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Food Accessibility in the Inner City:
What Have we Learned?
A Literature Review 1963-2007

Minh Wendt, Jean Kinsey, and Phillip Kaufman

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ABSTRACT

It has often been asserted that residents in inner-cities are disadvantaged by the price, quality, and variety of groceries sold in their communities. This assertion raises fundamental questions about the accessibility and affordability of fresh food and groceries in low income and/or ethnically concentrated urban neighborhoods. These issues have been addressed and examined by a number of studies since the 1960's. The results of many of these studies are summarized and discussed in five categories in this review of literature: (i) accessibility of food in inner-cities, (ii) availability and variety of food choices, (iii) affordability of food, (iv) behavior factors, and (v) public and private initiatives that focus on the issue of reviving inner-city business environment.

Defining accessibility to healthy food is problematic; distance to a supermarket is an imperfect measure. Prices are most often observed to be higher in inner city stores but research evidence is not conclusive. Evidence on the cost of store operation is mixed. Dense populations in inner cities can lead to higher sales per square foot and high price elasticity of demand for lower income consumers leads to downward pressure on prices. Public policy to revive inner city food retailing and changing demographics of inner cities is providing new opportunities for retail food stores.

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Food Accessibility in the Inner City: What Have we Learned?
A Literature Review 1963-2007

Executive Summary

Economists, social workers, nutritionists, policy makers and consumer advocates have frequently asserted that residents in inner-cities are disadvantaged by the price, quality, and variety of groceries sold in their communities. This contention raises fundamental questions about the accessibility and affordability of fresh food and groceries in low income and/or ethnically concentrated urban neighborhoods. These issues have been addressed and examined by a number of studies since the 1960's. The results of many of these studies are summarized and discussed in five categories in this review of literature: (i) accessibility of food in inner-cities, (ii) availability and variety of food choices, (iii) affordability of food, (iv) behavior factors, and (v) public and private initiatives that focus on the issue of reviving inner-city business environment.

1. Accessibility of food in inner cities

It seems clear that it does not matter whether we interpret an accessibility gap as the *physical distance* from home to store(s), or *types and structures* of stores that commonly locate in inner-city settings, or the accessibility gap that is due to *socioeconomic factors* such as income level, race/ethnicity, there is a consensus that these gaps do exist in certain cities throughout the U.S. This lack of access to healthy food such as fresh fruits and vegetables has important implications for growing obesity, which is particularly prevalent in low-income areas.

2. Availability and variety of food choices

The lack of competition among the few grocery stores that locate in inner cities leads to not only higher prices and lower quality, but also fewer varieties of healthy or fresh food for consumers. That is, even if there are accessible grocery stores, the availability and variety of certain food products, particularly fresh fruits and vegetables, varies greatly among stores that locate in different neighborhoods. Common differentiating factors are race, income levels, and other social economic measures.

3. Affordability of food in inner cities

Findings on this topic are mixed, perhaps due to complications in research questions and methodology. Studies that find the poor indeed pay more focus mostly on the differences between store types and store sizes. Since there are more independent and smaller sized stores in poor neighborhoods, prices for groceries in inner-city locations are higher compared to suburban areas. Factors conjectured to lead to higher operating costs for inner-city grocers include higher (or perceived higher) crime rates, low labor skills, high turnover rates, and higher shrinkage (theft and disposal of old products).

Studies that find either that the poor do not pay more or that there is no relationship between food prices and low-income neighborhoods rely on the reasoning that the poor have lower time cost, thus they can search for cheap prices and are willing to travel to

different stores to purchase their food. Furthermore, due to the third degree (classical) price discrimination (e.g. firms react strategically to the higher demand elasticities of low-income consumers with lower prices), some studies found that prices for certain homogenous foods in inner-city grocery stores are actually lower compared to suburban stores.

While there is no definite conclusion on whether the poor face higher prices in inner-city grocery stores, different research questions and methodologies such as controlling for the same market basket regardless of differences in preferences, or controlling for store types and sizes that are prevalent in certain neighborhoods but not others, would likely lead to different findings.

4. Behavior Factors

Consumer Behavior: There is evidence of differences in price elasticities and/or unit price paid between different income groups. Low-income shoppers are more sensitive to prices, more likely to choose lowest priced products within a given product class, and often rely on volume discounts. Moreover, low-income households are more likely to rely on public transportation to do their shopping. Thus, the physical distance between home and stores could overshadow other shopping behaviors such as shopping for low prices and/or searching for better quality and varieties of food products in different stores. These constraints for low-income consumers highlight the fact that they often substitute low-priced, energy-dense, and highly processed foods for healthier choices.

Firms Behavior and Supermarket Redlining: There are two major explanations of the shrinking number of supermarkets in inner cities: logistic and economic. Logistically, since there are more zoning restrictions, smaller size land plots, and mixed racial composition of consumers in urban settings, it is more challenging for grocers to operate in inner cities with their characteristically low profit margins (1 to 2 percent of total sales). Meanwhile, the decentralization trend of the 20th and 21st century resulted in a more homogeneous environment in the suburbs with a higher percentage of more affluent households and larger plots of land. This naturally led to grocers locating in the suburbs.

Economically, the interpretation is more complex and often controversial. While the average income level of inner-city residents (e.g. per customer purchasing power) might be lower compared to suburban average, it does not necessarily mean lower sales due to the density of population. In general, most of the studies conducted by interviewing store owners/managers cite higher operating and labor costs as major disadvantages for grocers locating in inner-city locations. There are a few studies/reports that statistically analyze real data from stores and show that inner-city grocery retailers might overcome these higher costs by relying on higher sales per square foot, lower labor costs due to an abundant supply of labor, or by counting on a heavy purchase of high margin perishable foods that are common in certain ethnic and minority groups.

5. Public and private initiatives

The paucity of supermarkets in the inner-city and its consequences on issues of food access and health outcomes have been widely acknowledged in recent years. There have

been efforts in many cities to revive the business environment, particularly grocery stores in urban core areas. Various studies, documents, and reports on this subject seem to share some common observations, conclusions, and recommendation for grocers, investors, consumer advocates, and local authorities. While these efforts bring advantages for consumers and the local economy, there are opportunities as well as challenges for the retail food business.

Opportunities for grocers include concentrated, yet often underestimated, purchasing power of inner-city markets, in terms of both population and real spending power. Moreover, issues such as high land cost, lack of suitably sized locations, and restricted zoning, are being targeted by local authorities to attract more business. However, grocery retailers need to be flexible to adapt to the local taste and willing to tailor the merchandise mix. They also need to work closely with local communities to build trust and support.

FOOD ACCESSBILITY IN THE INNER CITY: WHAT HAVE WE LEARNED?
A Literature Review 1963-2007

Table of Contents

Page

1. Introduction……1
2. Accessibility of food in inner cities……...2
    2.1. Geographical factors……..……..2
    2.2. Accessibility gap due to location of stores and store types.……....3
    2.3. Racial/ethnic and socioeconomic factors……...…....3
3. Availability and variety of food choices.....……....5
4. Affordability of food in inner cities……..……7
    4.1. The poor pay more……..7
    4.2. The poor do not pay more…….....9
    4.3. There is no link between low income areas and prices……10
    4.4. Complications in research questions and methodology……....10
5. Behavioral Factors……13
    5.1. Consumer behavior: food shopping strategies, mobility, and patterns……..…13
    5.2. Firm behavior and supermarket redlining……..……...15
    5.2.1. Logistic reasoning……..16
    5.2.2. Shifts in population and urban trends in the 20th and 21st century……....17
        a. The move to the suburbs…….….17
        b. The decline of inner cities…….…...17
    5.2.3. Economic reasoning……..…….17
        a. Income level and purchasing power……18
        b. Higher operating and labor costs……..19
6. Public and Private Initiatives……....20
    6.1. Reviews of studies on efforts to revive inner-city markets…….....21
    6.2. Opportunities and challenges for grocery retail business…….……22
    6.3 Advantages and disadvantages of having more grocery stores
        in inner-city areas……...24
7. Conclusions……..25
References…….…..……..27
Appendix – Sketch of findings in selected references. …….…… 33

Food Accessibility in the Inner City: What Have we Learned?
A Literature Review 1963-2007

1. Introduction

This review covers five major issues related to the general concern of accessibility, availability, and affordability of food in the inner cities of the U.S. It covers studies conducted between 1963 and 2006 that were published in academic journals, government reports, private manuscripts and consulting reports. Although there are many common themes, there are conflicting hypotheses and conclusions. One thing is clear. There is an enduring and widespread concern about the availability of healthy, high quality food for people who live in the inner city, especially if they are poor and/or live in highly ethnic neighborhoods.

The idea that the poor pay more for goods and services was first introduced by David Caplovitz's 1963 book, *The Poor Pay More*. There have been a number of studies about the link between food prices and consumer income since then. The results are generally mixed. Answering the question "do the poor pay more?" entails a number of issues that need to be investigated: *how* the poor shop, the pricing and business strategies of grocery stores in low-income areas, the accessibility of basic food items and the availability of grocery stores in inner-cities. That is, one needs to look at both the supply and demand sides of the food basket in order to shed light on this matter. Furthermore, due to the complexity of this issue, it is likely that findings will depend on research methodology, sample collection, and characteristics of each particular retail market.

Studies that explore different aspects on this subject can generally be divided into four categories. First, the pervasive problem of food accessibility and availability in inner cities where there is a high concentration of low-income consumers is explored. Second, issues regarding food affordability are examined. Particularly, there is a group of studies that focus on the *price*

the poor – or low-income consumers – pay for their food. Third, the behavior factors are investigated. Consumer behavior is analyzed to further examine whether the poor indeed pay more for their food. Firm behavior – the supply side – is observed in terms of their reasoning and strategies for locating their food stores. In addition to these studies, we also review recent public and private initiatives that focus on the issue of reviving inner cities to attract more business, including grocery stores, to try to deal with the dual problem of obesity and hunger that is rising particularly among low-income consumers.

