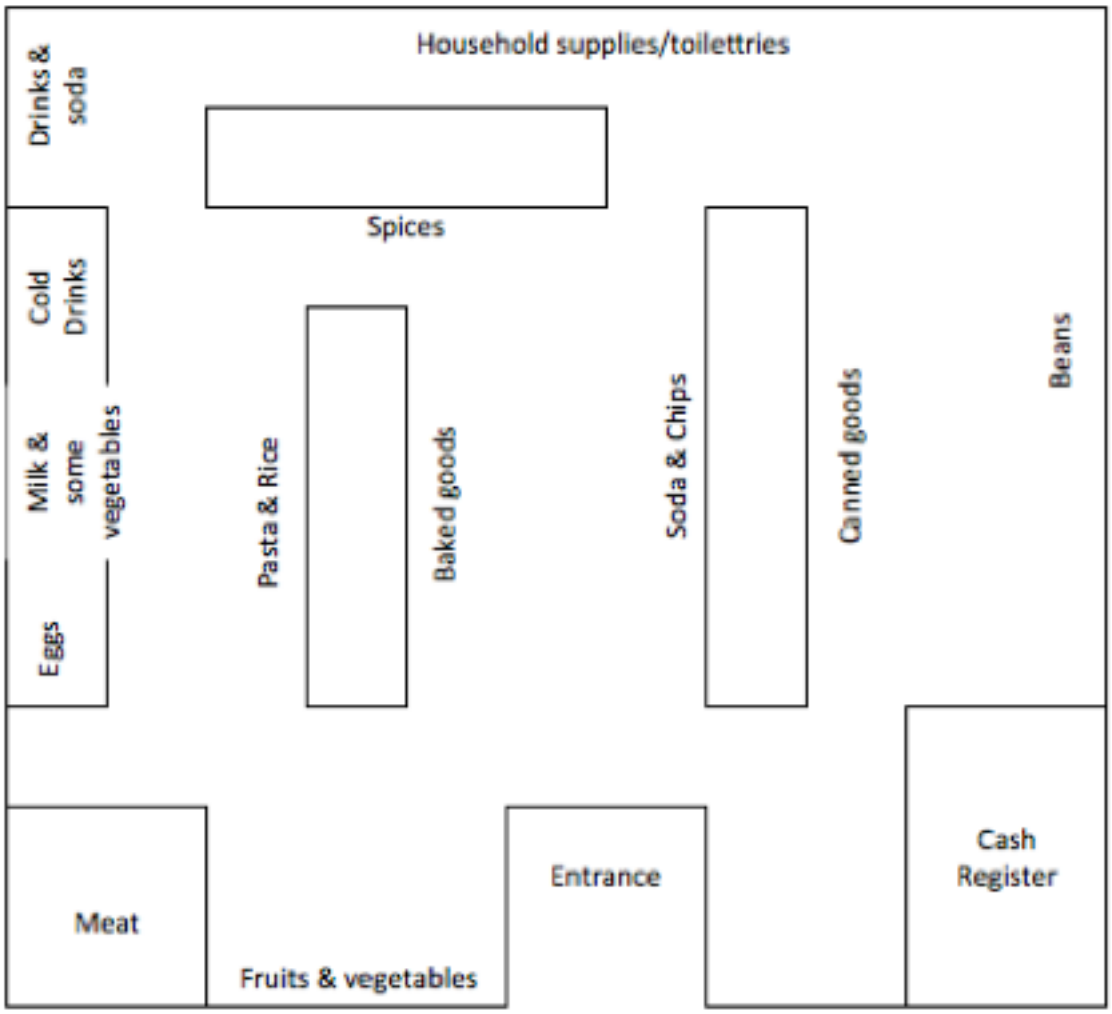


Figure 5: Floor Plan of Amigos Grocery Store

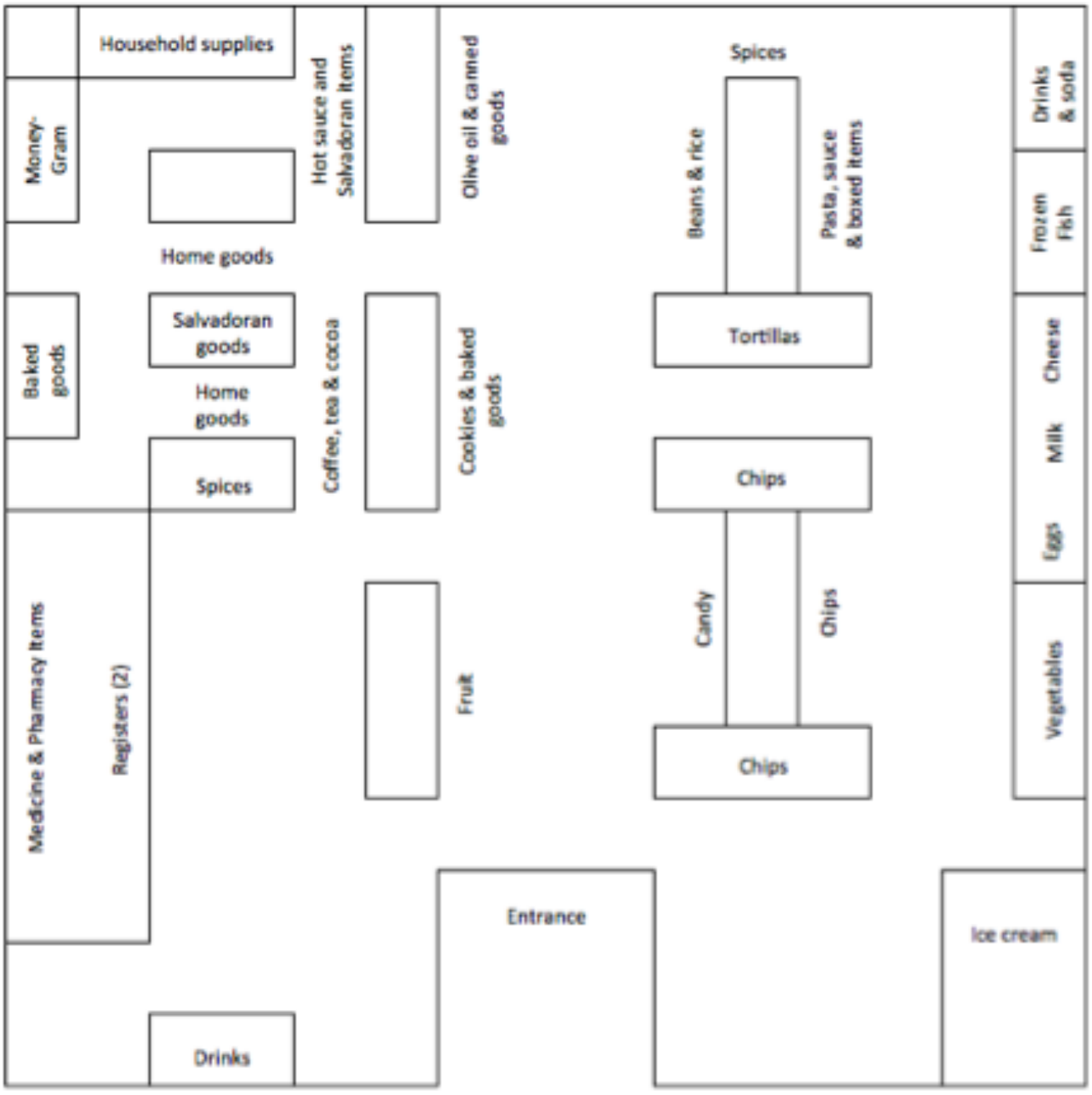
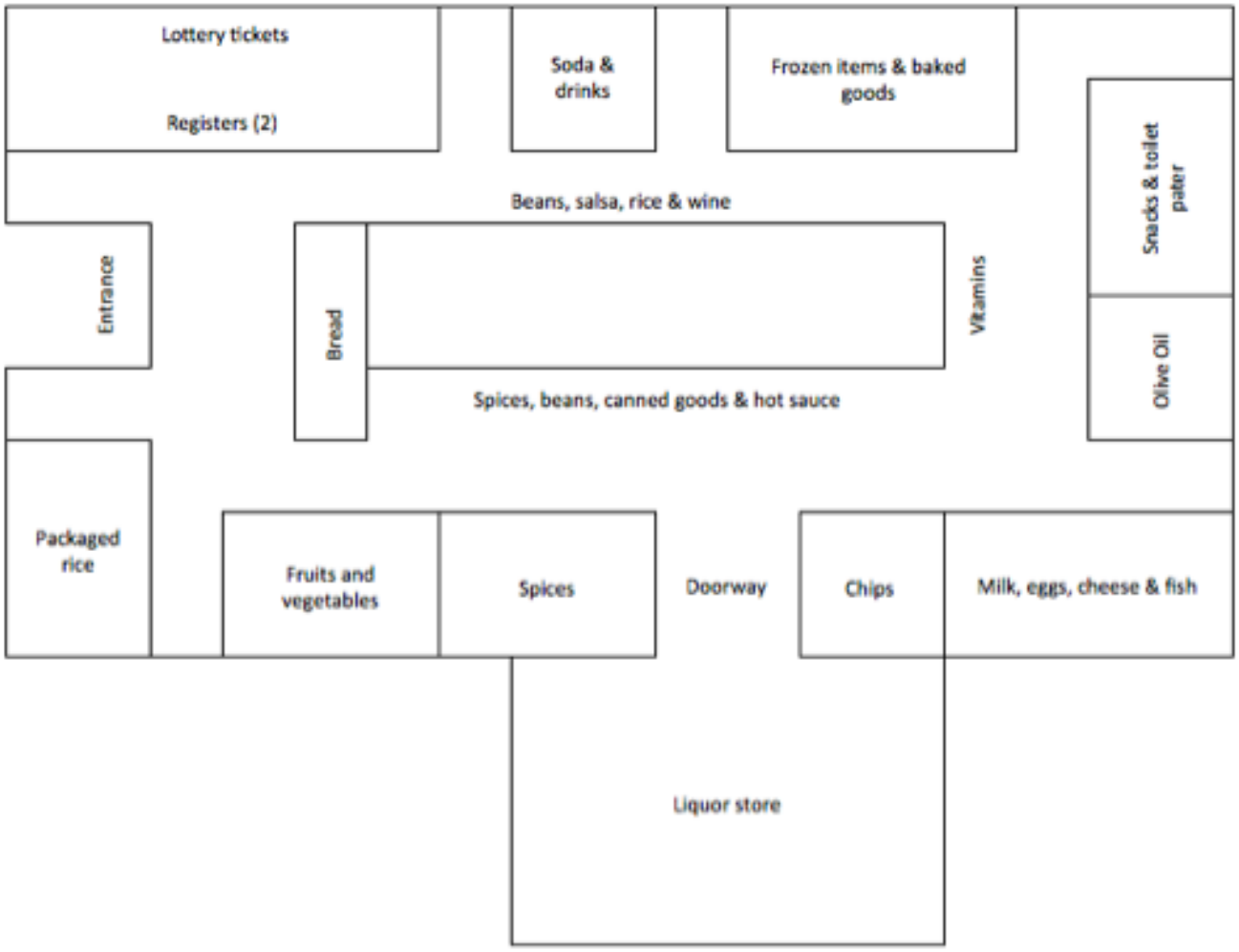


