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Greater Waco Food Environment Study

A collaborative effort between:

Baylor School of Social Work

Texas Hunger Initiative

Waco-McLennan County Public Health District

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Introduction

Food Desert

A food desert is defined by the U.S. Department of Agriculture, Treasury and Department of Health and Human Services as a low-income census tract where either a substantial number or share of residents has low access to a supermarket or large grocery store¹. There are two criteria that must be met to qualify census tracts as food deserts:

1. The census tract has a poverty rate of $\geq 20\%$ OR a median income $\leq 80\%$ of the area median family income; AND
2. The census tract qualifies as “low-access” based on ≥ 500 persons and/or $\geq 33\%$ of the census tract’s population live more than one mile from a supermarket or large grocery store.

Live Well Waco and its partners aim to increase healthy eating in McLennan County, TX by increasing access to affordable fruits and vegetables. This assessment provides Live Well Waco and its partners a sketch of what food is available in particular census tracts and zip codes which will help guide current healthy living initiatives, as well as those to be developed in the future. Waco-McLennan County Public Health District (WMCPHD) received funding from the Centers for Disease Control and Prevention (CDC) through the Texas Department of State Health Services (DSHS) to perform this local assessment. The Texas Nutrition Environment Assessment in Stores (TxNEA-S) survey tool was used in convenience and grocery stores in 7 zip codes.

The survey findings are intended to be shared with community stakeholders and decision makers in hopes that environmental changes will take place. Live Well Waco will share these findings with local food environment and access experts for their use in identifying locations for greatest impact.

