The Relationship between Supermarket Concentration and the Shopping Habits of the Urban Poor: a Prepared Foods Example

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Abstract

This paper adds to the literature on household prepared food purchasing behavior of urban households by analyzing price, income, shopping environment, and demographic data. A nationally representative dataset was used to determine which geographic, health, economic and demographic factors effected households' expenditures at grocery stores. A logit model was used to determine both urban poor and urban non-poor households' probability of purchasing prepared foods. Both urban populations' prepared food purchasing behaviors were found to be unresponsive to household income and prepared food price changes. The healthfulness of prepared food items does not affect households' probability of purchasing prepared food items. Additional variables that are significantly related to the purchase of prepared foods include: distance to a grocery store, percentage of households that are minorities, the number of trips per week to the grocery store, and female headed households that were employed.

Introduction:

Low-income and low-access (LILA) households represent a subset of the population that has limited-access to healthy fresh food and likely healthy prepared foods. By definition, these households (HH) have low-access to supermarkets and have a monthly income below the poverty threshold (Food 2013). These households' shopping environment is usually characterized by an abundance of corner stores, convenience stores, independent supermarkets and other small grocery based retailers (Sharkey et al. 2009, Powell et al. 2007, and Weatherspoon et al. 2013 and 2014). LILA households are often unable to prepare healthy meals at home and must rely on their immediate shopping environment for those types of goods. Of concern is that these households are not able to purchase a healthy, affordable bundle of goods year-round. Prepared foods may be a viable option for LILA households attempting to improve their bundle of healthy food. Americans are purchasing more prepared foods from food retailers, as households are more time crunched and prepared food offerings have improved in quality and healthiness over time. What is not clear is if this trend is reflected in America's urban poor households and, if so, to what extent.

This study considers all food products sold at grocery based retailers in urban areas of the U.S., i.e. food service based retail is not included. This article adds to the literature by carefully detailing the shopping environment LILA households face. Instead of simply classifying households as having low-access to supermarkets or not, through GIS techniques, each household's shopping environment is based on a continuum measured in miles. The complete grocery food shopping environment, prices, and expenditures are modeled for all food groups including prepared foods by type of retailer.

The objective of this study is to analyze the demand for prepared foods by urban households with varying income levels and shopping environments. Specifically, this study will analyze: (1) prices of prepared food offerings by location, income and grocery store concentration, (2) how expenditures on prepared foods differ amongst households based on income, grocery store concentration and other demographic factors, and (3) if healthy prepared food products are a significant part of LILA household bundle of food goods.

Background

The Rise of Prepared Foods in the US

While shopping for groceries, consumers are inundated by food advertisements and labels touting convenience claims such as “fully-cooked”, “ready-to-serve” and “heat & eat”. These advertisements underscore the role of convenience as a dominant trend in the US grocery industry. According to Senauer (2001), approximately 55% of consumers report that convenience is an important determinant of their food choices. With the importance the modern consumer places on convenience, cooking has largely been replaced by meal preparation (Evolution 2015). Prepared foods provide consumers with three forms of convenience: time, physical energy and mental energy (Buckley et al. 2007). The rise of prepared foods has led to a significant decrease in the amount of time spent cooking food each day. In 1965, the average US household spent 44 minutes preparing food. By 1995, this number had decreased to 27 minutes per day (Jabs & Devine 2006). Prepared foods also decrease the physical and mental energy consumers must expend to cook a meal, with Mintel reporting that 76% of consumers feel prepared meals are useful to have on hand when they do not feel like cooking (2014).

Today, nearly two-thirds of Americans purchase prepared foods from grocery stores and supermarkets each month (Zenk et al. 2015). Prepared foods widespread proliferation in the US began in 1953, with C.A. Swanson & Sons' introduction of the T.V. dinner (Sheely 2008). Continued growth of the prepared foods segment was made possible by technological developments such as microwaves, vacuum packing, improved preservatives, deep freezing and artificial flavors (Cutler et al. 2003; Jabs & Devine 2006). The prepared food segment continues to experience gradual growth of 4 to 4.5% annually (Elitzak 2014).

Past studies have identified several key reasons for consumers' increased demand for prepared foods. Female labor force participation has increased nearly 25%, from 33% in 1950 to 57.2% in 2013 (Women 2014). Households thus found themselves with less time to allocate to preparing meals, making timesaving prepared foods more attractive (Buckley et al. 2007; Nayga 1998). Changing household structure has also had a significant effect on households' consumption of prepared foods. An increase in single-parent households has led to increasingly time-sensitive consumers, while a decrease in household size has led to an increased demand for individualized meals (Scholliers 2015; Buckley et al. 2007; Nayga 1998). Buckley et al. (2007) and Scholliers et al. (2015) also cite a decline in cooking skills as a reason for households' increasing dependence on prepared foods.

The Market for Healthy Prepared Foods

Health is one of the most important drivers of new product development in the prepared foods segment (Jago 2000; Consumer Driven 2015; Candel 2001). According to Capps & Schmitz (1991), 93% of consumers are concerned about the nutritional content of their food. Frank et al. (2013) explains that "consumers want prepared foods to do more than offer convenience; they want them to provide nutrition, help them avoid fat, sodium and other unhealthy ingredients."

When shopping for prepared foods, approximately 40% of consumers report that nutrition claims influence their purchases (Mintel 2014).

In a 2015 national study, Zenk et al. studied the availability of healthy prepared foods in U.S. food stores located in both low-poverty and high-poverty neighborhoods. Results indicate that supermarkets have the greatest availability of healthy prepared foods, with 74.5% of supermarkets carrying prepared salads. Comparatively, 16.2% of grocery stores and 12.7% of convenience stores sold prepared salads. Similar results were also found by Black et al. (2014) and Vallianatos et al. (2010), who found that supermarkets offer the most healthful shopping environments, while convenience stores and petrol stores offer less healthful shopping environments.

Several studies on the availability of healthy food have found that retailers located in low-income neighborhoods tend to carry fewer healthy products (Zenk et al. 2015; Jetter & Cassady 2005; Warren et al. 2008). Specifically, Zenk et al. (2015) found that convenience stores in high-poverty neighborhoods were 29% less likely to carry healthy prepared salads than in low-poverty neighborhoods. Further, small grocery stores located in high-poverty neighborhoods had lower availability of healthy foods such as whole-grain products, low-fat cheeses and low-fat ground meat (Jetter &Cassady 2005; Warren et al. 2008). Thus, low-income households with high-access to corner stores, but low-access to supermarkets are more likely to have low availability of healthy prepared foods.

The Demand for Prepared Food

While no past studies have considered the demand for healthy prepared foods specifically in poor, urban environments, several studies have analyzed the demand for prepared foods on a national level (Parks & Capps 1997; Harris 2005; Nayga 1998; Capps et al. 1985; Brunner et al. 2010; Harris & Shipstova 2007; Botonaki & Mattas 2008; Sheely 2008). Within these studies, own-price elasticities for prepared food ranged from -0.89 to -0.41, indicating elastic demand (Parks & Capps 1997; Harris 2005; Capps et al. 1985). Expenditure elasticities ranged from 0.07 to 0.33, suggesting that prepared foods are normal goods (Parks & Capps 1997; Harris 2005; Capps et al. 1985). These studies also identified several demographic, economic, geographic, and health factors that have an effect on households' demand for healthy prepared food.