Figure 6: Floor Plan of La Internacional Food Corp.



Quantitative: NEMS-S Store Analysis

NEMS-S U.S. compared to NEMS-S Guatemala

Results regarding the comparison of the two NEMS-S surveys aim to address the first hypothesis related to whether the items available in these stores will more closely resemble the NEMS-S Guatemala survey or the NEMS-S U.S survey. The items added to the NEMS-S Guatemala survey are boxed milk, papaya, pineapple, plums, zucchini, green beans, chayote, guicoy (squash), radishes, avocado, and canned beans. Out of these 11 items, 6 were available in Latino Americas Market, 8 in Amigos Grocery Store and 3 in La Internacional Food Corp. Looking at the availability of healthy food options in the tables below, it is evident that the items added to the NEMS-S Guatemala survey contributed to a higher number of available healthy food options when using the NEMS-S Guatemala survey compared to the NEMS-S U.S survey. Even in the La Internacional Food Corp, the store with the smallest number of healthy food options, the items added to the NEMS-S Guatemala survey make up over a third of the available healthy food options in the store (3 out of 8). There is a high presence of Central American foods found in these stores, despite the lack of many other typical food items (frozen dinners, hot dogs, and ground beef). Therefore the NEMS-S Guatemala survey is a more accurate tool to measure the availability of healthy food options in these three Latino bodegas.

Availability of healthy food options in the three bodegas using the NEMS-S U.S. and NEMS-S Guatemala surveys is as follows:

Table 1: NEMS- S Results for 3 stores in East Somerville using U.S. NEMS-S

Healthy Item:	La Internacional Food Corp.	Latino Americas Market	Amigos Grocery Store	Total # Available	Total # of Stores	% Total
1) Skim milk	0	1	1	2	3	67%
2) Fruit						
Bananas	1	1	1	3	3	100%
Apples	0	1	1	2	3	67%
Oranges	0	1	1	2	3	67%
Grapes	0	0	1	1	3	33%
Cantaloupe	0	0	1	1	3	33%
Peaches	0	0	0	0	3	0%
Strawberries	0	1	0	1	3	33%
Honeydew Melon	0	0	0	0	3	0%
Watermelon	0	0	0	0	3	0%
Pears	0	0	0	0	3	0%
3) Vegetables						
Carrots	1	1	1	3	3	100%
Tomatoes	1	1	1	3	3	100%
Sweet Peppers	0	1	1	2	3	67%
Broccoli	0	1	0	1	3	33%
Lettuce	0	1	1	2	3	67%
Corn	0	0	1	1	3	33%
Celery	0	1	1	2	3	67%
Cucumbers	0	1	1	2	3	67%
Cabbage	1	1	1	3	3	100%
Cauliflower	0	1	1	2	3	67%
4) Lean meat	0	0	0	0	3	0%
5) Fat free/light Hotdogs	0	0	0	0	3	0%
6) Reduced fat frozen dinners	0	0	0	0	3	0%
7) Low fat baked good	0	0	1	1	3	33%
8) Beverages						
Diet soda	1	1	1	3	3	100%
100% juice	1	1	1	3	3	100%
9) 100% whole wheat bread	0	1	1	2	3	67%
10) Baked chips	0	0	0	0	3	0%
11) Low sugar cereal	0	1	1	2	3	67%
Total # of NEMS healthier items per store (max. 30)	6	18	20			
% Healthy Items	**20%**	**60%**	**66.7%**			

Table 2: NEMS-S Results for 3 stores in East Somerville using Guatemala NEMS-S

Healthy Item:	La Internacional Food Corp	Latino Americas Market	Amigos Grocery Store	Total # Available	Total # of Stores	% Total
1) Skim milk	0	1	1	2	3	67%
1.5) Skim Boxed Milk	0	0	0	0	3	0%
2) Fruit						
Bananas	1	1	1	3	3	100%
Apples	0	1	1	2	3	67%
Oranges	0	1	1	2	3	67%
Grapes	0	0	1	1	3	33%
Cantaloupe	0	0	1	1	3	33%
Peaches	0	0	0	0	3	0%
Strawberries	0	1	0	1	3	33%
Honeydew Melon	0	0	0	0	3	0%
Papaya	0	0	1	1	3	33%
Pineapple	0	1	1	2	3	67%
Plums	0	0	1	1	3	33%
Watermelon	0	0	0	0	3	0%
Pears	0	0	0	0	3	0%
3) Vegetables						
Carrots	1	1	1	3	3	100%
Tomatoes	1	1	1	3	3	100%
Sweet Peppers	0	1	1	2	3	67%
Broccoli	0	1	0	1	3	33%
Lettuce	0	1	1	2	3	67%
Corn	0	0	1	1	3	33%
Celery	0	1	1	2	3	67%
Cucumbers	0	1	1	2	3	67%
Cabbage	0	1	1	2	3	67%
Zucchini	0	1	1	2	3	67%
Green Beans	0	1	1	2	3	67%
Guisquil/Chayote	1	1	1	3	3	100%
Guicoy/Squash	0	0	0	0	3	0%
Radishes	0	0	0	0	3	0%
Avocados	1	1	1	3	3	100%
Cauliflower	0	1	1	2	3	67%
4) Lean meat	0	0	0	0	3	0%
5) Fat free/light Hotdogs	0	0	0	0	3	0%
6) Reduced fat frozen dinners	0	0	0	0	3	0%
7) Low fat baked good	0	0	1	1	3	33%
8) Beverages						
Diet soda	1	1	1	3	3	100%
100% juice	1	1	1	3	3	100%

Healthy Item:	La Internacional Food Corp	Latino Americas Market	Amigos Grocery Store	Total # Available	Total # of Stores	% Total
9) 100% whole wheat bread	0	1	1	2	3	67%
10) Baked chips	0	0	0	0	3	0%
11) Low sugar cereal	0	1	1	2	3	67%
12) Canned black beans (whole)	1	1	1	3	3	100%
Total # of NEMS healthier items per store (max. 41)	9	24	28			
% Healthy Items	**22%**	**58.5%**	**68.3%**			