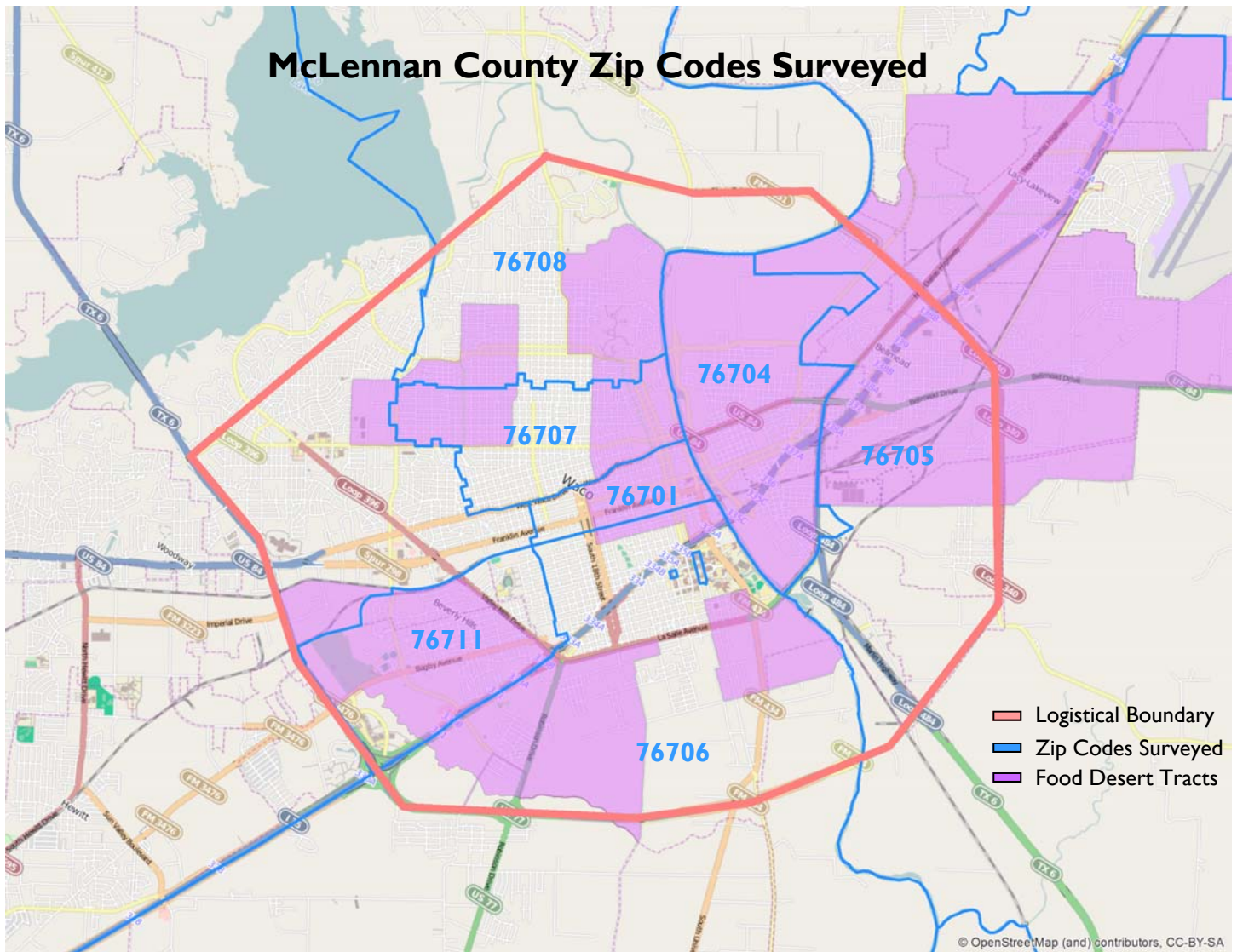
Methods

Sample

Seven zip codes were selected for this study which contained at least one food desert census tract and are located within the 340 Loop and Highway 6 for logistical purposes. The stores in this geographic area make up the majority of all the stores located in food deserts in McLennan County, TX. Store information was gathered from WMCPHD health permit data and was geo-coded by address for analysis.

This study defined grocery stores similar to the Tarrant County Food Desert Project, as retail food establishments providing dry, canned and frozen foods, fresh produce, meat and dairy². Grocery stores surveyed could be independent or a chain of any size. One grocery store and several convenience stores that were located in identified zip codes closed down during the data collection window, so they were not surveyed. For most of the comparisons, grocery stores were compared to convenience stores, which included drug stores, corner stores, and discount stores.

A total of 111 stores/venues were identified in 7 zip codes; 5 grocery, 13 discount, 92 corner stores, and 1 farmer’s market.



Survey

DSHS developed the TxNEA-S as a modification to the Nutrition Environments Measures Survey in Stores (NEMS-S) to include foods that are culturally appropriate to Texas residents. The survey tool is used to assess availability, quality, and cost of foods recommended by the Dietary Guidelines for Americans and contains 14 categories of food with a total of 134 items³.