Considering first the demographic factors, household size is positively related to consumption of prepared foods; as household size increases, so does the time required to prepare meals, making prepared foods appealing to large households (Parks & Capps 1997; Botonaki & Mattas 2008; Harris 2005; Harris & Shipstova 2007). Similarly, prior studies indicate that the number of children in a household is positively related to prepared foods consumption (Botonaki & Mattas 2008; Nayga 1998; Harris & Shipstova 2007; Harris 2005). Further, married households are less likely to purchase prepared foods (Harris & Shipstova 2007; Harris 2005). Harris & Shipstova (2007) explain that traditional family types, i.e. married households with children, are more likely to prepare home cooked meals. Brunner et al. (2010) and Capps et al. (1985) further find that females are less likely to consume prepared foods than males, likely due to differences in cooking skills. Reflecting generational differences, prior findings also suggest that age is inversely related to prepared food consumption (Parks & Capps 1997; Brunner et al. 2010; Nayga 1998; Harris & Shipstova 2007; Harris 2005; Capps et al. 1985). Nearly all past studies have also considered whether the demand for prepared foods varies based on race and education, but findings have been inconsistent (Parks & Capps 1997; Nayga 1998; Harris & Shipstova 2007; Harris 2005; Capps et al. 1985).

Several economic variables also have a significant effect on prepared food demand. Nearly all studies confirm that income is positively related to prepared food consumption (Parks & Capps 1997; Harris & Shipstova 2007; Sheely 2008; Harris 2005). This implies that as a household's disposable income and opportunity cost of time increase, they are more likely to purchase prepared foods. Similarly, hours worked has a positive effect on prepared food consumption, with increasingly time-sensitive customers purchasing greater quantities of prepared foods (Parks & Capps 1997; Botonaki & Mattas 2008; Sheely 2008).

Studies have also considered the effect of geographic variables on the demand for prepared foods. Past findings indicate that households located in urban areas are more likely to consume prepared foods than rural households (Parks & Capps 1997; Harris & Shipstova 2007; Harris 2005; Capps et al. 1985). Harris & Shipstova (2007) explain that these differences reflect different lifestyles amongst urban and rural households. Studies have also considered regional effects on the demand for prepared foods. Parks & Capps (1997) found that households located in the Southern and Western regions of the US are less likely to purchase prepared meals. Further, households located in the Northeast region of the US have lower overall expenditures on prepared foods (Parks & Capps 1997; Nayga 1998; Capps et al. 1985).

A handful of studies have also included variables to account for health's effect on prepared food consumption. Botonaki & Mattas (2008) found that households that described themselves as health conscious were less likely to purchase prepared foods. While health conscious households are less likely to purchase prepared foods, Sheely (2008) found that obese consumers were more likely to purchase prepared foods. Further, Brunner et al. (2010) found that a households' level of cooking knowledge is inversely related to prepared food consumption; cooking skills are associated with higher incidences of preparing home-cooked meals. Mojduszka & Everett (2005) also considered whether use of nutrition labels affected prepared food consumption, but no significant effect was found.

Data and Methods:

Self-reported weekly household food purchase and demographic data from Information Resources, Inc. (IRI) for 2012 were used. The 2012 sample includes over 100,000 distinct households from across the United States. Each household is classified by various demographic and socioeconomic identifiers. Appendix A, Table III includes all of the variable definitions. Of interest to this study were age, household size, household income, race, employment status, and marital status.[1] The data also offers a detailed account of what each household purchased for their food at home (FAH) consumption. In addition to details about the item(s) purchased and dollars spent, the type of establishment at which the items were purchased was also used. The consumer panel data are augmented to create a binary variable for prepared food (*prepared*). Healthy percent was created by calculating the percent of prepared foods that are considered healthy.[2] For example, frozen fruit is classified as healthy, whereas frozen pizza is classified as non-healthy. [3]

Using similar methods as Okrent and Alston (2012), each food purchase made by a household was categorized into one of seven broad categories: (1) cereals and bakery ; (2) meat and eggs; (3) dairy; (4) fruits and vegetables; (5) nonalcoholic beverages; (6) prepared foods; (7) other FAH (Figure 1). Individual purchases were placed in one of these seven categories based

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[1] New variables were created from the IRI data for marital status, female employment, and male employment. Table I in Appendix A outlines these changes.

[2] Designations on the healthfulness of the purchase were made based on food category and UPC description. For example, items with descriptions containing phrases such as ‘low fat’, “lean”, “whole wheat”, etc. were classified as healthy.

[3] A complete list of the categories classified as healthy can be found in Appendix A, Table IV. .

on their IRI category designation and/or product description. Figure 2 shows the distribution of purchases by food category over the entire sample and Figure 3 shows only the urban poor as compared to the urban non-poor. Relative to their respective grouping, the urban poor purchase relatively more cereals and bakery and other FAH goods as a percentage of all food purchases as compared to their non-poor urban counterparts.

The poverty binary variable, 1 being classified as in poverty, was calculated using U.S. Department of Health and Human Services' 2012 Poverty Guidelines (Appendix A, Table II). The poverty designation is based on each household's income (*HHinc)* and size (*HHsize*). Household income per person (*HHinc_per_capita)* is then a simple division of the mean household income by the number of people living within the household. The distribution of household income per capita (appendix A, figure I) is not normally distributed. Given that this study is focused on low income HH, *HHinc_per_capita* was truncated at two standard deviations from the sample mean.

Figure 1. Food Categories by Sub-Category

Cereals and bakery (1)
- Flour, flour mixes
- Breakfast cereals
- Rice, pasta
- Nonwhite bread
- Biscuits, rolls, muffins
- Cakes, cookies
- Other bakery

Meat and eggs (2)
- Beef
- Pork
- Other red meat
- Poultry
- Fish
- Eggs

Dairy (3)
- Cheese
- Milk
- Ice cream, frozen desserts
- Other dairy

Fruits and vegetables (4)
- Apples
- Bananas
- Citruis
- Other fresh fruits
- Lettuce
- Tomatoes
- Potatoes
- Other fresh vegetables
- Processed fruits and vegetables

Nonalcoholic beverages (5)
- Coffee and tea
- Carbonated beverages
- Non-carbonated beverages
- Frozen beverages

Prepared foods (6)
- Soups
- Prepared entrees (frozen, refrigerated, and shelf-stable)
- Bakery
- Deli salads
- Ready to drink breakfast meals

Other FAH (7)
- Sugar and sweets
- Fats and oils
- Snacks
- Frozen foods
- Condiments, sauces, seasonings
- Misc.

