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Urban Agriculture and Education Center: An Answer to Urban Food Deserts

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Urban Agriculture and Education Center
An Answer to Urban Food Deserts

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In economics, scarcity is defined as a condition where human wants and needs exceed production capabilities. Residents of impoverished urban areas suffer from the localized scarcity of healthy food options. Mass migration to the suburbs has caused the food retailers to follow their target market. In their wake, they leave behind low-income families and elderly residents with few grocery stores and an abundance of fast food restaurants. Some of these residents have been living in these situations for several decades, resulting in communities having unusually high rates of diabetes, cardiovascular diseases, and most markedly, obesity. Often these residents, when given access to healthy food lack the health education to support a healthy diet.

The localized scarcity of healthy food in impoverished urban areas has made a detrimental impact on the health and future of the residents in these areas. It has required residents to turn to other, less healthy, food options for several decades. The scarcity of healthy food in these areas is just one of the problems that have plagued urban life through the decades, but it is one that can be solved through health and agricultural education brought to these areas.

Statistical surveys of existing urban food deserts in Chicago and Philadelphia will be studied to determine the make-up, causes, and potential implications of food deserts. Different food distribution systems and changing retail
patterns will be studied to determine where the system breaks down in the urban centers and what can be changed.

The outcome of these studies will be an urban food production and education center in an inner-city area. The center will serve as a location for residents to learn about healthy eating habits, take pride in the agriculture they produce, and have access to healthy food options.
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The research for the project began with a focus on urban food deserts and their impact on the health of the impoverished communities. Studies of empirical data collected from Chicago and Philadelphia communities on grocer locations and health statistics prove that this is an issue that effects impoverished inner city communities and will continue to do so with the direction of change in the food retail market. The initial research also focused on studies of the history of the retail market and how the supermarket system has changed and will change in the future. To further understand the culture of inner-city communities, research was done on sociological studies of inner-city communities and how poverty has effected community life through the history.

After initial research, it was clear that the problem of urban food deserts originated in the communities inability to have access to healthy food options. The solution was to bring food to these communities to help alleviate the scarcity of food. Unfortunately, food scarcity did not seem to be the only issue. Research suggests that in these areas, people have gone without healthy food options for so long that they often do not have the education to support a healthy diet. A study done for the U.S. Department of Agriculture on food stamp participants reveals the general lack of health education among low-income populations.

METHODOLOGY
The proposed project, and urban agriculture and education center, will bring food to the community and will educate the community on the food that is there. By encouraging members of the community to get invested in the production of their food, they will have a better understanding of a healthy diet. In addition, they will embrace the center as a vital part of their community. Research of existing urban farms has been conducted to determine how those farms have been successful within the communities and how they have dealt with the issues of farming within dense urban communities.

The problems that this project is addressing are apparent in empirical data of health statistics in communities. Because this project will never be built, it will be impossible to measure its impact on the health of the community. According to studies of successful farmers’ markets, the success of a center like this will depend on the community’s willingness to accept it as a centerpiece of their neighborhood. The success of this project will be determined by how well the design incorporates community involvement.
The origin of this project developed from the early study of several empirical studies citing the changing trends in shopping patterns and their effects on the population. Each of the studies focuses on one of the underpinning aspects that formed the basis for the direction of the project.


Trends in retail shopping experiences have been changing since the 1970s. The development of superstores in the 1970s, followed by warehouse retail centers in the 1980s, and then the grouping of retail warehouses and superstores, shows a major trend of moving retail units away from the traditional urban center to larger centers on the suburban border. In recent years, the trend for retail centers is returning to one of an urban center. In many cases though, this “urban center” often still appears on the outskirts of city limits and requires automobile transportation to get there. In this case, the “urban center” really just becomes a modern shopping center with aesthetic cues of a traditional urban center. Cars have become vitally important to the shopping experience.
This article examines the dichotomy between the traditional urban centers and suburban shopping centers and its reflection on the marked inequality in the opportunities of consumers, in which those with poor mobility are seen as disadvantaged.

**Article Background**

Retailing in Britain has followed similar trends to that in the United States. This article studies the city of Swansea, the second largest city in Wales, and the different shopping trends among those with and without cars. The study looks at the shopping trends among different groups and determines whether car ownership or lack thereof keeps shoppers from suburban shopping centers. The study looks at household make-up, location of residence, and socio-economic status to determine if car ownership is the prominent factor in the dichotomy of shopping trends among the residents of Swansea.

**Hypotheses**

- Suburban retail centers puts carless individuals at a disadvantage
- Car ownership is the biggest factor in determining customer base for suburban


**Method and Procedure**

This study used a survey-based method to collect data. Using household survey data for the Swansea area, the role of car-ownership is compared with other differing personal factors among shoppers to determine which has the greatest role in influencing shopping patterns. The factors studied were location of residences, age, and socio-economic status.

**Major Findings**

Individuals who do not have cars, shop at suburban shopping centers less often than individuals who do have cars. Car ownership mostly influences this dichotomy. With more shopping centers moving to the suburbs, fewer shopping centers are available to people living in city centers who do not have access to cars or public transportation.
The study defines ‘disadvantaged consumers’ as those who undertake shopping trips which are constrained to the more traditional and localized facilities due to the combined influences of low income, physical disability, and restricted personal mobility.

An analysis of residence locations on shopping patterns revealed that car ownership is the determining factor on where a patron decides to shop. In various suburbs studied, the major food shopping trips took place at regional superstores. Because members of each area visited their regional superstore, residential location does not determine the type of retail center visited, but the specific center the patron visited. However, in inner-city areas, patrons do the majority of their shopping at the inner-city shopping center, showing a strong distance decay pattern. Location of residence is a factor in the pattern of shopping behavior, but because of the spread of various shopping centers around the urban periphery of Swansea, the location of residence merely determines which center a patron visits.

The study also focuses on age, its effect on mobility, and if that could be the contributing factor to the dichotomy of shoppers at suburban and urban shopping centers. Families with pre-school aged children, as well as individuals over 60 years of age, were found to restrict most of the shopping for convenience goods to local facilities.
Though both of these groups showed that car ownership did not affect their food shopping behaviors, upon further investigation, shopping patterns for both groups for Do-It-Yourself or furniture shopping were largely influenced by car ownership.

Socio-economic status is often associated with shopping patterns, and was therefore, studied to see if it, rather than car ownership, was responsible for the dichotomy of shopping patterns. Persons of lower socio-economic status rely largely on city center shopping rather than on superstores or retail warehouses. The lower socio-economic classes, however, often stick to local shopping centers because they cannot afford a car that would allow them to travel to suburban shopping centers.

**Conclusion**

Through studies of different factors that may determine where a shopper decides to shop, it is determined that car ownership is the biggest factor in determining whether a person shops at new suburban shopping centers. Age, location of residence, and socio-economic position all play a factor in determining the shopping patterns of an individual, but car ownership determines whether a shopper has the ability to shop at new suburban shopping centers.
LITERATURE REVIEW


With the increasing popularity of one-stop shopping centers, several studies have been done to determine what has caused the increased popularity, where the retail market is going, how it affects the public, what type of retail center would best support the community. This is an economics based study, trying to explain why there has been a shift in retail culture.

**Article Background**

This study looks at two different economic models that explain the growing popularity of one-stop shopping. The study attempts to illustrate an economic and experimental approach that allows the measurement of consumer choices in multipurpose, multi-stop shopping trips. Using experimental designs to create hypothetical shopping scenarios, it enables the measurement of impact on consumer choice of different features of spatial structures, such as distance, store category availability, and the availability of specific retails chains.
Hypotheses:
- Convenience drives multi-stop shopping
- Consumers do multipurpose and multi-stop shopping to improve on their shopping efficiency
- Retailers have adjusted their marketing and product sales to fit the shifting trends of consumer shopping

Major Findings
After testing the proposed economic models, the findings of the study were threefold. As expected, the consumers prefer to combine the purchases of multiple types of products in their trips to reduce their overall travel. Secondly, consumers attach less value to everyday purchase opportunities. For the purchase of more expensive items, they were less likely to let the possibility of combining those purchases with everyday purchases determine where they shop. Finally, when making clothing purchases, consumers tended to be less sensitive to possibilities of reducing travel costs by combining their purchases than they are when purchasing drugstore products.

Conclusion
The research done by this study offers information towards the most beneficial approach to retail design for
both the consumer and the retailer. It offers better insight to the way in which consumers combine different types of purchases and visits to locations when making shopping trips. In understanding how consumers make their shopping trips more efficient, retailers can cater to the convenience needs of the retailer. In addition, while understanding the shopping patterns of the consumer, the retailer can design to encourage more consumer spending when it comes to higher end purchases.

