

AN ASSESSMENT *of* CORNER STORES *in* SUBURBAN COOK COUNTY, ILLINOIS

WHERE THEY ARE, AND WHAT THEY CARRY



AUGUST 2014

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Cook County DEPT.
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Public Health

Promoting health. Preventing disease. *Protecting you.*

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TABLE OF CONTENTS

Executive Summary	1
Introduction	5
Methods	6
Analysis	8
Results	10
Key Findings	31
Limitations	33
Conclusion	34

Maps

1 Corner stores across Suburban Cook County (SCC)	10
2 Corner Stores Compared to Other Store Types in SCC	11
3 Corner Store Locations Compared to Poverty in SCC	12
4 Produce Availability, Race and Ethnicity, Northeast Region, SCC	14
5 Produce Availability, Race and Ethnicity, Northwest Region, SCC	15
6 Produce Availability, Race and Ethnicity, West Region, SCC	16
7 Produce Availability, Race and Ethnicity, Southwest Region, SCC	17
8 Produce Availability, Race and Ethnicity, South Region, SCC	18

Tables

1 Counts and Population by SCC Region	23
2 Region* Fruit and Vegetable Class Crosstabulation	23
2a Region* Fruit and Vegetable Class Crosstabulation Percents	23
2b Mean amount of Fresh Fruits and Vegetables Carried by Region	23
3 Distance in Miles to Nearest Store by Demographic Quartile, SCC Corner Stores, 2012 and Comparison Stores, 2011	24
4 Distance to Nearest Store in Miles Divided by (1/Log of Population per Square Mile to Nearest Store) by Demographic Quartile, SCC Corner Stores, 2012 and Comparison Stores, 2011	25
5 Correlations Between Distance Index and Demographics	26
6 Corner Store Characteristics	26
7 Corner Store Marketing Environment	26
8 Selected Corner Store Characteristics by Neighborhood Racial Composition	26
9 Corner Store Fresh Fruit and Vegetable Selection	27
10 Corner Store Fresh Fruit and Vegetable Selection by Type	27
11 Corner Store Product Availability by Neighborhood Racial Composition	27
12 Mean Availability of Fresh Fruit and Vegetables by Neighborhood Racial Composition	28
13 Mean Availability of Fresh Fruit and Vegetables by Neighborhood Poverty (200%)	28
14 Mean Fresh Fruit and Vegetable Availability by Liquor Index	28
15 Mean Availability of Frozen and Canned Fruit and Vegetables by Neighborhood Racial Composition	28
16 Mean Availability of Canned and Dried Beans by Neighborhood Racial Composition	29
17 Mean Availability of Canned and Dried Beans by Neighborhood Poverty (200%)	29
18 Mean Availability of Canned and Dried Beans by Region	29
19 Mean Snack and Sugar Sweetened Beverage Score by Neighborhood Racial Composition	29
20 Mean Snack and Sugar Sweetened Beverage Score by Neighborhood Poverty (200%)	29
21 Mean Price of Selected Fresh Produce in Corner Stores Compared to National Average	30
22 Mean Price of Whole and Reduced Fat Milk in Corner Stores Compared to National Average	30

Figures

1 Fruit and Vegetable Categories by Region (n=182)	21
2 Fruit and Vegetable Categories by Race (n=182)	21

EXECUTIVE SUMMARY

Introduction

In the last decade, there is growing recognition about the importance of environmental context in shaping obesity risk at the individual level. Several studies have found that food environments in low-income and minority communities are particularly “obesogenic” including limited availability of healthy food options, such as fruits and vegetables, high availability of energy-dense foods, and greater availability of smaller stores compared to supermarkets/full service grocery stores.^{1,2} While multiple strategies have been proposed, increasing availability of healthy foods in corner stores as an approach to improve food access has gained momentum. This has been particularly true in communities with low food access, also referred to as food deserts, that are underserved by traditional supermarkets.³

To gain a deeper understanding of corner stores across suburban Cook County, Illinois, the Cook County Department of Public Health (CCDPH) commissioned an assessment to describe distribution between communities of different races and income levels and the kinds of food options offered, as well as present recommendations based on the findings.

Methodology

Since there is no standard trade group definition, this assessment defined corner stores as small-scale, independent grocery stores that are smaller than a supermarket, which is defined as having less than 2.5 million annual in sales.⁴ This assessment excluded chain convenience stores and stores whose primary classification was as a gas station or liquor store. Of 201 qualifying stores, a total of 182 corner stores or 91% were successfully assessed.

In-person audits were conducted at each corner store to assess store characteristics and the food environment. Additionally, store characteristics hindering or promoting healthy food purchasing were collected; and availability, variety and price of the corner store food environment were examined.

Data analysis consisted of both spatial analysis to explore the spatial relationship between store locations and community demographics and other characteristics and survey analysis to gauge the relationship between food environment and community and store characteristics.

Findings

In summary, key findings are outlined below.

DISTRIBUTION & DENSITY OF CORNER STORES IN SUBURBAN COOK COUNTY

- While corner stores of any size are relatively evenly distributed between suburban Cook County regions, compared to other grocery store types, they are somewhat more concentrated in the South and West regions and least concentrated in the Northeast region.

- Hispanic communities have the highest densities of corner stores and African-American communities have a higher density of corner stores than the overall average for suburban Cook County.

DISTANCE TO CORNER STORES IN SUBURBAN COOK COUNTY

- The distance to the nearest corner store is generally lower in areas with lower incomes and higher Hispanic populations. Additionally, areas with higher Hispanic populations tended to be nearer to corner stores with 10 or more fresh produce items.
- While the distance to a corner store of all types, in general, was somewhat closer in African-American areas than the average in suburban Cook County as a whole, percent Hispanic and low income were better predictors of the distance to a corner store than percent African-American.

AVAILABILITY OF HEALTHY ITEMS

- The percentage of corner stores carrying 10 or more fresh produce items was significantly different by region. It was higher in the Northwest, Southwest and West regions, and lower in the Northeast and South regions.
- Fruit and vegetable availability and variety in liquor stores was lower compared to other store types.
- Corner stores in Hispanic areas were much more likely to stock and have greater variety of fresh fruits and vegetables and dried/canned beans than those in African-American, White or racially mixed areas.
- Predominately White and racially mixed communities were more likely to carry low fat and fat free milk compared to predominately African-American and Hispanic communities.
- A low percent of corner stores in the predominately African-American South region carried 10 or more produce items and other healthy food options despite the generally high concentrations of corner stores.
- Higher poverty areas stocked more fresh fruits and vegetables.

AVAILABILITY AND MARKETING OF UNHEALTHY ITEMS

- Predominately Hispanic, African-American and racially mixed communities were more likely to carry gallon size fruit juice drinks (<10% juice), single serving size (8oz) juice drinks (e.g. Little Hugs), and Flamin' Hots compared to White neighborhoods.
- Corner stores in African-American communities were more likely to sell tobacco products and alcoholic beverages.
- Indoor and outdoor marketing environments in African-American neighborhoods were saturated with more advertisements of unhealthy items than in other racial/ethnic neighborhoods.

Conclusions

In general, the geographic pattern of corner stores in suburban Cook County correlates with race/ethnicity and socioeconomic variables. In particular, the South region and African-American areas of suburban Cook County generally do not seem to be well served by either traditional supermarkets or corner stores in terms of produce availability.⁵ The limited availability of fresh produce, low fat milk, and frozen fruits and vegetables in African-American neighborhoods highlights a potential opportunity to work with corner store owners in these neighborhoods to increase their produce offerings. Findings further suggest that a comprehensive approach to improving foods and overall quality of the corner store should be considered. access to public transportation than Chicago residents. If areas of relatively low food access are present, vulnerable populations such as the poor, elderly, and those lacking access to transportation might have difficulty accessing healthy food.

“Finding Food in Chicago and the Suburbs,” a 2008 report on food access in the 6-county Chicago metropolitan area, found a number of areas of low food access in Chicago’s suburbs. Particular areas of concern included the Maywood, Riverdale, and Calumet City/Lansing areas. As in Chicago itself, these low food access areas were predominantly African-American. In many cases, communities in these areas have since worked to bring full service grocery stores into their neighborhoods, but the success, or lack thereof, of these efforts has yet to be documented. Food access research is also about what is in areas with poor food access. Often, low food access communities do have large numbers of smaller “corner” stores, as well as fast-food restaurants. In addition, innovative solutions to improving food access, such as implementation of farmers’ markets, community gardens, and farm stands, have not been mapped for suburban Cook County.

Recommendations

Based on the findings in this report, the following is recommended.

FOR COUNTY & LOCAL GOVERNMENT

- Identify strategies to make the data and conclusions of this report useful and understandable to residents who live in, as well as organizations and leadership who serve, communities with low access to healthy corner stores and other healthy food options. Barriers between community and the data that describes their daily living conditions should be removed.
- Develop a system to routinely analyze and disseminate data related to food access that is based on information already gathered by governmental agencies.
- Facilitate cross-sector collaborations (e.g., public and private economic development agencies; suburban Cook County municipalities; academic institutions) to: 1) develop healthy corner store models in areas where they would improve food access; and 2) lead or support securing of resources to implement and evaluate initiatives that increase availability of healthy food options at corner stores, particularly in the South region and in predominately African-American neighborhoods.

- Support policies and approaches that improve residents' overall access to healthy foods in corner stores (e.g., financing; store development and layout; product sourcing and purchasing such as requiring fresh produce as a condition of operating a store; and marketing such as limiting number of advertisements).

FOR CORNER STORE OWNERS

- Display nutrition and health messages in and around the store to promote the sale of healthy food.
- Reduce in-store marketing of unhealthy foods and competing products such as liquor and tobacco.
- Increase availability of healthy items by, for example:
 - Increasing allocation of shelf space to healthy foods.
 - Offering low-sodium or no sugar added fruits and vegetables, canned or frozen.
 - Working with your current suppliers, local farmers and farmers markets to add more fresh produce options.

FOR COMMUNITY ORGANIZATIONS

- Work with local corner stores to identify ways to increase customer demand and provide support for healthy items.
- Organize local marketing campaigns for stores, in collaboration with corner store owners and other agencies, that increase purchase of healthier food options.
- Assist store owners in identifying food purchasing preferences of community members.
- Seek out assistance to learn more about what the data means and how the results of this report help explain health inequities including potential higher rates of disease and premature death.

FOR RESEARCHERS

- Examine how community residents use corner stores for food and other products and how the food from corner stores contributes to dietary intake.
- Conduct a focused market basket study, similar to this corner store assessment, for gas stations and chain convenience stores in the Cook County region.
- Further explore predominantly White areas of the county to study shopping patterns by residents of these areas and to determine whether vulnerable populations in these areas would be assisted through increased produce offerings.

¹ Hilmers A, Hilmers DC, & Dave J. (2012). Neighborhood disparities in access to healthy foods and their effects on environmental justice. *American Journal of Public Health*, 102(9), 1644-54.

² Walker RE, Keane CR, & Burke JG. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health Place*, 16(5), 876-84.

³ Treuhaft S, & Karpyn A. (2010). The Grocery Gap: Who has Access to Healthy Food and Why it Matters. Retrieved from <http://www.policylink.org/atf/cf/%7B97C6D565-BB43-406D-A6D5-ECA3BBF35AF0%7D/FINALGroceryGap.pdf>.

⁴ Food Marketing Institute. (2012). Supermarket Facts. Retrieved from <http://fmi.org/research-resources/supermarket-facts>.

⁵ Block DR, Bisegerwa J, Bowen K, Lowe B, Owens J, Sager N, & Ssepuyya F. (2012). Food Access in Suburban Cook County. Retrieved from <http://www.cookcountypublichealth.org/files/CPW/block-report-exec-summary-031612.pdf>.

INTRODUCTION

In the last decade, there is growing recognition about the importance of environmental context in shaping obesity risk at the individual level. Several studies have found that food environments in low-income and minority communities are particularly “obesogenic” including limited availability of healthy food options, such as fruits and vegetables, high availability of energy-dense foods, and greater availability of smaller stores compared to supermarkets/full service grocery stores.^{1,2} While multiple strategies have been proposed, increasing availability of healthy foods in corner stores as an approach to improve food access has gained momentum. This has been especially true in communities with low food access, also referred to as food deserts, that are underserved by traditional supermarkets.³

This strategy, while proving to be successful in some places,⁴ is controversial. Corner stores are often seen as negative in the community and perceived to primarily carry unhealthy food items. Supporting these claims, a 2009 study found that over 50% of a group of inner city Philadelphia 4th to 6th graders bought food at a corner store at least once a day, and most frequently consumed items like chips, candy and sweetened beverages that are energy dense and have low nutritional value.⁵ Some evidence suggests that corner store owners generally are not from the community and are often of a different race – especially in African-American communities.^{6,7,8} Focus groups and structured group interviews, conducted as part of Northeastern Illinois Community Food Security Assessment, found mistrust between consumers in African-American neighborhoods in Chicago and corner stores owners and managers.⁹ The differences in race between the corner store consumers and owners also may serve to remind the consumers of the lack of business ownership within the community, especially in African-American neighborhoods.¹⁰ Additionally, stocking healthy food options may be difficult for corner stores when many face unique challenges such as limited capital, storage equipment, and access to suppliers.

Despite these challenges, corner stores still present opportunities to improve the availability of healthy, affordable food. Corner stores have an existing presence in low-income and minority communities that can be leveraged. Since they are smaller in size, they have the potential to respond quickly to community needs.

To gain a deeper understanding of corner stores across suburban Cook County, Illinois, the Cook County Department of Public Health (CCDPH) commissioned this assessment to supplement the 2012 Food Access in Suburban Cook County report. This assessment describes distribution between communities of different races and income levels and the kinds of food options offered. Based on the findings, recommendations are also presented.

METHODS

Data Collection

Since there is no standard trade group definition, this assessment defined corner stores as small-scale, independent grocery stores that are smaller than a supermarket, which is defined as having less than 2.5 million annual in sales.¹¹ This assessment excluded chain convenience stores and stores whose primary classification was as a gas station or liquor store.