Figure 2. Number of Purchases by Food Category (Full Sample), IRI 2012 Data

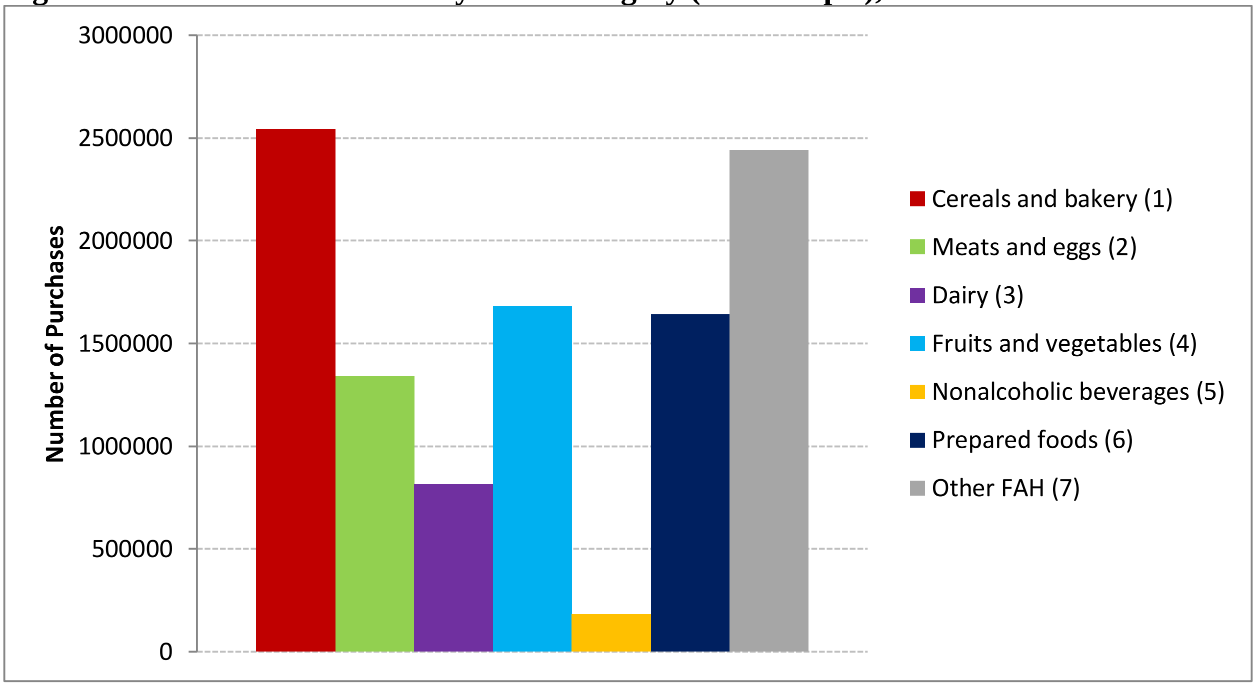
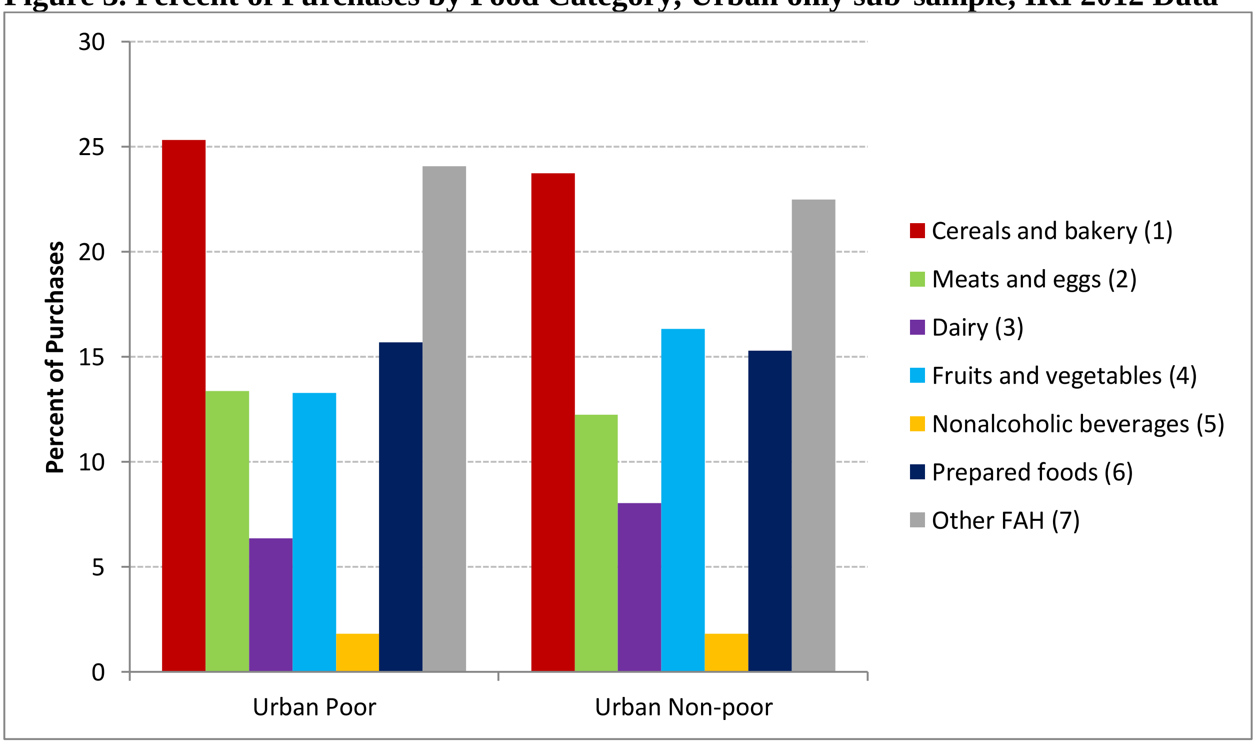


Figure 3. Percent of Purchases by Food Category, Urban only sub-sample, IRI 2012 Data



A primary focus of this analysis is to better understand how the household food shopping environment influences consumer behavior. GIS modeling was used to determine geographic location of each household as well as food access. The household food environment is measured using geospatial proximity methods by calculating the household distance to Nielsen's Trade Dimension (TDLinx) grocery stores. TDLinx stores are used as the target store data set since IRI store locations are a subset of the TDLinx store data set, hence, giving a more complete picture of the surrounding food shopping environment. A TDLinx's Grocery Store channel sub-set was created to represent outlets that have a probability of supplying a variety of fresh and diverse food stuffs. Military commissaries (a TDLinx grocery store sub-channel) were removed from the grocery store data set since commissaries are not open to the general public.

Next the shopping environment for each HH was defined by using the IRI's panel household Census block number. Latitude and longitude coordinates of the block centroid were obtained from the 2010 TIGER files available for download at the U.S. Census Bureau's website, and were assigned to each household for geographic location. Since this study is focused on households in urban areas, urban areas were defined as 2010 Census-defined urbanized areas within Census-defined metropolitan statistical areas (MSAs), and these data were also based upon the 2010 TIGER files. Only those IRI households within these areas are included in the analysis.

Geographical Information System (GIS) methods were used to compute distances from the IRI panel household locations to the nearest grocery stores. Euclidean distance was used to measure proximity between the household locations to the closest food stores in ArcGIS software. The distance from the household to the nearest grocery store as well as the proportion of grocery stores to total stores within a 1-mile buffer are the measures of the household's food environment.

Using GIS mapping, households were segmented into two populations – urban and non-urban. Using the poverty variable, the urban population was then segmented one step further into poor and non-poor groups. Our sample includes 79,339 urban non-poor households and 4,971 urban poor households. From this point on, the analysis focuses on comparing these two groups. Some outliers were found within these datasets. As a result, all probabilistic outliers were removed from the dataset.[4]

Due to the binary nature of this study's dependent variable, a logit model was used to estimate the effects of income, supermarket concentration and other demographic factors on prepared food consumption. In the logit model, the probability of purchasing prepared food is given by:

$$P(y = 1|x) = \frac{exp(x\beta)}{1+\exp(x\beta)}. \tag{1}$$

where y is a binary variable indicating whether a household purchased prepared foods (Wooldridge 2010). Further, x represents the following vector of explanatory variables:

$$x = (hhcharacteristics, trips, healthy, \\ distance, dollarspaid_{foodcat}, week, employment,). \tag{2}$$

The log-likelihood function for the logit model is given by:

[4] Probabilistic outlier calculations: $\text{Lower outlier} = \text{first quartile} - 3 \cdot \text{IQR};\ \text{Upper outlier} = \text{third quartile} + 3 \cdot \text{IQR}, \text{where IQR} = \text{third quartile} - \text{first quartile}$

$$\ell_i(\beta) = (1 - y_i)\log[1 - G(x_i\beta)] + y_i \log[G(x_i\beta)]. \tag{3}$$

The coefficients resulting from the maximization of Equation 3 give the direction of the partial effects of the explanatory variables on prepared food consumption (Wooldridge 2010). In order to analyze the magnitude of the coefficients, average partial effects (APE) are calculated for each of the explanatory variables as follows:

$$APE_j = \hat{\beta}_j[N^{-1}\sum_{i=1}^{N} g(x_i\hat{\beta})]. \tag{4}$$

The delta-method is used to calculate the standard errors of the average partial effects.