NEMS-S Availability of Healthy Food Options

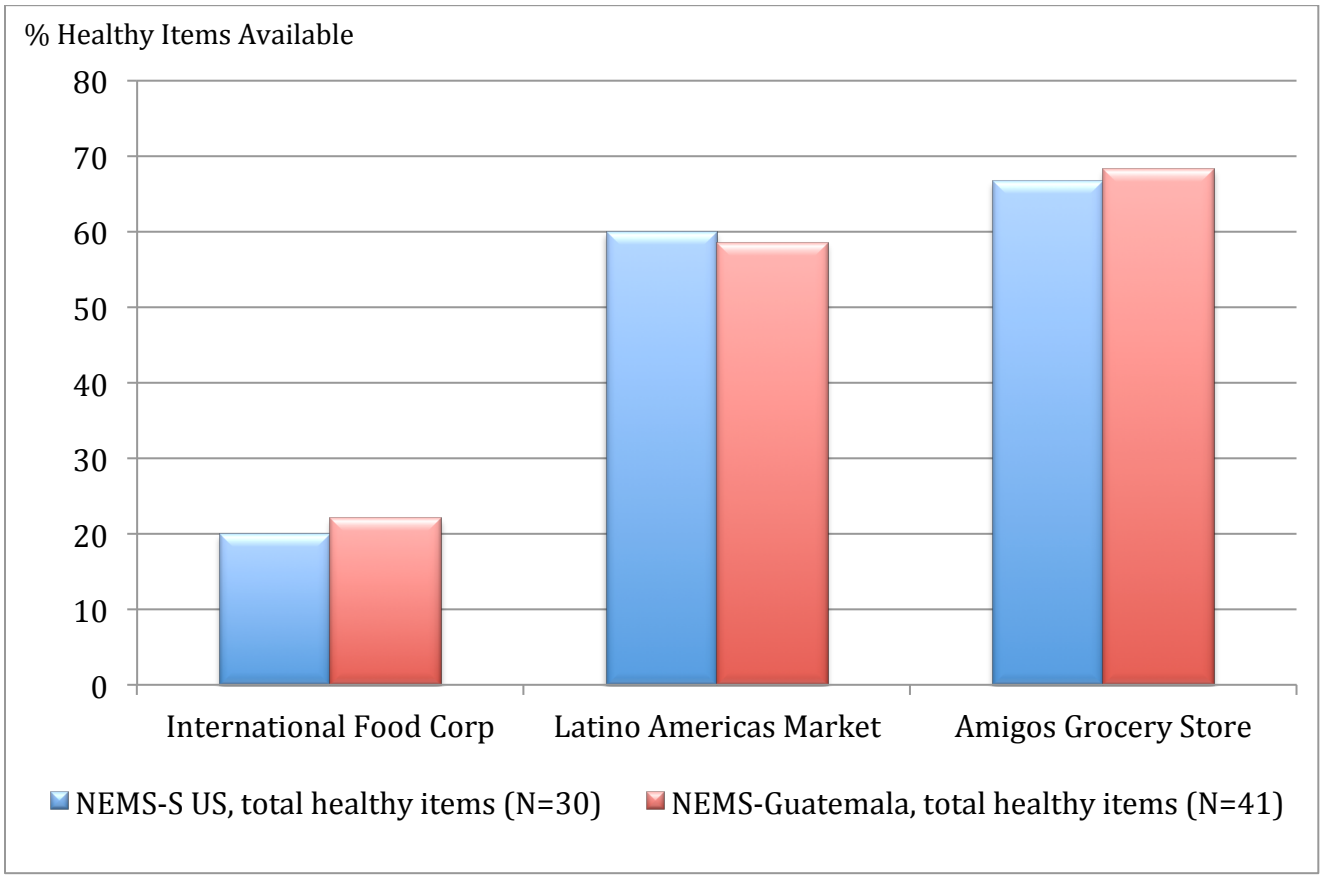
The following results aim to address the second hypothesis regarding whether there will be a lack of healthy food items in the three Latino bodegas. Using the NEMS-S U.S. survey, the availability of healthy food options for La Internacional Food Corp, Latino Americas Market, and Amigos Grocery Store are 20%, 60%, and 66.7%, respectively.

Using the NEMS-S Guatemala survey, the availability of healthy food options for La Internacional Food Corp, Latino Americas Market, and Amigos Grocery Store are 22.0%, 58.5%, and 68.3%, respectively.

Looking exclusively at the 11 items added to the NEMS-S Guatemala survey, the availability of healthy food options (out of the total healthy food options added to the survey) in La Internacional Food Corp, Latino Americas Market, and Amigos Grocery Store are 27.3%, 54.5%, and 72.7%, respectively.

Total availability of all items in stores (healthy and unhealthy options) can be found in **Appendix V**. Results are presented in the two graphs below:

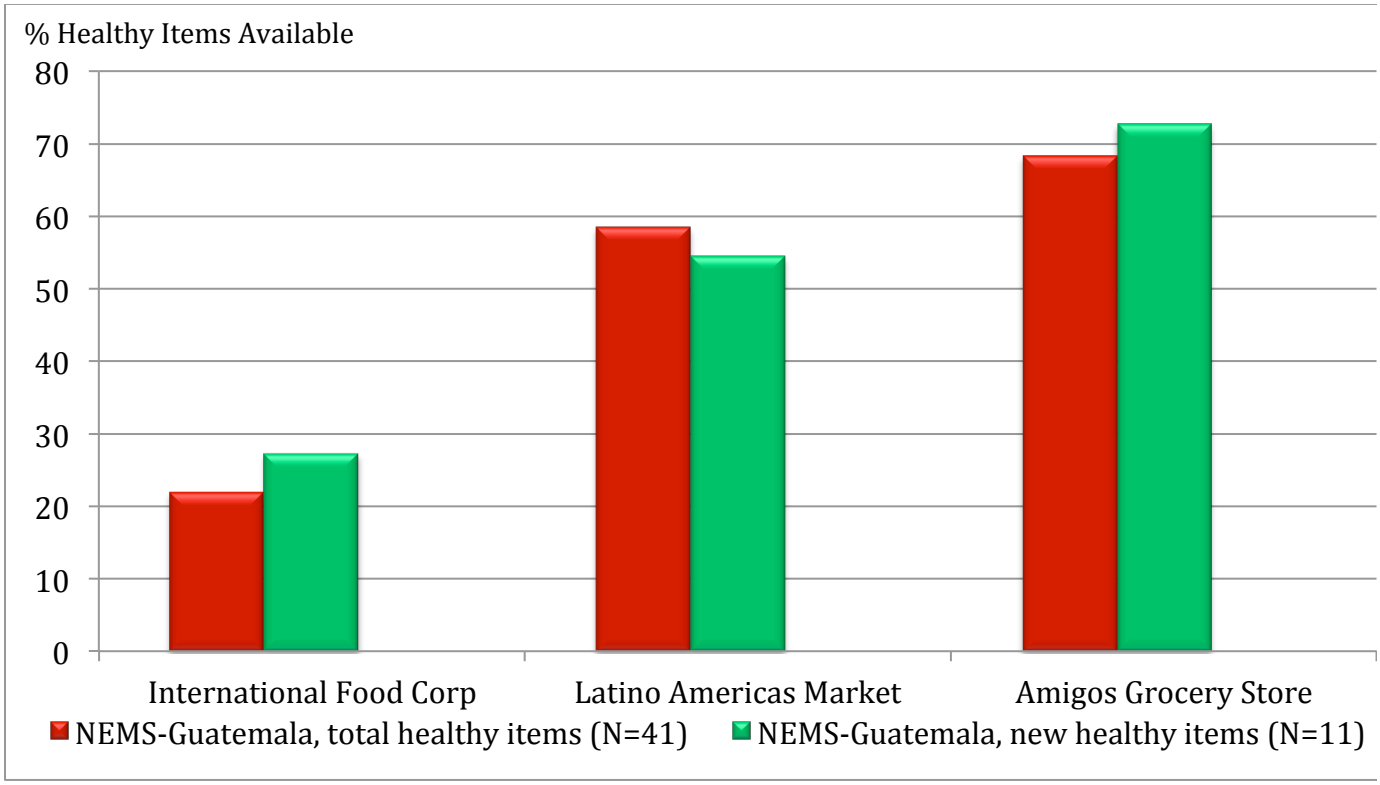
Figure 7: Availability of Healthy Food Options in the 3 Latino Bodegas



Initially, I created this graph to demonstrate the availability of healthy food options in stores using the NEMS-S U.S. and NEMS-S Guatemala surveys. I was surprised to note the relatively small difference between availability of healthy food options using the different surveys, when it seemed as though many of the items added to the Guatemala survey were available in the stores. I then realized that a disproportionate number of the items added to the NEMS-S Guatemala survey are healthy items. Out of the 11 items, 9 are fruits and vegetables (which are considered healthy items) and the remaining two (boxed milk and canned beans) have both a healthy and unhealthy option. Because there is not an equal number of healthy and unhealthy items added to the NEMS-S Guatemala survey, it distorts the results to compare these two surveys on

the same graph (as done above). Therefore, it is necessary to look exclusively at the items added to the Guatemala survey, and to analyze the number of available added healthy items compared to total added healthy items (11 items). I therefore created a second graph to compare the total number of available healthy food options using the NEMS-S Guatemala survey to the number of healthy items added to the NEMS-S Guatemala survey, to demonstrate the effect of the added items. This comparison generates valuable results, and indicates a more significant influence of adding the eleven items to the survey. See second graph below:

Figure 8: Impact of NEMS-S Guatemala Added Items on Availability of Healthy Food Options



So, looking at the marginal impact of added items reveals that including the items added to the NEMS-S Guatemala survey leads to a higher inventory of healthy food options at the bodegas. Therefore, the NEMS-S Guatemala survey is a better tool for quantifying the availability of healthy food options in the three Latino bodegas.