This study focuses on the efficiency of one-stop shopping and consumer tendencies that support it. The information can be used to help create a program that can best support a community that has other shopping opportunities.


A food desert is described as an area with little or no access to healthy food options. Often, in urban areas, the absence of healthy food markets is coupled with the relative abundance of fast food restaurants. As larger supermarket style stores come into areas, fewer small independent food stores can compete. Many of these small stores close
down and their customers continue to flock to the large superstores. For the consumer, this can be advantageous because the larger retailers have the ability to lower prices. The smaller stores, however, were highly advantageous to those customers without cars. Smaller stores were often located in several places within a neighborhood, giving consumers convenient locations to buy goods. When these small stores closed down, shopping for healthy foods became more difficult. Navigating public transportation or walking with bags of groceries was not an option. Consumers then began shopping at the remaining food retailers in the neighborhood. Many times, this is just fast food retailers and convenience marts selling processed snack foods.

**Article Background**

This study done by the Mari Gallagher Research and Consulting Group looks at the city of Chicago, broken down into city block sectors, and weighs the proximity of healthy foods sources with the relative health of the neighborhood. For looking at health issues, the study focused on reports of cancer, cardiovascular disease, diabetes, obesity, and hypertension. Further breakdown of the data shows the racial breakdown of the neighborhoods, suggesting that the race of neighborhood may encourage or deter large chain
Hypothesis:

- Location of food stores in a community affects overall health of a community
- Communities with a higher number of fast food venues compared to grocery stores have higher rates of diet related diseases

Method and Procedure

The process of study began with the breakdown of the city to the city-block level. The intention of this was to define a home place for the subjects of the study to identify with a community. With each block, the average distance to the nearest food venue was measured. The food venues were then categorized into groups of chain grocers, small grocers, all grocers, and fast food. Each block was then given a health ratio score: The distance to any grocer divided by the distance to any fast food venue. This ratio was called the Food Balance Score, and the Food Balance Effect. To determine the health of an area, the study looked at years of potential life lost for cancer, cardiovascular disease, diabetes, and chronic liver disease. These diseases cause premature death as defined as death under 65 years of age. By taking the total number of deaths under the age of 65 in a community and dividing it
by the total number of people in the community area under the age of 65, they determined the potential years lost in the community. In addition, each death was weighted based on its distance from age 65. Using drivers license data, which reports height and weight, the body mass index could be determined, which is the accepted measure for obesity.

**Major Findings**

After the study of location of food stores, health issues in a community, excluding, but then later examining the results concerning race, socio-economic status, car ownership, and other factors, the results point to one conclusion: communities that have no or distant grocery stores but nearby fast food restaurants instead, will likely have increased premature death and chronic health conditions. Mothers, children, disabled, and elderly are the most vulnerable residents in a food desert. The costs associated with the downfalls of a food desert effect them directly as it relates to quality and length of life, and indirectly to the health care industry.

**Conclusion**

Food deserts can occur in both urban and rural areas. Urban food deserts have a higher potential health risk due to the presence of fast food venues that offer greater...
convenience to members of the community. The trend of food retailing moving to larger chain grocery centers has had the greatest impact on the development of urban food deserts because they have forced the closure of smaller corner shops. That is not to say that large supermarket grocery stores are not beneficial. Often, they offer lower prices and higher quality produce. Unfortunately, that comes at the expense of those who do not have the ability to conveniently shop at these retailers.

In designing a community retail center, the impact that the center has on the health of the community must be considered. If the retail center is the primary source for food shopping, it must be able to compete with chain grocers in terms of price and selection. If not, the design of the retail center should be appealing to chain managers who may want to bring a chain venue to the center.


Retail markets have increasingly been providing consumers opportunities for “one-stop shopping”. In terms of grocery retailing, the supermarkets carry items in many categories that were once relegated to separate specialty
stores. The inclusion of markets for fresh-baked goods, liquor, pharmaceuticals, video rentals, select hardware, banking service, and flowers has contributed to the doubling of the number of items carried by U.S. supermarkets from 8,948 in 1974 to 26,430 in 1988.\textsuperscript{1} Given the magnitude of recent changes, one must question what has driven the move towards one-stop shopping. This study creates a model that can be used to explain the growth of one-stop shopping.

**Article Background**

The model created in the study focuses the effect of consumer choice on retail centers. Consumer choice is largely influenced by assortment, price, transactional conveniences relating to shopping time and logistics, and utility from the shopping experience itself. By considering the tradeoffs of each of these factors, the model can determine whether a retail center can survive. An empirical examination of the study suggests that a major force behind the growth of one-stop shopping venues is the increasing value of personal time. As wages and salaries increase and more women enter the work force, the value of time becomes more important than the value of money when it comes to shopping for convenience goods.

\textsuperscript{1} Messinger, 2.
Hypotheses:
- The model can be applied to various regions, regardless of population size
- The model can generate results that transcend economic classes
- One-stop shopping is the only type of shopping done by a consumer

Major Findings
The results of testing the model developed for this study revealed two major reasons for the increasing popularity of one-stop shopping centers. First, that personal income was positively related with growth in supermarket size. Second, improvements in consumer transportation and refrigeration technology have encouraged the growth of one-stop shopping. Though the model tested several alternative hypotheses, these reasons turned out to be the predominant factors in supermarket popularity.

Conclusion
Changing shopping trends often reflect changing social patterns. The success of a retail market depends on its ability to support the consumer base. If the culture of the consumer base changes, the retail market must change to support it. As the economy changes to support higher wages and higher salaries, consumers find that the opportunity cost
for taking the time to shop at several different destinations is too high to justify. These consumers understand and prefer the benefit of shopping for several convenience items in one center, even if prices for the products are higher. One-stop shopping also encourages one to stock up on several food items and convenience goods. Because personal transportation habits have improved in terms of convenience, shoppers can fill their cars with goods and not be limited by the number of purchases they can carry. In addition, advances in refrigeration technology has improved the ability for people to store food for longer periods, encouraging bulk purchasing.

Though this article mostly deals with the study of an economic model that attempts to explain the recent trends in retail development, it is useful in determining the driving forces of a retail development. In terms of programming for a multi-purpose retail design, it lends cues to the importance of certain spaces. What does a shopper value in a shopping experience? How can the design of a retail center best facilitate the needs of a shopper?


The closing of local grocers often causes food deserts
in urban locations when large chain grocery stores move in nearby. Often, the distance to a larger grocery store is too far for those without cars to travel to frequently. This leads to the consumer shopping for food at fast food venues and corner stores. Often, the food sold at these locations, when consumed in excess, leads to cardiovascular diseases.

**Article Background**

This article focuses on the specific shortage of grocery stores in Philadelphia. Philadelphia faces some of the same issues of inner-city poor populations in other large cities, but when compared with these other cities; Philadelphia has the second lowest number of grocery stores per capita than any other U.S. city. A shortage of supermarkets means that residents have to shop at more expensive corner markets that have an inadequate selection of healthy foods. Insufficient access to affordable food venues, lowers the purchasing power of the residents, which can then lead to long term health issues stemming from nutritionally inadequate diets.

**Hypotheses**

- Philadelphia's supermarkets cannot support its population
- Inaccessibility to supermarkets increases risk for diet
related health issues

- The supermarkets that are in Philadelphia are spread disproportionately through the city.

Methods and Procedure

The method of research for this study was done through mapping exercises to determine the shopping radii of grocery stores, and the location of diet related deaths.

Major Findings

The mapping exercise highlighted the uneven distribution of supermarkets within the city. There are many areas of the city with too few supermarkets to support their population, and even several areas with no supermarkets at all. Maps also showed a disproportionate amount of spending in certain areas per capita. Areas with high spending ratios per capita suggest that the area is an affluent area where people have more disposable income, or that more people are shopping there than live in the area, which would suggest people traveling to shop. The maps also revealed that the areas with few or no supermarkets were low-income areas, creating a disadvantage for low-income families. In addition, the data also supports the hypothesis that areas of fewer supermarkets have populations with increased diet related health problems.
**Conclusion**

Location and quality of food sources within a community can greatly affect the overall health of the community. Areas with limited access to healthier food options must sustain themselves on the unhealthy foods. This can lead to the greater community problem of burdening the healthcare industry with diet related diseases and childhood obesity.

This study of Philadelphia does not do much to influence the particular design of a supermarket, but it does highlight the problems of retail development today. There is a dichotomy between the idea that supermarkets are better for the community because they offer cheaper and healthier food options, and the idea that supermarkets can only cater to those who have cars and access to the stores. Those who do not have access to the stores are disadvantaged. When designing a community retail center, it is important to understand how it will impact the surrounding community both positively and negatively.