Results:

Descriptive Statistics

Table 1 shows the full household sample, which consists of more than 10 million observations from over 100,000 households. The Urban sample (70.6 percent of the full sample, 4.4 percent being urban poor) represents HHs for which geocoding was available and had HH income per capita within 2 standard deviations from the Urban mean. All of the variable means were significantly different from each other, i.e. full sample, urban non-poor and urban poor. Our primary interest is to determine the differences in prepared food purchasing behavior between the populations. Although significantly different between the samples, the urban poor's purchases of prepared foods is 11.8 percent, just slightly higher than the full and urban non-poor sample, 11.6 and 11.2 percent respectively.

The secondary research interest is the household's purchasing behavior of healthy prepared food products. Sample mean tests reveal that the urban non-poor purchase healthy prepared food products at a higher rate than the urban poor – 22.8 percent of purchases versus 19 percent Other shopping statistics for poor urban households show that they use less coupons and do not get as many purchase deals (i.e. purchase items that are on sale). In terms of demographic differences poor urban households are more likely to be a minority, have a much lower rate of employment for both male and female heads of households, heads of household are slightly younger, have a fraction more children, and are less likely to be married. . It is also important to note that the expenditure per item of food purchased on average is higher for the urban non-poor than all other groups. This may be differences in where urban non-poor households shop.

Table 1: Demographics by household type (Full Sample, Urban Non-poor and Urban poor)

	Full Sample		**Urban Non-poor**		**Urban Poor**	
Variable	N	Mean	N	Mean	N	Mean
Expenditure daily	10651550	3.17483	7195722	3.23311	326323	3.07602
Prepared	10651550	0.11561	7195722	0.11248	326323	0.11789
Healthy percent	10651550	0.21859	7195722	0.22759	326323	0.18957
HHinc_per_capita	10650218	28641.5	7195722	31067.8	326323	5940.35
hhsize	10650218	2.70989	7195722	2.6942	326323	2.86583
head[1]	10650218	1.76057	7195722	1.74464	326323	1.79768
Male_Age	8581339	54.2912	5766564	54.1589	192234	51.3175
Female_Age	9914024	52.9092	6661666	52.9493	293062	50.1276
Avg_Age	10650218	54.0036	7195722	54.0176	326323	51.1173
Nonwhite	10651550	0.154	7195722	0.18003	326323	0.24305
Married	10651550	0.73121	7195722	0.72407	326323	0.46339
F_Employed	10651550	0.51784	7195722	0.5369	326323	0.29109
M_Employed	10651550	0.56455	7195722	0.57704	326323	0.23996
quantity	10651550	1.45859	7195722	1.44872	326323	1.53859
coupon	10651550	0.05914	7195722	0.06285	326323	0.0474
deal	10651550	0.2581	7195722	0.27525	326323	0.22408

[1] Head = The number of heads of households within a household. If both a male and female head are present, this variable = 2.

Table 2 shows the annual mean price per food category which are detailed in Figure 1. On average, beverages (5) and meat and eggs (2) categories have the highest prices and the least expensive food products are the Cereals and Bakery category (1). Prepared foods (6) are the second most inexpensive food group and all groups face similar prices. Of note, and requiring further research, is the finding that the urban poor shopping environment has lower prices on all food and beverage categories.

Table 2. Annual Mean Price Per Item by Food Category and Sample Classification.

	Full Sample		Urban Poor		Urban Non-poor	
Food Category	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**
Cereals & Bakery 1	2545969	2.6996	82684	2.6665	1709485	2.74623
Meat & Eggs 2	1341522	4.8017	43678	4.7532	880453	4.87941
Dairy 3	813869	3.4308	20769	3.3699	579826	3.44390
F&V 4	1683251	2.930	43375	2.7978	1175732	3.01458
Beverages 5	183119	4.8548	5991	3.7782	130745	4.91504
Prepared 6	1642325	2.8349	51260	2.8577	1100832	2.88538
Other FAH 7	2441495	2.9626	78566	2.7394	1618649	3.03569

Table 3 shows the urban breakdown of the aggregated weekly data. This was done because most Americans shop 1 to 2 times per week according to the trade, (SupermarketNews.com, 2014) and supported by the number of *trips* in this sample (1.4 times per week for both groups). Hence, to minimize the number of zeros in the dataset for purchases, we aggregated the data into weeks. The comparison reveals that the weekly expenditures by the urban poor on food and beverages per week are greater than those of the non-poor. The rate at which prepared food is purchased is similar, 26% of the time, but the urban poor purchase healthy food fewer weeks of the year than the non-poor. The data also shows that, on average, the urban poor live closer to a grocery store. Average weekly prices for all categories vary due to seasonality and consumer preferences of time to purchase. This is reflected by calculating the weekly average price per category. The urban non-poor face higher average prices for all categories with the exception of category (5), non-alcoholic beverages.

Table 3. Means of Urban Poor and Non-Poor, Weekly

	Urban Poor		Urban Non-Poor	
Variable	**N**	**Mean**	**N**	**Mean**
weekly expenditure	79975	23.0657	1656119	22.542
prepared	79975	0.26735	1656119	0.26335
healthy_tot	79975	0.77349	1656119	0.95117
trips	79975	1.41482	1656119	1.44652
Distance	79975	0.81747	1656119	0.94151
Avg_p_1	79975	1.45674	1656119	1.53204
Avg_p_2	79975	0.76404	1656119	1.0075
Avg_p_3	79975	1.6408	1656119	1.69291
Avg_p_4	79975	1.53027	1656119	1.62213
Avg_p_5	79975	1.26387	1656119	1.17293
Avg_p_6	79975	0.2804	1656119	0.29604
Avg_p_7	79975	0.73098	1656119	0.75779

Logit Model Results

The logit model dependent variable represents whether or not the household purchased prepared food or not based on weekly data. To capture all of the effects, the sample was split into urban poor and urban non-poor and run separately. This was based on the descriptive statistics and means tests that indicate these are two different populations. In addition, the mean number of times households went shopping *(trips)* was weighted to determine if there was a significant difference in consumers based on frequency of shopping. Table 3 shows that both the urban poor and non-poor shop approximately 1.4 times per week, hence, a base group that represents the trip averages per household was used to weight the number of trips which ranged from 1-7 times per week.

The logit model pseudo R-squares were .03 and .04 for the urban non-poor and urban poor models respectively. This means that there are other factors that influence consumer purchasing behavior of prepared goods that are not captured by this model. However, Tables 4 and 5 show that the likelihood ratio and wald test show that all beta's jointly being zero was rejected for both models.

Specific results for the urban non-poor are shown in Table 4. Twelve independent variables were significant in the model: HH income per capita, average price for prepared foods (Avg_p_6), the number of trips for those that averaged 1, 4, 5 and 6 shopping trips per week, HH size, female head of HH is employed (full or part time), male head of HH is employed (full or part time), Average age of head of household, distance to closest grocery store, and non-white HHs.