2. Accessibility of food in inner-cities

The term food accessibility for inner-city residents is interpreted in this section as the *physical* accessibility of food outlets. Geographical factors (i.e. where food stores are located) and the accessibility gap (i.e. how they are distributed throughout a geographic area) are analyzed. It also includes socioeconomic and racial/ethnic factors that correlate with the number of food stores in a given area.

2.1 Geographical factors

There have been a number of studies that document the abundance of small retail outlets and the paucity of large chain stores in poor neighborhoods in major cities in the U.S. There is a series of studies in the 1990's which conjecture that there is an urban grocery store gap. A study by Donohue (1997) examined and confirmed the hypothesis of the decline in grocery stores from the 1960's to 1990's in central cities. Although there are signs of reversing this tendency by the end of the 1990's, it is still not true at the national level. The trend of fewer stores, particularly fewer supermarkets locating in poor neighborhoods is replicated throughout the U.S. to various degrees: New York (O'Connor and Abell, 1992), Oakland and Los Angeles, California (Bell and

Burlin, 1993; Shaffer, 2002; Hatfield and Gunnell, 2005), Chicago (Alwitt and Donley, 1997), the Twin Cities of Minnesota (Chung and Myers, 1999), Detroit (Krupa, 2001).

2.2. Accessibility gap due to location of stores and store types

Besides the geographic gap often found in inner cities, the accessibility gap is intensified by the distribution of the food stores which are located in urban markets. A study by Algert et al (2006) notes that half of the stores carrying a selection of produce were located on the two main streets in Pomona, California. That is, food stores are often concentrated in certain part of urban cities and therefore, are unequal distances for shoppers. This study is unique in that it analyzes data from individuals (food pantry clients) and their proximity to various types of stores that sell fresh produce. That is, it measures access to food stores from individual addresses while also using network distance measures. It identifies significant clusters and accounts for spatial autocorrelation. Other studies of this type often rely on census tracts, city blocks, and ZIP code boundaries, which are more likely to capture the average number of food outlets in a given measure unit, rather than the specific location and/or distance from households who shop at that food store.

2.3. Racial/ethnic and socioeconomic factors

There are many studies that find definite gaps in the number of supermarkets between low- and higher-income areas as well as discrepancies based on the racial/ethnic and socioeconomic factors. Zip codes with a higher percentage of the population receiving public assistance and do not own a car have fewer stores than other areas. This suggests that a food access problem – defined as fewer stores in a given vicinity– exists in the same areas that have more households on public assistance than any other areas (Cotterill and Franklin, 1995). While this result is drawn from 21 large metropolitan areas representing about 30 percent of the U.S.

population, it holds true for other areas as well. Studies for specific locations such as Hennepin County in Minnesota (Hennepin County CHD, 2002), Chicago (Gallagher, 2005), and Lane County in Oregon (Smith et. al., 2006) all show basically the same tendency.

There tend to be more supermarkets and grocery stores located in predominantly White and racially mixed neighborhoods compared to Black areas. For example, in Boston, Massachusetts, there is not a single chain supermarket in Boston's predominately African American neighborhoods such as Roxbury, Mattapan, or North Dorchester (Pike, 2000). In Detroit, Michigan, the disparity in the number of stores exists on the basis of race among the poorest; the most impoverished areas with a high proportion of African Americans are 1.1 miles farther from the nearest supermarket than the most impoverished White area (Zenk et al., 2005).

In East Harlem, New York, 100 percent of African American census blocks[1] had neither supermarkets nor grocery stores. They also were less likely to have convenience stores compared to racial mixed census blocks. In contrast, predominantly Latino census blocks were more likely to have convenience stores, specialty stores, full-service restaurants, and fast-food restaurants compared to racially mixed census blocks (Galvez et al, 2007).

In several areas of North Carolina, Maryland, and New York where there are predominantly minority and racially mixed neighborhoods compared to White areas, there are fewer supermarkets, fruit and vegetable markets, bakeries, specialty stores, and natural food stores (Moore and Diez Roux, 2006). The same results, a higher concentration of supermarkets in White communities compared to African American areas, hold for Los Angeles, California (Shaffer, 2002, Sloane et al, 2003) and for Mississippi, North Carolina, Maryland, and Minnesota (Moreland et al., 2002/1).

[1] This study covered 165 census blocks, 17 of which had at least 75 percent African American, 34 had at least 75 percent Latino, and 114 were racial mixed.

The observation that racial factors explain the accessibility of food in inner cities is strengthened by controlling for the level of household income since racial/ethnic characteristics and income are often correlated. A study by Helling and Sawicki (2003) for Atlanta metropolitan area which covered 417 census tracts in ten counties showed that affluent Black households had poorer access to grocery stores of all types and to restaurants (other than fast-food franchises) than comparable White households by some measures, one of which is travel time. The authors conclude that race has an effect separate from income and household demographics.

This phenomenon holds true at the national level as well. After controlling for income and other covariates (e.g., race/ethnicity, urbanization, and region), a study by Powell et al (2007) shows that the availability of chain supermarkets in African American neighborhoods is only 52 percent of that in compatible White neighborhoods. Hispanic neighborhoods have only 32 percent as many chain supermarkets compared to non-Hispanic neighborhoods. Within urban areas, the result is even worse. African American urban zip codes have only 41 percent of the supermarkets available compared to White urban zip codes.

3. Availability and variety of food choices

The lack of competition among a few grocery stores that locate in inner cities leads to not only higher prices and lower quality, but also fewer varieties of "healthy or fresh" choices for consumers. Since food access has become an influential tool to analyze equity and nutrition in a food system, the accessibility issue also entails healthy food choices in the face of rising obesity epidemic, particularly in low-income areas. A study by Morland et al. (2002) found that African Americans living in communities with at least one supermarket were more likely to meet dietary guidelines for fruit and vegetable consumption and for fat intake than those living in areas

without supermarket. Moreover, additional nearby supermarkets would lead to even higher fruit and vegetable consumption. These results hold true even after controlling for education and the income effect on food choice. The same result was found for Los Angeles' 65 neighborhoods using U.S. Census data. Specifically, individuals have higher BMI (Body Mass Index) if they reside in and/or shop for groceries in disadvantaged[2] neighborhoods (Inagami et al., 2006).[3]

To facilitate the comparison of food availability among different areas, one way is to use a standardized market basket (e.g., diabetes-healthy foods, USDA's Thrifty Food Plan) that one can observe and/or collect at survey sites. A study by Horowitz et al (2004) documented and compared the availability and cost of five food items[4] that are commonly recommended for people with diabetes between East Harlem, a low income, non-White area (with only six percent White) and Upper East Side, a more affluent and predominantly White area (84 percent White). The results show that 18 percent of East Harlem stores stocked recommended foods, compared to 58 percent of stores in Upper East Side. Only nine percent of East Harlem bodegas (neighborhood stores) carried all items versus 48 percent of Upper East Side stores though East Harlem had more bodegas. Moreover, availability differed greatly by store size. Upper East Side bodegas were more than five times more likely than East Harlem stores to be "desirable" (i.e., carry at least one item from the list) and to carry all five recommended foods.

The same findings are found for Los Angeles and Sacramento areas in California. Using the USDA Thrifty Food Plan, Jetter and Caasady (2006) found that food stores in very low and

[2] Neighborhoods are ranked through "disadvantage scores" based on four criteria: (1) percent living below the poverty line, (2) percent of households that are headed by a female, (3) male unemployment rate, and (4) percent of families receiving public assistance

[3] The authors regress individual BMI on their residential neighborhood disadvantage score, the difference in these scores and the scores for the grocery store neighborhood where they shop, and their sociodemographic variables. For details, see appendix A.

[4] These five items include diet soda, fat free or 1% fat milk, high fiber and/or low carbohydrate bread, fresh fruits, fresh green vegetables or tomatoes. See paper for more details on the nutrition subcommittee and their rational for food items selected.

low-income neighborhoods have restricted food items and less variety within a category. Furthermore, neighborhoods with smaller, independent grocery stores have less access to whole grain products, low fat cheese, and less than ten percent fat ground meat.

4. Affordability of food in inner cities

The consensus of higher prices and less variety of food in independent stores, which are more predominant in inner cities, compared to large chain supermarkets have been documented in the last few decades (Goodman 1968; Kunreuther 1973; Hall 1983; Bell and Burlin, 1993; Chung and Myers, 1999). Different studies by the USDA found that smaller stores are unlikely to offer the variety of products carried by most major supermarkets (Nayga and Weinberg, 1999), and prices in smaller stores are at least 10 percent higher than prices at large supermarkets (Krupa, 2001, Andrew et al, 2001). Thus, foods are less accessible to inner city residents in terms of affordability in addition to geographical location and physical distance.

There are three groups of conclusions on the issue of grocery prices in inner cities from studies that started since early 1960's.

4.1. The poor pay more

One group of studies found that the poor indeed pay more. First, there is some evidence that it costs more to do business in inner cities compared to suburbs. High crime and theft rates induce extra security costs. Low employee-labor skills, high turnover rates, and higher shrinkage (theft and loss of old product) rates lead to higher operating costs. Besides, inner cities have less available land and more zoning restrictions than do the suburbs. Therefore, large chain stores prefer to locate in the suburbs. Secondly, low competition among a few grocery stores located in urban areas leads to higher prices for local residents. Inner city residents, who are often

identified as poor (with average median income of $15,000 or less), usually face fewer varieties and lower quality of food products at higher prices (Alexis and Simon, 1967; Sexton, 1971; Kunreuther, 1973; Hall, 1983; MacDonald and Nelson, 1991; Chung and Myers, 1999; Krupa 2001; Pike, 2000; Pothukuchi, 2005).