Brown, Kate H. and Andrew Jameton. “Public Implications of Urban Agriculture.” *Journal of Public Health* 21,
As the urban population rapidly expands to record numbers, the apparent need for urban agriculture grows. Many foreign nations have recognized the value of investing in urban farming, and the US is slowly beginning to show promising growth in that direction. Health professionals, urban planners, environmental activists, community organizers, and policy makers are starting to recognize the benefits that urban farming can bring to communities in terms of food security, economic development, and the preservation of green space.

Article Background

Shifts in the economy have resulted in the majority of the nation’s food source to come from imports and rural farms. Many of these rural farms are no longer privately run, but are large commercial farms that focus on one or two cash crops in order to bring in the biggest profits. As a result, the stability of the nation’s food supply depends on the success of far fewer farms than in history. Shifts in weather trends cause a poor harvest of corn for a year, the supply drops and the cost of a basic food product needed in several industries skyrockets. Kate Brown and Andrew Jameton make the argument that by investing in urban farming, and the US is slowly beginning to show promising growth in that direction. Health professionals, urban planners, environmental activists, community organizers, and policy makers are starting to recognize the benefits that urban farming can bring to communities in terms of food security, economic development, and the preservation of green space.
in urban farming, the food security of the nation can stabilize. They use examples of foreign countries where urban farming has been successful in becoming a major food source in communities where food would otherwise be scarce. They also use examples of times in US history when urban gardening has helped the economy when the country was in need.

**Hypotheses**

- Food security in the United States is dependent on the type and location of its food sources
- Micro-farming provides healthier produce than large-scale industrial farms

**Conclusion**

Brown and Jameton provide convincing research to prove that adopting urban farming can have a profound impact on hunger and impoverished communities. One individual can change their health by investing in their food supply. That one person can have an effect on themselves in their family, but if the government got involved in subsidizing seed programs, the impact could be monumental.
In economics, scarcity is defined as a situation in which the condition of human wants and needs exceeds production capabilities. In a market society, however, production is driven by financial incentives, not the needs of the community. In the grocery industry, market trends have encouraged retailers to move to the suburbs and into a big box retail structure. The convenience of the one-stop shopping model put small grocers in the cities out of business. While there is an abundance of food sources in US cities, urbanization and changes in the supermarket and food vending industry, however, have kept healthy food options out of reach to underprivileged groups in inner-city areas. The impact of this localized scarcity can be seen in the health statistics among the residents of these communities. When grocers moved out, fast food chains and small convenience stores filled the role of providing food for these families. As a result, obesity, diabetes, and cardiovascular disease rates grew faster and higher in these areas than the rest of the country. Though the absence of healthy food options is at the root of these health issues, part of the real problem also lies in the deficiency of health education for these individuals. Unhealthy eating habits have developed over several generations, to the point where many individuals, even with access to healthy food, do not have the proper education to change their habits. The problem then becomes the result of insufficient education and limited access to healthy food options.

The issue of urban food deserts has been recognized and addressed in cities throughout the world and many have taken different approaches to tackle the problem. In 1984, Trevor Hancock, a physician and member of the Toronto Public Health Departments, and Len Duhl, a psychiatrist and teacher of urban development and public health, conceived the Healthy Cities movement. The movement reflected a changing perspective on community health. The idea was that medicine merely focused on the ill, but public education on health and healthy living would improve the health of the community and decrease the burden on public health systems. The concept focused on community education about healthy eating habits, drug use, tobacco use, and alcoholism prevention. In 1986, the World Health Organization adopted the idea and initiated the Healthy Cities Project, which quickly spread into smaller movements worldwide. The project intended to improve health conditions in impoverished communities. The model for the project, though varying among participating cities, included gathering people in the community from different backgrounds to address the issues and come up with innovative solutions. Unfortunately, despite the efforts to solve the problem, many communities remain untouched by the outreach and still suffer. Healthy food options remain out of reach to many in these communities. Public health will not improve

until members of these communities have access to healthy food options.

Urban food deserts have had a major impact on the social and physical health of inner city communities throughout the United States. Changes in economy and technology have led to the inability of individuals of lower socio-economic status to have access to healthy food venues. The inaccessibility to healthy food options leads to greater prevalence of diet related diseases and the continued stratification among wealthy and poor neighborhoods. Examining retail development patterns and refocusing them on the burden of food deserts can reveal a solution that will benefit both the members of the community and retail developers.

A food desert is defined as an area with no or distant grocery stores. Food deserts can occur in both urban and rural contexts, but as a result of two very different conditions. Rural food deserts occur when shrinking rural populations cannot support a local grocery store. As young families move away from rural areas, market pressures push local grocers out of business, leaving residents with few or no options for food purchasing. Many residents cope with this by doing their shopping on their commute to and from work, exacerbating the market problems of small local grocers. For the disadvantaged who do not have access to those stores, they must buy from local stores that often have a smaller selection of healthy

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food options at higher prices.\(^5\) In contrast to the dwindling number of full-service grocers, these areas have a higher number of convenience stores per capita compared to the rest of the country.\(^6\) Residents of food deserts all seem to share some common characteristics. Food deserts have a higher percentage of the population without a high school or GED diploma, higher poverty rates, lower incomes, and larger populations of elderly people. People of these classes are the ones who do not have the means to follow the market. As the food market leaves their area, they are left stranded and suffering.

Urban food deserts share many of the same characteristics of rural food deserts. They too are the result of shifts in the market pushing small businesses to close. In the case of urban food deserts, it is not a situation of a population not being able to support their grocer due to decreased population, but a case of smaller grocers being pushed out of business by large suburban supermarkets. As more residents flee to the suburbs, retailers see their profitability move as well. Large suburban supermarkets are highly profitable and are only increasing in popularity. Often the communities left behind are made up of disadvantaged people. These underprivileged people are hurt the most by food deserts.

\(^6\) Ibid., 3.
because they do not have the means to travel to other shopping venues.

Several influencing factors are to blame for the development of urban food deserts. Most notably, the shift in food shopping trends from local production and consumption to worldwide production and distribution of goods. Technological advancements in food production have reshaped food consumption trends in the U.S. over the last century. At the beginning of the 1900s, bank records showed that 46.4% of household incomes went to food purchases. That number had dropped to just 14.0% in 1995. Food was more expensive then, but rising salaries in the last decade have also allowed families to


The combine harvester was first invented in 1838 to speed up the harvesting process by combining the tasks of harvesting, threshing, and cleaning grain crops. Though the basic design has stayed the same, mechanical and technological advances have made the machines faster and gentler on fragile seeds.
have more disposable income, decreasing the burden of food purchases. Technologies have changed the way the food industry can produce and transport food goods. Mechanized machinery has reduced the number of hands needed to produce a crop, lowering the price of food production. In addition, freezing and preservation technologies have enabled growers to ship their products all over the world with little waste due to rotting or spoilage. Though these technologies have improved the food production business in developing countries and lowered the burden of grocery purchasing on the American public, it has had negative affects on several groups of people. Shopping trends changed to reflect the new economy, but for many who do not have the benefits of higher incomes and still view food purchases as a major expense, the trends have shifted to put the market out of reach.

As food production technologies have improved, the market for food production and retailing has become very competitive. Profit margins are so low that smaller grocers can no longer remain profitable. Large retailers such as Costco, Target, and Kroger have been able to streamline their business by cutting down operation costs. As a result, they often run smaller grocers out of business.\(^8\) For retailers, large supermarket structures offer a much more cost effective way of running business. Operating out of large warehouses

\(^8\) Ibid.
drastically cuts capital costs. Today, supermarkets are designed for customers to do one-stop shopping, picking up all that they need in fewer trips. Studies have been done to suggest that consumers spend more money when they shop less often but buy more on each trip than when they shop frequently for fewer items, further encouraging the continued development of large supermarket venues9. The large supermarket structure is also beneficial to its customer base, offering a wider variety of products at lower prices. Larger businesses also have the ability to import fresher and wider ranges of produce for their customers while keeping costs low. Because these supermarkets need to be located in large warehouses with large parking lots to be


Supermarkets today have the ability to import fruits and vegetables from all over the world, resulting in wide and varied selections of food.
financially successful, they are often restricted to suburban areas outside the city limits. The benefits outweigh the inconvenience of travel for most shoppers, but for those without the means to travel to these stores, the impact on their health can be critical.