Unlike the findings of Parks & Capps (1997), Harris & Shipstova (2007), Sheely (2008) and Harris 2005, this study finds that HH income per capita is negatively and significantly related to the purchase of prepared food. This means that as household income increases, the probability of purchasing prepared foods decreases for the urban non-poor. To determine the magnitude of change, the average marginal effects are consulted at the bottom of table 4. As the household increases income by one dollar, probability of increasing purchases of prepared foods increases by approximately 0 percent. Simply stated, urban non-poor households are not sensitive to income changes when it comes to purchasing prepared foods.

Average weekly price for prepared foods (Avg_p_6), which is the own-price for prepared foods is negative and significant. This result is in agreement with economic theory, there is a downward sloping demand curve. As found with HH income per capita, the prepared foods own-price average marginal effects are approximately 0. Non-poor urban households are not price sensitive to price changes for prepared foods. Interestingly, none of the cross prices were significant, hence, the substitution and complementary relationships among the seven food groups with respect to prepared foods are not clear.

Several of the number of trips (weighted by the average number of trips) for the urban non-poor were found to be significant. Trips 1 was negative and significant and trips 4-6 were positive and significant. This implies that if the HH travels to the grocery store once a week, the lower the probability they will purchase prepared foods. For those HH that make shopping trips above the average, specifically 4-6 times per week, the greater the likelihood they will purchase more prepared foods. One possible explanation is that those that shop once a week make grocery lists and plan meals, hence, purchase less prepared food items. Households that make a larger number of trips are probably less likely to plan ahead and thus more likely to purchase prepared foods.

Household size, female headed households that are employed, and male headed households that are employed are all positively and significantly associated with the purchase of prepared foods. These results are in accordance with past findings by Parks & Capps (1997), Botonaki & Mattas (2008), Harris (2005) and Harris & Shipstova (2007). Consulting the average marginal effects shows that, on average, one extra individual in the HH increases the probability that a HH purchases prepared food by .195 percent. If the female head of household is employed, then the household is .05 percent more likely to purchase prepared foods which is lower than if a male head of household is employed which increases that likelihood to 1.3%. Larger families and HH employment are drivers of increased purchases of prepared foods.

The urban non-poor sample was a little older than the urban poor sample and average age was found to be positively and significantly associated with the purchase of prepared foods. Increasing the age of the head of household by 1 year increases the probability of purchasing prepared foods by .015 percent according to the average marginal effects. This relationship is opposite of that found in nearly all past studies, which found that as age increases, prepared food purchases decrease (Parks & Capps 1997; Brunner et al. 2010; Nayga 1998; Harris & Shipstova 2007; Harris 2005; Capps et al. 1985).

Distance to a grocery store (supercenters, conventional supermarkets, superettes, natural and gourmet supermarkets, warehouse groceries, limited assortment supermarkets) are also positively and significantly associated with the purchase of prepared foods. The average marginal effects show that as the distance to the closest grocery store increases by 1 mile, the probability of purchasing prepared foods increases by .1 percent.

The non-white variable is negatively and significantly associated with the purchase of prepared foods. As the urban non-poor minority household increases by 1 percent, the probability of purchasing prepared foods decreases by 5 percent. Household race was found to be the most impactful relationship in the urban non-poor model.

The second research question concerning the purchase of healthy prepared foods was not significant. The purchase of healthy prepared foods requires further exploration.

Table 4. Binary Logit Regression on the Purchase of Prepared Goods for Urban Non-Poor

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	1902162.1	1864444.1
SC	1902174.4	1864752
-2 Log L	1902160.1	1864394.1

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	37765.9448	24	<.0001
Score	38940.0715	24	<.0001
Wald	37795.0518	24	<.0001

Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-0.4244	0.0331	164.6723	<.0001
HHinc_per_capita		1	-5.1E-06	1.57E-07	1050.821	<.0001
Exp_Tot_Prepared		1	0.000251	0.000213	1.3862	0.239
Avg_p_1		1	0.000469	0.000918	0.2607	0.6096
Avg_p_2		1	-0.00054	0.000622	0.756	0.3846
Avg_p_3		1	0.000689	0.000978	0.4958	0.4814
Avg_p_4		1	-0.00077	0.00095	0.6489	0.4205
Avg_p_5		1	0.000296	0.00122	0.0592	0.8077
Avg_p_6		1	-0.00295	0.00132	5.0352	0.0248
Avg_p_7		1	-0.00071	0.000802	0.7812	0.3768
healthy_percent		1	-0.0115	0.00958	1.4482	0.2288
trips	**1**	1	-0.8062	0.0298	732.4301	<.0001
trips	**3**	1	0.0145	0.0302	0.2321	0.63
trips	**4**	1	0.2455	0.0317	60.0149	<.0001
trips	**5**	1	0.4003	0.0391	104.8384	<.0001
trips	**6**	1	0.4412	0.0684	41.6292	<.0001
trips	**7**	1	-0.0005	0.1649	0	0.9976
hhsize		1	0.0103	0.00199	26.7903	<.0001
F_Employed		1	0.0315	0.00383	67.4755	<.0001
M_Employed		1	0.0727	0.00468	241.8179	<.0001
Married		1	0.00216	0.00486	0.1978	0.6565
Avg_Age		1	0.00077	0.00017	20.5426	<.0001
Nonwhite		1	-0.2642	0.00478	3050.204	<.0001
week		1	0.000083	0.000117	0.5026	0.4784
Distance		1	0.0521	0.00221	558.0321	<.0001

N = 1649746

Average Marginal Effects					
Variable	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
ME HHInc_per_capita	1649746	-9.61E-07	1.42E-07	-1.27E-06	-6.34E-07
ME exp_prepared	1649746	0.00004749	7.00E-06	3.1344E-05	0.000062689
ME avg_p_1	1649746	0.00008878	1.3083E-05	5.8597E-05	0.000117193
ME avg_p_2	1649746	-0.0001024	1.5094E-05	-0.0001352	-0.0000676
ME avg_p_3	1649746	0.00013042	1.9219E-05	0.00008608	0.00017216
ME avg_p _4	1649746	-0.000145	2.1368E-05	-0.0001914	-0.0000957
ME avg_p _5	1649746	5.6011E-05	8.25E-06	3.6968E-05	0.000073936
ME avg_p _6	1649746	-0.0005589	8.2367E-05	-0.0007378	-0.00036891
ME avg_p _7	1649746	-0.0001343	0.00001979	-0.0001773	-0.00008864
ME Healthy_percent	1649746	-0.0021836	0.00032178	-0.0028824	-0.0014412
ME hhsize	1649746	0.0019532	0.00028784	0.0012892	0.0025783
ME f_employed	1649746	0.0059661	0.00087918	0.0039377	0.0078754
ME m_employed	1649746	0.0137726	0.0020296	0.0090902	0.0181802
ME married	1649746	0.00040902	6.0274E-05	0.00026996	0.000539918
ME avg_age	1649746	0.00014578	2.1482E-05	9.6216E-05	0.000192431
ME Nonwhite	1649746	-0.0500391	0.0073739	-0.0660532	-0.0330267
ME week	1649746	1.5692E-05	2.31E-06	1.0357E-05	0.000020714
ME distance	1649746	0.0098655	0.0014538	0.0065114	0.0130228

Table 5 shows that 8 independent variables were significantly related to purchases of prepared foods (trips 1, 3, 6 and 7, HH size, female head of household employed, non-white, and distance) for the urban poor. Household income per capita was not significant for the urban poor, unlike for the urban non-poor. In addition, own-price for prepared foods was not significant either. One explanation could be that the safety net programs such as SNAP make these households less sensitive to income and price changes, hence, the lack of significant relationships. The rest of the results are similar for the urban poor and non-poor in terms of being significant and the sign.