Baylor Master of Social Work students administered the survey to 111 stores in 7 zip codes as one of their class projects from February to April 2014. Two trainings were conducted on how to collect data using the survey instrument and enter it into a spreadsheet. Training materials were obtained from DSHS, including simplified reference sheets for the surveyors. The data was entered into an Excel spreadsheet and then imported into STATA13 for analysis.

Response rates of convenience and grocery stores were calculated within each zip code area and compared in tables and charts. The availability and cost were compared across convenience and grocery stores also. Price analysis of available items was conducted across 5 food categories which had high percentages of availability. For sample size and comparison, discount stores were combined with corner stores for the price analysis.

Results

Sample Response

In figures 2-5, the sample distribution is described by zip code, type of store, and survey status for this study. Not all zip code areas surveyed contained grocery stores, which is a reason for these areas being classified as food deserts.

Stores Surveyed by Zip Code

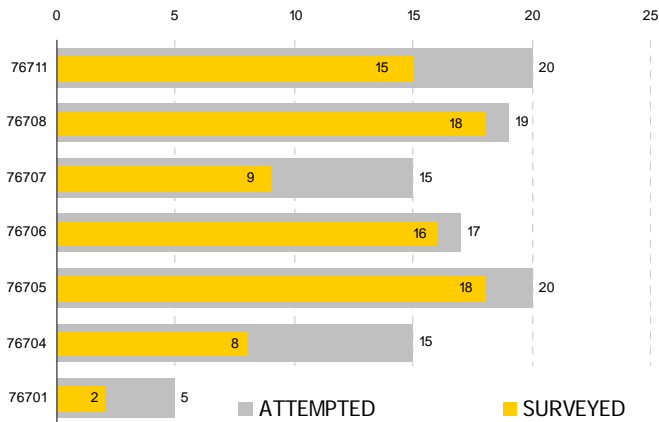


Figure 2

Stores Surveyed by Store Type

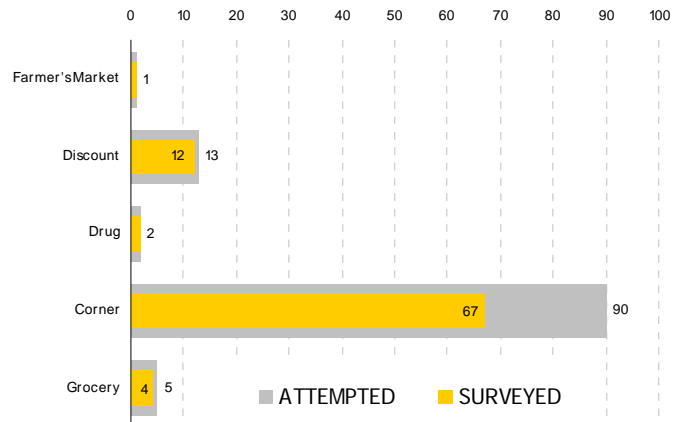


Figure 3

Percentage of convenience vs grocery stores in 7 zip code areas, McLennan County, 2014