As the food retail industry has changed, the shopping preferences and habits of individuals have changed to both adapt to and encourage the continued change in the food retail structure. National economic growth has played a major role in how the food retail market has developed over several decades. Advances in the automobile industry have allowed the number of cars per household to increase. Individuals with cars have the ability to shop at a greater variety of stores, buy in bulk, and buy at their convenience. Higher family incomes have made individuals put a higher value on time than money, making one-stop shopping and bulk buying more appealing. Car ownership and advances in refrigeration technology have allowed consumers to buy in bulk by giving them the means to transport and store goods. Economic trends are pushing the continued development of suburban supermarket centers, but leaving those without cars at a disadvantage. As a result, the gap between poor and affluent groups of people is becoming larger.

The most damaging effect of food deserts is on the

10 Ibid., 234.
health of the people in food desert communities. Without adequate access to healthy food options, many people only have fast food joints and local convenience stores for their food purchasing opportunities. The local markets do not have a wide selection of produce and the produce that they do have is often overpriced. The most economical option for these people is buying foods that are high in fat, sugar, and preservatives. As a result of poor food selection, the frequency of diabetes, hypertension, heart disease, and other diet related diseases runs higher in these communities than in communities with proper food access.

The Mari Gallagher Consulting Group of Chicago, IL conducted a study on Chicago communities and the impact of food deserts on community health. The study breaks the city down into city block sectors and weighs the proximity of healthy food sources against the relative health of the neighborhood. To compile health data, the study looked at the number of deaths under the age of 65 (defined as premature death) in the sector, divided by the total number of people in the sector under the age of 65. From this, the study could determine the total number of years of life lost due to diet related diseases. To determine the food shopping options for each sector, the study measured the average distance to each food venue from the sector. A ratio between the average distances to grocers divided by
The average distances to fast food venues determined the area’s Food Balance Score. Using drivers’ license data, which reports height and weight, the average body mass index for the sector could be determined, which is an accepted measure for obesity. The study supported the thesis that access to healthy food venues affected the relative health of a community, increasing the number of diet related diseases per capita.

The study done in Chicago proved that restricted access to food venues affects the occurrence of diet related diseases in the affected area. Areas with high Food Balance Scores (closer to fast food chains, farther from grocers) had higher rates of cancer, cardiovascular disease, and diabetes.\textsuperscript{11}

More interestingly, it revealed that these patterns of food

A breakdown of racial community profiles reveals that for most races, the relative distances to a grocer and a fast food venue are the same. For people living in African American communities, consumers generally have to travel 6-9 blocks to reach a grocery store and only three blocks to reach a fast food venue.

deserts followed both racial and poverty lines throughout the city. By identifying the predominant race for each sector, the results revealed that African American communities have the lowest access to chain grocery stores and independent grocery stores, but had roughly equal access to fast food joints compared to other racial groups. On average, members of these communities had to walk 6-9 blocks to reach a grocery store and only three blocks to reach a fast food venue. For most, an extra three blocks for healthy food does not seem like a burden, especially with access to an automobile. Transit patterns in the U.S., however, reveal that car ownership by African Americans is lower compared

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12 Ibid., 16.
13 Ibid., 17.
The breakdown of data into race, Food Balance Score, median household income, Body Mass Index scores, and education supports the hypothesis that lower income levels and lower education levels are often characteristics of communities with high Food Balance Scores and higher average Body Mass Index Scores.

The incorporation of data into a map of Chicago zip codes reveals a pattern that the worst Food Balance Scores correlate positively to high Body Mass Index scores.
to other races.\textsuperscript{14} People must rely on public transportation, rides from friends, or walking to get to a grocery store. All of these methods of transportation can be terribly inconvenient for single parents, people with disabilities, or the elderly, making trips to these grocers more difficult. The more difficult it is to get to the grocer, the less often they will go, and the more likely they will suffer the health effects of living in a food desert. Furthermore, examining income levels for each area reveals that the higher the income level for an area, the higher concentration of food venues there is, showing a pattern among food retail development in wealthy and impoverished areas.\textsuperscript{15}

Food deserts have an obvious impact on the health of people living within one, but they can also have a harmful impact on the economy, specifically the healthcare industry. Because food deserts often occur in less wealthy neighborhoods, it can be safe to assume that the number of people covered under health insurance in these neighborhoods is less than average. The cost of healthcare has increased faster than the rate of inflation since 2000, further exacerbating the stratification between the haves and the have-nots. The cost of caring for an uninsured patient is often deferred to the service providers and healthcare employers. This results in higher premium

\textsuperscript{14} Ibid., 17.
\textsuperscript{15} Ibid., 18.
rates for those in the community that do carry insurance. Hospital operation costs rise due to the care of uninsured patients, causing service providers to decide that it is not economically viable for them to work in the area anymore. They will close the hospital and put hundreds of people in the community out of work.\textsuperscript{16} Studies have shown that people who are uninsured visit healthcare facilities less often.\textsuperscript{17} This could suggest that someone living in a food desert could let their health go unchecked for several years, resulting in a chronic illness or obesity and thus becoming a larger burden on their local healthcare providers.

Philadelphia, PA, in particular, suffers from the burden of food deserts in its urban community. Philadelphia is not unlike many urban areas in the U.S. in terms of poverty levels, but studies show that in order to support the food needs of the city, the city would need 70 more supermarkets in low-income areas.\textsuperscript{18} The Food Trust of Philadelphia conducted a study using mapping exercises to lay out supermarket locations compared to population densities, socio-economic distribution, and racial distribution in the

\textsuperscript{17} Donald L. Patrick. “Health Status and Use of Services Among Families With and Without Health Insurance.” \textit{Medical Care} (1992): 941.
communities. The results of the study showed that the poor communities lacked significantly in terms of supermarkets per capita, and it was in these areas where there was the largest prevalence of diet-related diseases. The Food Trust pins the responsibility of providing enough food for a community on the public sector. However, as the grocery market became more competitive, this responsibility shifted from the public sector to private business owners. When the grocery market economy moved to a supermarket structure, more supermarkets left poverty-stricken areas, setting off the pattern of poor health in these areas.\textsuperscript{19} Perhaps the answer to ameliorating the damages of food deserts is to bring food distribution back into the public sector.

Urban food deserts have developed as a result of the progression of the food distribution economy. Better farming technologies have allowed farmers to produce more crops at a lower cost. Preservation and refrigeration technologies have allowed these farmers to reach a worldwide market with their products. Food retailers have discovered that in the highly competitive grocers market, there is more room for profit when operating out of large warehouses because of the decrease in capital costs. Finally, changing shopping habits brought on by the growing economy has allowed these warehouse supermarkets to have a large customer base to support their business. Today, it is not unusual to

\textsuperscript{19} Ibid., 4.
walk into a grocery store and pick up fruits and vegetables from around the country or world. Shoppers have become accustomed to these advantages. They no longer have to consider seasonality of fresh food and would find it odd that certain foods are not available during certain seasons of the year. These advances in technology have resulted in many benefits for the majority of shoppers. Though these changes have benefited the majority, perhaps they have had a more damaging impact on the few who cannot benefit from them.

Though the structure of the supermarket system has benefits for many, those who do not benefit are those who have the least flexibility for change. Often, food deserts occur in low-income African American communities. Families in these communities do not have the disposable income to spend on overpriced food or transportation. Many times the people most affected are those without the means of transportation to get to the large supermarkets. Supermarkets are designed for people with cars who can shop and fill up their car with several days’ worth of groceries. For a single mother, the hassle of lugging children and groceries on a city bus can make the trip not worthwhile. This mother is then confined to shopping at the local convenience markets that often do not carry, or only carry overpriced fresh food.
The studies of both Chicago and Philadelphia highlight a growing health epidemic in this country. Because it has been brought on as a result of economic prosperity, it is difficult to place blame or argue that the system has grown in the wrong direction. There needs to be a balance of profitability for retailers and benefit for consumers. Retailers are attracted to the potential profitability of warehouse supermarkets on the outskirts of cities. Because of this, many have left the inner cities and few venues have come in to fill the void. This space needs to be filled, and it seems as though the only solution is an innovative approach to the food market system. The solution needs to be one that benefits both the owners and the customers, but most importantly, it needs to be accepted and adopted by the whole community to survive.

If large supermarket retailers have discovered that the best retail structure is one that encourages bulk buying in large warehouse centers, can this model be adapted to a dense inner-city location? The grocery market is very competitive and many times retailers see that the only way to turn a profit is to cut down on capital and operating costs. If there were a way to cut capital costs without operating out of a large warehouse, perhaps more retailers would not be discouraged from coming to the inner city. In many inner cities, there is an abundance of abandoned residential
buildings and warehouses. Perhaps these venues could be put to use as food vending locations. Government subsidies given to food retailers that move into the area would encourage growth and business in underprivileged areas. The grocery market is very competitive and because of this, product prices should not differ whether inside the city or not. In addition, if there is enough demand to keep several liquor stores and fast food restaurants in business, there is enough of a market to support a grocer. The only thing keeping grocers out of the city are the high capital costs. Investing government money formerly allotted to healthcare into grocer subsidies, could eventually lower the cost of healthcare in the future.