On the other hand, Frankel and Gould (2001) show that, by dividing the income level into three groups – low, lower-middle, and middle-upper – the presence of a lower-middle income level is associated with lower prices. That is, the poor might pay higher prices, *only if* they are isolated from lower-middle income households. This is due to the observation of search cost being U-shape in income.[5] That is, the income inequality causes higher prices, rather than higher prices resulting from greater poverty per se.[6]

Several studies control for racial effects. They suggest that although low-income households pay significantly higher food prices than higher income household in urban areas, Whites of both income groups (high and low) appear to pay equal food prices and Black households pay higher prices than White households. This is because low-income Blacks most often live in areas that are portrayed as high cost for retail business which in turn charges more for their merchandise to offset these costs (Finke et al, 1997). This observation is consistent with the dispersion of low income Whites throughout the city rather than being concentrated in poverty areas (MacDonald and Nelson, 1991).

Moreover, there is evidence for price discrepancy in urban areas compared to suburban areas. That is, low-income households pay significantly higher food prices than higher-income households in urban areas; this trend is less likely to happen in suburban areas. Finke et al (1997)

[5] There is empirical evidence that price search intensity is highest among buyers with moderate incomes and lower for both low- and high-income consumers (Carlson and Gieseke, 1983; Goldman and Johansson, 1978

[6] The authors also consider alternative hypotheses of (i) higher crime rates, (ii) higher real estate prices due to an increase in middle-high income group, and (iii) prevalence of small convenience stores with higher average costs. All three of these hypotheses did not yield statistical significant results except for the housing cost index.

posit that this is due to a high percentage of consumers (Whites and high-income Blacks) traveling outside the city to shop at suburban supermarkets.

Another reason hypothesized to affect price levels in inner cities grocery stores was due to the oligopoly market structure that stems from years of merger activity among supermarkets (Larson, 2003).[7] In fact, the author posits that non-competitive prices due to high levels of concentration "may constitute a barrier to entry if other major chains are reluctant to enter markets with high concentration levels. These strategies make it clear that low-income inner-city neighborhoods are less desirable for investment for the major of supermarket chains, even though such neighborhoods can permit attractive profits for smaller, independent stores" (Larson, p.31)

4.2. The poor do not pay more

In contrast, there are also a number of studies that show the opposite outcome. That is, the poor actually pay less. One possible explanation is that the poor are assumed to have lower time cost, therefore, they are more likely to spend more time searching for lower prices. Sometimes, they patrol two or three different stores for the absolute cheapest products. However, this activity is severely constrained by location of stores and walking distance from their home. If one ignores quality of food products and level of services, inner city stores were found to have lowest overall prices while rural stores are the highest (Ambrose, 1979). On the other hand, limiting the comparison to a few homogenous foods such as milk, whole chicken, eggs, oranges, and iceberg lettuce, a study by Hayes (2000) found that the poor pay up to six percent less than the non-poor residents. The main explanation for this observation is that there is evidence of

[7] However, a review of the evidence of the impact of this ownership concentration on consumer welfare yields mixed results; see Kinsey (1998) for details.

third degree (classical) price discrimination. That is, firms react strategically to the higher demand elasticities of poor consumers with lower prices.

4.3. There is no link between low-income areas and prices

There are also numerous studies that found neither significant nor systematic price difference between poor and non-poor areas. Studies in the 1960's that focus on price dispersion in big cities such as Los Angeles, New York city, Philadelphia, Atlanta, Chicago, Houston, and Washington D.C. seem to derive the same conclusion; overall prices in low income areas were no different than prices in other areas (Better Business Bureau of Greater St Louis, Inc., 1968; Goodman, 1968; U.S. Department of Agriculture, 1969; Marcus, 1969; Alcaly and Klevorick, 1971; Hall, 1983). Specifically, given the store type and characteristics (i.e., chain or independent, store size, varieties of food products), and given neighborhood characteristics other than income (i.e., crime rates, percentage of population who are black or elderly), they found no systematic relationship between income and price level. Several recent studies also show the same result (Hayes, 2000, Horowitz et al, 2004).

A report from USDA (1997) captured this complex issue by stating that although low-income households do face prices about one percent higher than other households for the same food items, low-income consumers tend to have lower per unit food costs than consumers across the income scale for nearly every major food category. This is attributed to their selecting more economical foods and lower quality items. However, the study posits that "In areas where food choices are limited due to the kinds and locations of food stores, households may have sharply higher food costs" (Kaufman et al., 1997).

4.4. Complications in research questions and methodology

Due to the complexity of the issue being examined, there are several complications that

need to be addressed for a comprehensive understanding. First, researches on price disparity per food items and/or per market basket must differentiate between poor/non-poor areas versus chain/non-chained stores that exist in a given area of research. Since there are more independent stores available in inner cities than chain stores, the two effects are often mixed up. Chung and Myers (1999) posit that "The price premium is due more to shopping at non-chain stores than to shopping in poor areas. However, the poor are more likely to shop in non-chain stores". That is, both the availability of stores (supply) and consumer shopping behavior (demand) determine the price the poor pay for their food.

Second, food quality is not easily quantified and often ignored. So do the variety of products available and number of services that a store offers to its customers. There is evidence that characteristics or attributes of a store such as variety and convenient location are major factors that drive a consumer to shop there, rather than the price level alone (Kolodinsky and Cranwell, 2000).

Third, most studies usually control for the same market basket of food between the two areas and/or stores. However, there is evidence that the poor and/or different ethnic groups living in inner cities might have a different market basket compared to "average" consumer. The poor are more likely to purchase lower quality meat products (higher fat content, bone-in cuts, pig/chicken head, neck and feet) and fewer fruits and vegetables than more affluent consumers (Leibtag and Kaufman, 2003). More generally, the poor often search for the lowest priced products among all product classes (Jones et al, 2003). Finke et al (1997) suggested a method of analysis by matching consumers with the foods they buy and the prices they pay. This requires matching the shelf price data across stores for identical food items with specific groups of consumers within an area. Particularly, the authors use 1987-1988 Household Nationwide Food

Consumption Survey (NFCS)[8] to match individual characteristics with the price paid for foods they buy. From the 3,970 different food categories identified in the dataset, most of which contain intra-category quality differences, the authors identify a basket of i) foods that are purchased frequently, and ii) foods with fewest perceptible differences within the assigned food category, to maximize homogeneity for the purpose of price comparison. They found that low-income households in urban areas paid higher food prices than higher-income households, but there is virtually no difference in suburban areas for all households.

Moreover, there are other constraints that low-income consumers face compared to "average" consumers such as transportation, distance from home or work to grocery stores, and carrying effort. All of these keep consumers from capturing economies of scale by buying in bulk. These constraints are further complicated by the various compositions of individual households, i.e. number of adults and children, which influence the size effect. The observation that the poor might have lower opportunity cost of time might not hold true because many low-income consumers might hold more than one full time job, leaving less time for household chores which includes searching for lower prices.

Finally, by looking at three levels of income instead of the usual two – poor and non-poor – Frankel and Gould (2001) suggest that there might be a significant improvement in examining the question of whether the poor pay more. In other words, we might be able to address the reason *why* and *how* the poor pay more. Indeed, the authors find that an increase in the presence of lower-middle income households, relative to poor or middle-upper income households, is associated with lower prices. These findings suggest that greater income inequality raises the prices paid by poor residents.

[8] It was later called Continuing Survey of Food Intake by Individuals (CSFII) in 1994-1996 and 1998.

5. Behavior Factors

Economic analysis on food consumption often focuses on price elasticities. However, there are other aspects of consumer behavior such as of shopping strategies and patterns that are trade-offs with prices. In addition, there are several factors from the food supply side that contribute to the unequal distribution of food outlets in inner cities throughout the U.S.

5.1. Consumer Behavior: food shopping strategies, mobility, patterns

Price is unquestionably one of the most important factors that affect consumer behavior. Results of studies on consumer demand for most foods show a negative and inelastic own-price effect and a positive cross-price and income/expenditure effect (elasticity). However, there is some evidence that the income-group effect on the sensitivity of consumers on prices is different between lower- and higher-income consumers.

Park et al. (1996) found that poverty and above-poverty groups have similar own-price elasticities for the twelve basic foods using Nationwide Food Consumption Survey (NFCS) data. On the other hand, (Jones, 1997) found that there are major differences in the purchasing behavior of lower- and higher income consumers. Even when the own-price elasticity is comparable between two groups, other measures of consumer behavior, such as unit prices paid and percentages purchased within a product class, are different. For example, own-price elasticities for breakfast cereals for low-income shoppers are twice as price-sensitive as higher-income shoppers. Furthermore, there is some evidence that lower-income consumers tend to choose the lowest priced products within a given product class. This observation is confirmed by Leibtag and Kaufman (2003). The authors report that low-income households can economize on food expenditures by purchasing more discounted products, favoring generic products over brand

names, pursuing volume discounts, or simply buying less expensive products within a product class.

Another aspect of shopping behavior that might differentiate the two income-level consumers is means of transportation and relative distance between home and grocery stores where they shop. Studies in the 1960's and 70's show that the majority of families in low-income areas left the neighborhood to do their principle shopping, or they shop at several stores in a given trip (Goodman, 1968; Dixon and McLaughlin, 1971; Haines et al., 1971). A common observation is that since poor neighborhoods have higher percentage of small independent stores, low-income consumers tend to make a large grocery trip each month as a result of transportation constraints and walk to smaller but higher-priced stores for "fill-ins" during the month. However, a study by Damon et al. (2006) rejects this pattern since the frequency of shopping trips of the lowest quartile income consumer is found to taper off at the end of the month over all retail food channels.

A recent study by Clifton (2004) shows that in low-income areas, people with a car are less likely to shop at the closest supermarket and more likely to shop at several stores in search for low prices.[9] Moreover, they can take advantage of sales by purchasing in bulk. In contrast, people who can not afford a car and must rely on public transportation tend to shop more frequently with smaller purchases each time, are more price-conscious, and access mostly big stores. However, since they rely on public transportation, they must weigh the advantage of more frequent buses during peak hours against the greater likelihood of finding seats during off-peak hours. People who walk to grocery stores are forced to base their destination and purchase decisions solely on their transportation limitations and by what they can carry or wheel home, rather than price, quality, or variety of products.