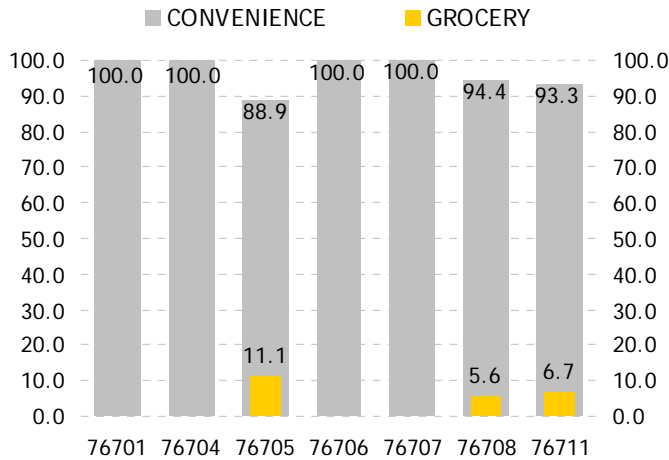


Figure 4

Counts of surveyed convenience vs grocery stores McLennan County, 2014

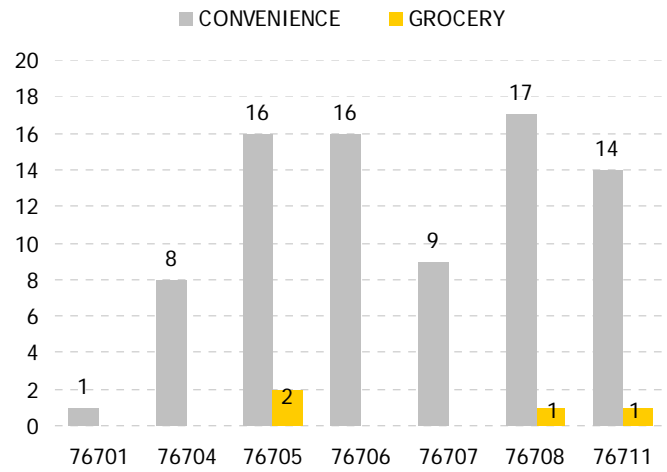


Figure 5

In the 7 zip code areas identified, 111 stores were attempted to be surveyed and 86 were successfully surveyed, which resulted in a 77.5% response rate. Corner stores had the lowest response rate of the different types of stores surveyed.

Food Category (number of items in survey)	Average Number of Available Items (%)						
	76701	76704	76705	76706	76707	76708	76711
Fresh Fruit (n=16)	0.0 0%	0.4 2%	2.6 16%	0.5 3%	0.8 5%	0.8 5%	1.4 9%
Fresh Vegetables (n=25)	6.5 26%	0.0 0%	2.8 11%	0.5 2%	0.0 0%	1.3 5%	1.9 8%
Dairy-Milk (n=17)	2.5 15%	2.1 13%	4.3 25%	3.1 18%	2.6 15%	2.6 15%	4.7 28%
Dairy-Yogurt & Cottage Cheese (n=4)	0.0 0%	0.1 3%	0.6 14%	0.2 5%	0.0 0%	0.2 6%	0.4 10%
Dairy-Other Cheese (n=8)	0.5 6%	0.8 9%	1.6 20%	1.1 13%	1.2 15%	1.0 13%	1.4 18%
Canned Fruit (n=10)	2.0 20%	1.3 13%	2.6 26%	1.9 19%	1.3 13%	2.0 20%	1.3 13%
Canned Vegetables (n=5)	0.5 10%	3.3 65%	2.8 56%	2.9 59%	1.1 22%	1.7 33%	2.0 40%
Canned Beans & Legumes (n=9)	1.5 17%	3.4 38%	2.4 27%	3.1 35%	2.7 30%	2.6 28%	2.3 26%
Grains-Cereal (n=9)	1.0 11%	2.5 28%	4.1 46%	3.3 37%	3.6 40%	3.1 34%	2.7 30%
Grains-Bread & Baked Goods (n=9)	0.5 6%	1.8 19%	2.3 26%	1.9 21%	1.5 17%	2.0 22%	3.0 33%
Grains-Pasta, Rice, Dried Beans (n=7)	1.0 14%	3.3 46%	2.4 35%	2.4 34%	1.1 16%	2.3 33%	2.1 30%
Frozen Fruits & Vegetables (n=13)	0.0 0%	0.0 0%	1.4 11%	0.0 0%	0.2 2%	0.7 6%	0.9 7%
TOTAL (N=132)	16.0 12%	18.8 14%	29.9 23%	21.1 16%	16.1 12%	20.2 15%	24.1 18%

Figure 6

Food Availability

The average number of items per food category varied (e.g. fresh vegetables was surveyed for 25 different items as opposed to dairy-milk, which had 4 items surveyed for). The majority of food categories across all stores had comparable percentages of variety, except for fresh fruits and vegetables, yogurts, and frozen fruits and vegetables (figure 6). Of the 7 zip codes surveyed, 76705 showed the highest percentage of variety across all categories.