In today’s culture, there is much talk about how Americans should work toward becoming colorblind to different races. Civil rights movements have made leaps and bounds in terms of providing equal opportunities for all races, but race divides remain. With urban food deserts affecting mostly African American communities, these divides are even more apparent and lasting. By living in these communities, people are confined by food options, ultimately affecting their health. This then puts the people in these communities at an even greater disadvantage. Until the problem of urban food deserts is solved, race equality could stall out in its current state or get worse, further stratifying class separations. Since all people must eat to
live, food is the most common denominator for people, and could be the tool to fixing racial and class divide issues. By attacking the issue of food deserts, communities can transcend racial and class boundaries to help solve the problems that plague the underprivileged.

Though medical technologies have advanced in the past several decades, extending life expectancies and curing formerly fatal diseases, public health continues to be a growing problem. Citizens of the United States are heavier than ever before. Diet related cardiovascular diseases, diabetes, cancer, and stroke plague more Americans today than ever before. Obesity continues to put a growing strain on the health industry. Childhood obesity, which is more prevalent today, will lead to even greater tolls on the health industry as these children grow into adulthood and develop serious health issues. Government groups have tried to ameliorate these conditions by health education programs in disadvantaged areas. In reality, health education will do little if there is no way for people to put their education to use. Food retail has moved to a structure that benefits the advantaged and hurts the disadvantaged. Economic retail patterns show no signs of turning back. Unless something is done, retailers will continue to follow a supermarket structure, excluding the disadvantaged shopper. It is time to invest in the future health of the country by bringing food back to the city.
The underlying characteristic of urban food deserts is the lack of food available to the local residents. Because of changes in the food market economy, grocery stores have moved out of the small neighborhood corner markets into the large suburban big box structure. It is more economically viable to ship in large amounts fresh food from areas that can produce the food cheaply. Businesses can store the food by operating out of large big box stores with low capital costs. Their target market covers a large population by becoming a destination shopping center with large and diversified food selections. What happens if the target market is much smaller? Can a market operate if it intentionally focuses on serving a small group? In this situation, it is no longer economically viable to ship in food because the amount of food needed would not be worth the cost of shipping and storage. When food is shipped long distances, it tends to hold less value than food retained locally. The importance lies more in the shipping, processing, packaging of the food and the value of the food itself.\textsuperscript{20} If the focus of the solution is getting healthy food to people who previously did not have access to it, shipping produce into the community is not the most beneficial practice. Studies have shown that the more time

that passes between harvest and consumption; the fewer micronutrients remain in the food due to decomposition.\footnote{Ibid, 45.}

Perhaps the best solution would be to focus on locally produced food, available to local citizens.

Security of the food supply for the US population has proven to be vulnerable to shifts in the economic health of the country due to national and international influences. As the country develops, more of the nation’s food supply is dependent on fewer large commercial farms. In perfect conditions, these farms can produce enough food to sustain the population due to advances in farming technology and irrigation. The nation is dependent on these farms not only for a food supply, but also for national income and raw materials for industry.\footnote{BioWorld Products. “History of Agriculture.” BioWorld Products. http://www.adbio.com/science/agri-history.htm.} As a result, these commercial farms hold a large stake in the stability of the nation’s food supply. Additional problems occur when farmers invest in cash crops to maximize their financial gains. When the crop is not diversified, the whole harvest is susceptible to damage from virus or climate change, putting the security of the nation’s food supply in limbo. Urban farming would provide diversified food sources for the country that would help stabilize the food security. In addition, foods produced closer to their eventual market do not need to be
genetically modified to make the journey, in effect, making them healthier for the consumer.  Micro-farming has proven to be a successful solution to problems of food supply.

During the first and second World Wars, resources for United States civilians were rationed in order to keep up with the demands of the military overseas. The Victory Gardens movement encouraged the development of household vegetable gardens to help alleviate the pressures on the available resources. The movement proved successful, allowing families to stretch their family grocery budget farther, and in some cases, selling their produce and donating the proceeds to the war effort. In 1944, twenty-million gardeners grew 40% of the nation’s fresh vegetables.  

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Kate H. Brown and Andrew L Jameton. “Public Implications of Urban Agriculture.” *Journal of Public Health*
caused inflationary food prices. Again, citizens turned to farming at home. These “inflation gardens” turned into a way for the community to have a tool to combat poverty, becoming a collective response to curing blighted city neighborhoods. In 1972, Congressman James Burke of Massachusetts proposed a plan for government subsidized seed distribution. Though the plan was rejected, he predicted that an investment of just $9 in seeds, could produce $240 worth of food. Small investments in time and money can result in large paybacks in food supply and food security.

Urban vegetable gardens are largely successful because the method of farming takes very little land and resources. An intensive system of farming that can produce as much as thirteen times more produce per acre than rural farms. Because fewer resources are needed for production, the process can be modified to fit different urban situations. Community gardens, maybe the most common type of urban farming, grown in vacant urban lots. City government or a private land owners often lease or loan the land for these community gardens. The lot is divided among members of the community who use the land for small vegetable gardens. Though these practices

24 Ibid., 22.
25 Ibid., 23.
26 Ibid., 26.
are largely successful and popular, the stability of these farms as a constant food source is questionable. Since the farmers often do not have control over the land, the owner or government could suddenly seize the land, eliminating a major food source for community families. School gardens, where gardening on a school lot is incorporated into the school’s curriculum can have a potentially bigger impact on the community by teaching children health and agricultural lessons early. They are, however, inaccessible to members of the community without children. Perhaps the most successful type urban garden is the intensive “entrepreneurial gardens”. These gardens raise vegetables, herbs, flowers, and animals to be sold wholesale to gourmet groceries and restaurants.27

27 Ibid., 21.
Urban farming can provide benefits to a community unique from rural farming. The types of crops grown in an urban farming location are often only viable if they are produced close to the market in which they are distributed. Because of this, large amounts of fresh produce can go to an urban community where before fresh vegetables were not readily available. Typically, farming in urban areas must happen in a much smaller land area because of limited land availability. Because they do not have the land mass of their rural counterparts, urban farmers must focus on using the land most efficiently, producing the most for the smallest land used.

Urban farmers face issues and obstacles totally unique from their rural counterparts. With less land availability, they have to deal with issues intensive farming, trying to create the most produce out of the least amount of resources. In addition, the small land that is available to farmers, is often contaminated from nearby industries or major roadways. In this case, soil bioremediation is necessary before any farming can take place. In addition to cleaning up the land and protecting it from the its surroundings, the farmland can also spread contaminates to the local area. Pesticides, insecticides, fertilizers, and fungicides are all often used on farms to protect the crops. However, the density of the neighborhoods surrounding
the urban farms can lead to farming run-off that can contaminate the sewage system and water table, and the pollute rivers\textsuperscript{28}. Urban farming requires the investment in and practice of unique farming practices that makes the farm viable without harming the surrounding community.

Urban farms can provide benefits to a community beyond just food production. In the 1980s, studies in Seattle showed that community gardens provided more social benefits per dollar invested than did libraries and community centers\textsuperscript{29}. The transformation of the urban landscape can provide valuable green space to an area. Horticultural therapists often site the physical and psychological benefits of farming and gardening. In the 1940s and 1950s, horticultural therapy grew in popularity as a way to rehabilitate war veterans. In addition to the physical therapy involved in tending to plants, the American Horticultural Therapy Association believes that the passive experience of being in a garden can greatly improve health and well-being\textsuperscript{30}. In decaying communities, urban farms can provide social capital to the community,

\begin{footnotesize}
\begin{enumerate}
\item Ibid., 31.
\item Daniel Taylor-Ide and Carl E. Taylor. \textit{Just and Lasting Change: When Communities Own their Futures} (Baltimore, MD: Johns Hopkins University Press, 2002) 196.
\item The American Horticultural Therapy Association, \textquote{The History and Practice of Horticultural Therapy,} The American Horticultural Therapy Association, http://www.ahta.org/information/
\end{enumerate}
\end{footnotesize}
offering opportunities for leadership and community organization. With community involvement in the farm, it gives the residents a sense of place and pride within their neighborhood.31

HEALTH EDUCATION

Poor health among low-income families is often related to limited access to healthy food options, but in many cases the problems can stem from a lack of health education. A study conducted by the Mathematica Policy Research Corporation for the U.S. Department of Agriculture about Food Stamp Program participants and general health, revealed that many low-income individuals lacked knowledge of health consequences related to dietary practices.32

Many low-income individuals feel that there is a need to have a healthy diet but that the foods typically associated with healthy diets are too expensive and out of reach to them. They believe pre-packaged convenience foods can have the same nutritional values as healthy


HEALTH EDUCATION

food. The study revealed that these individuals did not understand basic knowledge needed to create a healthy diet. For example, only forty percent of the participants knew that not eating enough fiber can be associated with bowel problems, heart problems, and cancer. Only thirty percent knew that cholesterol is found in animal products, and only forty-seven percent knew that hotdogs contain more fat than ham. The study reveals that individuals of both low and high income classes place an importance on a healthy diet. It is not therefore, a sense of complacency that leads to a poor diet for these individuals, but a basic lack of education about how to form a healthy diet.