[9] The author interviewed 26 low-income households in Austin, Texas.

There are some public health studies that focus on healthy food choice of consumers, particularly in low-income, urban areas with less access to food stores. While it is often difficult to tease out the direction of the relationship (i.e. causality) between food stores availability and people's food purchasing behavior, a few studies use econometric techniques to derive more rigorous results. Using random-effects log linear models, a study by Morland et al (2002) reports that after controlling for income and education, a higher proportion of Black Americans living in census tracts with at least one supermarket reported meeting dietary guidelines for fruits and vegetables than did Black Americans living in census tracts with no supermarkets. Specifically, there is an average of 32 percent increase in fruits and vegetables intake for each additional supermarket in the area. The results hold for dietary recommendations on total fat and saturated fat as well. The results are not as significant for White Americans. These results confirm the observation that the paucity of supermarkets in inner cities does have a health effect on low-income consumers besides the price, accessibility, and availability effects.

5.2 Firms Behavior and Supermarket Redlining

The declining population and increasing concentration of poverty in inner cities in the U.S. have been documented in the last few decades (Wilson and Aponte, 1985; Kasarda, 1993; Teitz and Chapple, 1998). The link between this trend and the shrinking number of supermarkets in inner cities, either per square mile or per capita, is also acknowledged. Alwitt and Donley (1997) show that poor zip code areas have fewer and smaller retail outlets than non poor areas, including fewer supermarkets, banks, and large drug stores. However, after controlling for purchasing power,[10] poor areas still lack large drug stores, but not banks or supermarkets.

[10] Aggregate purchasing power of a zip code area is calculated as the product of the median income and the number of households

On the other hand, several studies, both at the national and city/metropolitan level, have documented that the higher the concentration of poverty within a community, the fewer the number of supermarkets. Specifically, there is a negative relationship between the number of grocery stores per capita and the level of income, whether it is measured by percentage of households that receive public assistance or by the area's median income at or below the national poverty level (Cotterill and Franklin, 1995; Shaffer, 2002). Chung and Myers (1999) find that 89 percent of all chain supermarkets in the metropolitan areas of the Twin Cities of Minnesota were located in zip code areas that have less than 10 percent poverty rates.

There is a combination of factors that can explain this phenomenon. Logistic reasoning such as access to highways, or socio demographic reasons such as crime rates, community demographics, even with political forces and cultural biases that influence the decisions of supermarkets to locate in a given area, is more straightforward to analyze than economic forces such as cost-benefit and market analysis that entail purchasing power, and often yield mixed results.

5.2.1. Logistic reasoning

Logistically, inner cities have less available land and more zoning restrictions compared to suburb locations. This is perhaps one of the biggest obstacles to retail development in an urban area besides financial and political complications. An example cited by the Food Marketing Institute (1998) is a community-owned Pathmark store in Newark, New Jersey, that incurred an additional $500,000 cost because of restrictive building codes.

Since inner city residents are often identified with high crime rates and mixed racial composition, the market demand is complex. A number of studies have documented how the neighborhood demographic structure plays a major role in retail business strategies. Operating at

a low profit margin, usually around one to two percent of total sales, grocery businesses cannot afford to take risks such as potential shrink or shoplifting, and particularly if perceived high crime rates lead to higher insurance rates (Marcus, 1969; Pothukuchi, 2005). In Boston, high theft rates caused at least two grocery stores, the Star Market and Stop and Shop to lose money; they were forced to close (Pike, 2000).

5.2.2. Shifts in population and urban trends in the 20th and 21st century

The waves of urbanization of the 19th century contrast with the 20th and 21st century's decentralization trend, which happens not only to large metropolitan areas but also smaller-sized cities. Levy (2003) describes two main trends that characterize this phenomenon:

a. *The move to the suburbs*: beginning in the 1920's with the introduction of automobiles, highway systems, and improvements in electric communications such as telephone, television, fax machine, and computer.

b. *The decline of inner cities*: As a result of the suburbanization process, inner city residents move to larger houses in the suburbs. Furthermore, while the rapid mechanization of agriculture and its productivity encourage more prosperous farmers to acquire more land and stay in farming, it forces the poorer ones to migrate to cities.

As a result, a more homogeneous environment of the suburbs with a higher percentage of more affluent people attracts more food stores compared to inner cities with low-income and more ethnic-diverse neighborhoods.

5.2.3. Economic reasoning

Redlining[11] is economic discrimination against certain consumers in specific geographic

[11] Redlining was once a common practice in real estate mortgage markets. Geographic areas of a city would be outlined in red on the map indicating that the area inside the red lines was off limits for sales or mortgages.

regions. Redlining can also be on the basis of factors such as race, gender, and type of employment. It was found to exist throughout poor areas and thus dramatically affects low income consumers and their neighborhoods (Bell and Burlin, 1993). Moreover, declining health and poor food access are found to be persistent problems for the urban poor due to supermarket redlining (Eisenhauer, 2001). So, what is the economic reasoning for supermarkets to not locate in inner cities? While the negative effects of shifts in population and transportation patterns on supermarket location strategies in the urban core areas are unambiguous, neighborhood characteristics such as median income, population size and density, and operating and labor costs seems to be controversial in explaining this phenomenon.

Two types of explanations are found.

a. Income level and purchasing power

There is a group of studies that suggest it costs more for supermarkets to operate in an inner city due to low income, purchasing power and sales per store (Donohue, 1997; Pongracz, 2004, Gallagher, 2005). However, there are counter-arguments due to the effect of dense population in inner city areas. That is, per customer spending power might be lower, but this does not necessarily mean lower sales (Pothukuchi, 1999; Coumo, 1999). Besides, there is evidence that minority shoppers have a higher demand for fresh produce and meat than do most of white suburban consumers and such items have a higher profit margin than do processed and package foods (Bollier 1996). Another example includes the increasing Hispanic population in the U.S. Retailers have discovered that this segment of the population is an ideal customer for supermarkets as they shop for groceries more often, spend more when they shop, cook more at home, and have larger families (McTaggart, 2003; Dubowitz et al, 2007).

b. Higher operating and labor costs

The hypothesis of higher operating and labor costs for grocery stores located in poor, inner city neighborhoods versus higher-income suburban or urban areas are two fold. First, the cost structures for small independent stores, which have been shown to be more available in inner cities, are different from that of larger chain supermarkets. Secondly, given a store type, several studies still show that it often costs more to locate in urban poor areas than in more affluent suburbs. While the results from controlling for store type is more econometrically correct, both aspects represent constraints that inner city residents face and thus both are relevant for policy derivation.

There are several reports at the national level from food research agencies that indicate high operating costs in urban core supermarkets are due to security, shrinkage, workers compensation, general liability insurance, and real estate taxes (ICIC, 2002; Heany and Hayes, 2006). In addition, smaller average purchase size in urban stores is another key driver of higher operating costs. This is partly due to low rate of car ownership, resulting in small, frequent shopping trips. Therefore, the stores need to hire additional cashiers to serve more customers with smaller transactions. Another source of higher cost is due to extra charges or a complete lack of willingness among wholesale distributors to deliver to independent stores located in low income areas (O'Connor and Abell, 1992).

On the other hand, inner-city grocery retailers might cope with these higher costs by counting on higher sales per square foot, or lower labor costs due to an abundant supply of labor. More importantly, however, inner-city grocers count on a heavy purchase of high margin perishable foods that are common in certain ethnic and minority groups (ICIC report, 2002).

These explanations are in line with the findings from a study by King et al., (2004) that shows that operating costs as a percentage of sales for stores serving low-income consumers are similar to those for stores with moderate rates of food stamp redemption. This result holds true for both Metropolitan Statistical Area (MSA) and non-MSA grocery stores. Therefore, if the poor pay more, it is unlikely due to operating costs which consists of labor and cost of goods sold.

While the majority of studies that conclude operating costs for grocery business are higher in the inner city are done by interviewing grocery store managers and deduction analysis, the study by King et al. (2004) is done by utilizing several larger datasets and showing statistically significant results in regression analysis.

Conversely, in terms of allocation of space and the pricing and promotion of food, a study by Lavin (2005) found that there was no difference between a store located in inner city (Harlem, NY) and other suburban supermarkets. The result holds for both nutritious food and those with minimal nutrition value. However, this study was conducted on only one supermarket chain, Pathmark, and in only one city, Harlem, NY. Also, the supermarket observed in this study was the first full-service supermarket in the New York City's heavily populated, low-income Harlem neighborhoods. It is also one of the most profitable stores in the Pathmark chain.

6. Public and Private Initiatives

There are signs of increasing efforts to attract supermarkets and retailers to locate in inner cities again. According to International Council of Shopping Centers (ICSC), there is a new objective for the retail industry to clean up the inner city neighborhoods, spur economic development, and make a profit. This trend is stemmed from a collaborative effort of a non-profit organization, Social Compact, and the Local Initiatives Support Corp., who perform economic

assessments of some 100 inner city neighborhoods to reveal true consumption patterns. An example is $1 billion of income that had not been captured by retailers in any standard analysis for Harlem, N.Y. Similarly, they find that there are undercounts of about 10 percent in population and 32 percent in household income compared to the projected census for Santa Ana, CA, for the year 2006. These findings reveal underserved markets and thus opportunities for business development (McLinden, 2006).

The renewed interest in reviving the inner city and increase access to food for low-income residents has seen a success story. Cleveland has a greater number of stores in the lowest-income zip codes than in the highest ones (Cotterill and Franklin, 1995). It was because First National supermarket chain made specific efforts in the late 1980s and early 1990s to upgrade and build supermarkets in the city's urban core.