Figures 7-12 illustrate specific food item availability by store type and zip code area. The 76701 zip code sample size was too small to look deeper into each available category. Each figure gives four pieces of information:

1. The number of stores in each zip code area surveyed
2. The number of convenience stores with at least one item available
3. The number of grocery stores with at least one item available
4. The average number of available items in the stores with at least one item available.

Grocery & Corner Store Availability by ZIP and Food Category 76704

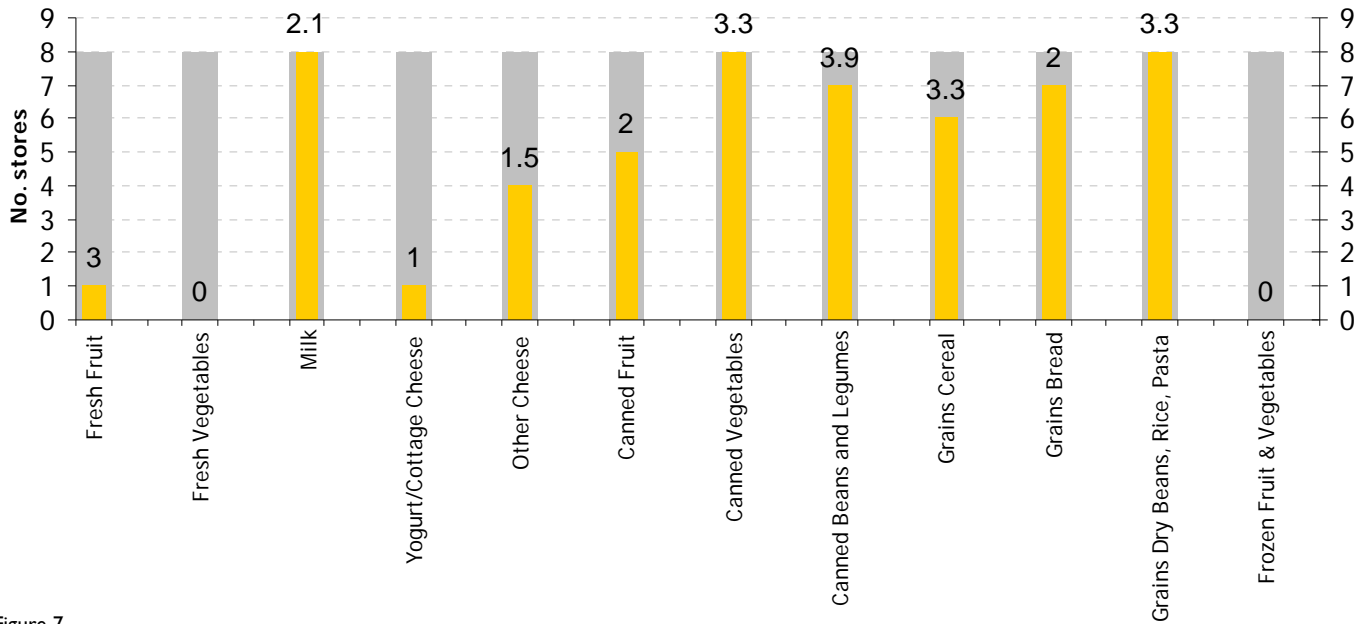


Figure 7

Grocery & Corner Store Availability by ZIP and Food Category 76705

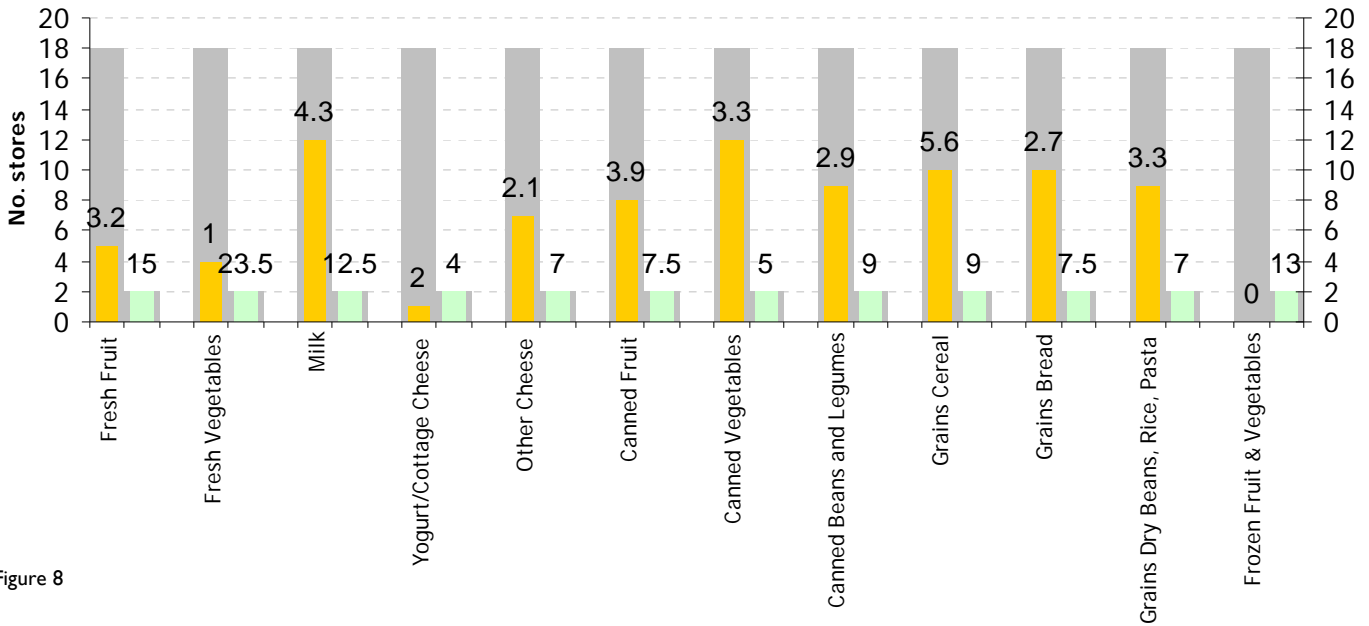


Figure 8

- No. of Stores in ZIP
- No. of Convenience Stores with ≥ 1 item available
- No. of Grocery Stores ≥ 1 item available
- #** Average number of available items in stores with ≥ 1 item available