To initially identify corner stores in suburban Cook County, a database of companies maintained by Hoover's, a division of Dun & Bradstreet, was used.¹² Review of the database led to the creation of an initial list of 360 stores that included food, meat, and produce stores with stated sales of less than 2.5 million annual revenue. Deleted from the list were duplicates; wholesalers, large chains, dollar stores, restaurants and stores visited in previous studies and determined to be supermarkets. In addition, in-person visits showed that 61 addresses of the 360 were residences – possibly store owners' homes, 26 were closed, and 33 were larger supermarkets. Other “store” addresses on the list led to an adult book store, an art gallery, restaurants and delis, a disco, and a carpet store. To this original 360 store list, 69 stores already participating in a corner store intervention project were added, many of which were duplicates to stores in the original 360 store list. All together, a total of 208 stores were judged to meet the qualifications for surveying. Seven of these were eliminated from the analysis after surveys were completed because they had three or more checkout lanes and nine or more shopping aisles or rows. Based on previous research, these types of stores, although meeting the annual sale limit, are considered small supermarkets. Taking away these seven stores resulted in a count of 201 qualified stores that we attempted to survey. Of these, 19 refused to participate. Of the 201 qualifying stores, a total of 182 corner stores or 91% were successfully assessed.

It should be noted that the original store list was very broad so that any store that could possibly be a corner store was included in the list to survey. However, the number of stores on the original 360 store Dun and Bradstreet list that were not groceries calls into question the use of such lists in general without in person site validation.

In-person audits were conducted at each corner store to assess store characteristics and the food environment. The survey used was adapted from several existing instruments^{13,14,15,16} and consisted of eight categories: 1) store characteristics, 2) fruits (fresh, frozen, canned), 3) vegetables (fresh, frozen, canned), 4) beans (canned, dried), 5) grains, 6) dairy, 7) beverages, and 8) snacks. Store characteristics that may hinder (e.g., in store marketing of unhealthy food items) or promote (e.g., accepting Supplemental Nutrition Assistance Program (SNAP) benefits) healthy food purchasing were collected.

In addition, availability, variety and price of the corner store food environment were examined. Availability was measured by documenting whether an item was present in the store (e.g. present/absent). Variety was assessed by evaluating the different kinds of items/products available (e.g. number of types of fruits/vegetables). Price was determined for a subset of foods, including a selection of six fruits and vegetables and other food products such as dairy foods and snack items. The list of foods included mostly healthy items (e.g.,

skim milk vs. whole milk), commonly consumed foods in the USA, and culturally specific foods for African-American (e.g., collard greens, okra) and Hispanic (e.g., tomatillo, mango) communities.

To gain a clearer understanding of factors that contributed to differences in food availability, we developed a liquor store index score using three store characteristics which were perceived to be consistent with a liquor store -- namely cigars sold, rolling papers sold, and liquor being the largest permanent outdoor sign. To examine availability of unhealthy foods, we also calculated a sugar-sweetened beverage score (sum of gallon size juice drink, single serving small juice drink, single serving large juice drink and soda) and poor snack score (sum of Flamin' Hots, regular chips, cookies, and HoHos/snack cakes).

A team of eight students from Chicago State University were hired to complete the store assessment. Assessors attended two trainings. The first was to review the survey, and the second was at two corner stores to practice completing the survey. Assessors were then “certified” to a level of 90% correct (compared to an assessment completed by an experienced lead assessor) on a third store. In addition, 40 stores were assigned to two reviewers in order to test for inter-rater reliability.



ANALYSIS

This assessment aimed to identify corner store locations in suburban Cook County, examine the food environment, and compare location and availability patterns to community characteristics. Data analysis consisted of both spatial analysis to explore the spatial relationship between store locations and community demographics and other characteristics and survey analysis to gauge the relationship between food environment and community and store characteristics.

Spatial Analysis

Methods used to identify areas of concentrations of corner stores followed similar methods to a previous assessment of food access in suburban Cook County.¹⁷ Suburban Cook County was divided into five regions. Three of these, the South, Southwest, and West regions, were identical to CCDPH district regions. The CCDPH North region was divided into Northwest and Northeast regions since these areas had very different characteristics in previous food access studies. The number of stores within each region were tallied and the ratio of stores to population within each region was calculated (Table 1). The relationship between region and produce availability class was assessed using a chi-square test (Table 2). Distances to the nearest corner store, the nearest corner store with any fresh produce, and the nearest corner stores with at least 10 fresh produce items of those surveyed were calculated to the nearest 100 feet to all residential and mixed residential zones in suburban Cook County.

Mean distances were then calculated by census block group. Population standardized means were then calculated for quartiles based on seven demographic variables: median household income; aggregate household income; percent of households below 200% of poverty; percent of households that are renters; and percent African-American; Non-Hispanic White; and Hispanic (Table 3). This was also done for a distance index that minimized the effect of population density on the mean distance to the nearest store (i.e. in general, as population density increases, distance to the nearest store decreases), using the formula: distance index = mean distance/(1/(log of population density)) (Table 4). Finally, the distance indexes were correlated with demographic variables (Table 5). Analyses were run using the Statistical Package for the Social Sciences (version 18.0, 2009, SPSS Inc., Chicago, IL) and ArcGIS (version 10, 2011, ESRI, Redlands, CA).

Survey Analysis

Availability and variety of each food item in corner stores overall, as well as by community racial/ethnic composition, poverty level, and region were measured using simple frequencies. Data were available for defined geographies from the U.S. Census (e.g., census block groups, census tracts). Census block group was used to define “neighborhood” and as the unit of analysis because it is the smallest spatial scale for which poverty data are available. Racial composition of each census block group was defined using Census 2000 data (2000 Census

Summary File 1). Based on the racial/ethnic distribution, block groups were categorized as greater than 50% White, greater than 50% African-American, and greater than 50% Hispanic. Community areas with no majority racial/ethnic group were designated as racially mixed. The percentage of individuals in the Census block group who reported annual family incomes below 200% of the federal poverty level was used to classify neighborhood poverty (2000 Census Summary File 3). Suburban Cook County regions were classified based on geographic areas designated by CCDPH. Chi-square and one-way ANOVA tests were used to test for differences in the availability and price by racial/ethnic distribution and poverty level. Analyses were run using the Statistical Package for the Social Sciences (version 16.0, 2007, SPSS Inc., Chicago, IL).



RESULTS

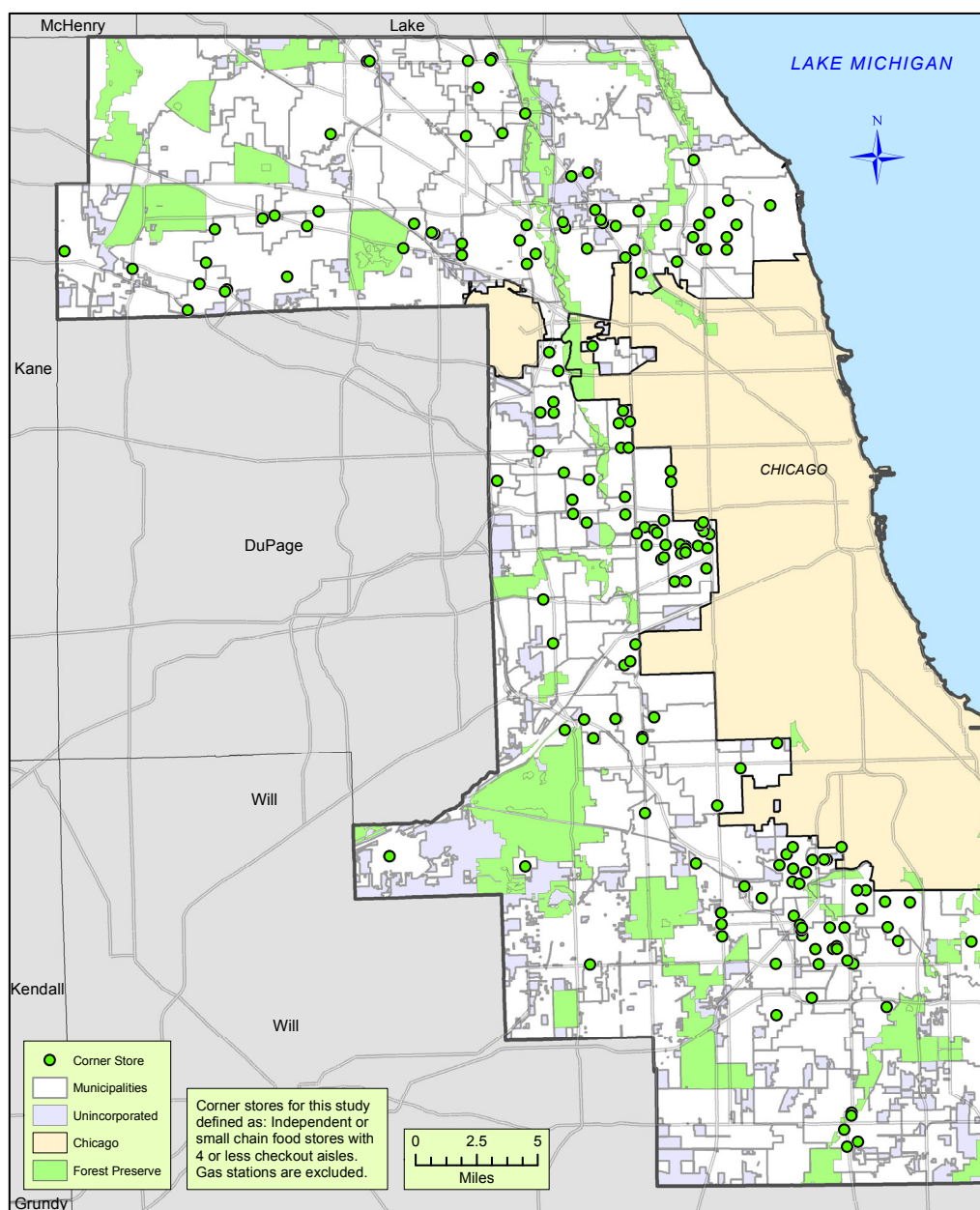
Spatial Results

This section presents the spatial results which can be seen in Maps 1-8 as well as Tables 1-5.

CORNER STORES ACROSS SUBURBAN COOK COUNTY (SCC)

Map 1 shows the locations of the corner stores that were assessed as part of this report. It illustrates the general distribution pattern of corner stores, with concentrations particularly in the town of Cicero and the near southern suburbs. Stores were less concentrated in the north suburbs.

MAP 1 |



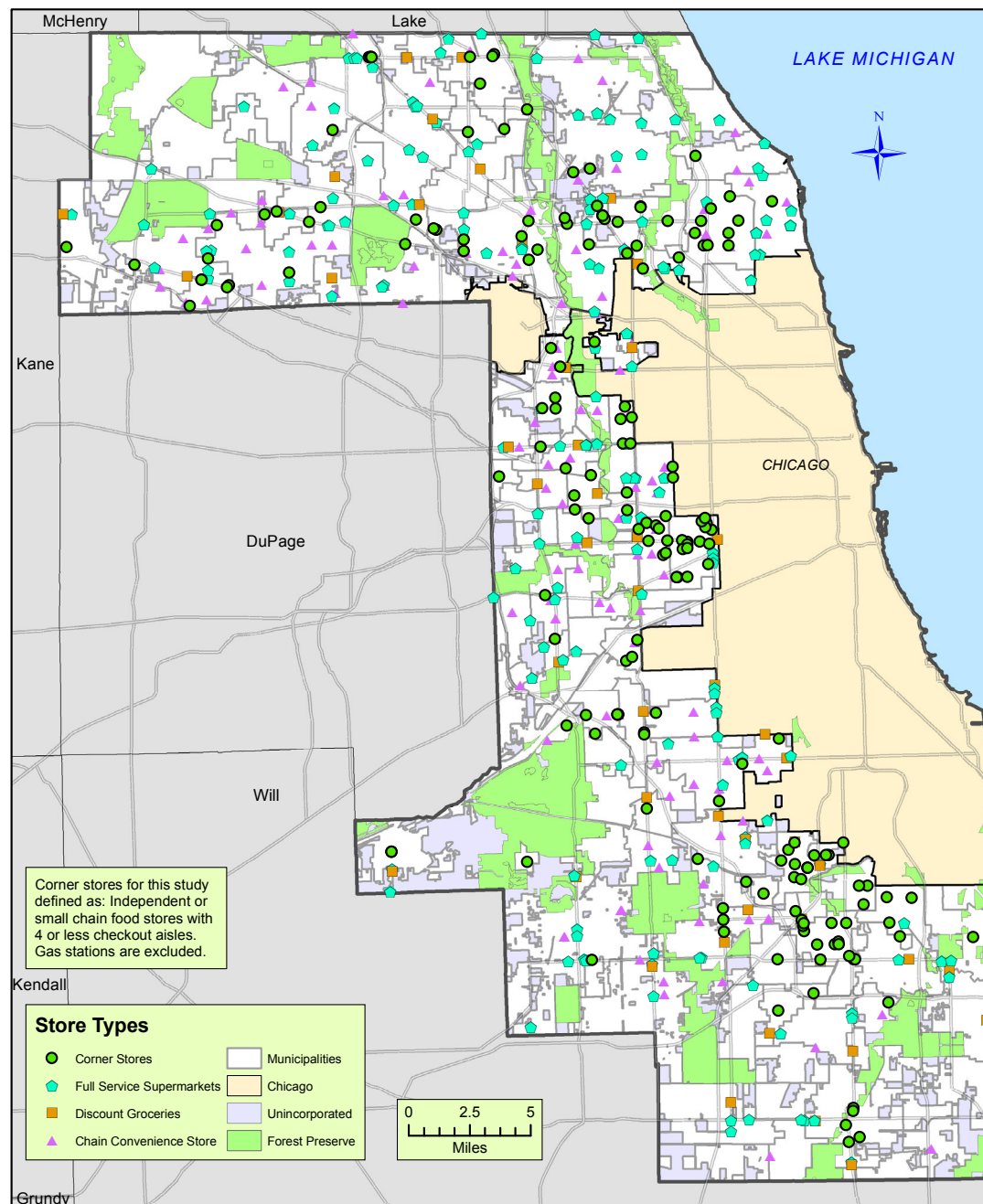
Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
US Census Bureau

Map and Assessment Completed by Chicago State University
Neighborhood Assistance Center and UIC Dept of Kinesiology and Nutrition
Fall 2012

CORNER STORES COMPARED TO OTHER STORE TYPES IN SCC

Map 2 presents the distribution of Chain Full Service Supermarkets, Discount Supermarkets (e.g. Aldi and Save-A-Lot); and Chain Convenience Stores (mainly 7 Eleven stores) for comparison with corner stores across suburban Cook County. Particularly in the near southern suburbs, independent corner stores appear to be “filling in” for other store types, in particular chain convenience stores. In other areas, particularly the northeastern suburbs (i.e. North Shore) independent corner stores are lacking compared to other store types.