Qualitative: Interviews

Description of Subjects

Out of the 10 participants interviewed in this study, there were 6 females and 4 males. Almost all of the subjects were from Central America (9 out of 10), with half from El Salvador (5 out of 10) and 3 from Guatemala. There was a wide age range of subjects, from early 20's to mid 50's. All participants spoke Spanish as a first language, but 4 were bilingual and proficient enough in English to conduct the interview in English. Subjects shopped at all of the three stores of interest, but the majority of participants shopped mostly at Amigos Grocery Store (7 out of 10), with 2 preferring Internacional Food Corp and 1 favoring Latino Americas Market. There was a large distribution of length of residence in the United States, from 1 year to 20 years, with two subjects born in the United States.

Table 3: Interview Subject Information

Subject	Store	Approximate Age	Sex	Country of Origin	Preferred Language	Length of Residence in U.S.	Employer or Customer?
1	Amigos	Mid 50's	Female	El Salvador	Spanish	20 years	Customer
2	Internacional Food Corp	Early 30's	Male	Guatemala	English	U.S born	Employer
3	All	Mid 40's	Female	El Salvador	Spanish	20 years	Customer
4	Amigos	Early 30's	Male	El Salvador	English	9 years	Employer
5	Amigos	Late 20's	Male	Guatemala	Spanish	10 years	Customer
6	Amigos	Mid 30's	Female	Guatemala	Spanish	14 years	Customer
7	Internacional Food Corp	21	Female	Colombia	English	U.S. born	Customer
8	Amigos	Mid 20's	Male	Honduras	Spanish	1 year	Customer
9	Amigos	Mid 30's	Female	El Salvador	Spanish	6 years	Customer
10	Latino Americas Market	21	Female	El Salvador	English	13 years	Customer

Interview Results

Interview results aim to address the third hypothesis regarding whether consumers have reasons other than food for shopping at the Latino bodegas. Ethnographic interviews obtained data related to shopping preferences and priorities, bodegas compared to other bodegas and compared to larger grocery stores, cultural aspects of stores, impact of lack of price labeling, and sentiment of cultural connection. For interview questions, refer to **Appendix III and IV.**

In the beginning of the interviews, subjects discussed their reasons for shopping at the Latino bodegas. Most interviewees (n=6) cited the Latin American products, or *"productos de mi país."* These bodegas sell items that cannot be found at the larger

grocery stores. Many participants (n=4) also commented on the personal *"at home"* feeling in the stores, and the sense of community: *"you get to know people."* The bodegas also function as a source of nostalgia for some subjects (n=5), as one explained *"I remember when I lived in El Salvador there would always be a woman on the corner selling juice [and other items], so it's nice to be able to get these same items at these stores."* Most participants (n=6) do less than half of their shopping at the stores, *"for something quick"*, but some (n=4) shop there more often, for *"la majoridad"* of their shopping.

Participants buy a wide range of items at the bodegas, but most (n=8) included cheese, rice, sweet bread, chips, corn flour (*maseca*) or beans on their grocery list. Many (n=8) also buy calling cards, soda, and some Latino produce items (such as okra) at the bodegas. Most of these items are things from the customers' Central American countries of origin: *"cosas de mi país."* But many subjects (n=4) commented on the high prices of many of the items sold at these bodegas, *"todo es más caro [in the bodegas]"* so subjects also shop at the larger grocery stores. Almost all of the subjects (n=8) shop at Market Basket, but some (n=3) also shop at Stop & Shop, Price Right, and Trader Joes. Most subjects (n=6) shop at these larger stores for *"regular groceries"* or *"main food"* including vegetables and meat. Many interviewees (n=5) also buy eggs, butter, name brands, and hygiene products at the larger grocery stores.

In comparing the three different Latino bodegas of study, most subjects (n=6) felt the stores are generally the same, or *"igual"*. A few participants (n=2) claimed Amigos has the largest selection, including *"brands and products you can't find in other stores."* One interviewee commented on the environment at Amigos, explaining that the owners also own a number of Latino restaurants and another bodega in the East Somerville area.

She does not like the environment of this store: *"I don't like the idea of owning lots of stores and having a monopoly,"* so she does not shop at Amigos for this reason.

All 10 of the interview subjects said that their friends and family also shop at the Latino bodegas, and one of the storeowners claimed, *"Many customers are regulars."* Some subjects (n=4) shop at the stores for reasons other than food including the environment and familiarity of the stores and storeowners, *"you get to know people…the people that shop there…I went to elementary school with the owners son."* Some people (n=3) also shop at Amigos because there is a MoneyGram machine, so they use that to transfer money.

In discussing the culture of the bodegas, some interviewees (n=4) commented on the changing culture that has occurred in the past few years. Although the environment is still comfortable and familiar to many of the subjects, the culture now is characterized by *"malcultura"* and is seen by many consumers as *"just a store."* There are differing reasons for this according to the interviewees, including *"towns go though transformations and gentrification"* and *"immigrant deportation"* that has occurred at an increased rate in the past few years. One participant believes that storeowners are intentionally removing aspects of Central American culture to avoid drawing the attention of immigration authorities.

About half of subjects exclusively walk to the stores (n=6) whereas the remainder drive. Some subjects (n=4) explained that they live very close to the stores, while one woman said that it is a long walk for her, but worth it for the *"cosas bonitas"* from El Salvador. One of the storeowners commented that he *"doesn't really have next-door customers anymore."*

In choosing which foods to buy, the majority of subjects (n=6) said taste, or *"things I like"* was their first priority, followed by price. A few participants (n=2) mentioned quality as a main priority, and only one listed health as her first choice (although her shopping basket was filled with cookies). One of the storeowners believes that brand is the most important consideration for customers (he makes sure to sell brands from El Salvador), but only 3 interviewees mentioned brand as something they care about. One interview subject did not mention brand as one of her considerations, but then went on to explain *"but actually brand is all I really care about when I shop at these stores. I look for specific brands that I know from El Salvador and only buy these items."*

Storeowners and consumers explain the lack of price labeling differently. Both owners claimed that the lack of labels was simply a result of laziness, and that all prices should be labeled. One also believes that the lack of labels *"only affects 5% of customers."* All 8 of the consumers interviewed are aware of the lack of price labels. Some consumers (n=3) will buy what they want regardless of the price, but others (n=3) buy only items they know the price of *"the bread rolls are always four for $1.00."* One participant believes that the lack of price labeling is intentional to make it harder for customers to note the large price discrepancy compared to items sold at the larger grocery stores.

The final question was whether subjects felt more connected to their country of origin or culture in the United States. The majority of subjects (n=6) feel more connected to their culture in the United States, but all six prefer food from Central America: *"comida de America…no."* Three subjects explained how their country of origin (El Salvador) is too scary and dangerous, so they are thankful to be living here, *"mejor aquí porque es*

más difícil allí." Two subjects feel equally connected to the two cultures, and two participants feel more connected to their culture of origin.