Trips show a similar trend as shown for the urban non-poor, as the weighted number of trips relative to the mean increases, the sign changes from negative to positive. Trips 1 and 3 were negative and significant and trips 6 and 7 were positive and significant. This implies that if the HH travels to the grocery store 1-3 times per week, the lower the probability they will purchase prepared foods. For those HH that make three times or more the average shopping trips, specifically 6 to 7 times per week, the greater the likelihood they will purchase more prepared foods. One explanation for this is that nutrition education programs for low-income, urban households encourage meal planning and home prepared meals.

Household size and female headed households are all positively and significantly associated with the purchase of prepared foods, thus confirming prior findings by Parks & Capps (1997), Botonaki & Mattas (2008), Harris (2005) and Harris & Shipstova (2007). Consulting the average marginal effects shows that, on average, one extra individual in the HH increases the probability that a HH purchases prepared food by .07 percent. If the female is employed, then the household is 1.1 percent more likely to purchase prepared foods. Larger families and female HH employment are drivers of increased purchases of prepared foods. Unlike the urban non-poor, male employment was not a factor that influences the purchase of prepared foods.

Distance to a grocery store (as defined earlier) are also positively and significantly associated with the purchase of prepared foods. The average marginal effects show that as the distance to the closest grocery store increases by 1 mile, the probability of purchasing prepared foods increases by 1.3 percent. The urban poor are 10 times more likely to purchase prepared foods than the urban non-poor for every additional mile they are from a grocery store.

The non-white variable is negatively and significantly associated with the purchase of prepared foods. As the urban non-poor minority household increases by 1 percent, the probability of purchasing prepared foods decreases by 2.6 percent. In both models, household race was found to be the most impactful relationship in determining the purchase of prepared foods.

As in the urban non-poor model, healthy prepared food was not significantly related to prepared food purchases.

Table 5: **Binary Logit Regression on the Purchase of Prepared Goods for Urban Poor**

Model Fit Statistics			
Criterion	**Intercept Only**	**Intercept & Covariates**	
AIC	92562.708	90423.591	
SC	92571.994	90655.748	
-2 Log L	92560.708	90373.591	
Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	2187.1172	24	<.0001
Score	2285.209	24	<.0001
Wald	2141.8949	24	<.0001

Analysis of Maximum Likelihood Estimates

Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-0.0779	0.1088	0.5126	0.474
HHinc_per_capita		1	-0.000001	5.08E-06	0.0653	0.7983
Exp_Tot_Prepared		1	-0.00068	0.00126	0.2894	0.5906
Avg_p_1		1	-0.00468	0.00413	1.2827	0.2574
Avg_p_2		1	0.000528	0.00282	0.035	0.8516
Avg_p_3		1	0.00135	0.0046	0.0856	0.7699
Avg_p_4		1	0.00638	0.00414	2.3802	0.1229
Avg_p_5		1	0.00531	0.00552	0.9266	0.3357
Avg_p_6		1	-0.00128	0.00715	0.0321	0.8579
Avg_p_7		1	-0.00044	0.00354	0.0156	0.9007
healthy_percent		1	0.0517	0.0409	1.5966	0.2064
trips	**1**	1	-1.3201	0.0867	231.9605	<.0001
trips	**3**	1	-0.449	0.0896	25.0874	<.0001
trips	**4**	1	-0.1144	0.1001	1.3063	0.2531
trips	**5**	1	-0.0417	0.1382	0.0909	0.763
trips	**6**	1	0.4483	0.2378	3.5538	0.0594
trips	**7**	1	2.2605	0.4508	25.1446	<.0001
hhsize		1	0.0369	0.00797	21.4336	<.0001
F_Employed		1	0.0602	0.0185	10.5355	0.0012
M_Employed		1	0.0194	0.0219	0.783	0.3762
Married		1	0.0318	0.0202	2.4954	0.1142
Avg_Age		1	0.00113	0.000652	2.9958	0.0835
Nonwhite		1	-0.2606	0.0195	178.3121	<.0001
week		1	-0.00062	0.00053	1.3556	0.2443
Distance		1	0.071	0.0109	42.3375	<.0001

N = 79975

Means of Marginal Effects					
Variable	N	Mean	Std Dev	Minimum	Maximum
meHHInc_per_capita	79719	-2.47E-07	3.68E-08	-3.2E-07	-9.17E-08
meexp_tot_prepared	79719	-0.00013	1.92E-05	-0.00017	-4.8E-05
meavg_p_1	79719	-0.00089	0.000133	-0.00117	-0.00033
meavg_p_2	79719	0.0001	1.5E-05	3.73E-05	0.000132
meavg_p_3	79719	0.000256	3.82E-05	9.51E-05	0.000336
meavg_p _4	79719	0.001214	0.000181	0.000451	0.001595
meavg_p _5	79719	0.00101	1.51E-04	0.000375	0.001327
meavg_p _6	79719	-0.00024	3.63E-05	-0.00032	-9E-05
meavg_p _7	79719	-8.4E-05	1.25E-05	-0.00011	-3.1E-05
meHealthy_percent	79719	0.009825	0.001464	0.003649	0.012913
mehhsize	79719	0.007016	0.001046	0.002606	0.009221
mef_employed	79719	0.011446	0.001706	0.004251	0.015044
mem_employed	79719	0.003682	0.000549	0.001367	0.004839
memarried	79719	0.006058	0.000903	0.00225	0.007962
meavg_age	79719	0.000215	3.2E-05	7.97E-05	0.000282
meNonwhite	79719	-0.04956	7.39E-03	-0.06514	-0.01841
meweek	79719	-0.00012	1.75E-05	-0.00015	-4.4E-05
medistance	79719	0.013504	0.002013	0.005015	0.017749

Concluding Remarks:

This paper adds to the literature on the prepared food purchasing behavior of urban households by analyzing price, income, shopping environment, and demographic data. A nationally representative dataset was used to determine which geographic, health, economic and demographic factors effected households’ expenditures at grocery stores (supercenters, conventional supermarkets, superettes, natural and gourmet supermarkets, warehouse groceries, limited assortment supermarkets). A logit model was used to determine the household’s probability of purchasing prepared foods for the urban poor and urban non-poor.

Descriptive statistics show that the urban poor face similar weekly average prices for prepared food as the urban non-poor, and thus, had similar expenditure patterns. It was also found that the urban non-poor purchase healthy food products at a higher rate than the urban poor.

Parameter estimates and their average marginal effects show that both urban populations' prepared food purchasing behaviors were influenced by the number of trips made to the grocery store per week, household size, whether the adult female in the household is employed, the percentage of non-white households and distance to grocery stores. The explanatory variables that were found to be significant for the urban non-poor and not for the urban poor were household income per capita, price of prepared foods, adult male being employed and average age of the household heads.

Both urban populations' prepared food purchasing behaviors are unresponsive to household income changes, but for different reasons. The urban non-poor parameter was significant but the marginal effects were approximately zero so the urban non-poor do not change their preferences based on income. Household income per capita was not significant for the urban poor; one explanation is that these households are insulated from income fluctuations because social safety net programs insulate them for food expenditures. In addition there were similar findings for the own-price for prepared foods, significant for the urban non-poor but the average marginal effects were near zero. The traditional economic factors that influence consumer purchasing behavior are not good policy tools to influence consumer behavior, ie policies that impact the price of prepared and healthy prepared foods will have little effect.