MAP 2 |



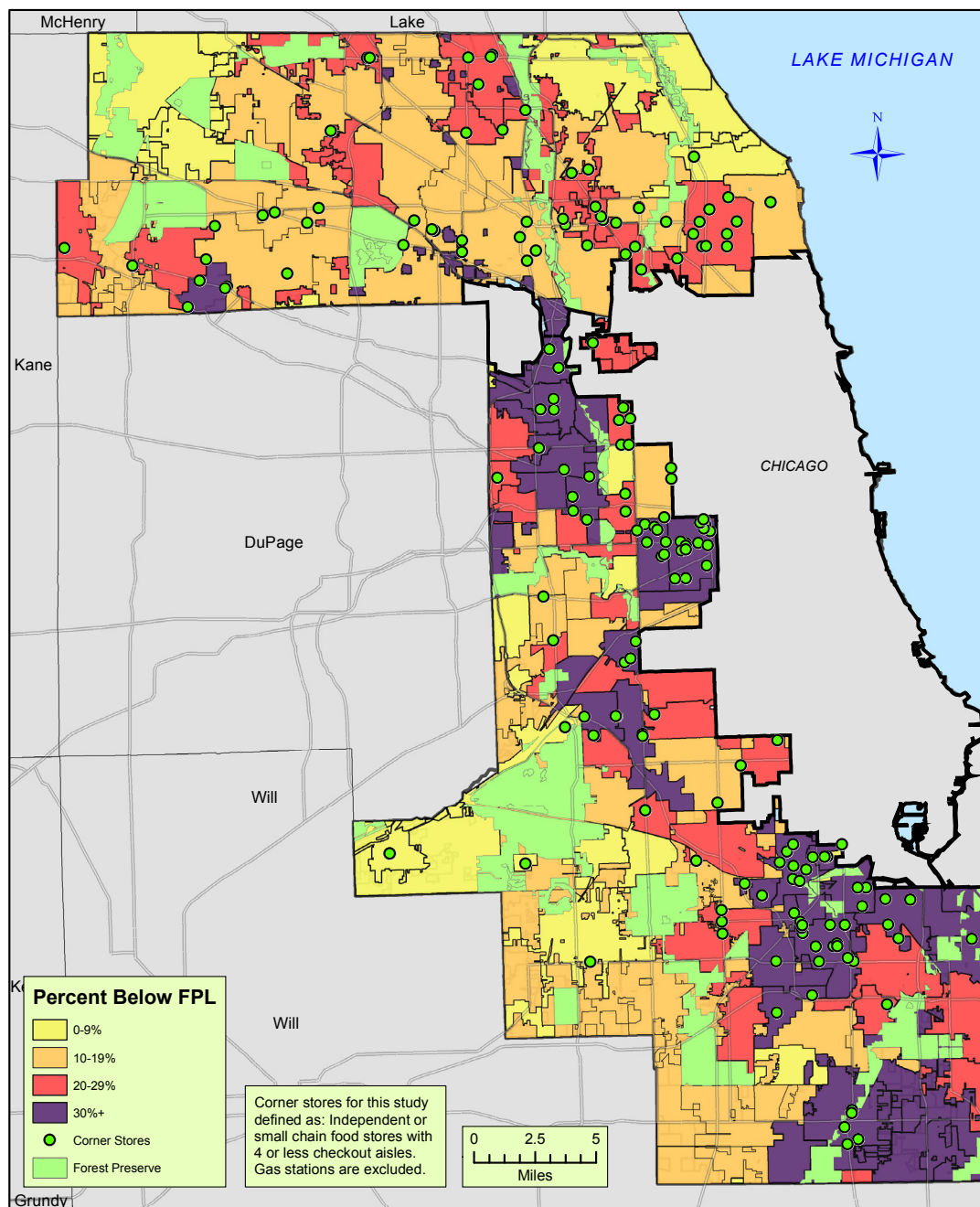
Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
US Census Bureau

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CORNER STORE LOCATIONS COMPARED TO POVERTY IN SCC

Map 3 superimposes the percent of population living in households that have annual incomes below 200% of the federal poverty level with the corner store locations. While corner stores are not confined to areas with higher levels of poverty, it is apparent that they are more often concentrated in these areas.

MAP 3 |



Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
US Census Bureau

Map and Assessment Completed by Chicago State University
Neighborhood Assistance Center and UIC Dept of Kinesiology and Nutrition
Fall 2012

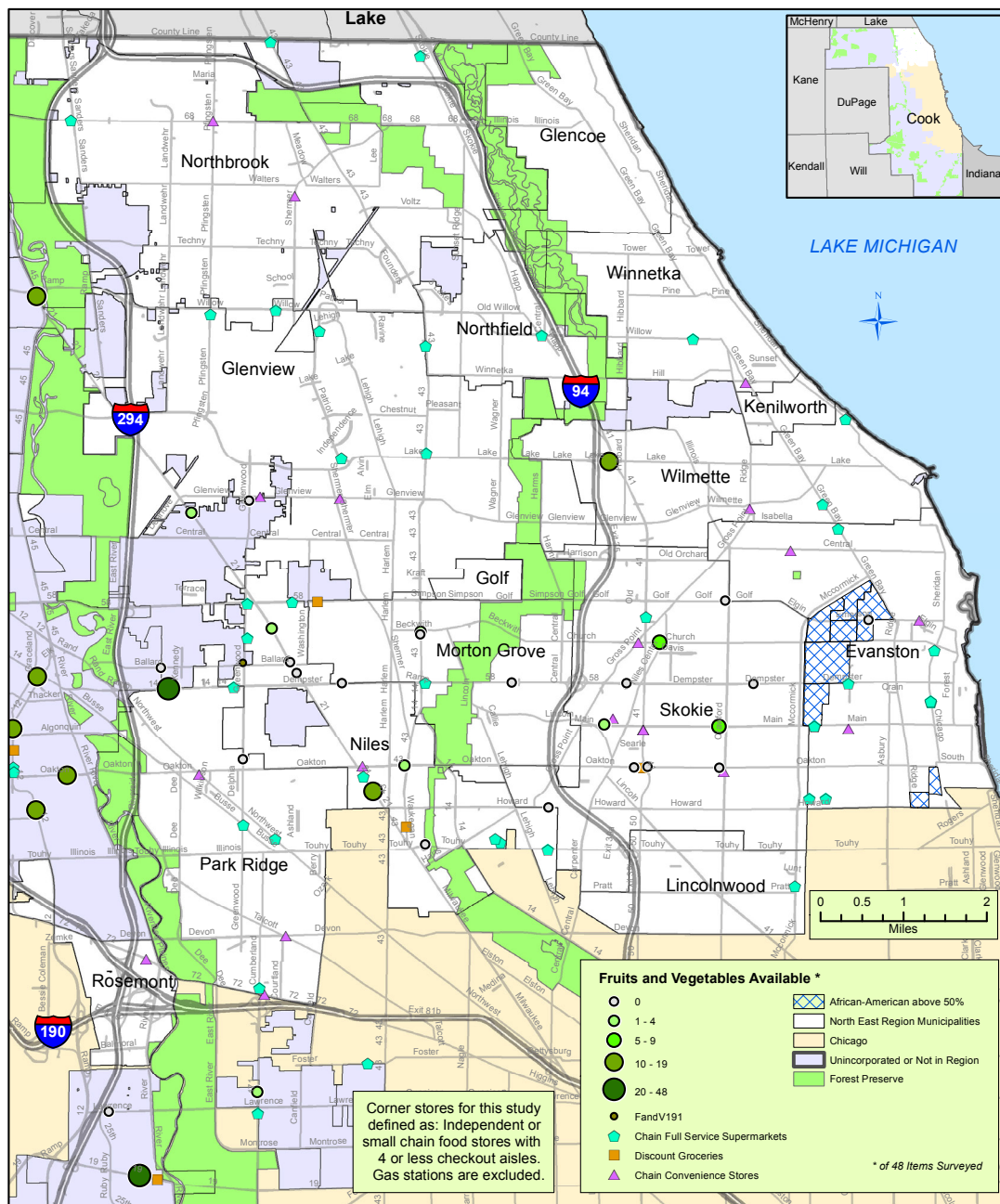
CORNER STORE LOCATIONS BY REGION IN SCC

Maps 4-8 present a clearer pattern of the within-region distribution of corner stores. In these maps, corner store symbols are sized by the number of produce varieties available. Census tract classification for African-American and Hispanic areas is also highlighted. The Northeast region (Map 4) shows only three corner stores that carry a large amount of produce and an overall low concentration of corner stores. The Northwest region (Map 5) shows a wide variety of independent and chain supermarkets, as well as concentrations of corner stores with larger amounts of produce in the eastern portion of this zone, including those in the municipalities of Des Plaines, Wheeling, and southern portions of Arlington Heights.

It should be noted that some of these stores specifically focus on serving the Asian-American population in this region. The West region (Map 6) is characterized by a large number of corner stores with relatively large amounts of produce especially in the predominantly Hispanic areas of Cicero and Berwyn, although such stores also exist in areas of Maywood, Melrose Park, and Schiller Park. The Southwest region (Map 7) is characterized by corner stores with larger produce sections in the predominantly Hispanic areas of Summit and Blue Island, with lower amounts of produce at corner stores elsewhere in the region. Finally, the South region (Map 8) shows a large number of corner stores with little or no produce, with a few scattered stores carrying larger amounts of produce, mainly in areas that are not predominately African-American.



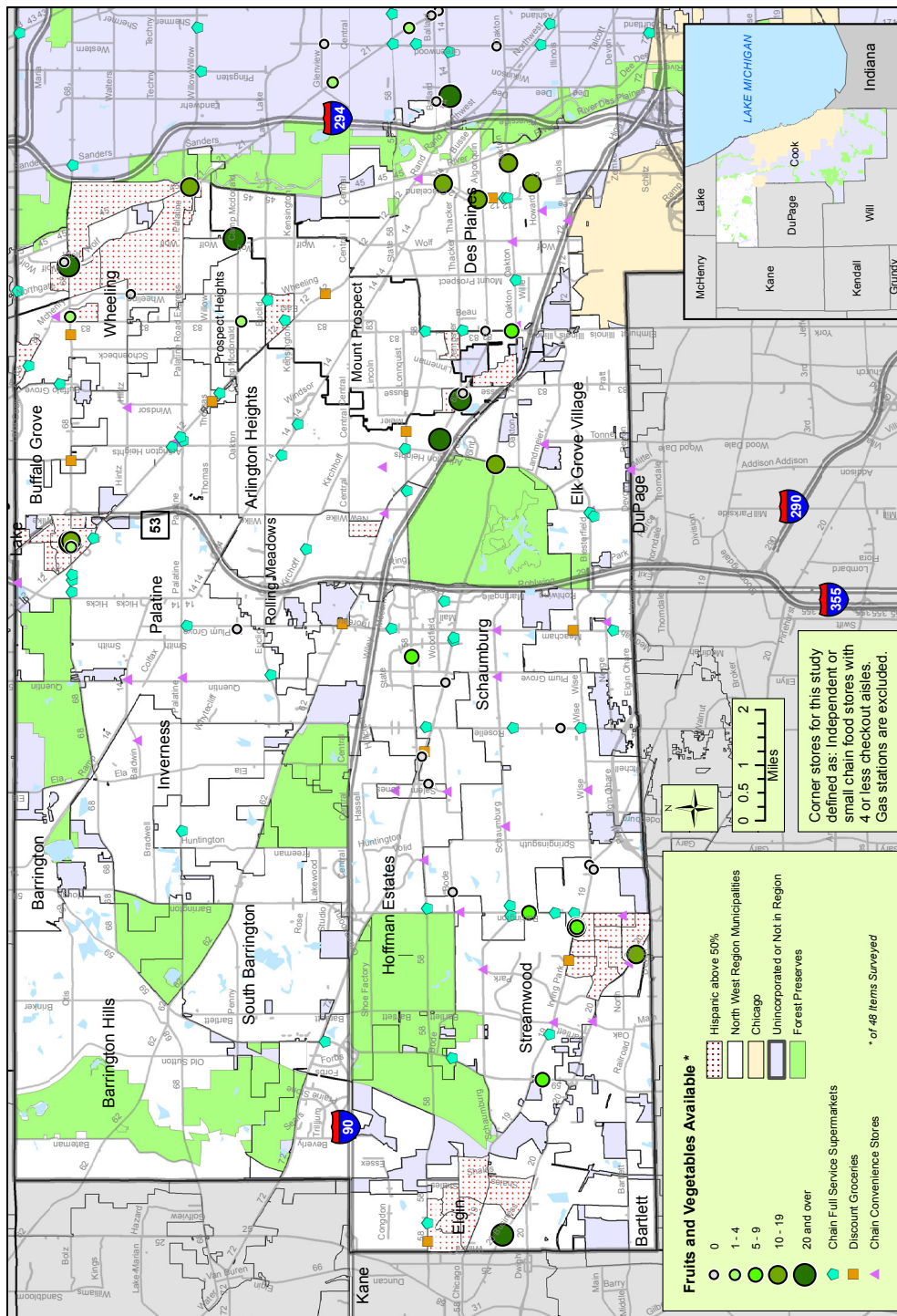
MAP 4 | Produce Availability, Race and Ethnicity, Northeast Region, SCC



Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
American Community Survey 2005 - 2009, US Census Bureau

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Fall 2012

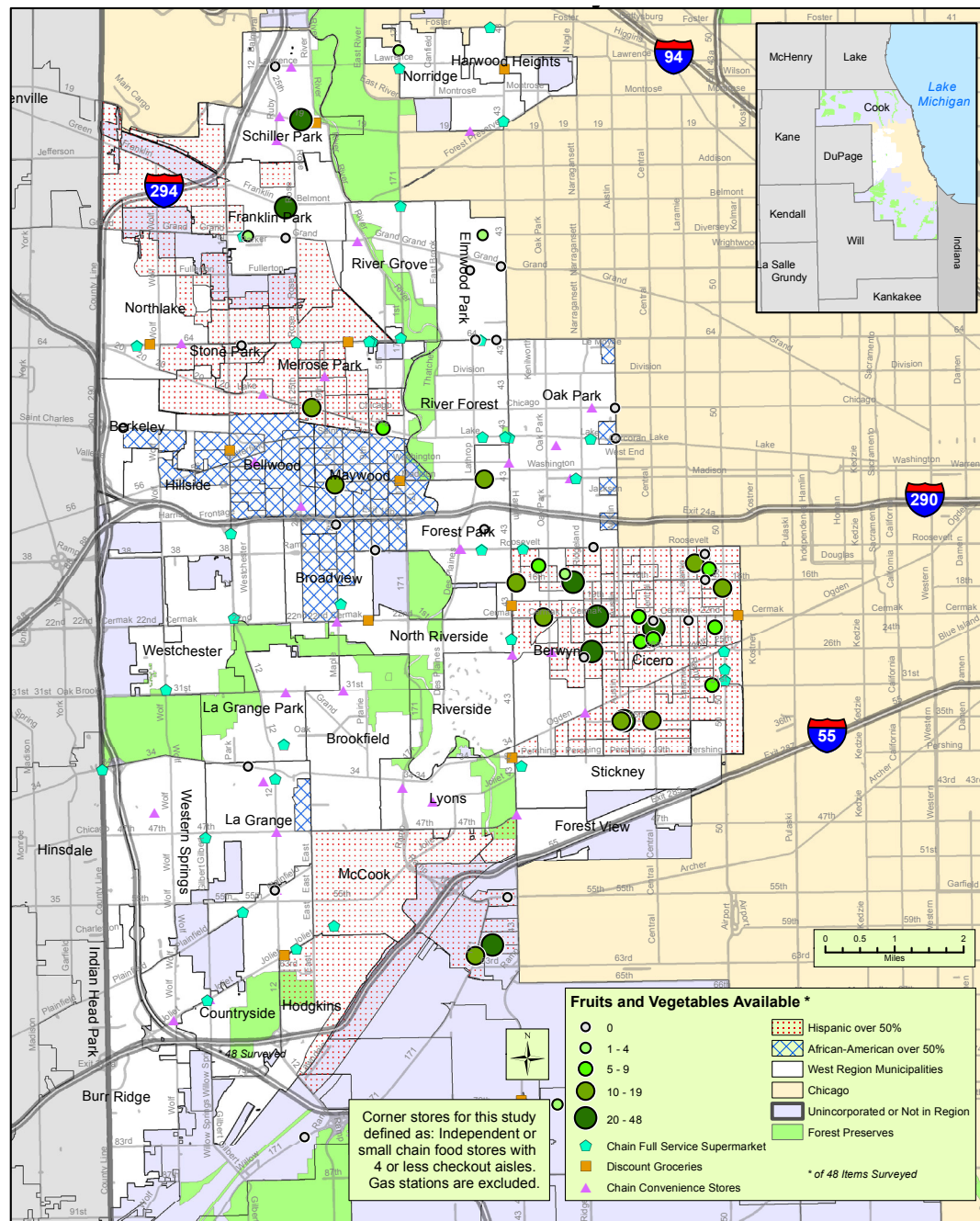
MAP 5 | Produce Availability, Race and Ethnicity, Northwest Region, SCC



Sources: CDPW Corner Store Assessment, Spring 2012
 Base Maps: Chicago Metropolitan Agency for Planning
 American Community Survey 2005 - 2009, US Census Bureau

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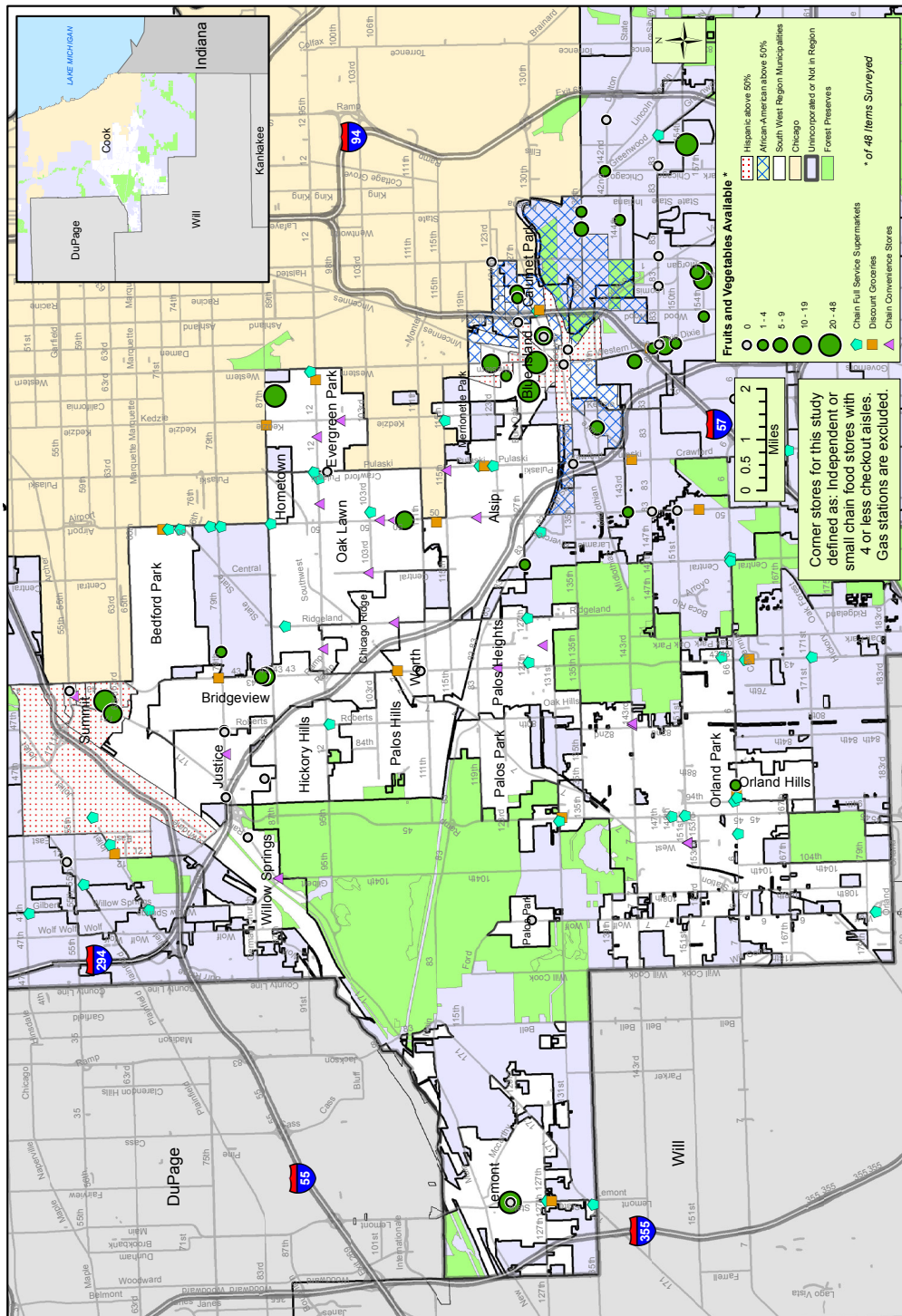
MAP 6 | Produce Availability, Race and Ethnicity, West Region, SCC



Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
American Community Survey 2005 - 2009, US Census Bureau

Map and Assessment Completed by Chicago State University
Neighborhood Assistance Center and UIC Dept of Kinesiology and Nutrition
Fall 2012

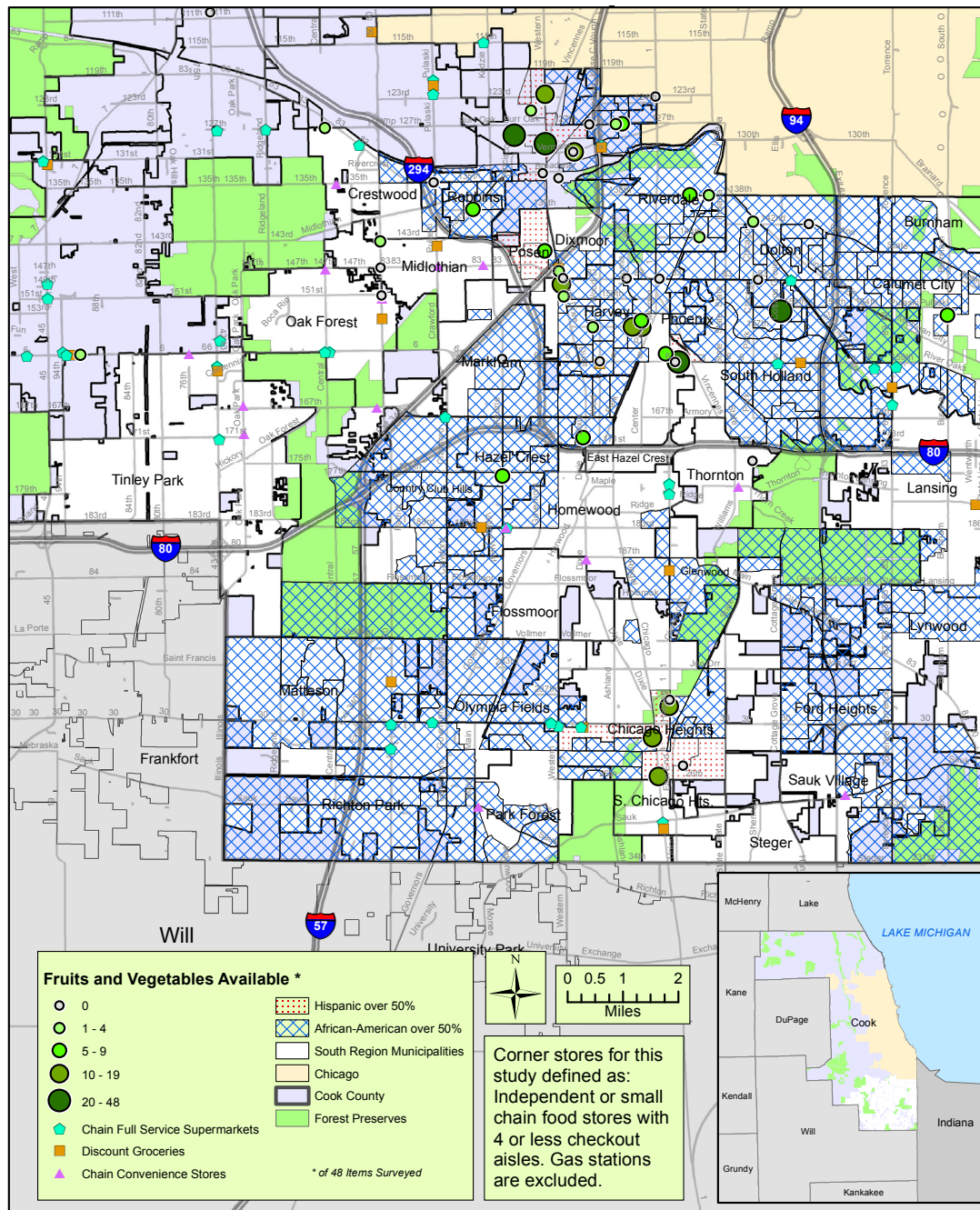
MAP 7 | Produce Availability, Race and Ethnicity, Southwest Region, SCC



Sources: CJPW Corner Store Assessment, Spring 2012
 Stores: Chicago Metropolitan Agency for Planning
 Base Maps: American Community Survey 2005 - 2009, US Census Bureau

Map and Assessment Completed by Chicago State University
 Neighborhood Assistance Center and UIC Dept of Kinesiology and Nutrition
 Fall 2012

MAP 8 | Produce Availability, Race and Ethnicity, South Region, SCC



Sources:
Stores: CPPW Corner Store Assessment, Spring 2012
Base Maps: Chicago Metropolitan Agency for Planning
American Community Survey 2005 - 2009, US Census Bureau

The general patterns presented in the corner store maps parallel and are confirmed by the spatial analysis as shown in tables beginning on page 23. Table 1 shows the number of corner stores per region, including stores with no produce, stores with 1-9 produce items, and stores with 10 or more. Note that the density of corner stores compared to the region's population is highest in the predominately African-American South region (high densities are indicated by low populations per store). However, differences between regions are relatively low compared to those seen with corner stores with higher amounts of produce. For instance, the density of stores with 10 or more produce items is highest compared to the population in the West and Southwest regions, which generally have larger Hispanic populations. The concentration of stores carrying 10 or more produce items is particularly low in the Northeast region, which has a predominantly White population.