Grocery & Corner Store Availability by ZIP and Food Category 76706

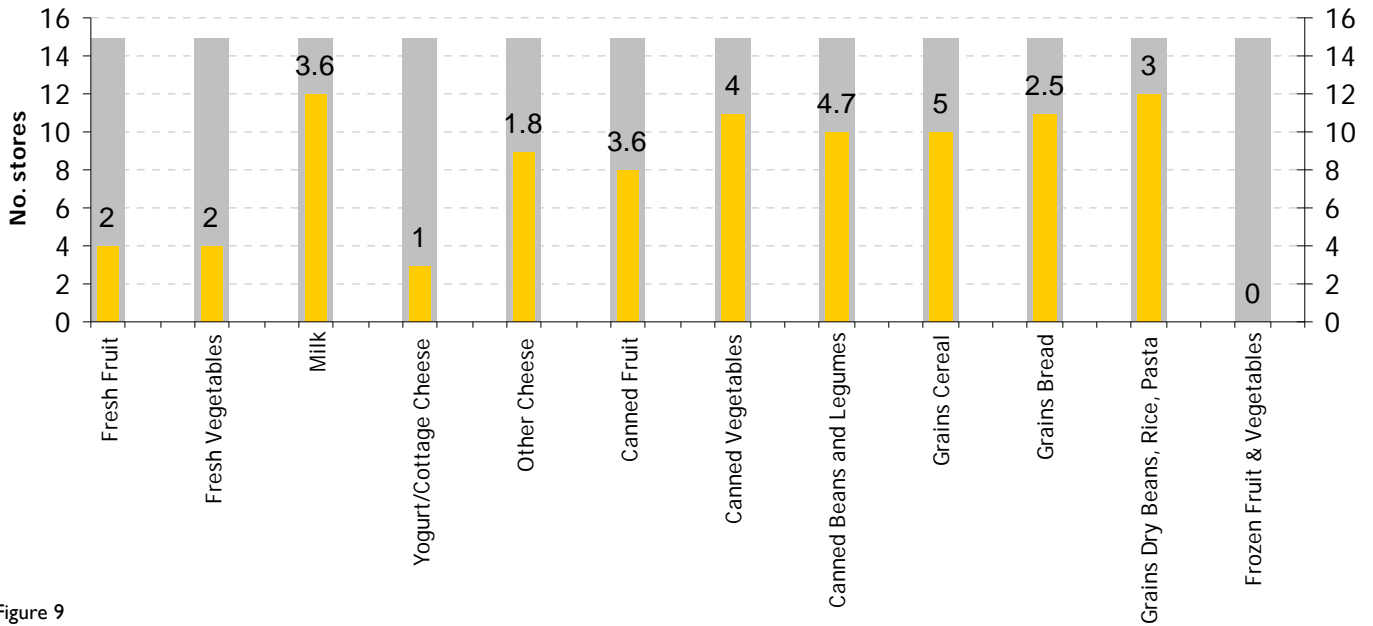


Figure 9

Grocery & Corner Store Availability by ZIP and Food Category 76707

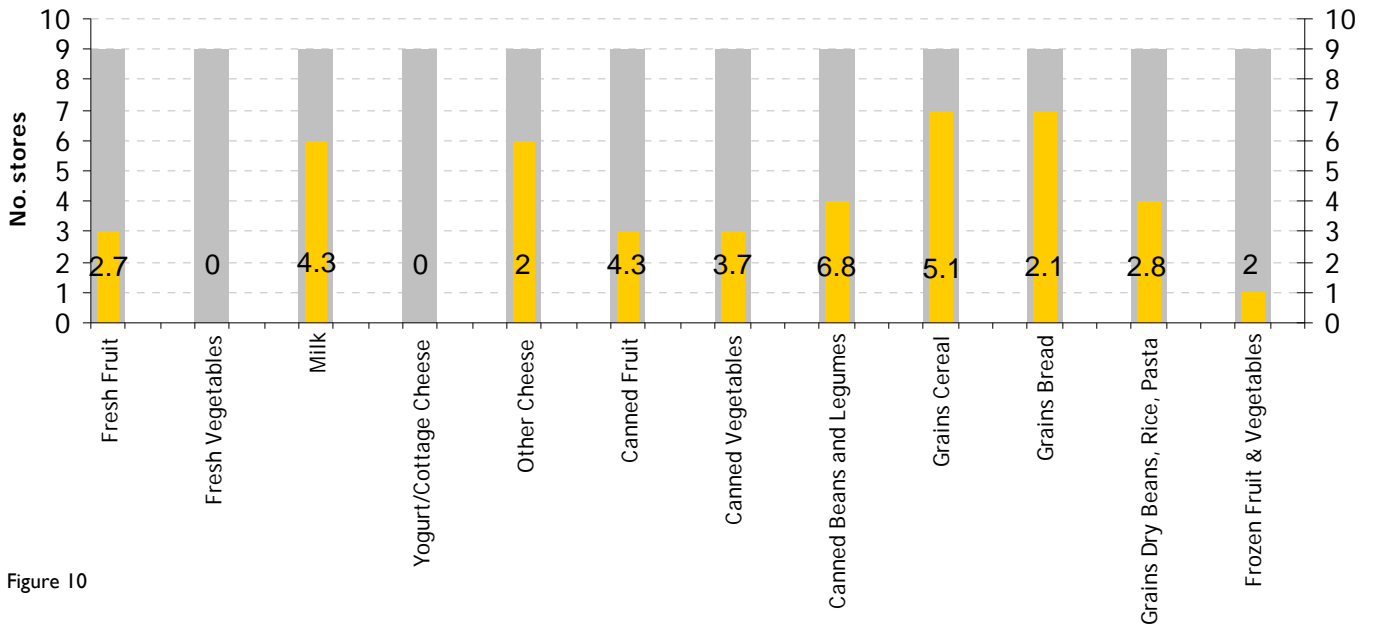


Figure 10

- No. of Stores in ZIP
- No. of Convenience Stores with ≥ 1 item available
- No. of Grocery Stores ≥ 1 item available
- #** Average number of available items in stores with ≥ 1 item available