33 Ibid., 11.
34 Ibid., 12.
Urban Farms

Urban farming in its present practice grew out of mass real estate abandonment in New York City in the 1970s. Over the years, as residents fled from the city, the number of abandoned, rat-infested, trash-strewn lots grew. Residents eventually got fed up and cleared the rubble to plant small community gardens.¹ In New York’s East Village, gardens began to spring up all around the neighborhood in abandoned lots. The first gardeners were squatters, but eventually the government realized the benefits of these gardens and started programs to encourage urban farming. Alphabet City, in New York, has a whole network of gardens that have improved the neighborhoods greatly in terms of creating social capital for the city and reducing crime. Neighborhood children and residents flock to the gardens in the summers and afternoons to relax in these small oases in the middle of the city.

Urban farming projects in other cities have followed, trying to stem the advance of urban decay and inner-city hunger. Projects in Chicago, Detroit, Los Angeles, among other cities, have sprung up as an answer to diminished food supplies and urban blight. Whereas the projects in New York started as an effort to clean up the city, the other projects mentioned developed solely as an answer to urban

hunger.

**Chicago Urban Farm**

LaDonna Redmond is the president and CEO of Chicago’s Institute for Community Resource Development, focused on rebuilding the local food system. Redmond has become one of the leading advocates for health in Chicago. Redmond started her mission when she discovered her two year-old son had food allergies. She went in search of organic foods that her son could eat. Surprisingly, she found that there were few options in terms of organic food in her neighborhood. Furthermore, she was disturbed by how


New York’s Alphabet City is the home to several community gardens scattered throughout the neighborhood. The gardens helped clean up a previously run-down section of the city, providing oases for its residents.
often industrial farms produce genetically modified foods that are distributed to consumers without proper information regarding their origins.

Redmond’s response to the problem was to bring the farming home. She turned her small backyard on the Westside of Chicago into a micro farm, growing lettuce, tomatoes, peas, squash, greens, cabbage, onions, and a few herbs. After initial success, she expanded to growing corn. Eventually her husband decided to join her in her pursuits and became a farmer as well. Both have gone on to research how local farming can be adopted in urban communities. They have identified the needs of their local economy and determined how they can use vacant urban lots to satisfy those needs.3 With donations and guidance from other

3 The New Farm-Regenerative Agriculture Worldwide. “Creating Local Food Options in an Urban Setting,” The New Farm: Farmer-to-Farmer Know-how from the Rodale Institute,
organic food suppliers, the Redmonds have helped turned around the organic market in their neighborhood. Teaming up with the local farmer’s market, they have begun to provide organic food for their community.

The Redmond’s own farm and their efforts to change the organic food market in urban Chicago have proven to be successful in bringing improvements to the community. Through their work, they have disproved the stereotype that people in their community would not be interested in buying or consuming healthy organic food. One issue that still plagues the community, and one that they have admittedly not solved yet, is the fact that the members of these communities lack the education to provide themselves and their families healthy diets. The Redmond farm is a shining example of how a little investment in urban farming can result in a large impact on the community. They have been successful in working towards changing the detrimental patterns of health in their community that have plagued communities just like theirs.

**Urban Farming – Los Angeles, CA**

Urban Farming intends to eradicate hunger while increasing diversity, motivating youth and seniors.

http://www.newfarm.org
and optimizing the production of unused land for food and alternative energy.\textsuperscript{4}

In 2004, Taja Sevelle took steps to fight hunger in Detroit by starting a program that would use vacant city lots to grow healthy produce. She soon became the founding member of the Urban Farming Organization, spearheading their “Green Science School Garden” program. The program creates gardens at schools to promote studies in sciences, life skills, health, nutrition, and alternative fuels. In addition, the organization grows produce on empty city lots, donating the food to the hungry, while at the same time providing more green space for the community. The organization has expanded to include urban farming projects in New York, New Jersey, Los Angeles, Jamaica, St. Paul, MN, St. Louis, Atlanta, New Orleans, North Carolina, Hawaii, and Florida.

The proposed project of an Urban Agriculture and Education Center, has two distinct functions. The Center will strive to provide the community with not only the food needed to supply the neighborhood with a healthy diet, but also the education and confidence to take advantage of the benefits of the Center. In order for the Center to be successful, there must be a high level of community acceptance and involvement. Ideally, the community would adopt the Center.

\textsuperscript{4} Urban Farming, http://www.urbanfarming.org
as an asset to the community and acknowledge it with a sense of community pride. Several successful Farmers’ Markets were studied as examples for popular public spaces that centered around food consumption.

**Santa Caterina Market – Barcelona, Spain**
Enric Miralles and Benedetta Tagliabue

In a city where farmers’ markets are part of the community culture, the Santa Caterina Market stands out as a successful community feature on its own. The market is part of an urban renewal project for Barcelona’s Gothic Quarter. The neighborhood, whose dim, narrow, overcrowded streets were infamous for crime and poverty, has been the subject of several urban renewal plans since the 19th century. Previous renewal projects in the area called for large cultural centers that required large-scale demolition. Architects Miralles and Tagliabue focused on the criticism of these projects and tried to find a less invasive technique to reinvigorate the neighborhood. They lamented that renewal projects in historic neighborhoods are often unsuccessful because they tend to have a pattern of demolition followed by construction in a style foreign to the neighborhood. Instead of trying to figure out a program that would fit within the complexities of a historic neighborhood, architects try to
Barcelona’s Santa Caterina Market is a prime example of an urban renewal project that successfully integrates into the existing neighborhood, focusing on preserving what is good and fixing what is bad.

simplify the answers by getting rid of the obstructions.5

The design of the Santa Caterina Market is fully integrated into the existing neighborhood. The building retains three of the perimeter walls existing from the previous market building. In order to encourage pedestrian flow from the surrounding streets, the architects created a roofline with several arches to that open up to the streets. In addition, the same pavers that are used on the street are carried into the market plaza for continuity. Small housing units for the elderly are incorporated into the plaza

area to provide housing to some of the residents displaced from their homes by reconstruction. The multi-colored roof, inspired by the vibrancy of the colors of the fruits and vegetables sold within the market, establishes the building as an architectural landmark and provides visual vitality to the neighborhood.

The market holds vendor’s stalls, shops, cafés, a supermarket, a restaurant, in addition to community services. Completed in 2005, the market has been highly successful in revitalizing the community. The design and integration of the building into the existing infrastructure has increased circulation in the area, bringing patrons farther into the Gothic Quarter. Just blocks from the tourist heavy Las Ramblas, the market has begun to pull tourists into the area as well. Most importantly, however, the market adds to the retail market culture of a farmers’-market heavy city, giving no resident any excuse to shop and eat poorly.6

The City Market – Kansas City

One of the largest and oldest city markets in the Midwest, the City Market, has linked local farmers and small businesses with the Kansas City community since 1857. The farmers’ market, open all year, is available to the community as a fresh food source, giving business to local farmers and affordable prices to patrons in the community. In addition to serving as a food source for the community, the market also serves as a civic center offering an arts center and live music during the summer.
Kansas City’s City Market has become a historical landmark and treasured site for the city’s residents. The community’s commitment to the market has contributed to its success and ensures a thriving future for generations to come.
The site for the City Market opened in 1857, serving as a location for market commerce, horse trading, political rallies, medicine shows, and circuses. The market was the center of city life. Over the years, the market lost some of its vitality. By the 1960s, the market had reverted to just a center for produce vending. However, during this time, the area around the market and the river began to grow as one of the central bar districts. In the 1980s and 90s, the city invested in a redevelopment of the area and revitalization of the market. The rehabilitation project added restaurants, shops, and retail and museum exhibit space. The Arabia Steamboat Museum was added to the City Market's East Building, along with apartments to some of the upper stories of the buildings. The streetscape was revitalized to encourage pedestrian circulation and creating a pedestrian-friendly urban space. Since the major rehabilitation projects of the 20th century, the market has thrived as a key civic center, providing gathering space for the community to thrive.