The relationship between region and classes of produce carried (i.e. none, 1-9 items, 10 or more items) is shown on Tables 2 and 2a. Differences were examined using chi-square and ANOVA tests. In the tests, region was not found to be a significant predictor of produce availability at a significance level less than .1 ($p=0.19$). However, a comparison of stores in the "10 and Above" class shows that region is a minimally significant predictor in the percent of stores that carry 10 or more fresh produce items ($p=0.07$). Tables 2, 2a, and 2b indicate relationships that follow the variation in produce available by region. This is demonstrated by the variation in produce available in corner stores by region. Not only did the Northeast region have the lowest number of corner stores, only 11.5% of these had 10 or more produce items, compared to 29.1% for all regions. The South region, despite having the second highest number of corner stores overall, had the second lowest percentage of stores (20.9%) that carried 10 or more produce items. The other regions surpassed these with the West, Southwest and Northwest regions having 32.7%, 37.0%, and 40.5%, respectively, of the stores carrying 10 or more produce items.

Tables 3 and 4 show distance and distance index quartiles by demographic variables for the corner store data and comparison store types. Table 5 shows correlations between these demographic variables and the distance index. In addition, calculations by quartile were added for percent Asian, as well as percent Asian combined with percent Hispanic. This addition was in response to inquiries about whether produce access at stores might correlate with the locations of recent immigrant populations.

Table 5 shows correlation coefficients between race and income variables and distance to the nearest corner store. Pink-colored boxes are significant relationships with correlations of $-.1$ or less, meaning that as the variable goes up, the distance to the nearest corner store goes down. Grey colored boxes are significant relationships with correlations of $+.1$ or greater, meaning that as the variable goes up, the distance to the nearest corner store goes up. It should be noted that correlations of $.1$ or $-.1$ are not very high. Even stronger correlations, such as $.3$ or $-.3$ still do not indicate causation. When reading this table, it is important to concentrate more on the overall patterns than particular relationships.

Concentrating specifically on correlations between percent African-American and the distance index on Table 5, an unexpected relationship emerges. For most store types, percentage African-American correlates moderately positively with distance to the nearest store, meaning as percentage African-American goes up, distance to the nearest store also goes up. One exception is with discount supermarkets such as Aldi and Save-a-Lot, where distance goes down as African-American percentage increases. Even though the distance to get to other kinds of groceries generally is well correlated with percent African-American, distance to the nearest corner store does not correlate well.

On the other hand, percent Hispanic is negatively correlated at a level of .3 or greater with a lower distance index, meaning that the distance to the nearest store declines as the percentage of Hispanics in a region increases) for all corner stores and for corner stores with between 1-9 produce items and 10 or above produce items. Percent Non-Hispanic White correlates positively with the distance index, as does both median and aggregate household income, meaning that one must generally travel further to reach a corner store in Non-Hispanic White and higher income areas.

Percent Asian itself is not a strong enough predictor of store access to create its own patterns, generally showing fairly weak correlations. For this reason, analysis results for percent Asian alone are not presented here.

Survey Results

This section presents survey results that describe store characteristics and food environment.

Store Characteristics

Detailed results from in-person audits are presented in Tables 6-22 and Figures 1 and 2. Table 6 highlights characteristics of corner stores across suburban Cook County (n=182). A majority of stores (76.4%) accepted SNAP benefits (known as LINK in Illinois). However, about 24% of stores participated in the Supplemental Nutrition Program for Women, Infants, and Children (WIC). About 50% of stores had signage in languages other than English. Slightly over 30% of stores sold prepared foods, such as pizza or sandwiches.

Many corner stores included in the survey sold alcoholic beverages (40.1%) and at least one tobacco product (54.9%). In addition, several of the stores also promoted alcoholic beverages and tobacco products through in-store ads, displays/built-ins, outdoor signage, and/or functional items such as trash cans, mats, etc. (Table 7). Store characteristics differed based on the racial/ethnic composition of the community. Stores in African-American neighborhoods were significantly more likely to sell alcoholic beverages and cigarettes; have industry produced ads for tobacco, alcoholic beverages, and sugar sweetened beverages displayed inside the store; and sell cigars, smokeless tobacco, and tobacco rolling papers compared to all other racial/ethnic neighborhoods (Table 8). Likewise, corner stores in African-American neighborhoods were more likely than other neighborhoods to have outdoor ads for alcoholic beverages and feature “liquor” as the largest permanent outdoor sign (Table 8).

Food Option Availability

Analysis of data on fruit and vegetable availability showed that less than half (43%) of the corner stores in suburban Cook County carried fresh produce with 15% carrying 1-5 varieties, 11% carrying 6-9 varieties, 17% carrying 10-20 varieties, and 14% carrying 20 or more varieties (Table 9). The Northeast region had the highest percentage of stores without fresh produce (58%) whereas the Northwest had the lowest percentage of stores without fresh produce (35%) (Figure 1, below). Predominately White neighborhoods had the highest percentage of stores without fresh produce (55%) and Hispanic neighborhoods had the lowest (23%) (Figure 2, below).

Figure 1 | Fruit and Vegetable Categories by Region (n=182)

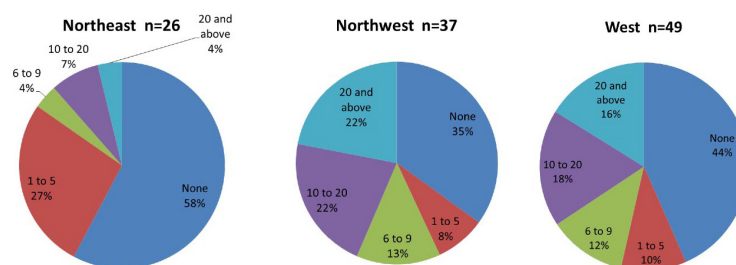
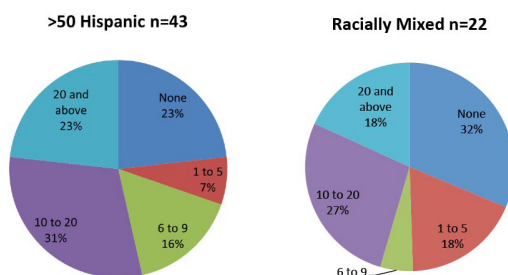


Figure 2 | Fruit and Vegetable Categories by Race (n=182)



Of the corner stores that carried fresh produce, the type of produce that was carried most frequently was white onions (45.6%) followed by apples (38.5%), bananas (35.7%), and oranges (33.5%) (Table 10). White potatoes were not included in this assessment; however, previous studies suggest that corner stores frequently carry white potatoes as a staple item.^{18,19} Availability of other food items is presented in Table 11. Most stores stocked canned beans, dried beans, canned fruits, white bread, white rice, white pasta, whole and reduced fat milk, regular cheese, and a selection of regular snack chips.

Stores in White and racially mixed neighborhoods were more likely to carry low fat and fat free milk compared to stores in African-American and Hispanic neighborhoods.

Stores in Hispanic, African-American and racial mixed neighborhoods were more likely to carry orange juice, gallon size fruit juice drinks (<10% juice), single serving size (8oz) juice drinks (e.g. Little Hugs), and snack chips compared to stores in White neighborhoods (Table 11). Stores in predominately Hispanic neighborhoods were significantly more likely to stock canned and dried beans whereas stores in racially mixed neighborhoods had greater availability of frozen fruits and vegetables.

In our sample of corner stores, mean availability of fresh fruits and vegetables differed by both neighborhood racial/ethnic composition and poverty level (Table 12 and 13). Mean

fresh fruit and vegetable availability in Hispanic and racial mixed neighborhoods was significantly greater than in predominately White and African-American neighborhoods. Mean availability of culturally specific Hispanic and African-American fresh fruits and vegetables was also significantly greater in Hispanic than African-American, White and racially mixed neighborhoods. Mean availability of fresh fruits and vegetables was also directly associated with neighborhood poverty level, with the highest poverty category (>41.29) having a higher mean availability of fresh fruits and vegetables overall and culturally specific African-American and Hispanic fruits and vegetables compared to the lower poverty category. In contrast, mean availability of both fruits and vegetables was significantly lower in corner stores with the highest liquor store index score compared to the stores with the lowest score ($p<0.05$) (Table 14).

Selection

Consistent with the availability of fresh produce items, mean availability of canned fruits, canned vegetables, frozen fruits, and frozen vegetables was significantly greater in Hispanic and racially mixed neighborhoods compared to White and African-American (Table 15). Mean availability of frozen vegetables was significantly lower in African-American neighborhoods compared to Hispanic, White, and racially mixed neighborhoods (Table 15). Canned and frozen fruits and vegetables did not differ by neighborhood poverty level. Mean availability of canned and dried beans was significantly higher in Hispanic neighborhoods compared to racially mixed neighborhood types (Table 16). Additionally, mean availability of canned beans was also significantly higher in the highest poverty category compared to the lowest poverty category (Table 17). Consistent with the greater Hispanic population, mean availability of both canned and dried beans was highest in the South and Southwest regions (Table 18).

The poor snack score in predominately White neighborhoods was significantly lower than in neighborhoods of all other racial/ethnic groups (Table 19). Mean sugar-sweetened beverage score was significantly higher in African-American and Hispanic neighborhoods compared to White neighborhoods (Table 19). Sugar-sweetened beverage and poor snack scores for stores in neighborhoods in the lowest poverty tertile were significantly lower than scores in the highest poverty tertile (Table 20). The liquor store index also predicted poor snack score with a significantly higher mean poor snack score in corner stores with higher liquor index scores (not pictured).

Price

Mean price was calculated for a selection of fresh produce in the corner stores and compared to the national average. Mean prices for all selected fruits and vegetables except mangos exceeded the national average pricing (Table 21). There were no significant differences in mean price of selected produce items by neighborhood racial composition. However, mean prices of mangos differed by poverty level with higher levels of poverty being associated with lower prices. Mean prices of milk items were lower than the national average with no significant differences by race, poverty, or region (Table 22).

TABLE 1 | Counts and Population by Suburban Cook County (SCC) Region

Table 1: Counts and Population by Suburban Cook County Region

Corner Stores		All Corner Stores		CS's w. No Produce		CS's w. 1-9 Pr. Items		CS's w. >=10 Pr. Items	
Region	Total Population	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site
Northeast	403277	26	15511	16	25205	7	57611	3	134426
Northwest	779799	37	21076	14	55700	8	97475	15	51987
South	435201	43	10121	18	24178	16	27200	9	48356
Southwest	403831	27	14957	12	33653	5	80766	10	40383
West	543582	49	11094	20	27179	13	41814	16	33974

Food Stores		Full-Serv. Chains		Discount Chain		Supercenters		Specialty Stores		All Independent Groc.		All Supermarkets	
Region	Total Population	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site
Northeast	403277	23	17534	3	134426	3	134426	6	67213	20	20164	46	8767
Northwest	779799	30	25993	11	70891	8	97475	3	259933	37	21076	76	10261
South	435201	14	31086	12	36267	5	87040	1	435201	44	13865	55	11092
Southwest	403831	17	23755	10	40383	4	100958	1	403831	12	35178	38	11109
West	543582	18	30199	12	45299	6	90597	3	181194	24	18133	34	12800

Alternative Food Sites		School Gardens		Farmers Markets		Farm Stands		Community Gardens		TOTAL Alternative Sites	
Region	Total Population	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site
Northeast	403277	39	10340	14	28806	0	NA	9	44809	62	6504
Northwest	779799	33	23630	7	111400	4	194950	14	55700	58	13445
South	435201	23	18693	7	61419	4	107483	6	71655	40	10748
Southwest	403831	22	18356	10	40383	1	403831	7	57690	40	10096
West	543582	37	14612	9	60070	0	NA	7	77233	53	10201

Others		Total Fast Food		Chain Convenience		Liquor Stores		Chain Drug Stores	
Region	Total Population	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site	Number	Pop/Site
Northeast	403277	172	2345	19	21225	52	7755	34	11861
Northwest	779799	294	2652	46	16952	93	8245	45	17041
South	435201	140	3071	13	33072	57	7543	32	14483
Southwest	403831	150	2692	25	16153	44	9178	31	12769
West	543582	209	2587	36	15018	61	8863	42	13119

Store Types: All Groceries: All independent, local chains, and chain groceries of all types; All Chain Supermarkets: Includes all full-service, discount, and specialty chains

All Supermarkets: Includes all full-service and specialty chains and all independents and local chains with 5 or more check-out lanes.

Full-Service Chains: Jewel, Dominicks', Food 4 Less; Discount Chains: Aldi, Save-A-Lot; Specialty Chains: Whole Foods, Trader Joe's; Warehouse Stores: Costco, Sam's Club

Supercenters: Wal-Mart Supercenter, Meijer, Target; Chain Drug Stores: Walgreen's, CVS; Chain Convenience Stores: 7-Eleven, Convenient Mart, and J.J. Peppers

Corner Stores: All stores with less than 2.5 million annual sales that do not carry a full line of groceries

Fast-Food Restaurants: All chain fast and independent limited service (fast food) restaurants; Liquor Stores: all package liquor stores

Data Sources: Land Use Data for Calculations, Chicago Metro Agency for Planning, 2005; Streets: US Census Bureau, 2008

Supermarket Data: Based on Company Web Sites and In-person Visits, Chicago State University, Spring 2011

Chain Convenience Store Data, Based on Company Web Sites: Spring 2011

Farmers' Markets: Communities Putting Prevention to Work, 2011; Corner Stores, Chain Fast-Food Restaurants, and Corner Stores: Dun and Bradstreet, 2011

TABLES 2, 2a and 2b | Fruit and Vegetable Class Crosstabulation

Table 2: Region * Fruit and Vegetable Class Crosstabulation

		Fruit and Vegetable Class			Total
		None	1 - 9	10 and Above	
Region	North East	16	7	3	26
	North West	14	8	15	37
	South	18	16	9	43
	Southwest	12	5	10	27
	West	20	13	16	49
Total		80	49	53	182

Table 2a: Region * Fruit and Vegetable Class Crosstabulation Percents

		Fruit and Vegetable Class			Total
		None	1 - 9	10 and Above	
Region	North East	61.5	26.9	11.5	100.0
	North West	37.8	21.6	40.5	100.0
	South	41.9	37.2	20.9	100.0
	Southwest	44.4	18.5	37.0	100.0
	West	40.8	26.5	32.7	100.0
Total		44.0	26.9	29.1	100.0

Tables show number of items found of the 48 items surveyed.