6.1. Review of studies on efforts to revive inner-city markets

In 1994, Michael Porter founded a nonprofit group called the Initiative for a Competitive Inner City (ICIC) to conduct research on opportunities for retail investment in inner cities, a subject that is often overlooked by corporate America. Since then, there is a series of reports and studies on this topic from various agencies and state governments. This has been triggered by a preponderance of evidence that inner-city residents in many areas suffer from lack of access to food, which has been statistically linked to a coexistence of obesity and hunger (Dwyer, 2005), a variety of health problems (Morland et al., 2006, Heany and Hayes, 2006, Inagami et al., 2006), and even death (Gallagher, 2005).

Except for some large scale reports done by ICIC in collaboration with various agencies, most of the reports on this aspect of revitalizing inner-city market environments are done for a particular city or region of a state, since each area might have different characteristics and thus

need different recommendations. However, there seems to be a consensus of observations and conclusions from these studies revealing both opportunities and challenges to both grocers and inner-city governments and residents.

6.2. Opportunities and challenges for grocery retail business

Opportunities for grocers include concentrated, yet underestimated, purchasing power in inner-city markets.[12] Due to the paucity of supermarkets in inner-cities, a large part of retail dollars are being spent elsewhere. Specifically, in 1998, inner cities possessed over $85 billion in annual retail spending power, about 25 percent of which was unmet locally. More importantly, there is a growing effort from state governments to revive inner-city business environments by providing incentives to attract more retail investment (ICIC Reports, 1998-2006).

Several ICIC reports from 1998 to 2006 refer to benefits of bringing in new stores to the inner city for the local economy and local governments. New business means increased tax revenue, increased employment and entrepreneurial opportunities for local residents. Besides, vacant or underused lots can be revitalized and thus attract other shops and investment. Therefore, a virtuous cycle could be created that would lead to increased local jobs, income, consumer demand, and business sales (Pongracz, 2004).

Some common challenges of doing business in inner-city areas such as high land costs and a lack of suitably sized locations are being targeted by local authorities to create incentives for retailers. It requires efforts from individual grocers to find opportunities and potentials in inner-cities to balance the disadvantages of shrink (inventory loss), perception of high crime rates, high employee turnover, and flexibility needed for diverse consumer preferences.

[12] ICIC Report (1998) documents an estimated $85 billion of purchasing power, or 7 percent of total retail spending in the US, for inner-city market. A study by Social Compact and Local Initiatives Support Corp reveal a $1 billion of income that had not been captured in any standard analysis for Harlem, NY, some 10 percent in population and 32 percent in household income are underestimated for Santa Ana, CA, for the year 2006.

There are a number of reports for particularly troublesome areas such as Philadelphia, PA (the Food Trust, 2003-2006), Los Angeles and Oakland, California (Shaffer, 2002; Bolen and Hecht, 2003; Flournoy and Truehaft, 2005), Durham, NC (Pongracz, 2004); East Harlem, NY (Dwyer, 2005). These reports often target specific predicaments in a given area and compile recommendations for state government in revitalizing their urban neighborhoods.

Although each area has its own advantages and disadvantages, there are some common solutions. First, flexibility is essential in doing business in promising, but highly variable, inner-city settings. Business models as well as store formats and merchandise mix should be tailored to the local level. Besides, grocer retailers also need to be patient and open for modifications to succeed in this type of "emerging market" environment.

Second, the key to success is forming a close relationship with the local community, from local government to neighborhood organizations. This is not only to build trust and support but might also be a practical business strategy. Community development corporations (CDCs) play critical roles in their ability to attract subsidies and determination in rebuilding the retail environment. In addition to political knowledge, they also understand community needs, and might even participate in recruiting, screening, and training new employees.

Third, improving pubic transportation is important. Actions can range from arranging traffic lights and left turn lanes to attract traffic to a retail site to providing van service that transports shoppers without a car.

Fourth, supermarkets should make an effort to hire locals as a way to gain community confidence (Weinberg, 2000). National chains that serve inner cities indicate that local hires make up 50 to 80 percent of their employees. Besides, hiring local might help reduce security costs, especially if employee demographics reflect the ethnic mix of the neighborhood.

6.3. Advantages and disadvantages of having more food stores in inner-city areas

The advantages of bringing supermarkets into inner-cities are multi-fold. From the consumer point of view, having more grocery stores means increased access to food, both quantitatively and qualitatively. Since competition among stores would increase, food prices would decrease. Moreover, each store might also need to increase the variety of food products or introduce new items to attract more customers. Therefore, more food sources will be available, accessible, and affordable to the neighborhood.

One of the disadvantages for having a chain food store in a neighborhood is that it is likely to "crowd out" corner and/or "mom and pop" shops in the neighborhood. This means residents might need to travel a further distance to obtain certain food items that could be conveniently purchased at smaller food outlets in the neighborhood. Increased traffic in the area will be an inevitable result. Moreover, a recent study of retail milk prices in New England concluded that WalMart stores in the sample did not share the same local market areas with supermarket chains who offered low milk prices and thus did not have, or need to have, lower milk prices (Cotterill et al, 2002). Therefore, a "revived" neighborhood with a new grocery store might not automatically mean prices are lower (or more affordable) for consumers due to monopoly pricing.

Despite widespread acknowledgment of a dearth of grocery stores in many inner-city areas, systematic and city-wide initiatives to attract supermarkets are rare (Pothukuchi, 2005). Naturally, there is a need of collaboration among community organizations, planning and development agencies, national grocery chains, and city/state public agencies to achieve systematic and citywide success in their effort to revitalize underserved urban neighborhoods.

7. Conclusions

Do inner city poor consumers have convenient access to affordable, healthy food? This is a perennial question which has been studied for decades with mixed results. Casual observation tells the casual observer that they do not, at least not as easily as their counterparts in the suburbs. Public policy focused on assuring access to nutritious food for all consumers depends on accurate answers to this question. We continue to study it. This is not to imply a redundancy of effort; the retail food business is a flexible and changing industry as is the demographic composition of inner city populations. Answers found in past decades may be different today, even if the same models are used for analysis.

This review covers more than four decades of research. It is useful for the methodology and assumptions made by past researchers. It is also instructive for interpreting new findings and for informing the context of current research. Key findings from the past research are that even if the actual prices of food may be higher in the inner city (and those results are mixed), poor households have higher elasticities of demand for particular foods and more readily substitute lower priced foods. Whether this leaves them with a less healthy diet is unknown. In spite of much belief and evidence that it costs more to operate a retail food store in the inner city, new research finds this is not necessarily true. There are several city government policies to attract stores to the inner city to say nothing of a new affluent population in those neighborhoods.

This review is a prelude to an empirical study that makes a new assumption about the definition of “access” to healthy food. In this new study, “access” is determined by the defacto expenditure -a similar percent of the household food dollar being spent on fresh fruits and vegetables by inner city, poor, households as suburban, middle and higher income households. It determines that distance from a store is not a good measure of access in the current shopping

environment. The current concerns with this question are not just access to low priced food but access to “healthy food.” The standards for food and nutrition are higher in a society where obesity is a major nutritional problem believed to be related to access to too much food that is not healthy when it makes up the bulk of the diet. This new study will shed new light on this defacto access and add to the ongoing literature addressing the question.

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FOOD ACCESSBILITY IN THE INNER CITY:
WHAT HAVE WE LEARNED?
A LITERATURE REVIEW 1963-2007
Appendix

Author/Study	Population	Data Base and Model Specification
Alcaly and Klevorick (1971)	New York city, summer 1967, by the NYC Council on Consumer Affair	Price of 37 food items, 25 stores in 46 neighborhoods OLS: cost of foods =f(median family income in neighborhood j) or =f(median f. income, dummy for store in neighborhood j)
Alexis and Simon (1967)	Monroe County, Rochester, NY. 1965-66	Primary survey data. Study shopping behavior of shoppers in low, mid, and high income groups. Also compare in-store prices. Examine difference in mean price paid between independent and chain for both major and fill-in stores, for low and high-prices
Algert, S.J., A. Agrawal, and D.S. Lewis (2006)	Pomona, California in 2003	-Use special analysis with a sample of 84 food stores, categorized (with geocoding technique) as selling a "variety of produce" or "limited produce" with 3985 food pantry clients - Identify cluster areas with high densities of food pantry clients
Alwitt and Donley (1995)	Chicago, poor & nonpoor neighborhoods, total of 53 zip codes areas (13% of all zip codes)	3 sources of data: Econ Census of US, 1995 Prophone CD-ROM, Sourcebook of Zip code Demographics. Define "poor area": if it meets all 4 criteria: i) poverty rate is in the highest 25% (>28%) of the zip code, ii) high school graduation rate is in the bottom 25% (<56%), iii) labor force participation rate is in the bottom 25% (<60%); iv) unemployment rate is in the top 25% (>14.6%)
Ambrose (1979)	Omaha, NE. This area nearly approximates a representative composition of the aggregate U.S.	14 stores, 54 grocery items. Compare store indexes with comparative range of price indexes by location (inner city, suburban, and rural)
Andrews, M., Kantor, L.S., Lino, M. and Ripplinger, D., (2001)	Washington DC, Aug 2000	Use the Thrifty Food Plan (TFP) shopping list to survey the availability and cost of 68 items that are classified as healthy and minimal-cost meal plan in 34 large food retailers that include 21 chain supermarkets, 7 independent supermarkets, and 6 discount food stores

Bell and Burlin (1993) (The West Coast Regional Office of Consumers Union)	California. Compare 3 low-income and 1 middle-income in Oakland; and 1 low-income and 1 middle-income in LA.	Uses a market-basket model developed by Crockett (1992) Consumer survey. Compare and describe where low income consumers go to purchase basic necessities, how they get there, and what they pay relative to MI households in the same city Look primarily at 5 basic goods and services: food, housing, healthcare, banking, and credit
Better Business Bureau of Greater St Louis, Inc. (1968)	5 months in 1967	Primary survey data. 30 of 64 chain stores are in poor areas were shopped 169 of 238 times total by 19 shoppers. 18 items specified by brand and size
Bolen and Hecht (2003)	California	- Investigates issues of access to nutritious foods that leads to hungry and food insecure probls - Propose and evaluate market-based solutions - Features case studies and Recommendations
Bollier (1996)	Collection of real-life stories profiles	Profiles of chief executives, managers, and employees who view social challenges as opportunities to create new markets, build motivated workers, and attract loyal customers. Examples of companies interviewed: Vermont National Bank's Socially Responsible Banking Fund, Finast Supermarket, Ben & Jerry's Homemade, White Dog Café, Merck & Co.
Carlson and Gieseke (1983)	Lansing, Michigan. Data from a study of family food purchases for home consumption by the Department of Agricultural Economics at Michigan State University for the years 1951-58. There are 290 families.	Two-stage least squares procedure was used to estimate a system of three simultaneous equations: number of grocery stores visited, N; an index of price paid for groceries, P; and quantities purchased Q. Independent variables include income, age of homemaker, education, average expenditure on grocery products per week, household size, and whether the homemaker is single or divorce and alone.