The success of the City Market is due largely to its ability to remain a civic center. The market is so deeply ingrained in the city culture after so many decades as an iconic landmark, that the community is committed to

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8 Ibid.
PRECEDENT ANALYSIS

maintaining it as a successful center. Though most of the success of the City Market is due to its longstanding history, lessons can be taken from it when designing a new farmers’ market or urban agriculture center. The farmers’ market needs to become part of the community. The community needs to accept and embrace it as part of their identity.
Urban food deserts exist in nearly every city in the United States. They are the combination of several factors that have led to the detriment of many of the city’s citizens. Though there may be many areas within a city that suffer this kind of misfortune, the levels of depravity vary among the neighborhoods. It is necessary to carefully evaluate the conditions within the city to determine the areas where change is in the greatest need. As discussed previously, the condition that causes the development of a food desert is an insufficient access to healthy food options, contributed to by low income levels, lack of mobility, and a lack of food education.

The proposed project targets Indianapolis, Indiana as a potential site. In order to determine the area of greatest impact in the city, a careful analysis of census data concerning deaths due to diet related diseases, obesity rates, and income levels was conducted. The results of this study produced an initial set of neighborhoods that held all of the characteristics of a food desert. Within those initial four neighborhoods, one site was chosen within each. The number of full-service grocery stores, corner markets, and fast food restaurants were mapped in the neighborhood in relation to the site. Bus routes, being the only form of public transportation within the city, were also mapped in relation to the site. The result was four possible sites, all in
impoverished neighborhoods in Indianapolis that could greatly benefit from the addition of an urban food market.

Analysis

The initial stages of the analysis used census data to map the central Indiana counties with the greatest number of deaths due to diet-related diseases. Urban food deserts often result in a population with higher rates of obesity and disease related to diet. Greater rates of cardiovascular diseases, and diabetes are often the result of diets high in fat and low in nutritional value, therefore, pinpointing areas with higher rates of these diseases can help determine areas suffering from a food scarcity.

Using 2005 Census data for the state of Indiana, the percentage of deaths due to diet-related diseases in central Indiana counties was documented in comparison to other counties and state-wide statistics. The census divided the number of deaths by the cause of death. In this study, deaths due to diet-related diseases were deaths due to cardiovascular disease and diabetes. Though it is fair to say that a number of these deaths were not the result of a poor diet, these are the diseases that often result from a poor diet and were therefore a good initial indicator of problem areas. The results of this survey showed that Marion County, the
county of Indianapolis had 46% of deaths due to die-related
diseases. This is statistic is in comparison to 40% of deaths
state-wide. The next county with the highest rate of deaths
due to diet-related diseases was Johnson County, just south
of Indianapolis. Of the eight counties analyzed, Hamilton
County, to the north of the city, had just 27% of deaths due
to diet-related diseases.¹

Urban food deserts often have the characteristic of
being in a low-income area. Income statistics were then
analyzed to determine if there was any relation between the
diet-related diseases and income levels. The results of the
study support the urban food desert hypothesis that low-

stats.indiana.edu
Income communities have higher rates of cardiovascular disease and diabetes, presumably due to limited access to healthy food options. Of the eight central Indiana counties, Marion County had the lowest median household income at $40,000-$45,000 annually. Johnson County had the second lowest median household income at $45,000-$50,000 annually. Hamilton County had the highest annual median household income at over $65,000.²

These two studies proved that Marion County is the county in central Indiana that could suffer the most from urban food deserts. As Marion County is the county of the

² Ibid.

MARION COUNTY INCOME DATA
Median Household Income by Township

- < $43,125
- $43,125 - $53,250
- $53,250 - $65,581

Data gathered from SAVI: Information for Communities
http://www.savi.org/savii/
state’s capital city, it is safe to assume that there is a large amount of diversity within the city to include professionals, service workers, and industry workers, among others. Household Income levels were then broken down to the township level to determine which areas within the city suffer from the greatest poverty. The results of the study show that the most central township, in the city center, as well as the townships to the direct east and west have the lowest income levels within the county.

The census data on causes of death did not include one of the greatest evils of poor diet, obesity. To account for this inefficiency in the study, obesity rates in different areas were documented to determine the locations for greatest concern. The studies of obesity rates were confined to neighborhoods in Indianapolis to determine which areas in the city of Indianapolis are of greatest concern. Neighborhoods with obesity rates higher than 20% of the population were tagged as possible site locations.

Each of the neighborhoods flagged as having the highest obesity rates were in the townships with the lowest income and highest percentage of deaths due to diet-related diseases. These neighborhoods served as a starting point for the actual site selection for the Urban Agriculture and Education Center. Four of these neighborhoods were selected to provide possible sites.
Within those four neighborhoods, possible project sites were selected. From that site, the number of full-service grocery stores, fast food venues, and corner markets were recorded and mapped within relation to the site. All of the sites selected showed a lack of full-service grocery stores and an over abundance of fast food restaurants.

*Riverside*

The first possible neighborhood selected was Riverside, on the west side of Indianapolis. The neighborhood has historically been economically depressed consisting
SITE ANALYSIS

POTENTIAL NEIGHBORHOODS
Indianapolis, IN
- Fall Creek Place
- Haughville
- Riverside
- Rural-Sherman

Food Sources
- Site
- Fast Food Venue
- Corner Market
- Full-Service Grocery
of mostly four-square type homes and bungalows built mostly in the 1910s and 1920s.\textsuperscript{3} Considered one of the most impoverished neighborhoods in the city, it has fallen victim to severe urban decay, white flight, and crime. The city has made efforts to try to improve conditions in the neighborhood by inducting it into the Weed and Seed Initiative designed to help reduce crime in deprived areas of Indianapolis.\textsuperscript{4}

The site selected within the neighborhood is a vacant lot on the corner of Pruitt Street and Koehne Street. The site is approximately 11,000 square-feet. A map of fast food restaurants, grocery stores, and corner stores in the neighborhood reveals that the site is in need of more food service venues. Within the neighborhood limits, which includes nearly two square-miles, there were zero full-service grocery stores, zero corner markets, and three fast food venues.

**Haughville**

Haughville in Indianapolis was the second neighborhood considered for a possible project site. The neighborhood is located on the east side of Indianapolis, just east of the White River. Like Riverside,

\textsuperscript{4} Ibid.
the neighborhood suffers from high crime rates and low property values. The average household yearly income is only $25,312, with thirty-three percent living under the national poverty line.\footnote{Indiana Business Research Center, “STATS Indiana.” http://www.stats.indiana.edu}

The site is located on West 10th Street, directly on the only bus route in the neighborhood and just one block from a bus stop. A study of food options in the neighborhood revealed that there is only one full-service grocery store within one-square mile of the site, four corner markets, and ten fast food venues. The over-abundance of fast-food venues suggests that the high rates of obesity and deaths due to diet-related diseases could be due to the limited food options for the residents of the neighborhood. Measuring around 15,000 square-feet, the site would lend itself to a very small urban farm or market center.
Fall Creek Place

Like the two previously mentioned neighborhoods, Fall Creek Place is an impoverished neighborhood of Indianapolis. Located just north of the city center, the neighborhood was nicknamed "Dodge City" in the 1980s and 1990s because people had to "dodge" bullets from the high number of drive-by shootings in the area.6 The neighborhood has been the center of many urban redevelopment programs aimed at cleaning up the area. Like Riverside, it is part of the Weed and Seed Initiative designed to help reduce crime in areas of Indianapolis.

The site in consideration is located on the corner of North Delaware Street and East 25th Street. It is

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SITE ANALYSIS

approximately 20,000 square-feet in size. An analysis of food service venues in the neighborhood reveals that there are no full-service grocery stores or corner markets in the area and five fast food venues within the neighborhood limits. Though the neighborhood was once considered one of the worst and most dangerous neighborhoods in the city, the redevelopment initiatives have begun to transform the neighborhood. Major new construction projects have cleaned up the area and brought young professionals to the area, trying to restore the original vitality to this historical neighborhood. Because this neighborhood is on the upward swing due to redevelopment programs, the Urban Agriculture and Education Center would not have as large of an impact as it may in another neighborhood.

Rural-Sherman

The final neighborhood that was considered for a site was the Rural-Sherman neighborhood of Indianapolis. It is located east of the city center in an industrial section of the city. It is considered one of Indianapolis’ most blighted areas. Many of the residences in the area have decayed or been abandoned. In the last few years, this area has been cited as having the highest violent crime rates in the city.