The number of trips per week is a key factor that influences prepared foods purchases. This dataset shows that the average shopping trips per household for both urban populations are close to 1.5 times per week. For those households who shop less than the average they are less likely to purchase prepared foods.

Retail management may also benefit from the findings in this study. This study's findings indicate that both urban households are just as likely to purchase prepared foods. This may largely be due to the overall relative inexpensive pricing. Retail management could also benefit from the findings about the number of trips variable. In order to increase purchases of prepared foods, particularly store branded products or fresh prepared meals in stores, stores could use their loyalty card programs to provide consumers with individualized coupons for prepared foods. For example, a customer who shops only once per week could be given a coupon for prepared food items in an attempt to get them to purchase from the segment.

References

Botonaki, Anna, Dimitrios Natos, and Konstadinos Mattas. "Exploring convenience food consumption through a structural equation model." *Journal of Food Products Marketing* 15, no. 1 (2008): 64-79.

Brunner, Thomas A., Klazine Van der Horst, and Michael Siegrist. "Convenience food products. Drivers for consumption." *Appetite* 55, no. 3 (2010): 498-506.

Buckley, Marie, Cathal Cowan, and Mary McCarthy. "The convenience food market in Great Britain: Convenience food lifestyle (CFL) segments." *Appetite*49, no. 3 (2007): 600-617.

Candel, Math JJM. "Consumers' convenience orientation towards meal preparation: conceptualization and measurement." *Appetite* 36, no. 1 (2001): 15-28.

Capps Jr, Oral, and John D. Schmitz. "A recognition of health and nutrition factors in food demand analysis." *Western Journal of Agricultural Economics*(1991): 21-35.

Capps, Oral, John R. Tedford, and Joseph Havlicek. "Household demand for convenience and nonconvenience foods." *American Journal of Agricultural Economics* 67, no. 4 (1985): 862-869.

"Consumer-Driven Trends Center on Convenience, Health and Smaller Stores in 2015," *Supermarket News*, January 23,2015, accessed April 23, 2015, http://www. chicagomanualofstyle.org/tools_citationguide.html.

Cutler, David, Edward Glaeser, and Jesse Shapiro. *Why have Americans become more obese?*. No. w9446. National Bureau of Economic Research, 2003.

Elitzak, Howard. "Retail Trends." *Economic Research Service*. (2014). http://www.ers.usda.gov/topics/food-markets-prices/retailing-wholesaling /retail-trends.aspx

"Evolution of Eating: Hot Topic Report." *ACOSTA Sales & Marketing*. (2015). http://www.acosta.com/hottopicreports/

Food Access Research Atlas: Documentation. (2013). Retrieved February 26, 2015 from USDA-ERS: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation. Aspx

Frank, John. "Frozen Meals." *Mintel Oxygen Database*. (2013).

Harris, James Michael, and Rimma Shiptsova. "Consumer demand for convenience foods: Demographics and expenditures." *Journal of Food Distribution Research* 38, no. 3 (2007): 22.

Jabs, Jennifer, and Carol M. Devine. "Time scarcity and food choices: an overview." *Appetite* 47, no. 2 (2006): 196-204.

Jago, D. "A healthy outlook." *Prepared foods* 169, no. 4 (2000): 29.

Jetter, Karen M., and Diana L. Cassady. "The availability and cost of healthier food alternatives." *American journal of preventive medicine* 30, no. 1 (2006): 38-44.

Mintel. "Prepared Meals and Side Dishes." *Mintel Oxygen Database*. (2014).

Mojduszka, Eliza M., and Rachel M. Everett. "Determinants of Consumer Choices of Prepared Frozen Meals and Salted Snacks Over Time." In *Selected Paper Prepared for Presentation at the 2005 Annual Meeting of the American Agricultural Economics Association, July*, pp. 24-27. 2005.

Nayga, Rodolfo M. "A sample selection model for prepared food expenditures."*Applied Economics* 30, no. 3 (1998): 345-352.

Okrent, A. M. and J.M. Alston. 2012. “The Demand for Disaggregated Food-Away-From-Home and Food- at-Home Products in the United States,” ERR-139, *U.S. Department of Agriculture, Economic Research Service*.

Park, John L., and Oral Capps. "Demand for prepared meals by US households." *American Journal of Agricultural Economics* 79, no. 3 (1997): 814-824.

Powell, Lisa M., Sandy Slater, Donka Mirtcheva, Yanjun Bao, and Frank J. Chaloupka. "Food store availability and neighborhood characteristics in the United States." *Preventive medicine* 44, no. 3 (2007): 189-195.

Scholliers, Peter. "Convenience foods. What, why, and when." *Appetite* (2015).

Senauer, Benjamin. *The food consumer in the 21st century: new research perspectives*. Retail Food Industry Center, University of Minnesota, 2001.

Sharkey, Joseph R., Scott Horel, Daikwon Han, and John C. Huber. "Association between neighborhood need and spatial access to food stores and fast food restaurants in neighborhoods of colonias." *International Journal of Health Geographics* 8, no. 1 (2009): 9.

Sheely, Megan. "Global Adoption of Convenience Foods." *American Journal of Agricultural Economics* 90, no. 5 (2008): 1356-1365.

“The poverty guidelines updated periodically in the *Federal Register* by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. 9902(2).”

Vallianatos, Mark, Andrea Misako Azuma, Susan Gilliland, and Robert Gottlieb. "Peer Reviewed: Food Access, Availability, and Affordability in 3 Los Angeles Communities, Project CAFE, 2004-2006." *Preventing chronic disease* 7, no. 2 (2010).

Warren, Heather, Catherine Cubbin, and Marilyn Winkleby. "Direct measures of the availability and quality of food, tobacco, and physical activity resources in three socioeconomically contrasting neighborhoods." *International Journal of Critical Statistics* 2, no. 1 (2008): 1-18.

Weatherspoon, Dave, James Oehmke, Assa Dembele, and Lorraine Weatherspoon. "Fresh vegetable demand behaviour in an urban food desert." *Urban Studies* (2014): 0042098014529340.

Weatherspoon, Dave, James Oehmke, Assa Dembélé, Marcus Coleman, Thasanee Satimanon, and Lorraine Weatherspoon. "Price and expenditure elasticities for fresh fruits in an urban food desert." *Urban Studies* 50, no. 1 (2013): 88-106.

Wooldridge, Jeffrey M. *Econometric analysis of cross section and panel data*. MIT press, 2010.

“Women in the Labor Force: A Databook.” *US Bureau of Labor Statistics. Report* 1052 (2014): 1-107.

Zenk, Shannon N., Lisa M. Powell, Zeynep Isgor, Leah Rimkus, Dianne C. Barker, and Frank J. Chaloupka. "Prepared Food Availability in US Food Stores: A National Study." *American journal of preventive medicine* (2015).