Table 4: Summary of Quantitative Interview Responses

	Majority Response	Additional Responses	Unique Response
Reason for Shopping at Latino Bodegas?	Central American products	Reminds consumer of home	Sense of community
How much of their shopping do they do there?	Less than half	Majority of shopping	Just for something quick
Specific items bought at bodegas?	Cheese, rice, sweet bread, chips, corn flour, beans	Calling cards, soda, some produce	Everything
Where else do they go for groceries?	Market Basket	Stop & Shop	Trader Joes, Price Right
Items only bought at larger grocery stores?	Vegetables, meat	Eggs, milk, butter, name brands	Hygienic things
Differences between different Latino bodegas?	No real difference	Amigos has largest selection	Doesn't like environment in Amigos
Do friends/family shop at Latino bodegas?	Yes- unanimous response		
Reasons other than food for shopping at stores?	Environment, familiarity	MoneyGram- to transfer money	Support small business
Cultural aspect of stores?	Not as much as there used to be	Familiar environment	Just a store
Walk or drive to stores?	Walk	Drive	
Priorities/considerations in choosing what to buy?	Taste then price	Quality or brand	Based on what store owners suggest
Impact of lack of price labeling?	Customer response: has some impact on shopping decisions	Customer response: lack of price labeling is intentional	Store owner response: all prices should be labeled
Connection to country of origin vs. United States?	U.S. culture, but prefers food from Central America	Country of origin or equal	Here because too dangerous in country of origin

Discussion

This study demonstrated the importance of culture in determining food preferences. Results indicated the significance of using a culturally-specific tool to determine the availability of food options in Latino bodegas, and revealed interesting information about the healthy food options sold at these stores. Quantitative NEMS-S results indicated that the NEMS-S Guatemala survey is the preferred tool to analyze the food options in the three bodegas, and that the number of healthy food options is lacking. Qualitative interviews exposed the consumer motivations behind shopping at the bodegas, and how this relates to culture. Most interview subjects had reasons other than food for shopping at the bodegas. The three initial hypotheses are supported by study results.

First Hypothesis

The first hypothesis states that the food found in the three Latino bodegas will apply more closely to the NEMS-S survey created in Guatemala than the general NEMS-S survey created for U.S. stores, meaning that consumer buying preferences in these stores are molded more by culture of origin. Study results support this hypothesis. The two graphs presented in the above section display the results in two different ways based on a variable encountered in the process of analysis. The 11 items added to the NEMS-S Guatemala survey were boxed milk, papaya, pineapple, plums, zucchini, green beans, chayote, squash, radishes, avocado, and canned beans. Out of these 11 items, 9 are fruits and vegetables and the remaining two have a healthy and unhealthy option (skim or whole boxed milk and canned whole or refried beans). Therefore the majority of the items added to the NEMS-S Guatemala survey were healthy food options. The lack of an

even number of healthy and unhealthy added items to the modified survey leads to a distortion in the presentation of results. The initial graph (figure 7) did not account for this variable, because it compared total items on the NEMS-S U.S. survey to total items on the NEMS-S Guatemala survey, so this suppressed the effect of the added items. Therefore, an additional comparison was made between the availability of the healthy food options using the NEMS-S Guatemala survey and the availability of healthy items out of *just the eleven items added to the modified survey*, to examine the effect of the added items. This second graph (figure 8) demonstrates a larger effect of the survey modification.

For Internacional Food Corp and Amigos Grocery Store, results indicate a large percent increase in availability of healthy food options when using the NEMS-S Guatemala survey. For Latino Americas Market this positive relationship between the added items and increased availability of healthy food options did not occur, but more than half of the items added were available in this bodega (6 out of 11). Overall, many of the items added to the NEMS-S Guatemala survey were available in the bodegas. Additionally, adding the items found in the Guatemalan diet allowed for a larger selection of healthy items in the stores because many of the added items were healthy and available. Therefore results indicate that the culturally-specific NEMS-S Guatemala survey is a more accurate tool to examine stores targeted to a specific ethnic population.

The second part of this first hypothesis, "meaning that consumer buying preferences in these stores are molded more by culture of origin" was supported by study findings, but not by the results of the NEMS-S surveys. Although the NEMS-S Guatemala survey was a better tool for quantifying the items sold in stores, this does not

provide information related to the preferences of consumers. NEMS-S collects quantitative data related to items sold in the stores, which reflects a decision of store managers. Therefore, it cannot be said that results of the NEMS-S survey reveal specific consumer buying preferences. But this part of the hypothesis was supported by information generated from interviews. Although most consumers claimed to feel more connected to their United States culture, almost all of the interview subjects said that they prefer food from their countries of origin. Despite varying lengths of time lived in the United States, interviewees and their friends and family continue to shop at the bodegas to buy items from their countries of origin. The strong interconnectedness between food and culture is an anthropological phenomenon, and will be discussed later in the discussion section. This further reinforces the necessity to have a tool specifically designed to measure the availability of culturally specific food items.

Although the storeowners' and consumers' food marketing and buying decisions both indicate a need for a culturally-specific analytic tool, results reveal a disconnect in the perceived factors that influence shopping decisions. One of the storeowners claimed that brand is the most important consideration for his customers, and he strives to market the items in his stores so that the Salvadorian brands are highlighted. But very few customers mentioned brand as a consideration in choosing what to buy. This inaccurate perception may lead to marketing issues for storeowners, as they could be promoting the wrong aspects of the food items. Since most of the interview subjects mentioned taste and price as the most important considerations, the storeowners should instead focus on marketing strategies to emphasize these qualities. The lack of price labels on food items will be examined in further detail later in the discussion.

The results generated from qualitative interviews can be shared with storeowners to help them market items that are most popular among customers. Most of the interview subjects buy cheese, rice, sweet bread, chips, corn flour, and beans at the bodegas. Because these are the most commonly purchased items for consumers, storeowners may be able to improve sales by emphasizing or relocating these items or by raising prices. Storeowners should also continue to focus marketing strategies on the foods that are from Central America and are not sold at the larger grocery stores. One of the storeowners implemented this tactic and it appeared as though his store was the busiest and most profitable of the three.

Although results support the first hypothesis about the importance of using a culturally-modified NEMS-S survey, there is still ambiguity about how specifically the NEMS-S survey needs to be modified for different cultural populations. In this study, the NEMS-S survey was modified to emulate the Guatemalan diet, and was used to analyze stores that sell primarily Central American (Guatemalan and Salvadorian) products. But can this survey be used to examine stores that sell South American products? How about Haitian or Puerto Rican products? One of the interview subjects from Colombia explained that she goes to the city of Everett to buy Colombian products; so clearly there is a difference in dietary selection among Latin American countries. Does there have to be a different NEMS-S survey for every country's diet? Where do we draw the line?

Second Hypothesis

The second hypothesis claims that there would be a general lack of healthy food options in these stores indicated by the results of the NEMS-S surveys. Results show that the percent of available healthy food options at La Internacional Food Corp, Latino

Americas Market, and Amigos Grocery Store according to the NEMS-S Guatemala survey (deemed the more accurate survey to analyze these bodegas) are 22%, 58.5%, and 68.3% respectively. These percentages demonstrate a relatively low availability of healthy food options in these stores, thus supporting the second hypothesis.

La Internacional Food Corp has a significantly lower selection of healthy food choices than Latino Americas Market and Amigos Grocery Store, even though Latino Americas Market is the smallest store. Interview results reveal that a possible explanation for this difference is the location of the three stores. Latino Americas Market and Amigos Grocery store are both located on Broadway in East Somerville. This is where the majority of the Latino population in Somerville is centered. In addition to these two bodegas, Broadway also contains a number of Central American and Brazilian restaurants, a Brazilian bodega, a *carnecería*, and a *panadería*. La Internacional Food Corp is located in Union Square, which has recently gone through a massive demographic transformation and gentrification. Since the two healthier bodegas are located within a more densely Latino populated area, they are able to generate enough customers and profit to be able to sell more fresh produce. Because Union Square is no longer the home of a large Latino population, the store does not foster enough business to allow the sale of fresh produce daily. This divergence between the two areas of Somerville will continue to increase as Union Square becomes more expensive and trendy, and this trend will most likely accelerate after the extension of the green line of the Massachusetts Bay Transit Authority of the west of Somerville.

Although most customers only shop at the Latino bodegas for specific items, the lack of healthy food options in these stores still has important implications for health.

For example, if a customer is going to Internacional Food Corp to buy sweet bread, but remembers that he or she is also out of cereal and milk, he may buy these items at the bodega out of convenience. Because this bodega only sells high-sugar cereal and whole milk, this customer is forced to buy these unhealthy items to bring home to his family. Therefore, it is important that the bodegas sell the healthy options of standard food items, so consumers have the choice to consider their health. Many interview subjects mentioned that they sometimes shop at the smaller stores to avoid the crowds and long lines at the larger grocery stores. If a customer is doing the majority of his weekly shopping at a bodega with limited produce and no healthy snack options, he or she is forced to bring unhealthy food back home to his family. If the owners of these bodegas want their stores to serve as a feasible alternative to the larger grocery stores, they have to provide adequate produce along with the culturally specific products.

Examining the three bodegas in this study, it is evident that the amount of healthy food options could be improved, especially at Internacional Food Corp. Based on study results, it is apparent that cultural preferences should be considered when determining policies to increase the sale of healthy foods. The consumers in these stores are drawn to products that remind them of El Salvador, so emphasizing these foods while subsequently adding healthier options (baked versions of the chips, lean meat, more fruits and vegetables, etc.) would improve the health of customers. Creating incentives for storeowners to sell more of these healthy options, and for consumers to buy these items would benefit the overall health of the community.