Chi-square test not significant at a p value of .186

Chi-square test for just "10 and Above" significant at a p value of .068

Table 2b: Mean amount of Fresh Fruits and Vegetables Carried by Region

		Mean	N	Std. Deviation
Region	North East	2.88	26	6.029
	North West	8.57	37	10.046
	South	5.84	43	8.685
	Southwest	8.52	27	11.376
	West	7.63	49	9.838
Total		6.85	182	9.515

ANOVA not significant at p value of .116

TABLE 3 | Distance in Miles to Nearest Store by Demographic Quartile, SCC Corner Stores, 2012 and Comparison Stores, 2011

	All Corner Stores	Corner Stores with Produce	Stores w/ >=10 Types of Produce	Chain Supermarkets	All Groceries	Indep. & Local Chain Groc.	All Supermarkets	Dis-count Chains	Full-Service Chains	Specialty Chains	Super-centers	Membership Whole-sale	Chain Convenience Stores	Alternative Food Sites	Chain Drug Stores	Farmers Markets	Fast Food	Nat. Chain Fast Food	Liquor Stores
Median Household Income (in dollars)																			
9,911-48,583	1.02	1.33	1.93	1.16	0.82	1.18	1.06	1.67	1.59	7.70	2.62	3.35	1.47	1.11	0.89	3.07	0.64	0.79	0.77
48,584-63,148	1.27	1.76	2.58	1.09	0.84	1.25	1.02	1.74	1.43	6.53	2.58	3.31	1.24	1.04	0.88	2.68	0.63	0.76	0.83
63,149-84,271	1.63	2.08	3.18	1.03	0.86	1.45	0.98	1.86	1.29	5.89	2.43	3.14	1.34	1.05	0.92	2.34	0.67	0.74	0.87
84,271-250,001	2.06	2.78	3.97	1.24	1.04	1.71	1.16	2.89	1.42	4.07	3.06	3.53	1.59	1.09	1.11	2.19	0.91	1.00	1.08
%Under 2x Poverty Level																			
0-8.80	1.97	2.66	3.91	1.20	1.00	1.64	1.13	2.64	1.37	4.10	3.03	3.47	1.51	1.05	1.06	2.19	0.86	0.96	1.01
8.81-18.77	1.69	2.24	3.34	1.11	0.94	1.54	1.06	2.14	1.37	5.59	2.53	3.32	1.39	1.11	1.00	2.27	0.73	0.81	0.98
18.78-31.98	1.42	1.88	2.65	1.02	0.83	1.33	0.97	1.81	1.34	6.22	2.53	3.18	1.20	1.01	0.87	2.53	0.60	0.70	0.81
31.99-99.06	0.96	1.25	1.87	1.19	0.82	1.11	1.06	1.63	1.64	8.05	2.64	3.37	1.53	1.12	0.88	3.25	0.67	0.84	0.76
% Housing Units Rental																			
0-4.19	2.02	2.58	3.91	1.24	1.05	1.71	1.20	2.37	1.49	5.85	2.82	3.48	1.65	1.21	1.10	2.47	0.86	0.95	1.10
4.20-15.82	1.66	2.21	3.09	1.16	0.94	1.44	1.08	2.18	1.41	5.93	2.79	3.38	1.42	1.03	1.00	2.42	0.80	0.91	0.96
15.83-35.86	1.35	1.82	2.68	1.06	0.81	1.34	0.98	1.93	1.40	6.13	2.59	3.28	1.23	1.03	0.85	2.55	0.63	0.76	0.79
35.87-100	1.06	1.47	2.18	1.08	0.80	1.16	1.00	1.76	1.43	6.15	2.54	3.22	1.38	1.05	0.88	2.81	0.59	0.70	0.74
Aggregate Income (in Millions of Dollars)																			
0.88-20.87	0.94	1.24	1.78	1.09	0.75	1.04	1.01	1.47	1.53	7.82	2.55	3.12	1.49	0.94	0.82	2.97	0.62	0.80	0.75
20.88-31.17	1.23	1.65	2.31	1.08	0.81	1.15	1.01	1.62	1.45	7.28	2.49	3.29	1.34	1.09	0.84	2.78	0.64	0.78	0.79
31.18-48.83	1.36	1.86	2.78	1.07	0.83	1.26	0.97	1.90	1.35	5.88	2.57	3.23	1.20	0.96	0.88	2.28	0.63	0.73	0.87
48.84-99.71	1.95	2.56	3.79	1.22	1.04	1.76	1.15	2.59	1.43	4.77	2.90	3.51	1.55	1.19	1.11	2.48	0.84	0.92	1.00
%Non-Hispanic White																			
0-37.61	1.12	1.32	1.88	1.23	0.84	1.16	1.10	1.63	1.72	8.97	2.50	3.30	1.70	1.10	0.91	3.33	0.68	0.85	0.82
37.62-69.61	1.32	1.78	2.59	1.08	0.86	1.29	1.04	1.83	1.37	6.11	2.59	3.28	1.21	1.02	0.91	2.55	0.65	0.75	0.83
69.62-85.94	1.64	2.27	3.31	1.10	0.92	1.52	1.04	2.26	1.30	4.85	2.75	3.29	1.22	1.13	0.98	2.30	0.72	0.82	0.93
85.95-100	1.97	2.67	4.01	1.12	0.97	1.65	1.06	2.50	1.33	4.06	2.90	3.48	1.52	1.04	1.02	2.07	0.81	0.90	0.97
%African-American																			
0	1.58	2.17	2.97	1.07	0.88	1.37	1.01	2.11	1.29	4.30	2.71	3.14	1.27	1.02	0.95	2.31	0.70	0.79	0.88
0.8-4.72	1.57	2.07	3.29	1.13	0.94	1.51	1.04	2.23	1.37	4.57	2.66	3.21	1.35	1.20	1.01	2.73	0.74	0.83	0.89
4.73-32.75	1.22	1.74	2.62	1.02	0.80	1.26	0.97	1.91	1.32	5.75	2.57	3.33	1.20	0.99	0.90	2.44	0.62	0.73	0.82
32.76-100	1.63	1.92	2.73	1.39	0.99	1.49	1.28	1.85	1.92	11.62	2.80	3.86	2.03	1.09	0.93	2.97	0.83	1.02	0.98
%Hispanic																			
0-2.03	1.77	2.31	3.18	1.18	0.93	1.44	1.09	2.52	1.43	6.22	2.89	3.51	1.55	0.93	0.97	2.37	0.78	0.88	0.95
2.04-7.55	1.87	2.54	3.99	1.17	0.99	1.75	1.12	2.37	1.43	5.48	2.84	3.47	1.59	1.14	0.99	2.18	0.78	0.89	1.02
7.56-21.06	1.47	1.91	2.84	1.12	0.89	1.35	1.05	1.88	1.42	6.33	2.58	3.48	1.30	1.15	0.95	2.57	0.72	0.83	0.89
21.07-98.22	0.89	1.19	1.57	1.07	0.76	1.02	0.97	1.47	1.44	6.15	2.42	2.86	1.21	1.05	0.90	3.18	0.57	0.70	0.69
%Asian																			
0	1.36	1.76	2.44	1.20	0.86	1.24	1.13	1.75	1.68	8.54	2.74	3.50	1.57	0.98	0.91	2.81	0.72	0.89	0.84
11-3.19	1.68	2.26	3.20	1.13	0.92	1.45	1.05	2.13	1.37	5.91	2.68	3.44	1.39	1.08	0.92	2.29	0.73	0.83	0.92
3.20-10.32	1.74	2.23	3.51	1.07	0.93	1.62	1.03	2.12	1.26	4.55	2.75	3.15	1.39	1.12	1.00	2.53	0.75	0.82	0.92
10.33-72.86	1.32	1.88	2.84	1.09	0.88	1.39	0.99	2.32	1.30	4.00	2.54	3.17	1.24	1.15	1.00	2.52	0.67	0.74	0.89
Pop. per Square Mile																			
28-3553	2.20	2.73	3.68	1.43	1.17	1.92	1.32	2.56	1.75	7.26	3.08	3.89	1.87	1.30	1.25	2.88	1.02	1.14	1.18
3554-5607	1.61	2.08	3.28	1.11	0.92	1.45	1.06	2.00	1.40	6.06	2.69	3.46	1.39	1.07	0.99	2.50	0.73	0.85	0.90
5608-8523	1.36	1.92	2.67	1.03	0.80	1.23	0.98	1.90	1.30	5.95	2.66	3.19	1.33	0.95	0.83	2.40	0.62	0.73	0.77
8524-42431	0.82	1.23	2.04	0.94	0.67	0.98	0.84	1.70	1.25	4.77	2.27	2.76	1.03	0.96	0.73	2.46	0.48	0.57	0.68
Mean-All Block Grps																			
	1.50	2.00	2.93	1.13	0.90	1.40	1.06	2.05	1.43	6.02	2.68	3.33	1.41	1.07	0.95	2.57	0.71	0.83	0.89

Quartiles calculated using American Community Survey estimates, 2005-2009, US Census

Stores Types: All Groceries: All independent, local chains, and chain groceries of all types; All Chain Supermarkets: Includes all full-service, discount, and specialty chains

All Supermarkets: Includes all full-service and specialty chains and all independents and local chains with 5 or more check-out lanes.

Full-Service Chains: Jewel, Dominicks', Food 4 Less; Discount Chains: Aldi, Save-A-Lot; Specialty Chains: Whole Foods, Trader Joe's; Warehouse Stores: Costco, Sam's Club

Supercenters: Wal-Mart Supercenter, Meijer, Target; Chain Drug Stores: Walgreen's, CVS; Chain Convenience Stores: 7-Eleven, Convenient Mart, and J.J. Peppers

Corner Stores: All stores with less than 2.5 million annual sales confirmed as corner stores by survey; Fast-Food Restaurants: All chain fast and independent limited service (fast food) restaurants; Liquor Stores: all package liquor stores

Data Sources: Land Use Data for Calculations, Chicago Metro Agency for Planning, 2005; Streets: US Census Bureau, 2008

Corner Stores: Based on In-person Visits, Chicago State University, Spring 2012; Supermarket Data: Based on Company Web Sites and In-person Visits, Chicago State University, Spring 2011

Chain Convenience Store Data, Based on Company Web Sites: Spring 2011; Chain Fast-Food Restaurants: Dun and Bradstreet, 2011\

TABLE 4 | Distance to Nearest Store in Miles Divided by (1/Log of Population per Square Mile to Nearest Store) by Demographic Quartile, SCC Corner Stores, 2012 and Comparison Stores, 2011