Grocery & Corner Store Availability by ZIP and Food Category 76708

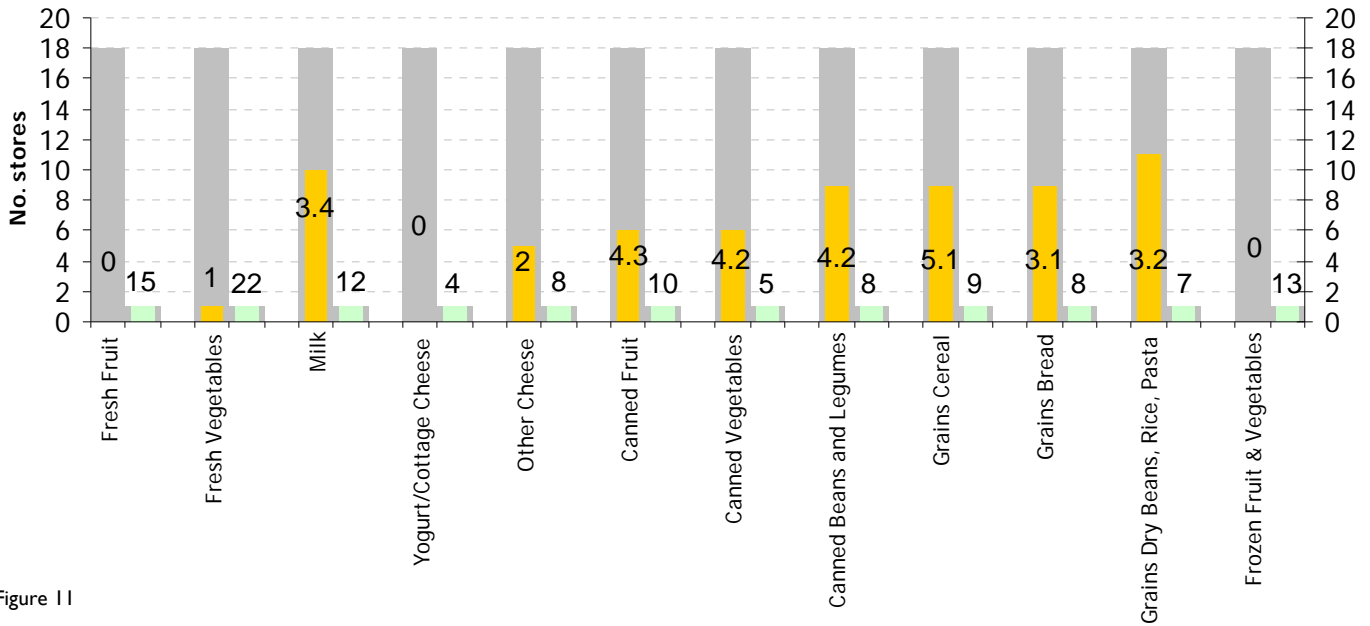


Figure 11

Grocery & Corner Store Availability by ZIP and Food Category 76711

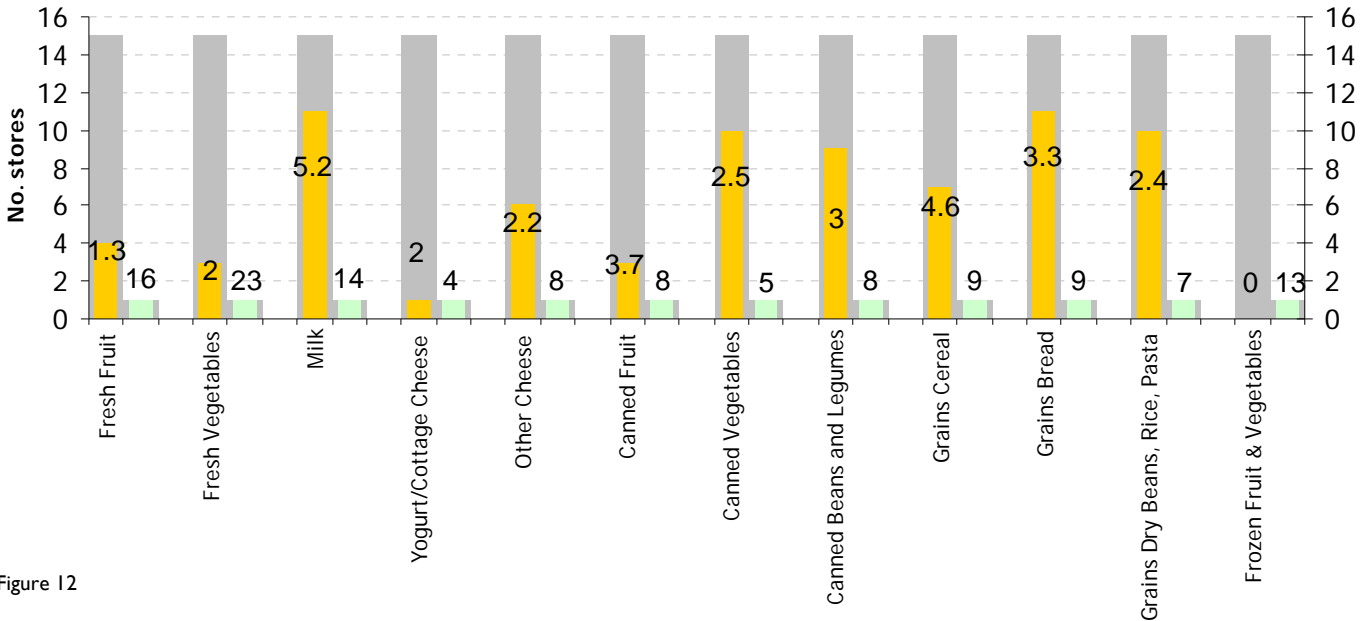


Figure 12

- No. of Stores in ZIP
- No. of Convenience Stores with ≥ 1 item available
- No. of Grocery Stores ≥ 1 item available
- #** Average number of available items in stores with ≥ 1 item available

Cost Survey

The most abundant food items across all types of stores were selected to compare average prices by store type. For this comparison, discount stores were separately compared to grocery and corner stores, as opposed to being combined with corner stores to be labeled convenience stores as before. This was done to provide a stratified comparison of store types in our community.