Additionally, only one interview participant listed health as a top priority in deciding which foods to buy. If consumers do not consider health in their shopping

decisions, they will not choose to buy healthy food options even if those options are available. The study population includes a wide range of age, education level, socioeconomic status, and time lived in the United States and still health was not a significant consideration in consumers' grocery shopping decisions. This indicates additional need for improved food policies for increasing nutrition education for the community of Somerville. This knowledge should be disseminated early on, but also for the older generations who may be continually putting themselves and their children at risk for obesity and related diseases.

Increasing nutrition education brings up additional challenges in changing the overall attitudes toward healthy eating. Many economically disadvantaged people may lack the resources to consider the health of their food choices, and may not problematize obesity as a health risk. If customers already struggle to afford enough food to feed a family, how can we convince them that they should also consider their health? Additionally, culture may influence perception of health foods, as immigrants may see Western food as generally healthy or unhealthy compared to food from their countries of origin. Increasing education will not be sufficient in convincing people to change their diets. It is necessary to think about the root of the problem: why do people eat what they eat, and how can we change this? A change in attitude combined with education of the health complications of obesity is the only way to change customers' shopping decisions. To supplement efforts targeted at consumer buying behavior, it is necessary to increase the healthy options in these bodegas.

Ultimately, despite the somewhat higher percentage of healthy food availability in Latino Americas Market and Amigos Grocery Store, there is still a need for increased

emphasis on healthy food, supporting the second hypothesis. This emphasis needs to come from both sides: the store owners need to sell more healthy foods and consumers need to learn more about health so they can make smarter decisions.

Third Hypothesis

The third hypothesis states that consumers will have reasons other than food for why they choose to shop at these stores: e.g. for community, social, and cultural aspects. Qualitative interview results support this hypothesis, as interviewees cited many non-food-related reasons for shopping at the Latino bodegas. For many customers, these stores create a sense of nostalgia of their countries of origin, and for others the bodegas provide consumers with a sense of community or a more relaxed shopping environment. When asked directly about the culture of the stores, many interviewees commented on the lack of culture, but their responses to other questions indicated that the atmosphere of the bodegas plays an important role in consumer shopping decisions and maintenance of culture.

In Purnima Mankekar's paper *'India Shopping': Indian Grocery Stores and Transnational Configurations of Belonging*, she describes the role of Indian grocery stores for the Indian diaspora in the San Francisco Bay Area as "commodities that participate in this ongoing construction of India and Indian culture" (2002, p.76). She goes on to propose "Indian grocery stores in the diaspora form a *crucial node* in the transnational circulation of texts, images, and commodities between India and the diaspora" and that "the objects sold in these stores create different *regimes of value* as they move from location to location" (2002, p.76). The three Latino bodegas in East Somerville play a similar role for the Central American population living in this area.

Even though many Central American consumers are unaware of the cultural connection provided by these bodegas, the stores function as a critical intermediary, or "*crucial node* in the transnational circulation" between these immigrants and their countries of origin. Additionally, Mankekar explains how Indian grocery stores allow for Indians in the Bay area, whom may otherwise feel excluded and unassimilated from American culture, to "forge community and identity" (2002, p.80). This same sense of community is seen in East Somerville, as the Latino bodegas provide a safe and familiar environment for consumers of different levels of acculturation. Just as Indians shop at Indian grocery stores for "India shopping" (2002, p.80), Central Americans can be said to shop at the three Latino bodegas in East Somerville for "Central American shopping."

Many participants described the deterioration of Latino culture that has occurred in the bodegas over the last few years. According to one subject, the bodegas had a much richer culture five years ago, but this aspect of the stores has declined as a result of the increasing popularity of Market Basket. Now that Market Basket has an "international" aisle and sells many Latino products, consumers can get most of the items that they want at the larger store for a much lower price. Many participants commented on the significant price reduction in comparable items at Market Basket, so this has taken a lot of business away from the smaller bodegas. As a result, storeowners do not have the resources to market the cultural aspect of the stores, thus shoppers just come and go and do their business quickly. The gentrification of Somerville (especially Union Square) and the movement of much of the Latino population to Everett and Malden have further accelerated the loss of business and culture from the bodegas.

One participant provided a different explanation for the recent decline in the cultural aspect of the bodegas. He explained how there have been many cases of immigration officers coming to the bodegas and arresting and deporting illegal immigrants. He said the stores used to have pictures and other artifacts from El Salvador, but that these items would draw unnecessary attention to the stores as a place where many immigrants, some illegal, could be found. He says that these cases of arrest and deportation have increased in the past few years, and this is why he believes the storeowners are trying to minimize their ties to the Latino culture. Regardless of the reason, interview participants agree that the culture of these bodegas is diminishing. This study may have captured an important moment in the middle of this transformation, or a snapshot of a cultural moment where these changes are occurring. These Latino bodegas are transitioning from places of cultural nexus to regular corner stores for customers to do a quick shop. But the cultural aspect of these stores may not completely diminish, because many customers still value the Latino aspect of the food products and store communities.

One interview subject made a statement that encompasses the sentiment of many consumers. She said, *"Food is one of the last things tied to your culture."* Many of the participants claimed to feel more connected to their culture in the United States, yet still prefer Central American food to North American food. While immigrants go through varying levels of acculturation, food seems to be one factor that they hold on to from their cultures of origin. Even the two Tufts student interviewees who were born and raised in the United States continue to shop at these bodegas for certain items. Therefore these stores will continue to persist through the gentrification of Somerville, price

increases, and immigrant deportations. The Central American culture and items sold at these stores are too important to the Latino customers for these stores to go out of business, and these bodegas will continue to aid in the maintenance of Latino culture in East Somerville.

An ethnographic study done on the Italian-American Community in the Philadelphia Metropolitan area found that in spite of major generational and technological changes in the community, there remained over the years a "community-shared, socially reinforced continuity in meal patterns and social participation in menu negotiation" (Goode, Curtis, & Theophano, 1984, p. 216). Therefore, because of the durable relationship between food and culture, the connection Latino customers feel from the bodegas will outlast societal changes to the community.

Other Findings

During the process of NEMS-S data collection, an interesting discovery was made regarding the price labeling in stores: very few items have price labels. The items that do have labels are random and sporadic, including some canned goods and a few produce items. But the majority of products remain priceless; forcing the customer to either ask the storeowners for prices or to just buy the items they want regardless of price. An interview question was added in response to this phenomenon, and results revealed an interesting disconnect between the perceptions of storeowners and customers.

When asked about the impact of price labeling on shopping decisions, storeowners seemed to think that the lack of labels does not have a significant influence on customers. They claim this lack of labeling is an accident, and is the result of laziness of employees and the constant changing of prices. From the perspective of the consumer,

the lack of labeling is an intentional tactic. A couple of participants claimed that the storeowners intentionally leave the items unlabeled to make it more difficult to compare the prices to the cheaper prices of comparable items at Market Basket. Additionally, the lack of prices does impact the shopping decisions of consumers. Many participants only buy items for which they already know the price, or ask the store employers the price before deciding what to buy. The lack of price labeling may have a negative impact on sales in these stores because customers may buy less than they would if items had price labels. This is because consumers may be embarrassed to ask for price information, and would instead choose to only buy items for which they already know the price.

When trying to obtain price data for the NEMS-S survey, an interesting discussion emerged with one of the store employers. In response to one of the price inquiries, the employer said, "For you the price would be…" When asked if he sometimes gives different prices to different customers, he admitted that he actually does. This finding was shocking. This tactic of deciding prices based on the apparent wealth or lack thereof of the consumer is obviously illegal, but is also unmonitored and most likely profit generating for storeowners. But the profits gained from price inflation based on customer appearance may not compensate for losses stemming from the lack of price labels. To increase sales and make products more appealing to customers, storeowners should be advised to accurately label food items with prices.

Policy Suggestions

Results indicate that culture plays a significant role in determining customers' food preferences. Therefore, it would be beneficial to incorporate culture in creating healthy food policies. Based on analysis of the three hypotheses, it is clear that there is a

need for both increased availability of healthy food options in the bodegas and increased education of consumers to promote the consumption of healthy foods. These improvements can be pursued through policy, and this policy should be created to appeal specifically to the Latino population.

As stated in the literature review, promising state and local obesity prevention policies incorporate certain foundational criteria: they are evidence-based or evidence-generating policies, which are legally feasible, financially viable, responsive to health inequalities, practical to implement and enforce, targeted at changing social norms, and part of a bigger plan (Graff et al., 2012). An example of a healthy food operation that meets these criteria is the Healthy Corner Store Initiative that is currently being pursued in bodegas around the Boston area. This system could be used as a model to promote the availability and sales of healthy foods in the Latino bodegas in Somerville.