	All Corner Stores	Corner Stores with Produce	Stores w/ >10 Types of Produce	Chain Supermarkets	All Groceries	Indep. & Local Chain Groc.	All Supermarkets	Dis-count Chains	Full-Service Chains	Specialty Chains	Super-centers	Membership Wholesale	Chain Convenience Stores	Alternative Food Sites	Chain Drug Stores	Farmers Markets	Fast Food	Nat. Chain Fast Food	Liquor Stores
Median Household Income (in dollars)																			
9,911-48,583	3.76	4.91	7.19	4.34	3.07	4.39	3.97	6.31	5.98	28.67	9.88	12.60	5.52	4.21	3.34	11.65	2.38	2.92	2.88
48,584-63,148	4.69	6.54	9.63	4.06	3.14	4.67	3.81	6.54	5.33	24.19	9.69	12.38	4.62	3.89	3.27	10.07	2.31	2.82	3.08
63,149-84,271	5.89	7.52	11.57	3.75	3.13	5.26	3.58	6.83	4.70	21.42	8.92	11.48	4.83	3.84	3.35	8.60	2.42	2.68	3.16
84,271-250,001	7.10	9.67	13.89	4.33	3.62	5.89	4.03	10.13	4.95	14.11	10.81	12.36	5.47	3.79	3.86	7.65	3.12	3.47	3.75
%Under 2x Poverty Level																			
0-8.80	6.84	9.32	13.73	4.20	3.48	5.68	3.94	9.34	4.80	14.39	10.73	12.26	5.22	3.69	3.71	7.74	2.99	3.33	3.54
8.81-18.77	6.02	7.99	12.04	3.98	3.35	5.50	3.81	7.69	4.90	20.08	9.16	11.95	4.96	3.99	3.57	8.19	2.58	2.88	3.49
18.78-31.98	5.17	6.94	9.83	3.78	3.05	4.91	3.59	6.75	4.95	22.78	9.48	11.87	4.42	3.74	3.22	9.41	2.21	2.57	2.99
31.99-99.06	3.59	4.67	7.05	4.52	3.10	4.20	4.05	6.25	6.25	30.20	10.01	12.74	5.82	4.28	3.34	12.39	2.49	3.15	2.89
% Housing Units Rental																			
0-4.12	6.95	8.93	13.62	4.34	3.64	5.91	4.19	8.27	5.20	20.70	9.92	12.23	5.69	4.24	3.83	8.73	2.99	3.31	3.82
4.13-15.64	5.90	7.90	11.09	4.15	3.38	5.12	3.88	7.84	5.08	21.35	10.07	12.14	5.06	3.69	3.58	8.77	2.82	3.22	3.43
15.65-35.47	4.93	6.67	9.88	3.93	2.99	4.93	3.56	7.16	5.20	22.51	9.62	12.17	4.50	3.81	3.14	9.47	2.29	2.78	2.91
35.48-100	3.98	5.52	8.27	4.10	3.03	4.40	3.80	6.77	5.45	23.22	9.74	12.29	5.26	4.00	3.33	10.77	2.22	2.65	2.80
Aggregate Income (in Millions of Dollars)																			
0.88-20.87	3.47	4.58	6.59	4.11	2.78	3.86	3.78	5.54	5.79	29.28	9.62	11.68	5.62	3.55	3.08	11.33	2.30	2.97	2.81
20.88-31.17	4.55	6.12	8.62	4.04	3.02	4.28	3.81	6.09	5.45	27.21	9.37	12.35	5.00	4.12	3.15	10.54	2.39	2.90	2.96
31.18-48.83	4.96	6.85	10.33	3.94	3.06	4.65	3.58	7.10	4.99	21.50	9.56	12.01	4.43	3.56	3.22	8.46	2.32	2.67	3.21
48.84-99.71	6.81	8.97	13.37	4.29	3.66	6.19	4.06	9.20	5.07	16.82	10.33	12.47	5.40	4.21	3.91	8.83	2.91	3.22	3.52
%Non-Hispanic White																			
0-37.61	4.05	4.81	6.95	4.61	3.12	4.30	4.13	6.16	6.48	33.36	9.43	12.44	6.42	4.17	3.40	12.65	2.52	3.15	3.06
37.62-69.61	4.79	6.51	9.58	3.97	3.16	4.76	3.79	6.80	5.04	22.10	9.63	12.10	4.41	3.75	3.33	9.40	2.34	2.72	3.04
69.62-85.94	5.87	8.16	12.02	3.97	3.30	5.48	3.73	8.19	4.71	17.67	10.00	11.95	4.37	4.12	3.51	8.34	2.58	2.93	3.36
85.95-100	6.93	9.43	14.14	3.96	3.40	5.76	3.73	8.88	4.69	14.47	10.30	12.34	5.30	3.68	3.61	7.38	2.84	3.13	3.44
%African-American																			
0	5.66	7.78	10.69	3.90	3.18	4.93	3.67	7.66	4.72	15.85	9.87	11.46	4.57	3.76	3.47	8.54	2.51	2.86	3.19
.08-4.72	5.54	7.34	11.76	4.11	3.36	5.39	3.76	8.05	4.97	16.69	9.69	11.64	4.79	4.36	3.65	9.99	2.61	2.93	3.19
4.73-32.75	4.53	6.49	9.87	3.78	2.95	4.68	3.60	7.21	4.94	21.16	9.69	12.48	4.48	3.69	3.34	9.14	2.30	2.70	3.05
32.76-100	5.74	6.80	9.80	4.98	3.57	5.33	4.62	6.71	6.95	41.90	10.17	14.04	7.38	3.93	3.32	10.83	2.93	3.61	3.54
%Hispanic																			
0-2.03	6.27	8.24	11.41	4.23	3.31	5.14	3.92	9.03	5.15	22.53	10.40	12.68	5.51	3.30	3.46	8.55	2.79	3.16	3.40
2.04-7.55	6.50	8.97	14.20	4.12	3.49	6.17	3.94	8.48	5.07	19.43	10.22	12.41	5.58	4.02	3.48	7.77	2.72	3.11	3.58
7.56-21.06	5.34	6.95	10.44	4.07	3.23	4.91	3.82	6.89	5.19	23.02	9.48	12.74	4.74	4.20	3.44	9.40	2.59	2.97	3.24
21.07-98.22	3.38	4.50	5.95	4.10	2.92	3.87	3.71	5.67	5.55	23.42	9.30	10.99	4.63	4.05	3.45	12.29	2.16	2.68	2.63
%Asian																			
0	4.94	6.39	8.92	4.46	3.17	4.54	4.18	6.48	6.22	31.50	10.15	12.97	5.80	3.66	3.35	10.53	2.62	3.25	3.11
.11-3.19	6.03	8.13	11.54	4.09	3.32	5.20	3.81	7.76	4.97	21.42	9.80	12.56	5.00	3.94	3.33	8.45	2.60	2.99	3.33
3.20-10.32	6.13	7.89	12.47	3.80	3.31	5.72	3.66	7.62	4.51	16.39	9.94	11.33	4.88	4.01	3.56	9.16	2.62	2.88	3.28
10.33-72.86	4.74	6.82	10.44	3.98	3.22	5.07	3.60	8.49	4.78	14.51	9.33	11.63	4.48	4.22	3.62	9.20	2.41	2.68	3.22
Mean-All Block Grps																			
	5.38	7.19	10.62	2.98	4.12	3.25	5.06	2.73	7.48	5.24	21.99	9.83	12.21	5.11	3.93	3.46	9.47	2.56	3.22

Quartiles calculated using American Community Survey estimates, 2005-2009, US Census

Stores Types: All Groceries: All independent, local chains, and chain groceries of all types; All Chain Supermarkets: Includes all full-service, discount, and specialty chains

All Supermarkets: Includes all full-service and specialty chains and all independents and local chains with 5 or more check-out lanes.

Full-Service Chains: Jewel, Dominicks', Food 4 Less; Discount Chains: Aldi, Save-A-Lot; Specialty Chains: Whole Foods, Trader Joe's, Warehouse Stores: Costco, Sam's Club

Supercenters: Wal-Mart Supercenter, Meijer, Target, Chain Drug Stores: Walgreen's, CVS; Chain Convenience Stores: 7-Eleven, Convenient Mart, and J.J. Peppers

Corner Stores: All stores with less than 2.5 million annual sales confirmed as corner stores by survey; Fast-Food Restaurants: All chain fast and independent limited service (fast food) restaurants; Liquor Stores: all package liquor stores

Data Sources: Land Use Data for Calculations, Chicago Metro Agency for Planning, 2005; Streets: US Census Bureau, 2008

Corner Stores: Based on In-person Visits, Chicago State University, Spring 2012; Supermarket Data: Based on Company Web Sites and In-person Visits, Chicago State University, Spring 2011

Chain Convenience Store Data, Based on Company Web Sites: Spring 2011; Chain Fast-Food Restaurants: Dun and Bradstreet, 2011

TABLE 5 | Correlations Between Distance Index and Demographics

	Median Household Income	Aggregate Household Income	%Under 2x Poverty Level	% Housing Units Rental	%Non-Hispanic White	%Hispanic	%African-American	%Asian	%Asian + %Hispanic
All Corner Stores	.278**	.287**	-.265**	-.220**	.268**	-.306**	-.026	-.082**	-.334**
Corner Stores with >=1 produce item#	.323**	.277**	-.326**	-.215**	.361**	-.348	-.104**	-.053*	-.363**
Corner Stores with >=10 produce items#	.219**	.291**	-.297**	-.192**	.323**	-.372**	-.077**	.039	-.349**
Chain Supermarkets	-.013	.049*	.112**	-.006	-.158**	.008	.193**	-.079**	-.024
All Groceries	.039	.156**	-.051	-.097**	-.002	-.123**	.108**	-.026	-.132**
Indep. & Local Chain Groceries	.078**	.269**	-.121**	-.095**	.129**	-.223**	.043	-.020	-.227**
All Supermarkets	-.062**	.051*	.071**	-.021	-.131**	-.027	.197	-.094**	-.065**
Discount Chains	.474**	.363**	-.237**	-.094**	.236**	-.251**	-.090**	.072**	-.217**
Full-Service Chains	-.095**	-.030	.232**	.062	-.294**	.058*	.323**	-.142**	-.002
All Alternative Food Sources	-.144**	.044	.092**	.005	-.093**	.072*	.062**	.056*	.094**
Convenience Stores	-.035	.050*	.142**	.012	-.211**	-.048*	.260**	-.108**	-.092**
Chain Drug Stores	.117**	.182**	-.081**	.070**	.031	-.026	.009	-.007	-.029
Farmers' Markets	-.287**	-.133**	.361**	.040	-.381**	.317**	.176**	-.056*	.287**
Fast Food Outlets	.126**	.139**	-.017	-.007	.013	-.131**	.093**	-.080**	-.161**
Liquor Stores	.075**	.126**	-.089**	-.006	.044	-.160**	.084**	-.028	-.168**
National Chain Fast Food	.062**	.077**	.064**	-.069**	-.057*	-.074**	.161**	-.107**	-.116**
Specialty Chains	-.349**	-.229**	.348**	.071**	-.402**	.016	.523**	-.272**	-.097**
Supercenters	.153**	.103**	.004	.007	.055*	-.102**	.042	-.067**	-.127**

** Correlation is significant at the 0.01 level (2-tailed) & Correlation Coefficient is greater than .1

** Correlation is significant at the 0.01 level (2-tailed) & Correlation Coefficient is less than .1

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

of 48 items surveyed

TABLE 6 | Corner Store Characteristics (n=182)

Characteristic	% (n)
Accept SNAP/LINK	76.4 (139)
Accept WIC	24.4 (44)
Alcoholic Beverage Sold	40.1 (73)
Prepared Foods Sold	30.2 (55)
Tobacco Products-Cigarettes	54.9 (100)
Tobacco Products-Cigars	40.7 (74)
Tobacco Products-Smokeless Tobacco	27.5 (50)
Tobacco Products-Rolling Papers	41.8 (76)
Signs in Language Other Than English	53.8 (98)
Spanish	30 (54)
Asian Languages (e.g. Chinese, Korean, Hindi)	13(24)

TABLE 7 | Corner Store Marketing Environment (n=182)

Characteristic	% (n)
Inside Store	
Industry Sugar-Sweetened Beverage Ads (e.g. soft drinks, sports drinks, etc.)	37.9 (69)
Industry Alcohol Ads	37.9 (69)
Industry Tobacco Ads	40.7 (74)
Permanent Tobacco Displays/Built-ins	22.0 (40)
Functional Tobacco Items (e.g. mats, garbage cans, etc.)	15.9 (29)
Store Front	
Industry Sugar-Sweetened Beverage Ads (e.g. soft drinks, sports drinks, etc.)	23.6 (43)
Industry Tobacco Ads	24.7 (45)
Industry Alcohol Ads	34.6 (63)
Liquor Largest Permanent Sign	22.5 (41)
Sugar Sweetened Beverage Largest Permanent Sign	7.1 (13)

TABLE 8 | Selected Corner Store Characteristics by Neighborhood Racial Composition (n=182)

	Cigarettes Sold (%)	Cigars Sold (%)	Smokeless Tobacco Sold	Tobacco Rolling Papers Sold	Industry Ads for Tobacco Inside
>50% White	47.1	29.4	22.4	30.6	35.7
> 50% Black	87.5**	75.0**	50.0*	78.1**	65.6
>50% Hispanic	44.2	32.6	20.9	30.2	34.9
Racially Mixed	59.1	50.0	27.3	54.5	36.4

*p<.05

**p<.001

TABLE 9 | Corner Store Fresh Fruit and Vegetable Selection (n=182)

Fruit and Vegetable Class	Percent (n)
None	43.4 (79)
1-5 varieties	15.4 (28)
6-9 varieties	11.0 (20)
10-20 varieties	16.5 (30)
20 and above varieties	13.7 (25)

TABLE 10 | Corner Store Fresh Fruit and Vegetable Selection by Type (n=182)*

Type of Produce	% (n)
Onion	45.6 (83)
Apple	38.5 (70)
Banana	35.7 (65)
Orange	33.5 (61)
Pepper (Bell, Hot, etc)	33.5 (61)
Cabbage	29.7 (54)
Carrots	29.7 (54)
Lettuce	29.1 (53)
Avocado	26.9 (49)

*Does not include white potatoes

TABLE 11 | Corner Store Product Availability by Neighborhood Racial Composition (n=182)

Product	% (n)	>50% White	>50% Black	>50% Hispanic	Racially Mixed
Canned Beans	72.4 (132)	61.2	75.0	90.7**	76.2
Dried Beans	67.0 (122)	54.1	71.9	90.7**	63.6
Canned Vegetables	83.0 (151)	71.8	90.7	95.3	90.9
Canned Fruits	75.8 (138)	70.6	65.6	90.7	81.8
Frozen Vegetables	35.2 (64)	37.6	31.2	20.9	57.1*
Frozen Fruit	13.7 (57)	10.7	9.4	11.4	25.0*
White Bread	56.6 (103)	48.2	68.8	69.7	59.1
Whole Wheat Bread	37.4 (66)	29.3	46.9	46.5	31.8
White Rice	78.6 (143)	70.6	78.1	90.7	86.4
Brown Rice	44.0 (80)	41.7	40.6	46.5	54.6
White Pasta	63.7 (116)	52.9	68.8	76.7	72.7
Whole Wheat Pasta	20.9 (38)	16.7	18.8	37.2*	9.1
Whole Milk	71.4 (130)	69.0	71.9	74.4	77.3
Reduced Fat Milk (2%)	70.3 (128)	65.5	68.8	74.4	86.4
Low Fat Milk (1%)	6.6 (12)	9.9	3.1*	2.4*	9.1
Fat Free Milk	9.3 (17)	12.2	9.4*	2.4*	13.6
Regular Cheese (>3g fat per serving)	51.1 (93)	40.0*	62.5	58.1	72.7
Low Fat Cheese (0-3g fat per serving)	13.7 (25)	12.5	6.5**	20.9	18.2
Orange Juice	45.6 (83)	37.0	65.6	46.5	60.0
Gallon Juice Drink (≤10% juice)	42.3 (77)	23.5*	65.6	53.5	63.6
Single Serving Size Juice Drink (e.g. Little Hugs) (≤10% juice)	29.7 (54)	25.3*	68.8	57.1	53.3
Regular Snack Chips	78.0 (142)	36.7	42.9	41.7	36.4
Low Fat Snack Chips (0-3g fat per serving)	26.9. (49)	17.6	21.9	41.9	40.9
HoHos, Cupcakes, or Swiss Rolls	48.4 (88)	35.7	71.9	48.8	63.6