Chung and Myers Jr. (1999)	Twin cities metro, MN. Market-basket: according to 1996 US Dept of Agriculture estimate of weekly Thrifty Food Plan for a family of 4.	Examine 3 questions: store availability, price disparity, and market-basket prices. *For price disparity*, descriptive stats of 55 stores. Prices of independent purchase items (49, in 6 groups). *For market basket price,* OLS, Market-basket price/% availability =f(chain, poor, %chain, availability index)] i) in chain vs. convenience/small grocery stores; ii) inner city vs. those from other locations; iii) poor vs. non-poor. *Note method of price comparison*: most popular brand & package size; or least exp brand, and largest package size. Record normal (non- sale) prices. Avoid the 1st and 15th/mon.
Clifton (2004)	Austin, TX	Interviews 26 low-income households. Aims to highlight the relevance of food security to the transportation planning filed, examining how working families cope with their mobility and accessibility disadvantages in acquiring foods and consequences of their household well-being.
Cotterill and Franklin (1995)	21 metro areas: NY, LA, Chicago, Phil., Washington D.C., Detroit, Boston, Atlanta, Houston, St Louis, Minneapolis, Cleveland, Oakland, S. Antonio, New Orleans, Hartford, Dayton- Springfield, Memphis Bridgeport, New Haven, Wichita (~ 30% of US pop)	Use data from: (i) Progressive Grocer SM data base and (ii) 1990 Census of Population A list of tables that organize data into categories for analysis, including overall average and each of 21 areas, grouped by quintile (by % receiving pub. assistance) for num. of stores/capita; square feet of selling space, households with at least 1 vehicle. Also has a linear regression of relationship between stores per capital, sq foot per capita, and % of households with one or more vehicles with the % of households on public assistance var.
Damon, King, and Leibtag (2006)	ACNeilsen Homescan data for 7,013 households in 52 urban and peri-urban markets throughout the U.S.	Examines aggregate food expenditure, shopping trip, and expenditure patterns across retail channels over calendar weeks, weekly seven days cycles, and days of the week.

Dixon and McLaughlin (1971)	North Philadelphia inner city with med. Income $3,900, over half receives welfare	Primary survey data. 39 families, 21 Black and 18 Puerto Rican. Compare cultural differences in shopping behavior, expenditure patterns, and differences in prices paid.
Donohue (1997)	Grocery stores in the U.S.	Tests the hypothesis: "central cities experienced substantial declines in grocery stores from 1960-90. This trend ended in early 1990s, followed by a period of reinvestment.
Dubowitz, Acevedo-Garcia, Salkeld, Lindsay, Subramanian, and Peterson (2007)	2 metro areas in Massachusetts, US	44 US- and foreign-born women were purposively sampled from 2 metro areas in Massachusetts. Sampling is based on i) nbh of residence and ii) primary language spoken. All focus groups were conducted in comm health centers and with co-located WIC program Use qualitative method (focus groups) to examine the mechanisms and pathways of food preparation and purchasing within the context of daily life activity. Analyze notes and verbatim transcripts, summarized recurring responses and identify new themes in the disccusions
Dwyer (2005)	East Harlem, NY Objective: explore the dimensions of choice and control faced by E.Harlem in its relationship with food. Hunger and obesity can be thought of as 2 sides of the same coin, with eating high fat but low nutrition foods.	The link between obesity and hunger is mediated by poverty with 4 mechanisms 1. The physiological changes associated with hunger encourage obesity 2. A culture of scarcity low-income, overeat when food is avail 3. Low-income consumers max food dollars by buying high-calorie and density foods 4. Low-income consumers will reduce the quality and variety of foods before quantity The environment also plays crucial role. USDA defines food insecurity and hunger as lack of access to affordable, nutritious, culturally appropriate food.

Eisenhauer (2001)	Qualitative analysis	Examines changes in urban retail food availability, the impact these changes have had on the health status of the urban poor, strategies utilized by the urban poor to address inadequate access to quality food sources, and the role of supermarkets in distressed communities
Finke, Chern, and Fox (1997)	1987-88 Household Nationwide Food Consumption Survey (NFCS) with 12,522 individual consumers within 4,495 households.	Analyze 186,181 individual food purchases with prices actually paid by household which were categorized demographically. Foods that were consumed with some frequency by members of all relevant demographic were grouped into nine homogeneous groups. A price index is created as the average of all normalized prices paid for each food reported that was in one of these nine categories.
Flournoy and Treuhaft, 2005 (Policylink)	California Report shows access to healthy, reasonably priced foods in low-income communities of color can be achieved – with dramatic results	Case studies. Highlights 3 promising strategies to increase access to retail outlets that sell nutritious and affordable food in low income communities: 1. Develop Grocery Stores 2. Improve Existing Small Stores 3. Start and Sustain Farmers' Markets
Frankel and Gould (2001)	Data collected from 184 cities in the US in 1979/80 and 1989/90. Retail price index was constructed using data from the American Chamber of Commerce Research Assoc. Also confirm findings by using a panel of 15 metro areas using price data from BLS	Panel data with IV to correct for endogeneity and unobserved heterogeneity. OLS and IV (2SLS). OLS results answer "Do the poor pay more," IV results suggest that changes in the income distribution *cause* the changes in prices observed (this is important because 1) it rules out reversed-causality and 2) some urban policies have the potential to affect income distribution. - Size of a city's manufacturing sector (shares of 15 industries) in 1980 is IV for exogenous changes in income distribution.

Gallagher (2005)	Chicago	Describes and analyzes Chicago's retail patterns by community area and the delicate, complex, and approach critical questions concerning income, race, and place in relationship with these patterns
Galvez, M.P., K. Morland, C. Raines, J. Kobil, J. Siskind, J. Godbold, and B. Brenner (2007)	East Harlem, NY.	165 census blocks located in 2 zip codes 10029 and 10035. Cross-sectional study, use walking survey method. Examines whether census blocks either 75% African American (AA) or 75% Latino (L) are associated with food store availability, as compared with racially mixed (RM) census blocks
Goldman and Johansson (1978)	Panel data of 424 observations on gasoline purchases, from National Family Opinion Inc. at a major Midwest metropolitan area.	OLS is applied for 2 split subsamples of the dataset. A jackknife approach is utilized to estimate coefficients. A propensity to search for lower prices is constructed from five statements regarding the respondents' actual search behavior; each is measured on a seven point bipolar scale. Independent variables include price variability, quantity of gasoline purchased per month, number of monthly trips, the mean amount of each purchase, number of credit cards held, and the number of cars in the family. Other demographic variables such as income, number of children, education, age, and gender of principle buyer are also included.
Goodman (1968)	Low income areas of Philadelphia (60 blocks)	Primary survey data of 520 residents in the area. 72 item market basket. Compare prices in 1 geographic area.
Haines, Simon, Alexis (1971)	Rochester, NY 4 neighborhoods, (2 inner cities).	Study 4 questions: commercial structure, changes between 67-69 in neighborhood, type of retail, compare across U.S. Characteristics of inner city: low quality housing, higher density units, lower home ownership, lower median income, higher unemployment rate, higher proportion of lower social class occupation. Census of retail stores and services, land & building

Hall (1983)	New York, Buffalo & rest of Erie County; Poughkeepsie & rest of Dutchess County, and Manhattan, Brooklyn, Queens, and the Bronx	Survey 191 stores in 3 areas: central-city, rural, and some suburban locations.
Hatfield and Gunnell (2005)	CA. Pop data from US 2000 Census, block group level data. Road data is from 2002 Census.	Measures the distance between eaters and the nearest full-service grocery store as access to healthy food for everyone
Hayes (2000)	National data	Use national sample of data from the Bureau of Labor Stat primary sampling frame for construction of the Consumer Price Index 1. estimate if a price diff exists in stores between poor and affluent neighborhoods 2. empirically test the major argument in support of disparate prices such as quality, operating and consumer search costs 3. explore the relationship between pricing strategies and the racial and ethnic composition of poor neighborhood
Heany and Hayes (2006)	Report on the issue of Redlining in the food industry and link with hunger problem	- List of facts, causes, impact of food redlining at national level - Community food security defined - Example of successful SM in inner city - Alternative resources - Creating solutions
Helling, A. & Sawicki D. (2003)	Atlanta	417 census tracts that made up metropolitan Atlanta (10 counties). Accessibility (both opportunity and gravity) is calculated as a function of travel time to providers of local goods and services
Hennepin County Comm. Health Dept (CHD) (2002)	Hennepin County, MN	Explores relationships between availability, cost, and quality of fruit and vegetables in retail food stores, and community characteristics such as poverty, weight, and diet. Has 4 major findings:

		1. persons/sq mile and MBS3 2. Vulnearable householdss as a % of all householdss 3. % of adults who ate 5+ servings of fruits/veg the day prior to the survey 4. % of dautls who are over-weight/obese base on BMI
Horowitz, C.R., K.A. Colson, P.L. Hebert, and K. Lancaster (2004)	East Harlem and Upper East Side, NY	Use 5 recommended foods (diet soda, fat free or 1% fat milk, high fiber and/or low carbohydrate bread, fresh fruits, fresh green vegetables or tomatoes) for people with diabetes to compare between 173 East Harlem and 152 Upper East Side grocery stores
ICIC/Boston Consulting Group (BCG), June 1998 "The Business Case for Pursuing Retail Opportunities in the Inner City"	6 inner-city markets: Atlanta, Boston, Chicago, Harlem, Miami, and Oakland	Objective: develop the market intelligence to bridge the information gap and access the attractiveness of opportunities for inner-city retail investment 1. There is a market for inner cities which represent approx. $85 bil. in annualy purchasing power, or 7% of total retial spending in the US. In many markets, more than 25% of retail demand is unmet 2. Inner cities demand is largely driven by standard preferences for competitive offerings, with some degree of tailoring to local needs 3. Retail in inner cities can benefit from foot traffic and concentrated spending power. High volume and preference for certain high-margin goods can compensate for hi operating costs 4. Identify critical success factors
ICIC/ Pricewaterhouse Coopers, Jan 1999 The Inner-City Shopper: A Strategic Perspective	The first national survey of 1,205 inner-city households to fill the info-gap that many retailers lack in terms of potential of IC markets	The survey was conducted in Oct-Nov of 1997, based on a special fielding of PricewaterhouseCoopers' Consumer Database. The surveys were mailed to a randome sample of IC households in 417 zip codes identified by the ICIC as IC areas across major US metro areas. The householdss were drawn from a consumer panel of over 500,000 householdss provided by National Family

		Opinion, a market research firm. Responses were weighted to reflect the national mix of African American, Hispanic, and White householdss as well as income and age distribution of each of these segments. Does have bias toward English. speaking.
ICIC 2nd annual Inner-City Shopper Survey: Inner-City Shoppers Make Cents (and Dollars) (2000)	417 zip codes in the US that meet the criteria of an inner-city area, consists of 1159 households.	Surveys were mailed to a random sample of households in designated areas. 3 ethnic groups were sampled: White, Latino, and African American. (Could be biased toward English-speaking and gender -female- repondent)
ICIC study, 2002 "The Changing Models of Inner City Grocery Retailing"	Report key principles for grocery retailers to operate profitably in inner-city communities	Outline unique challenges and opportunities of inner-city markets and provides the experience of 4 grocery retailers serving IC: 1. Americas' Food Basket in Boston, 2. Shaw's supermarket in New Haven, 3. NCC Pathmark in Newark, and 4. Schunucks in St. Louis.
Inagami, Cohen, Finch, and Asch (2006)	Los Angeles, CA. Link the 2000 US Census data with the LA Family and Neighborhood Study (L.A.FANS) database, with 2620 adults sampled from 65 neighborhoods in LA county between 2000 and 2002. LA.FANS is a longitudinal study based on a stratified random sample of 65 neighborhoods in LA county	Regress BMI (height and weight, self-reported) on mean tract socioeconomic status (SES) between residential and grocery store neighborhood, distance traveled to grocery store, and socio-demographics of households. - 4 aspects that create a neighborhood "disadvantage score" (DSR): (1) % living below the poverty line, (2) % of households that are headed by a female, (3) male unemployment rate, and (4) % of families receiving public assistance. The DSR is categorized into 4: very low, low, high, very high SES areas (lower scores refer to higher-SES areas) - A proxy measure for grocery store quality is created by differencing DSR from DSG (disadvantage scores index for grocery store location where they shop). Thus "DSG-DSR" indicates whether the person shopped in an area more or less advantaged to his/her residential area. Higher scores mean shopping in a more disadvantaged neighborhood.

Jetter, K.M., and D.L. Cassady (2006)	Los Angeles and Sacramento, CA	Survey 25 stores 3 times between Sept 2003 and Jun 2006. Stores were chosen from neighborhoods with different levels of income. Compare cost and availability between a standard market basket (based on the USDA Thrifty Food Plan) and a healthier market basket (with low-fat meat and dairy and whole grain products)
Jones (1997)	Uses 1990 census tract data for Columbus, Ohio to classify supermarkets into lower- and higher-income stores, 3 stores from each income area, and a rural store is selected for comparisons of milk consumption	Observations for breakfast cereals cover 54 weeks, from Feb 1990-Feb 1991, for carbohydrates/milk for 54 weeks, from the last week of 1993 to first week of 1995. Objective: report and discuss own-price, cross-price, and expenditure elasticities for 2 product categories, breakfast cereals and carbohydrates - Use time-series cross section regression procedure (SAS) to estimate 5 equations for breakfast cereals and 11 equations for carbohydrates.
Jones, Akbay, Roe, and Chern (2003)	2 distinct income areas of the larger Columbus, OH, metropolitan area. 6 stores, 3 from lowest and 3 from highest income areas. 7 product categories are subdivided into nutritional classes.	Use an Almost Ideal Demand System (AIDS) to examine food shopping behavior and consumption patterns of 2 different geographic and income (above and below $50,000 household income) areas. 7 product categories: breakfast cereals, cooking oils and shortening, fluid milk, ice cream, mayonnaise, salty snacks, and salad dressings
Kasarda (1993)	U.S. 100 largest central cities, using tract-level data from the 1970, 80, and 90 censuses of population to id. neighborhood by degree of poverty: poverty, extreme poverty, distressed, and severely distressed	Documents changes in demographic and socioeconomic characteristics, including racial/ethnic composition, poverty population concentration, school drop out rates, and rates of joblessness, single-parent household, and welfare receipt. Results show that with some exceptions, urban poverty concentration and neighborhood distress worsened nationwide between 1980 and 1990. The greatest deterioration is in mid-western cities (Detroit). Blacks fared worse than whites and Hispanics during the 1980s in terms of increased concentration of poverty and distress neighborhood

Kaufman, MacDonald, Lutz, and Smallwood (1997) AER No. 759	National Census data	A report that is drawn upon 14 studies on the topic of price differences by income, and combine these studies with different data sources such as the Census of Retail Trade, the Census of Population, and USDA food stamp redemptions data. Both household consumption/expenditure data in ***household surveys*** and supermarket scanner data on food prices for ***store surveys*** are used in this analysis
King, Leibtag, and Behl (2004)	2002 Supermarket Panel	Characteristics of stores: 1) % of store sales from food stamp redemptions: degree of low-income shoppers; 2) 3-stage LS with 3 equations: 1. Full Weekly Operating Cost = f(Wage, COGS, weekly sales, Service offerings index, store selling area, tech shifter) 2. Cost share of payroll = f(wage, wkly sale, SOI, store selling area, tech shifter) 3. WSale= f(SOI, store selling size, exogenous demand shifter)
Kinsey (1998)	Review of academic literature that has been published in the U.S. and U.K. over the two decades, from late 1970's to 1990's.	Review and analyze the relationship between market power, food prices, food firms' profitability, and consumer impact that are linked with the increasing concentration of ownership in the food retailing industry.
Kolodinsky and Cranwell (2000)	A small city (approx pop of 50,000) in June 1999, where a downtown SM closed. The city's Comm. Econ. Dev. Office was interested in finding a viable alternative for an inner-city SM that could be profitable and meet the needs of both the comm. and the store.	Concentrates on the demand side of market. 398 interviews were completed by phone, plus 40 street intercept surveys with people with no phone. Use multivariate Logit, based on Lancaster's bundles of characteristics model. Probability (of shopping at a downtown grocery store)= f[demographics (age, gender, # adults, # kids, high school education, some college, has college degree, part time work, or unemployed); preferences (convenience, delivery served, order = phone, staples, local grown, comp prices, quality>>wide selection); and shopping habit (food share of income, 2nd store share, dummy for previous shopping at the store, transportation)

Krupa (2001)	Detroit, MI. *The Detroit News* Newspaper article	A report that is drawn from interviewing consumers/shoppers, survey (by The Detroit News) on prices and quality of food in different neighborhoods, and a survey by Pothukuchi, a professor at Wayne state
Kunreuther (1973)	Theory & Empirical. New Haven, summer 1971. 159 households, divided into upper-mid income vs. low income (6 subscaps)	Theoretical model explains why large chains and small convenience stores can both exist in an area: different costs associated with traveling and waiting. Empirical: test 2 hypotheses: store- and size-effect by comparing means difference by interviewing 25-30 families in each subcaps
Lavin, M. (2005)	Harlem, NYC.	Examines the square footage that Pathmark - a supermarket chain -allocated to fresh produce, meats, snack foods, soft drinks, and similar items in its Harlem store and compare that to a suburban supermarket. It also examines its pricing and promotion scheme.
Larson (2003)	National level, but focus on South Central Los Angeles	Qualitative analysis about the link between inner-city and the grocery industry - Describes why having full-service grocery stores is important to neighborhood: health/nutrition, provide jobs, tax base - Summary of alternative views on rebuilding inner cities - Explain the scarcity of SM in inner city by using economic literature on the modern supermarket industry - Review food pricing surveys to examine the viability of independent, full-service grocery stores Hypothesizes that where oligopoly market structure permits the pursuit of high profits and might obtain by leverage buyouts, which then greatly increase debt levels and increase the need for high profits, the attraction of inner-city locations will be limited for major chains. It also looks specifically at the pressures on major supermarket chain to earn high returns on investment and how that is likely to affect investment in inner city areas.