The Healthy Corner Store Initiative aims to work with storeowners, local organizations, and community members to increase the amount of healthy options sold in corner stores. The Healthy Stores Network suggests a number of tactics to promote the sale and consumption of healthy foods in corner stores. First, it is crucial to "speak the language" of the storeowner, and communicate how they can profit from increasing the healthy food inventory. Educating storeowners about how they can actually increase store profits from selling items such as cut fruits or salads can incentive the sale of these healthier options. Second, local organizations can help by creating attractive displays, offering tastings and cooking demonstrations, providing nutritional information, increasing advertising, and promoting community outreach. These strategies can make healthy food options more appealing to both the storeowners and the customers. The

local organization Shape Up Somerville is currently using many of these tactics in its new Market Basket health promotion project. Organizations can also influence local policy to create tax incentives for stores that offer healthy items. Finally, local community members and youth can help spread the word about benefits of the new healthy products sold at the stores. Storeowners, local organizations, and the community can all work together to educate consumers about the importance of a healthy diet (Healthy Corner Stores Network, 2014).

Combining the cultural aspect with the Healthy Corner Store Initiative model would be the ideal way to improve the availability of healthy foods and education of consumers in the Latino community in East Somerville. The tactics dealing with the storeowners would be the same, but the role of local organizations would be slightly modified to create displays, taste tests, cooking demonstrations, advertising, and community outreach that appeal to the Latino population specifically. Methods could focus on foods and brands that are most commonly purchased as revealed through interviews. Organizations could post recipes next to the beans section, describing soups with whole black beans and low fat cheese. There could be taste tests of the Latino produce, such as chayote and avocados, and these items could be placed next to the registers. Popular items such as sweet bread or other unhealthy choices could be placed in a harder to access area of the stores, with nutritional information emphasized and healthier options available (low fat baked goods and baked chips). Community outreach such as advertisements or nutritional pamphlets could be provided in both Spanish and English for customers to give to their family members and friends. Finally, community-cooking classes could be offered to teach consumers how to cook with fresh produce and

other healthy ingredients. All of these tactics suggested by the Healthy Corner Store Initiative could be very successful in this community if culture is accounted for.

Study Limitations and Suggestions for Additional Research

This study presents some limitations to be overcome in future studies. For example, the difficulty of obtaining health data presents a major obstacle for understanding the extent of the obesity problem in any specific town. In trying to gauge the exact obesity statistics for Somerville and to map out the trends using Geographic Information Systems (GIS), I had to go through multiple channels to figure out where to obtain this data. I am currently working with Shape Up Somerville to try to access the data, but I still do not yet have this information. This difficulty is a problem for health research in general, as the restrictions of HIPAA make the majority of health information inaccessible to many researchers. Although it is important to ensure patients' privacy, the negative influence of these laws on health research and promotion is important to consider.

Another limitation is the small number of bodegas and sample size of interview participants. This limitation is a result of the insufficient amount of time I had to complete the study. Because I only had five months to complete the study after receiving IRB approval, I was unable to study more bodegas or obtain more than ten interview participants. This small sample sizes leads to the difficulty to generalize findings to the larger population. Additional research is needed in this area to test the hypotheses on more bodegas of Latino and other ethnic backgrounds, and to conduct more interviews.

Limitations also include the language barrier and my lack of having a car to get to the three bodegas. Although I am proficient in Spanish and had a translator for

interviews, if I had been a native speaker it may have been easier to recruit participants and to fully understand their responses to the interview questions. Because of my lack of a car, I had to walk, bike, get a ride, or take the bus to get to three stores. Since the stores were all in different areas, it often took a long time to get to all three in the same afternoon. If I had a car this would have made it easier to travel to the stores more quickly and more often, which may have allowed me to recruit more interview participants.

Because this study ultimately relates to obesity and health, another limitation is the lack of a thorough analysis of the consumers' perceptions of health. There was only one interview question related to health, and the results from this question were shocking: only one interviewee indicated health as an important consideration in choosing what to buy. Additional research is necessary to examine this lack of health knowledge and to relate this information to the availability of healthy food options and the need for healthy food policies.

Finally, additional research is needed to examine the lack of price labeling on food items. The perception of this phenomenon differs for the storeowner and consumer, and this finding has important implications for marketing and policy. A market analysis on the economic implications of excluding price labels would enrich the understanding of the dynamics of these stores. The causes and results of this tactic would also be relevant in prescribing healthy food options for these bodegas.

Conclusion

Ultimately, the majority of customers interviewed in this study shop at the Latino bodegas in Somerville for cultural reasons. Despite the varying number of years

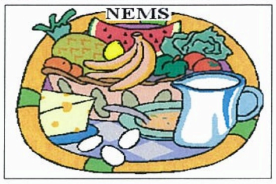
consumers have lived in the United States, they all feel somewhat connected to their cultures of origin, whether it is El Salvador or elsewhere. The foods sold at these stores function as a "*crucial node* in the transnational circulation", and provide a way for people to connect to and maintain a culture that may otherwise be lost or assimilated to U.S. culture, as one of the subjects claimed *"food is one of the last things tied to your culture."* Therefore acknowledging the significance of culturally specific foods is important in understanding what drives food preferences.

The Latino bodega may serve only as a nostalgic oasis to buy specific items reminiscent of Central American cultural origins, but these stores should not contribute to the obesogenic environment that many consumers in our society face. There should be sufficient healthy food options at these stores so that consumers can choose for themselves what foods they want to buy, if they are doing a quick shop or if they are doing their weekly grocery shopping. Additionally, nutrition education should be improved so that consumers have the appropriate information to guide buying preferences. Health does not have to be the number one consideration for consumers, but it should at least come second after taste or price. Food policies are needed to improve the availability of healthy food options in these stores and to increase nutrition education in the community, and the Healthy Corner Store Initiative is a good model for a system that may work in Somerville. Finally, cultural background and country of origin should be considered when formulating policies to target these issues.

Appendix

Appendix I: Excerpt from NEMS-S U.S. Survey

Nutrition Environment Measures Survey (NEMS)
Food Outlet Cover Page



Rater ID: ☐☐

O Grocery Store
O Convenience Store
O Other_____

Store ID: ☐☐-☐-☐☐-☐☐☐

Date: ☐☐/☐☐/☐☐
Month Day Year

Start Time: ☐☐:☐☐ O AM O PM

End Time: ☐☐:☐☐ O AM O PM

Number of cash registers: ☐☐

O SD O FC O FF O Specialty O Other

Restaurant ID: ☐☐-☐-☐☐-☐☐☐

Site Visit Date: ☐☐/☐☐/☐☐
Month Day Year

Start Time: ☐☐:☐☐ O AM O PM
End Time: ☐☐:☐☐ O AM O PM

Menu/Internet Review Date: ☐☐/☐☐/☐☐
Month Day Year

Start Time: ☐☐:☐☐ O AM O PM
End Time: ☐☐:☐☐ O AM O PM

Other Visit/Interview Date: ☐☐/☐☐/☐☐
Month Day Year

Start Time: ☐☐:☐☐ O AM O PM
End Time: ☐☐:☐☐ O AM O PM

Comments: _____

Nutrition Environment Measures Survey (NEMS)
Cover Page

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8250013302

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)
Measure #1: MILK

Rater ID: ☐☐

Date: ☐☐ / ☐☐ / ☐☐
Month Day Year

Store ID: ☐☐-☐-☐☐-☐☐☐

O Grocery Store O Convenience Store O Other

Marking Instructions

Please use a pencil or blue or black ink. Correct ● Incorrect ✓ ✗ ◒ ◉

A. Reference Brand

1. Store brand (preferred) O Yes O No

2. Alternate Brand Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Comments: _____

B. Availability

Comments:

1. a. Is low-fat (skim or 1%) available? O Yes O No _____

b. If not, is 2% available? O Yes O No O NA _____

2. **Shelf space:** (measure only if low fat milk is available)

Type	Pint	Quart	Half gallon	Gallon
a. Skim	☐☐	☐☐	☐☐	☐☐
b. 1%	☐☐	☐☐	☐☐	☐☐
c. Whole	☐☐	☐☐	☐☐	☐☐

C. Pricing All items should be same brand

Comments:

1. Whole milk, quart $☐.☐☐ _____

2. Whole milk, half-gallon $☐.☐☐ _____

3. Skim or 1% milk, quart $☐.☐☐ _____
(Lowest-fat milk available)

4. Skim or 1% milk, half-gallon $☐.☐☐ _____
(Lowest-fat milk available)

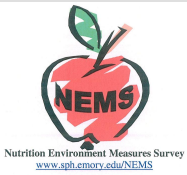
Alternate Items:

5. 2%, quart $☐.☐☐ O N/A _____

6. 2%, half-gallon $☐.☐☐ O N/A _____

Appendix I: Excerpt from NEMS-S Guatemala Survey

Nutrition Environment Measures Survey (NEMS) - Guatemala
Food Outlet Cover Page



Rater ID: |__|__|

○ Grocery Store

Store ID: |__|__|-|__|__|-|__|__|-|__|__|-|__|__|__|__|

Date: __/__/__
Month Day Year

Start Time: |__|__| : |__|__|
○ AM
○ PM

End Time: |__|__| : |__|__|
○ AM
○ PM

Number of cash registers: |__|__|

Comments: _____

_____

_____

_____

_____

_____

_____

Nutrition Measures Survey (NEMS) - Guatemala
Cover Page

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Nutrition Environment Measures Survey (NEMS) - Guatemala
Measure #1: MILK - FRESH

Rater ID: ___ Store ID: ___-___-___-___-___

Date: ___/___/___
Month Day Year

O Grocery Store O Convenience Store O Tienda O Street Vendor O Other

Marking Instructions

Please use a pencil or blue or black ink Correct ● Incorrect ✓ ⊗ ⬭ ◉

A. Reference Brand

1. Trebolac (preferred) O yes O no

2. Alternate Brand Name _____

Comments: _____

B. Availability Comments:

1. a. Is low-fat (skim or 1%) available? O Yes O No _____

b. If not, is 2% available? O Yes O No O NA _____

2. **Shelf Space:** (measure only if low fat milk is available)

Type	Pint	Quart	Half gallon	Gallon	Bag
a. Skim					
b. 1%					
c. Whole					

C. Pricing: All items should be same brand Comments:

1. Whole milk, gallon Q ___.___ _____
2. Whole milk, half-gal. Q ___.___ _____
3. Skim or 1% milk, gallon (Lowest available) Q ___.___ _____
4. Skim or 1% milk half-gal. (Lowest available) Q ___.___ _____

Alternate Items:

5. 2%, gallon Q ___.___ O N/A _____
6. 2%, half gal. Q ___.___ O N/A _____

Appendix III: Interview Questions (English)

About the store:

1. What makes you decide to shop here[2]?
2. How much of your shopping do you do here?
3. Do you only shop for certain items here?
4. Where else do you go for your groceries?
5. Are there any items that you only buy in the larger grocery stores?
6. If yes to above, why?
7. What items do you generally buy here?
8. Why do you choose to buy them here?
9. How often do you shop here compared to the larger grocery stores?
10. Why this store; do you also shop at any of the other neighborhood stores?
11. Do any of your friends or family shop here?
12. Are there any other reasons besides the food products that you shop at this store?
13. How far is this store from your house?
14. Do you generally walk here or drive here?
15. How do you choose what to buy: what is more important to you when buying food- taste, price, brand or health? What is next important? What is next after that?
16. Do you still purchase items you want or need even if the price is not listed?

Background information about interviewee:

17. How long have you/your family lived in the Boston area?
18. How long have you lived In the United States?
19. Where were you born?
20. Where is your family from originally?
21. In what ways do you feel connected to your culture here in the United States?

Appendix IV: Interview Questions (Spanish)

Acerca de la tienda:

1. ¿Cual es la razón por la cual usted decide ir de compras acá?
2. ¿Hace la mayoría de sus compras aquí?
3. ¿Hay algunas cosas que Ud. solamente compra acá?
4. ¿A que otros lugares va Ud. Para comprar sus alimentos?
5. ¿Hay algunas cosas que sólo se pueden comprar en los supermercados?
6. Si la respuesta de la pregunta anterior es sí, ¿por qué?
7. ¿Cuáles son los artículos que compra más a seguido acá?
8. ¿Por qué usted decide comprarlos aquí?
9. ¿Con qué frecuencia viene usted acá en comparación con los supermercados para hacer las compras?
10. ¿Por qué esta tienda; también hace sus compras en otras bodegas?
11. ¿Tiene algunos amigos o familiares que vienen a hacer sus compras en esta tienda?

[2] Substitute “here” or “aqui” with whichever store interviewee is recruited from

12. ¿Hay otras razones, además de los productos alimenticios, que usted compra en esta tienda?
13. ¿Que tan lejos le queda la tienda de su casa?
14. ¿Por lo general, camina o conduce para llegar aquí?
15. ¿Cómo elige Ud. qué comprar: ¿Cuál de estas opciones es la más importante para usted en la compra – el sabor de la comida, el precio, la marca o la salud? ¿Cuál es el próximo más importante? ¿Qué sigue después de eso?
16. ¿Compra usted un artículo o producto que quiere o necesita que no tiene la etiqueta de precio?

Información de fondo sobre el entrevistado:

17. ¿Por cuánto tiempo ha vivido su familia (nuclear o extendida) en Boston?
18. ¿ Por cuánto tiempo ha vivido su familia (nuclear o extendida) en los Estados Unidos?
19. ¿Dónde nació Ud.?
20. ¿De dónde es su familia (nuclear o extendida)?
21. ¿De qué manera se siente conectado con su cultura aquí en los Estados Unidos?

Appendix V: Longer NEMS graph (results)

	Neighborhood																
	La Internacional (U.S.)		La Internacional (Guate)		Latino Americas (U.S.)		Latino Americas (Guate)		Amigos (U.S.)		Amigos (Guate)		Total # Healthy Available	Total # Regular Available	Total # of Stores	% Total Healthy	% Total Regular
	Availability																
Item	healthy	regular	healthy	regular	healthy	regular	healthy	regular	healthy	regular	healthy	regular					
1) Skim milk	0	1	0	1	1	1	1	1	1	1	1	1	**4**	**6**	**6**	**0.67**	**1.00**
1) Boxed skim milk (Guate)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.00	0.00
2) Fruit																	
Bananas	1		1		1		1		1		1		6	n/a	6	1.00	
Apples	0		0		1		1		1		1		4	n/a	6	0.67	
Oranges	0		0		1		1		1		1		4	n/a	6	0.67	
Grapes	0		0		0		0		1		1		2	n/a	6	0.33	
Cantaloupe	0		0		0		0		1		1		2	n/a	6	0.33	
Peaches	0		0		0		0		0		0		0	n/a	6	0.00	
Strawberries	0		0		1		1		0		0		2	n/a	6	0.33	
Honeydew Melon	0		0		0		0		0		0		0	n/a	6	0.00	
Watermelon	0		0		0		0		0		0		0	n/a	6	0.00	
Papaya (Guate)			0				1				1		2		3	0.67	
Pineapple (Guate)			0				1				1		2		3	0.67	
Plums (Guate			0				0				1		1		3	0.33	
Pears	0		0		0		0		0		0		0	n/a	6	0.00	
3) Vegetables																	
Carrots	1		1		1		1		1		1		6	n/a	6	1.00	
Tomatoes	1		1		1		1		1		1		6	n/a	6	1.00	
Sweet Peppers	0		0		1		1		1		1		4	n/a	6	0.67	
Broccoli	0		0		1		1		0		0		2	n/a	6	0.33	
Lettuce	0		0		1		1		1		1		4	n/a	6	0.67	
Corn	0		0		0		0		1		1		2	n/a	6	0.33	
Celery	0		0		1		1		1		1		4	n/a	6	0.67	
Cucumbers	0		0		1		1		1		1		4	n/a	6	0.67	
Cabbage	1		1		1		1		1		1		6	n/a	6	1.00	
Green Beans (Guate)			0				1				1		2		3	0.67	
Zucchini (Guate)			0				1				1		2		3	0.67	
Chayote (Guate)			1				1				1		3		3	1.00	
Squash (Guate)			0				0				0		0		3	0.00	

Radishes (Guate)			0				0				0		0		3	0.00	
Avocados (Guate)			1				1				1		3		3	1.00	
Cauliflower	0		0		1		1		1		1		4	n/a	6	0.67	
4) Lean meat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.00	0.00
5) Fat free/light Hotdogs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.00	0.00
6) Reduced fat frozen dinners	0	0	0	0	0	0	0	0	0	1	0	1	0	2	6	0.00	0.33
7) Low fat baked good	0	1	0	1	0	1	0	1	1	1	1	1	2	6	6	0.33	1.00
8) Beverages																	
Diet soda	1	1	1	1	1	1	1	1	1	1	1	1	6	6	6	1.00	1.00
100% juice	1	1	1	1	1	1	1	1	1	1	1	1	6	6	6	1.00	1.00
9) 100% whole wheat bread	0	1	0	1	1	1	1	1	1	1	1	1	4	6	6	0.67	1.00
10) Baked chips	0	1	0	1	0	1	0	1	0	1	0	1	0	6	6	0.00	1.00
11) Low sugar cereal	0	0	0	0	1	1	1	1	1	1	1	1	4	4	6	0.67	0.67
12) Canned black beans (Guate)			1	1			1	1			1	1	3	3	6	0.50	0.50
Total # of NEMS healthier items per store (max. 30 for U.S. and 41 for Guate)	6		9		18		24		20		28						

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