TABLE 12 | Mean Availability of Fresh Fruit and Vegetables by Neighborhood Racial Composition (n=182)

	Fresh Fruit (18 items)	Fresh Vegetables (27 items)	African American Specific (8 items)	Latino Specific (8 items)
>50% White	2.1±4.0	3.1±5.5	.80±1.5	1.1±1.9
> 50% Black	2.0±4.1	2.0±5.6	.91±1.7	.56±1.4
>50% Hispanic	4.6±4.8*	7.7±6.8*	1.8±2.4*	2.7±2.3**
Racially Mixed	4.0±4.7	5.9±6.2	1.6±2.0	1.7±2.1
Total	2.9±4.5	4.6±6.2	1.1±1.9	1.4±2.1

*p≤.05

**p<.001

TABLE 13 | Mean Availability of Fresh Fruit and Vegetables by Neighborhood Poverty (200%) (n=182)

	Fresh Fruit (18 items)	Fresh Vegetables (27 items)	African American Specific (8 items)	Latino Specific (8 items)
>26.44	2.8±4.5	4.0±5.7	1.0±1.8	1.3±1.9
26.45-41.29	1.9±3.7	3.3±5.6	.85±1.7	.90±1.7
>41.29	4.1±4.8*	6.6±6.8*	1.5±2.1	2.1±2.5*
Total	2.9±4.4	4.6±6.2	1.1±1.8	1.4±2.1

*p≤.05

TABLE 14 | Mean Fresh Fruit and Vegetable Availability by Liquor Index (n=182)

	Fresh Fruit (18 items)	Fresh Vegetables (27 items)	African American Specific (8 items)	Latino Specific (8 items)
Liquor Index 0	3.6±4.8	5.8±6.5	1.5±2.0	1.9±2.3
Liquor Index 1	2.4±4.6	3.9±6.5	0.92±2.1	0.84±2.0
Liquor Index 2	3.0±4.4	4.4±6.2	1.0±1.9	1.4±2.2
Liquor Index 3	0.83±2.1	1.3±3.1	0.33±0.92	0.17±0.46
Total	2.9±4.5	4.6±6.2	1.1±1.9	1.4±2.1

TABLE 15 | Mean Availability of Frozen and Canned Fruit and Vegetables by Neighborhood Racial Composition (n=182)

	Canned Fruit (6 items)	Canned Vegetables (6 items)	Frozen Fruit (6 items)	Frozen Vegetables (7 items)
>50% White	2.1±4.0	3.1±5.5	.80±1.5	1.1±1.9
> 50% Black	2.0±4.1	2.0±5.6	.91±1.7	.56±1.4
>50% Hispanic	4.6±4.8	7.7±6.8	1.8±2.4	2.7±2.3
Racially Mixed	4.0±4.7	5.9±6.2	1.6±2.0	1.7±2.1
Total	2.9±4.5	4.6±6.2	1.1±1.9	1.4±2.1

TABLE 16 | Mean Availability of Canned and Dried Beans by Neighborhood Racial Composition

	Canned Beans (6 items)	Dried Beans (6 items)
>50% White	1.9±2.0	1.9±2.1
> 50% Black	2.5±2.1	2.5±2.1
>50% Hispanic	3.5±1.9	3.3±1.9
Racially Mixed	2.8±2.2	2.5±2.2
Total	2.5±2.1	2.4±2.1

Significant difference in mean availability of canned and dried beans between White and Hispanic ($p \geq .001$)

TABLE 17 | Mean Availability of Canned and Dried Beans by Neighborhood Poverty (200%)

	Canned Beans (6 items)	Dried Beans (6 items)
>26.44	2.1±2.2	2.0±2.2
26.45-41.29	2.2±2.1	2.5±2.3
>41.29	3.3±1.8	2.8±1.8
Total	2.5±2.1	2.4±2.1

TABLE 18 | Mean Availability of Canned and Dried Beans by Region

	Canned Beans (6 items)	Dried Beans (6 items)
Northeast	2.1±4.0	3.1±5.5
Northwest	2.0±4.1	2.0±5.6
South	4.6±4.8	7.7±6.8
Southwest	4.0±4.7	5.9±6.2
West	2.9±4.5	4.6±6.2

TABLE 19 | Mean Snack and Sugar Sweetened Beverage Score by Neighborhood Racial Composition (n=182)

	Poor Snack Score (4 items)	Sugar Sweetened Beverage Score (4 items)
>50% White	2.0±1.5	1.6±.95
> 50% Black	3.2±1.0	2.3±1.0
>50% Hispanic	2.8±1.2	2.2±1.1
Racially Mixed	3.1±1.2	2.1±1.1
Total	3.1±1.2	1.9±1.1

TABLE 20 | Mean Snack and Sugar Sweetened Beverage Score by Neighborhood Poverty (200%) (n=182)

	Poor Snack Score (n=4)	Sugar Sweetened Beverage Score (n=4)
>26.44	2.1±1.6	1.6±1.0
26.45-41.29	2.6±1.5	1.9±1.1
>41.29	2.9±1.1	2.2±1.0
Total	2.6±1.4	1.9±1.1

TABLE 21 | Mean Price of Selected Fresh Produce in Corner Stores Compared to National Average (n=182)

Type of Produce (each)	Mean Price	National Average	Difference
Apple	0.53±.35	0.35	+0.18
Banana	0.71±.30	0.18	+0.53
Lettuce	1.23±.42	0.99	+0.24
Mango *	1.01±.48	1.16	-0.15
Tomato	0.51±.37	0.41	+0.10

*Significant Difference low compared to high poverty for Mangos. No significant differences in price by race

Source: <http://www.ers.usda.gov/data-products/fruit-and-vegetable-prices.aspx>;
<http://www.ams.usda.gov/mnreports/fvwretail.pdf>

TABLE 22 | Mean Price of Whole and Reduced Fat Milk in Corner Stores Compared to National Average (n=182)

Type of Produce (each)	Mean Price	National Average 2012	Difference
Whole Milk	3.36±.74	3.65	-0.29
Reduced Fat (2%)	3.21±.90	3.58	-0.37
Low Fat (1%)	2.33±.1.6	N/A	N/A
Fat Free	2.50±.1.41	N/A	N/A

*No significant differences in price by race, income, or region

Source: <http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateL&navID=IndustryMarketingandPromotion&leftNav=IndustryMarketingandPromotion&page=RetailPrices&description=Milk+Marketing+Order+Statistics&acct=dmktord>

KEY FINDINGS

In summary, key findings are outlined below.

Distribution and Density of Corner Stores in Suburban Cook County

- While corner stores of any size are relatively evenly distributed between suburban Cook County regions, compared to other grocery store types, they are somewhat more concentrated in the South and West regions and least concentrated in the Northeast region.
- Hispanic communities have the highest densities of corner stores and African American communities have a higher density of corner stores than the overall average for suburban Cook County.

Distance to Corner Stores in Suburban Cook County

- The distance to the nearest corner store is generally lower in areas with lower incomes and higher Hispanic populations. Additionally, areas with higher Hispanic populations tended to be nearer to corner stores with 10 or more fresh produce items.
- While the distance to a corner store of all types, in general, was somewhat closer in African-American areas than the average in suburban Cook County as a whole, percent Hispanic and low income were better predictors of the distance to a corner store than percent African-American.

Availability of Healthy Items

- The percentage of corner stores carrying 10 or more fresh produce items was significantly different by region. It was higher in the Northwest, Southwest and West regions, and lower in the Northeast and South regions.
- Fruit and vegetable availability and variety in liquor stores was lower compared to other store types.
- Corner stores in Hispanic areas were much more likely to stock and have greater variety of fresh fruits and vegetables and dried/canned beans than those in African American, White or racially mixed areas.
- Predominately White and racially mixed communities were more likely to carry low-fat and fat-free milk compared to predominately African-American and Hispanic communities.
- A low percent of corner stores in the predominately African-American South region carried 10 or more produce items and other healthy food options despite the generally high concentrations of corner stores.
- Higher poverty areas stocked more fresh fruits and vegetables.



Availability and Marketing of Unhealthy Items

- Predominately Hispanic, African-American and racially mixed communities were more likely to carry gallon size fruit juice drinks (<10% juice), single serving size (8oz) juice drinks (e.g. Little Hugs), and Flamin' Hots compared to White neighborhoods.
- Corner stores in African-American communities were more likely to sell tobacco products and alcoholic beverages.
- Indoor and outdoor marketing environments in African-American neighborhoods were saturated with more advertisements of unhealthy items than in other racial/ethnic neighborhoods.



LIMITATIONS

This assessment did not include chain convenience stores such as Seven Eleven, or stores attached to gas stations like AM/PM. While the focus on independent corner stores is important because they are often in food desert communities and may be most open to interventions, exclusion of gas stations and chain convenience stores means that the report cannot be taken to represent the full range of small food retail options in suburban Cook County.

A further limitation is the reliance on the Dun and Bradstreet list to shape the stores assessed, as well as the store classification. In the same way that many of the addresses in the list were not corner stores, it is likely that some corner stores were not included or were differently classified. Corner stores open and close often, and data vendors may tend to focus on larger entities more than corner stores. In addition, some of the residences on the list could represent home addresses of owners for which the actual address of the store is unknown.

In addition, it should be noted that on Tables 3, 4, and 5, some errors in the calculations for the comparison data (distance to supermarkets and other store types) were corrected since the release of the 2011 “Food Access in Suburban Cook County” report, where these data were first reported. These errors would not have led to major changes in the conclusions seen in the earlier report, but the data is updated in this report.



CONCLUSION

In general, the geographic pattern of corner stores in suburban Cook County correlates with race/ethnicity and socioeconomic variables. Percent Hispanic is a strong predictor of lower distances to the nearest corner store and the availability of fresh fruits and vegetables, canned and frozen fruits and vegetables, and dried and canned beans. The highest poverty neighborhoods also stocked more fresh produce than lower poverty neighborhoods.

This was likely based on an interaction between ethnicity and income, with Hispanic neighborhoods having higher poverty compared to white neighborhoods. Predominantly Non-Hispanic White areas, especially in the Northeast region, have lower levels of corner stores in general, as well as a greater number of corner stores with no produce. This may be explained by the fact that these areas are already being served by number of larger grocery stores and supermarkets.⁵

The pattern for African-American areas, however, is complex. In general, while there are a great number of corner stores in the largely African-American South region, the even larger concentration of corner stores in predominately Hispanic areas with low African-American populations means that percent African-American by itself does not, overall, correlate well with distance to the nearest corner store. Of concern is that while distance to any corner store is somewhat less in African-American areas, distance to the nearest corner store with at least 10 produce items is somewhat higher in African-American areas. The South region in particular has a low number of corner stores with at least 10 produce items compared to the total number of corner stores there. While this is also true in the Northeast region, as seen in the earlier “Food Access in Suburban Cook County” report, unlike the Northeast region, the South region has a lower concentration of supermarkets. Combining the two reports, the South region and African-American areas of suburban Cook County in general seem to not be well served by either traditional supermarkets or corner stores in terms of produce availability.²⁰ African-American neighborhoods not only had limited availability of fresh produce but also low fat milk, frozen fruits and vegetables. This highlights a potential opportunity to work with corner store owners in African-American neighborhoods to increase their produce offerings.

Furthermore, a comprehensive approach to improving foods and overall quality of the corner store should be considered. Store characteristics (e.g., liquor and cigarette advertisements) and other findings like the higher poor snack and sugar sweetened beverage scores in African-American and Hispanic neighborhoods as compared to predominately White neighborhoods point to other potential intervention strategies that can be implemented to support reduced access to unhealthy snacks and sugar sweetened beverages, limited advertisements of unhealthy items, and promotion of nutrition messaging that encourages sales of healthy items.

Recommendations

Based on the findings in this report, the following are recommended.

FOR COUNTY & LOCAL GOVERNMENT

- Identify strategies to make the data and conclusions of this report useful and understandable to residents who live in, as well as organizations and leadership who serve, communities with low access to healthy corner stores and other healthy food options. Barriers between community and the data that describes their daily living conditions should be removed.
- Develop a system to routinely analyze and disseminate data related to food access that is based on information already gathered by governmental agencies.
- Facilitate cross-sector collaborations (e.g., public and private economic development agencies; suburban Cook County municipalities; academic institutions) to: 1) develop healthy corner store models in areas where they would improve food access; and 2) lead or support securing of resources to implement and evaluate initiatives that increase availability of healthy food options at corner stores, particularly in the South region and in predominately African-American neighborhoods.
- Support policies and approaches that improve residents' overall access to healthy foods in corner stores (e.g., financing; store development and layout; product sourcing and purchasing such as requiring fresh produce as a condition of operating a store; and marketing such as limiting number of advertisements).

FOR CORNER STORE OWNERS

- Display nutrition and health messages in and around the store to promote the sale of healthy food.
- Reduce in-store marketing of unhealthy foods and competing products such as liquor and tobacco.
- Increase availability of healthy items by, for example:
 - Increasing allocation of shelf space to healthy foods.
 - Offering low-sodium or no sugar added fruits and vegetables, canned or frozen.
 - Working with your current suppliers, local farmers and farmers markets to add more fresh produce options.

FOR COMMUNITY ORGANIZATIONS

- Work with local corner stores to identify ways to increase customer demand and provide support for healthy items.
- Organize local marketing campaigns for stores, in collaboration with corner store owners and other agencies, that increase purchase of healthier food options.
- Assist store owners in identifying food purchasing preferences of community members.
- Seek out assistance to learn more about what the data means and how the results of this report help explain health inequities including potential higher rates of disease and premature death.

FOR RESEARCHERS

- Examine how community residents use corner stores for food and other products and how the food from corner stores contributes to dietary intake.
- Conduct a focused market basket study, similar to this corner store assessment, for gas stations and chain convenience stores in the Cook County region.
- Further explore predominantly White areas of the county to study shopping patterns by residents of these areas and to determine whether vulnerable populations in these areas would be assisted through increased produce offerings.

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