Leibtag and Kaufman (2003) Agri. Info. Bulletin No. 747-07	Use the Nielsen homescan data set which is a collection of food expenditure in $ and quantity in lb and oz measures for a 40,000 households sample of consumer that is representative of the US pop based on measures from the 1990 census.	Obtain food store purchase data, including detailed information about the product purchased (price, prod. descript. Package size, and brand name) and the condition of purchase (promotion, coupon, or sale) that incorporate per capita quantity and expenditure measure equivalents (adjusted for household size) across income levels. *Describe i) how total spending differs for a specific food item, type, and category, and ii) how income groups differ in the economizing practices that they utilize.*
MacDonald and Nelson (1991)	10 metro areas in 1982 (Atlanta, Boston, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, and St Louis). Price data was from USDA supermarket survey	Has over 600 items in 332 stores (32 in each area). The price data were matched to store-specific information on size, sales, corporate affiliation, services offered, and costs. Also used demographic information on the population characteristics of the neighborhood (zip code) in which each store is located.
Marcus (1969)	Watts (poor) vs. Culver City (more affluent, white suburb), Los Angeles, CA	16 stores in Culver, (7 super-chains & 9 are Mom & Pop shops); 33 in Watts (6 super-chains & 27 M&P shops). Use CPI market basket as a guide to compare data collected.
McLinden (ICSC), July 2006	International Council of Shopping Centers report	Reports part of findings from Social Compact, a nonprofit research group funded by real estate and financial firms for economic assessments and true consumption patterns of some 100 inner cities U.S. neighborhoods.
McTaggart (2006) Urban Retailing: Just enough for the city	Article in Progressive Grocer	Undesirable factors such as high poverty and unemployment are now not an issue for supermarket that see the potential profit in inner cities. Instead, they look for traits such as patience, creativity, and commitment - Part of the reason for the return of supermarkets to inner cities is due to cities recognize the challenges and make efforts to entice food retailers. The link bt health issues and access to fresh foods is a supporting factor

		- PA put together a state Fresh Food Financing Initiative in Sept `04 to provide retailers financial aid in offsetting initial capital costs - Challenges include high cost of land assembly
Moore and Diez Roux (2006)	Selected census tracts in N. Carolina, Maryland, NY	Poisson regression used to examine the association of food stores and liquor stores with racial/ethnic composition and income
Morland, Wing, Roux, and Poole (2001)	Mississippi, North Carolina, Maryland, and Minnesota	1990 census tracts. Measure Local Food Environment by id addresses where people can buy food from the local dept of environment health and state dept of agriculture. 3987 addresses are geo-coded to census tracts. Median house values are used to estimate neighborhood wealth, while the proportion of black residents is used to measure neighborhood racial segregation
Morland, K., S. Wing, and A.D. Roux (2002)	1990 Census tracts that cover 4 states: Maryland, North Carolina, Mississippi, Minnesota	- Use random-effects log-linear models to measure the association between the physical availability of food stores and food service places and people's adherence to health authorities' recommendations for a healthy diet (which are measured by i) servings of fruits and vegetables per day, ii) percentage of calories from fat, iii) saturated fat, and iv) dietary cholesterol. - Use the Atherosclerosis Risk in Communities (ARIC) data, third visit (1993-1995)
Nayga and Weinberg (1999)	Nationwide	Investigates and discusses critical issues of food access in inner-city markets, challenges and opportunities facing the development of supermarkets in poor urban neighborhoods
O'Connor and Abell, (1992)	Nationwide	Investigates successful supermarkets in low-income inner city communities. Describe 14 supermarkets in 10 cities, selected from a nationwide group of 250 supermarkets identified as successfully doing business in large city, low income areas. - Identifies critical factors for success of these supermarkets, and

		factors that encourage the entry and retention of inner city supermarkets. - Argues that inner city supermarkets can promote good dietary habits and can positively affect the use of food stamps, WIC, and nutrition education programs
Park, Holcomb, Raper, and Capps (1996)	Uses 1987-1988 Nationwide Food Consumption Survey, 12 food commodity groups were analyzed according to household poverty status.	Investigates possible differences in own-price elasticities, income elasticities, and subsistence expenditures by level of income, using the Linear Expenditure System (LES). 12 aggregate commodity groups: food away from home, beef, pork, chicken, fish, cheese, milk, fruits, vegetables, breakfast cereals, bread, and fats and oils
Pike (2000)	Boston, MA. *Massachusetts News*	Interviews residents/consumers, real estate manager for SUPERVALU chain, former professor of Univ. of Massachusetts, and store owner/manager in Boston about the scarcity of supermarkets in this area
Pongracz (2004)	Durham, North Carolina	Case study in a low-income neighborhood of Durham. Includes thourough review of theory of accessibility and affordability of food in inner-city neighborhood and US food retailing environment in these areas
Pothukuchi (2005)	Survey of planners in 32 communities	Examines initiatives to encourage grocery retail investment, reasons for the existence or absence of initiatives, and factors in successful developments
Powell, L.M., S. Slater, D. Mirtcheva, Y. Bao, and F.J. Chaloupka (2007)	National, 28,050 zip codes from Census 2000	Multivariate regression, examine relationship between the availability of chain SM, non-chain SM, grocery stores and convenient stores and neighborhood characteristics on race, ethnicity, and SES, while controlled for population size, urbanization, and region

Sexton (1971)	Chicago, 120 black and 600 white families, members of the Chicago Tribune panel.	Primary survey data. Examines mean price paid. 3 products, 2 in 1960 and 1 between fall 63 and spring 66. Compare prices of the same brand (3 brands for each product) purchased in stores of the same affiliation, 5 store categories, for total of 45 different brand-store categories
Shaffer (2002)	Los Angeles. This is a report for Center for Food and Justice, Urban and Environmental Policy Institute about the persistence of L.A's grocery gap. There is also a review of many studies on related topics.	Chronicles the gap between the number of supermarkets located in low-income and inner cities versus middle and upper-income, and suburban communities in LA. - Highlights the discrepancies in access to supermarkets in terms of household income and race/ethnic of the neighborhood. Also notes how the gap affect price and quality of food - Describes the potential health implication of poor diets due to lacking of access to affordable fresh food - Lists various factors that have been identified as key barriers for supermarket investment in low income communities - Explores opportunities and advantages for supermarket investment in areas with such barriers - Chronicles the evolution of the urban grocery store gap in LA from the 1992 civil unrest - Describes the current situation in LA., with updates of the current Rebuild LA effort. Also analyze the impact of race and income on supermarket access - Outlines recommendations
Sloane et al (2003)	Los Angeles, CA	Inventory selected markets in targeted areas (261 stores) of high African-American concentration (Inglewood, North Long Beach, and South Los Angeles) and compare that to markets in a wealthier area (69 stores) with fewer African Americans

Smith, Clarke, Ransley, and Cade (2006)	Lane county, OR. Note: only include stores that provide Thrifty Food Plan (68 items), thus exclude many health/natural, also specialty and ethnic food stores. Also, prices are taken for cheapest products. Define neighborhood by census tract, and access is defined as areas within 500 meters (no vehicle) or 1 mile of a store (with car)	Examines potential causes, and consider the possible geographic disadvantage reasons, both rural & urban. Explores the cost, availaibility of variety of foods, & locations of large grocery stores in 4 communities. National avg for hunger is 3% of pop (USDA, 2002) or average 5.8%. (i) GIS provides socioeconomic status at the country level (4), determine if socioecon. diff. (pop, median households income, ind. poverty, median home value, gross average monthly rent) cause rural OR to have higher rates of food insecurity and hunger (ii) Investigate by case study of 3 hypotheses (using median households income, % below poverty level, rented householdss without cars)
Teitz and Chapple (1998)	Review of literature on explanations of urban poverty	Urban poverty hypotheses are divided into 8 sections 1. structural shifts in the economy 2. inadequate human capital 3. racial and gender discrimination 4. adverse culturual and behavioral factors 5. racial and income segregation 6. impacts of migration 7. lack of endogenous growth 8. adverse consequences of public policy All these explanations may be relevant to urban poverty but their significance and the evidence of support varies substantially
The Food Trust and PA (several reports, 2003-2006)	1. “Simulating Supermarket Development: A New Day for Philadelphia“ (Jan 01, 2003) 2. “The Need for More SM in	10 recommendations on how city and state can increase the avail. and nutritious, affordable food in comm. throughout Philadelphia that emphasize the importance of food retailing in comprehensive nbh dev. and the city should give priority to assembling land and reduce regulartory barriers for supermarket development, also transportation service for shoppers. Each recommendation includes a successful example of other cities A geographical representation of food access, income, and diet-related health problems was created by mapping the location of

	Philadelphia“ (Mar 28, 2005) 3. “Philadelphia’s new Markets: Ripe Opportunity for Retailers“ (Feb 23, 2006)	SM sales, income and diet-related mortality data Note: “high“ diet-related mortality areas are defined as having ratios greater than the citywide rate, and “low“ is less (only for Philldelphia city) Provides details of retail opport. in the Phil. market. Utilize 2 metrics to reveal the untapped strength of inner-city markets: *concentration of buying power* (potential dollars available to be spent in retail stores by cons. who live in a defined geographic area) and *retail float* (a.k.a leakage, amount of unmet consumer demand for retail sales in any given geographic area)
US Department of Agriculture (1969)	Vermont	Primary survey data. 17 food products in each of 2 chains selected in each of these 6 cities, total of 134 stores
Weinberg, Z. (2000)		Qualitative analysis/review of literature
Wilson and Aponte (1985)	Literature review of the research and theoretical writing on urban poverty	The subject of urban poverty has drawn considerable attention since the mid-1960s. Researches on this topic contributes to the understanding of inner city poverty and insights in the relationship between poverty and welfare dependency. However, since the results of the public policy research are mixed, it is difficult to draw policy recommendations. Studies are reviewed chronically and by topic.
Zenk, Schulz, Israel, James, Bao, and Wison (2005)	Metropolitan of Detroit, MI. Evaluate the spatial accessibility of large “chain” SM in relation to neighborhood racial composition & poverty	Finds evidence for spatial autocorrelation in residuals of OLS, thus use moving average spatial regression to adjust for spatial autocorrelation. Three measures of supermarket access: distance to the nearest supermarket, number of supermarkets within a 3 mile radius, and potential supermarket accessibility (sum of the inverse Euclidean distances between neighborhoods and all supermarkets) Equation: distance to nearest supermarket (unit: Manhattan Block) = f(% African American, % poor, interaction terms), adjusted for pop density