Dairy-Milk



Figure 13

Grains & Dried Goods



Figure 14

Grains: Cereals

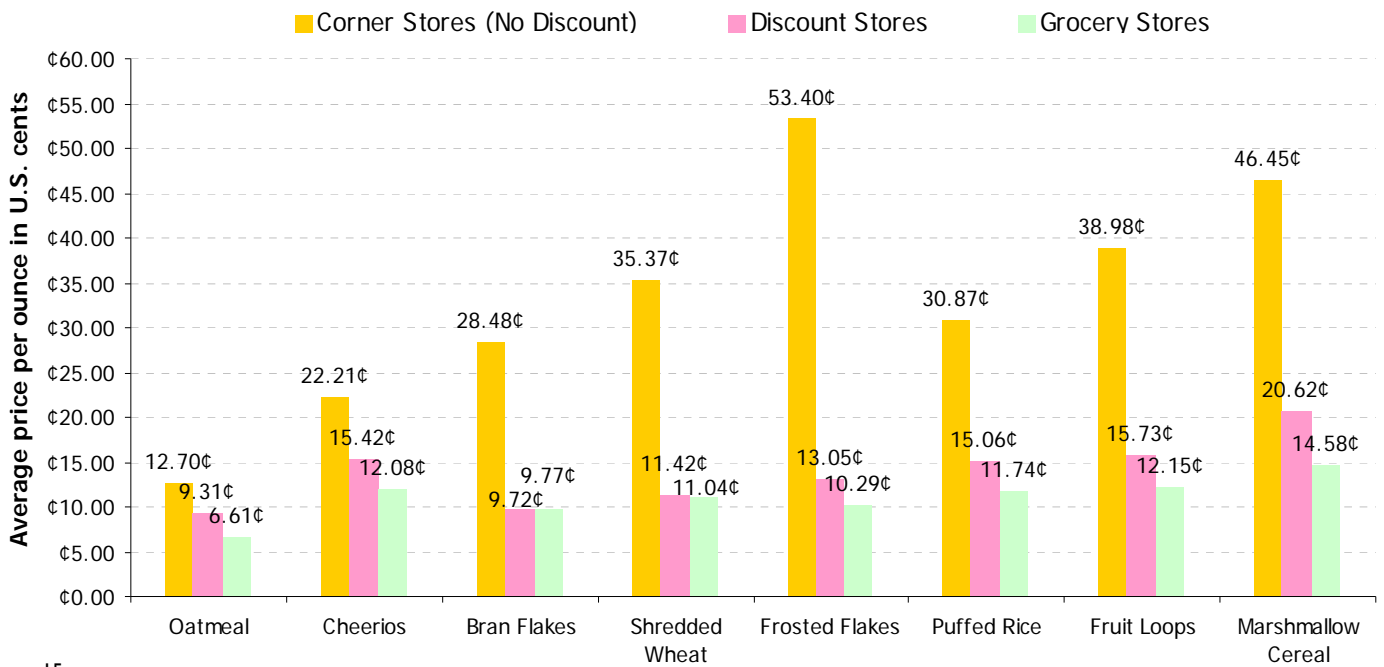


Figure 15

Grains: Breads



Figure 16

The cost of food items in corner and grocery stores were significantly different in 26 of 30 food items assessed for price. The cost of food items in discount and grocery stores were significantly different in 15 of 30 food items assessed for price. The cost of food items in discount and corner stores were significantly different in 19 of 30 food items assessed for price (figures 13-17).

Canned Goods



Figure 17

Conclusion

- Of the different food categories, milk, grains and canned goods were the most available. The stores surveyed in the 76705 zip code had the greatest variety of all food categories. The frozen fruits and vegetables category was remarkably low in all zip code regions.
- Several zip code regions (76701, 76704, 76706 & 76707) did not have a grocery store, which contributes to the low availability percentages in those regions. Grocery stores had significantly more available items in each food category over convenience stores.
- The majority of items available in corner stores are 2-3 times more expensive than in grocery stores, some items even greater.
- The Greater Waco food desert areas have disparities in healthy food availability.

References:

1. <http://apps.ams.usda.gov/fooddeserts/foodDeserts.aspx>
2. Salyer-Caldwell, A; Chen, J; Markham, M. 2013. Tarrant County Food Desert Project: Nutrition Environment Assessment Report.
3. Gloria, CT; Steinhardt, MA. 2010. Texas nutrition environment assessment of retail food stores (TxNEA-S): development and evaluation. Public Health Nutrition: 13(11) 1764-1772.