Appendix A:

Table I. Transformation of Variables to Binary

Variable		IRI Response	Binary Response
Married	1	Married	1
	2	Widowed	0
	3	Divorced/Separated	0
	4	Single	0
F_Employed	1	Employed lt 35 hours/week	1
	2	Employed ge 35 hours/week	1
	3	Homemaker/Student	0
	4	No Female Head Present	0
M_Employed	1	Employed lt 35 hours/week	1
	2	Employed ge 35 hours/week	1
	3	Homemaker/Student	0
	4	No Male Head Present	0

Table II. 2012 Poverty Guidelines

2012 Poverty Guidelines for the 48 Contiguous States and the District of Columbia

Persons in family/household	Poverty guideline
1	$11,170
2	15,130
3	19,090
4	23,050
5	27,010
6	30,970
7	34,930
8	38,890

For families/households with more than 8 persons, add $3,960 for each additional person.
Source: *Federal Register*, Vol. 77, No. 17, January 26, 2012, pp. 4034-4035

Table III. Variable descriptions

Variable	Description
hhsize	Number of individuals living in the HH
HHinc_per_capita	HH income divided by hhsize
poverty	Binary for poverty; 1 = poverty and 0 = not in poverty
Nonwhite	Binary for race; 1 = nonwhite and 0 = white
Healthy percent	Percent of healthy prepared food purchases made during weekly shopping trip
Prepared	Binary for whether the HH purchased a prepared food during their weekly shopping trip
Avg_Age	Average age of head of HH
Married	Binary for whether the head of HH is married
F_Employed	Binary for whether the female head of HH is employed (full or part time)
M_Employed	Binary for whether the male head of HH is employed (full or part time)
weekly expenditure	Total weekly expenditure for groceries
trips	Number of trips to the grocery store in one week
Avg_p_1-7	Average price paid by food cat (1 -7). Weekly expenditure by cat/ weekly Q.
Distance	Distance to closest store (miles)

Figure I. Distribution of HHinc_per_capita, full sample

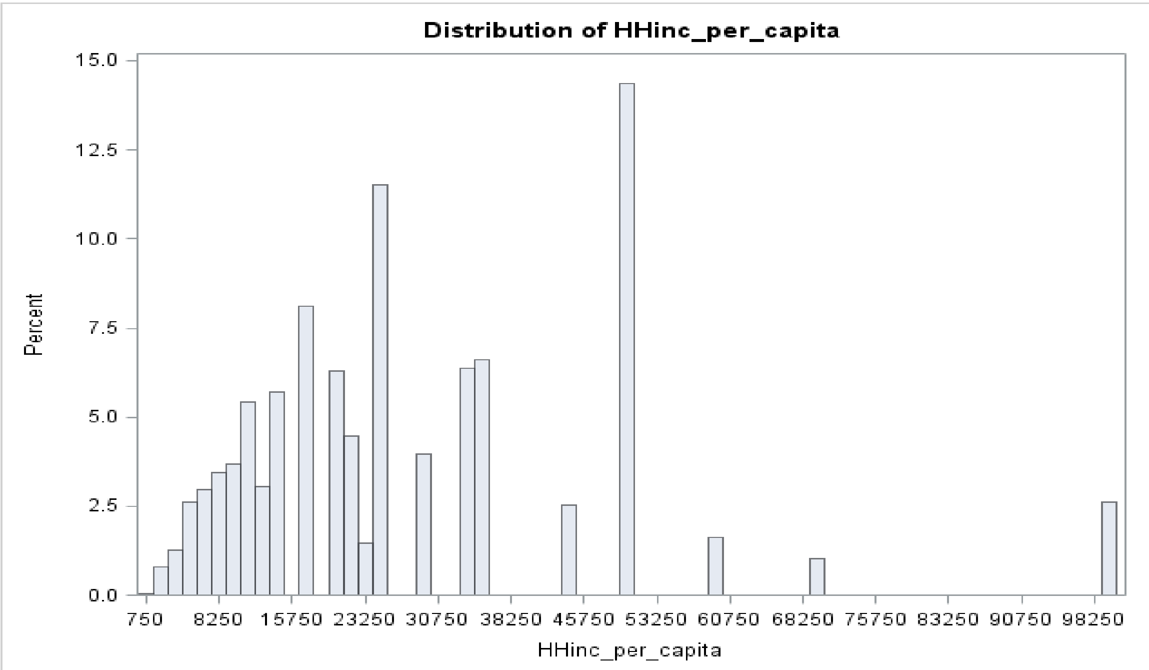


Table IV. Categories defined as healthy

Healthy Key Categories
DATES
DRIED BEANS/GRAINS
DRIED PRUNES
DRIED VEGETABLE - EXCEPT BEANS
FZ BEANS
FZ BROCCOLI
FZ CARROTS
FZ CORN
FZ CORN ON THE COB
FZ FISH/SEAFOOD
FZ FRUIT
FZ MIXED VEGETABLES
FZ ONIONS
FZ OTHER PLAIN VEGETABLE
FZ PEAS
FZ RFG POULTR/POULTRY SUBSTITUTES
FZ SPINACH
FZ SQUASH/ZUCCHINI
NUTRITIONAL SNACK BAR/GRANOLA BAR
NUTRITIONAL SNACK/TRAIL MIX
NUTS FOR BAKING/COOKING
OTHER DRIED FRUIT-NO PROCESSED SNACK
RAISINS
RFG EGG SUBSTITUTES
RFG FISH/HERRING/SEAFOOD
RFG SKIM/LOW-FAT MILK
SS ALL OTHER BEANS
SS ALL OTHER FISH/SEAFOOD
SS ALL OTHER FRUIT
SS APPLESAUCE/FRUIT SAUCE
SS CAN/BTLD GREEN BEANS
SS CAN/BTLD GREEN PEAS
SS CANNED ALL OTHER VEGETABLE
SS CANNED/BOTTLED APPLES
SS CANNED/BOTTLED APRICOTS
SS CANNED/BOTTLED BERRIES
SS CANNED/BOTTLED CARROTS
SS CANNED/BOTTLED CHERRIES
SS CANNED/BOTTLED CITRUS FRUIT
SS CANNED/BOTTLED CORN

SS CANNED/BOTTLED GRAPES
SS CANNED/BOTTLED MIXED FRUIT
SS CANNED/BOTTLED MUSHROOMS
SS CANNED/BOTTLED PEACHES
SS CANNED/BOTTLED PEARS
SS CANNED/BOTTLED PINEAPPLE
SS CANNED/BOTTLED POTATO/SWEET POTATO
SS CANNED/BOTTLED PRUNES/PLUMS
SS CANNED/BOTTLED SPINACH
SS CANNED/BOTTLED VEGETABLE
SS SALMON
SS TUNA
UNFM WGHT FRSH OTR FRT
UNFM WGHT FRSH OTR VEG
UNIFORM WEIGHT FRESH APPLES
UNIFORM WEIGHT FRESH BEANS
UNIFORM WEIGHT FRESH BROCCOLI
UNIFORM WEIGHT FRESH CABBAGE
UNIFORM WEIGHT FRESH CARROTS
UNIFORM WEIGHT FRESH CAULIFLOWER
UNIFORM WEIGHT FRESH CELERY
UNIFORM WEIGHT FRESH CUCUMBER
UNIFORM WEIGHT FRESH GRAPEFRUIT
UNIFORM WEIGHT FRESH LETTUCE
UNIFORM WEIGHT FRESH MIXED VEGETABLE
UNIFORM WEIGHT FRESH MUSHROOM
UNIFORM WEIGHT FRESH ONIONS
UNIFORM WEIGHT FRESH ORANGES
UNIFORM WEIGHT FRESH PEAS
UNIFORM WEIGHT FRESH PEPPERS
UNIFORM WEIGHT FRESH POTATO
UNIFORM WEIGHT FRESH RADISH
UNIFORM WEIGHT FRESH SPINACH
UNIFORM WEIGHT FRESH SPROUTS
UNIFORM WEIGHT FRESH TOMATO
UNIFORM WEIGHT FRESH YAMS
UNIFORM WEIGHT TOFU/SOYBEAN