The site, much larger than the previous sites
SITE ANALYSIS

measuring at around 250,000 square-feet, is located between East St. Clair and East North Street and North LaSalle Street and North Tuxedo Street. The site is bordered by residential homes to the north and west and a large foundry plant to the south and east. Because of the size and location of the site, it lends itself well to many options for urban farming and community interaction. This is the site that was chosen as the final project site for the agriculture and education center due to its large size and location within the neighborhood.

As a variety of activities would take place on this site, including both outdoor and indoor activities, it is important to consider how circulation on the site would be organized. The foundry plant borders the south and east sides of the site, keeping the most accessible sides to the north and

Food Sources

- Site
- Corner Markets
- Fast Food Venues
- Full-Service Groceries
west, where it borders the residential area. This offers the solution that the community face of the project should face to the north and west. There is a major roadway just two blocks south of the site. This suggests that most large vehicular traffic coming to the site would be coming from the south. As most large vehicular traffic that would come to the site would be more production related, the distribution and industrial parts of the center should be located on the south side of the site.
These images put the site in the context of its surrounding neighborhood. The site sits on the edge of a residential neighborhood, framed by a large foundry plant to the south and east.
In order for the Urban Agriculture and Education Center to be successful in terms of serving the community, it must serve the function of being a community center and a food production and retail center. Community involvement is vital not just to the success of the Center, but to the success of the community adopting healthy diets into their...

<table>
<thead>
<tr>
<th>Space</th>
<th>Req. Sq. Footage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building</strong></td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>200</td>
</tr>
<tr>
<td>Conference Rooms</td>
<td>800</td>
</tr>
<tr>
<td>Classrooms</td>
<td>1,600</td>
</tr>
<tr>
<td>Food Sorting</td>
<td>1,200</td>
</tr>
<tr>
<td>Distribution</td>
<td>400</td>
</tr>
<tr>
<td>Loading Docks</td>
<td>1,200</td>
</tr>
<tr>
<td>Store</td>
<td>5,000</td>
</tr>
<tr>
<td>Restaurant/Café</td>
<td>5,000</td>
</tr>
<tr>
<td>Restrooms</td>
<td>800</td>
</tr>
<tr>
<td>Storage</td>
<td>300</td>
</tr>
<tr>
<td>Equipment Storage</td>
<td>400</td>
</tr>
<tr>
<td>Locker rooms</td>
<td>800</td>
</tr>
<tr>
<td>Kitchen</td>
<td>1,200</td>
</tr>
<tr>
<td>Food Storage</td>
<td>1,200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,100</strong></td>
</tr>
<tr>
<td><strong>Outdoors</strong></td>
<td></td>
</tr>
<tr>
<td>Farmland</td>
<td>80,000</td>
</tr>
<tr>
<td>Picnic area</td>
<td>5,400</td>
</tr>
<tr>
<td>Community Gardens</td>
<td>16,000</td>
</tr>
<tr>
<td>Outdoor Classrooms</td>
<td>5,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>106,400</strong></td>
</tr>
</tbody>
</table>
lifestyles. The Center must include space for community gathering and involvement as well as include enough exterior space for sufficient farmland to provide food to the neighborhood and surrounding community.

Administration ~ 200 s.f.

The administration center should hold a small office space for a Center director as well as a customer service desk. The customer service desk will be the place for community interaction and should handle program organization. It should be accessible to the public, but away from the centers of action.

Conference Rooms ~ 800 s.f.

There should be two small conference rooms that will be available for community use and employee use. The rooms should be near each other. It may be possible for the rooms to be divided by a movable partition allowing for flexibility of space.

Classrooms ~1600 s.f.

There should be two indoor classroom spaces. Like the conference rooms, the spaces could be converted into one large classroom to hold larger crowds. The classrooms should be equipped with standard kitchen equipment as...
it is possible that food preparation classes will take place here. The classrooms will also be used for general health education, so it is important that the rooms be flexible in order to meet the needs of the class being held.

Restaurant / Café ~ 5,000 s.f.

The restaurant and café space will be open to the general public. The space will function like a cafeteria where prepared meals will be on display for people to order. The meals will either be picked up by the patron or delivered to their table. The café needs to be directly adjacent to the kitchen.

Store ~5,000 s.f.

The store will be one of the public spaces in the center, like the café. The store will sell the produce harvested from the urban farm at reduced prices. The store can also sell health food cookbooks, cooking tools, and seeds that can be planted in the community gardens by individual residents. Along with the café, it needs to be in one of the most visible and accessible positions to the surrounding residential community.

Kitchen ~1200 s.f.

The kitchen will only be accessible to volunteers and
employees of the center. It will prepare food for the café and cooking classes being conducted in the classrooms.

Food Sorting ~1,200 s.f.

The food sorting area will function as the pivot point for all of the food harvested from the farm. The produce will be cleaned here and sorted into sections depending on type of food and the destination of the produce. The food will either go to the classrooms, store, kitchen, or to the distribution center to be sold outside the farm. This area will be inaccessible to the general public, but it will be where the majority of the volunteers will work.

Locker rooms ~800 s.f.

The locker rooms will be for use for employees and volunteers working in sorting and on the farmland. The space should include lockers for personal belongings, showers, restrooms, and sinks.

Distribution ~ 400 s.f.

The distribution center will be where food comes in and out of the center. Food harvested from the farmland to be sold outside the farm will be sent here from the sorting center and stored until shipments go out. Shipments of food and equipment coming in will go to sorting and then
delivered to their destination. The distribution center simply serves as a drop-off / pick-up point for goods coming in and out of the center.

Loading Docks ~ 1200 s.f.

The loading docks should be directly adjacent to the distribution center. It will accommodate trucks bringing products in and out of the center.

Food Storage ~1,200 s.f.

The food storage area should be largely refrigerated and should accommodate the food that needs to be stored for the kitchen, store, and cafeteria.

Equipment Storage ~400 s.f.

The equipment storage will provide storage for the equipment used on the farmland. It will need to hold small hand tools as well as a small tractor with attachments for tilling and seeding the land.

Restrooms ~800 s.f.

Restrooms will be distributed throughout the center with some near the classrooms and more in the cafeteria.

General Storage ~300 s.f.
The general storage room will be used to store files and day to day equipment for maintaining the building.

Picnic Area ~5400 s.f.

The picnic area will be available to all visitors to the center. It will also be open to the community during non-operating hours. The area should have picnic tables and benches for visitors to enjoy the outdoors during nice weather.

Outdoor Classrooms ~5,000 s.f.

The outdoor classrooms will be used for hands-on learning of farming and gardening techniques. The space should have outdoor seating as well as gardening beds used for instruction purposes.

Community Gardens ~16,000 s.f.

The community gardens will be available to individual members of the community who wish to garden their own small gardens. Though it will be up to the user of the land to determine what will be grown in these gardens, it is most likely that they will be used for herbs, small vegetables, and flowers. The produce from these gardens can be sold to the center store.
SITE ANALYSIS

Farmland ~ 80,000 s.f.

The remaining land will go towards farming crops to be sold in the store. The produce grown will be crops that do not fare well in smaller gardens.
Urban food deserts exist in low-income communities in cities all over the United States. These communities are in need of the services provided by the Agriculture and Education Center but lack the resources to bring those services into their communities. Because these communities need the help, it is important that the design of the Center works within the constraints of the community. The modular design allows for the cost efficiency and flexibility needed to make the Center adaptable to any city location.

The structure of the building is based off of a twenty-foot by twenty-foot steel grid. The walls of the building are made up of infill panels that can be either permanent structure or removable panels. The removable panels create the walls for the store, restaurant, classrooms, and conference rooms, reflecting the expanding and contracting seasonal needs of these spaces. The four-foot panels can be solid or glazed. During summer months, when the store would have more produce and more customer traffic, the walls can be removed, allowing the usable space to expand onto the plaza area. The middle panels of each bay are on a sliding track so they can open up the space quickly and with ease. All of the panels can be removed completely for seasonal changes. The permanent walls surround the core of the building, housing the distribution center, sorting area, administrative area, restrooms, and kitchen.
The roof of the building has flexibility similar to the walls. A permanent standing seam metal roof covers the programmed area of the buildings to insure a weatherproof roof over the functional areas. The bays outside the programmed area are covered by retractable, colored canopies. The canopies are on a spring-loaded roll that can allow the canopy to be pulled out to cover the bay. The canopy can cover half or the entire bay to allow flexible sun-shading options. In the summer months, when the most shading is required, all of the canopies can be pulled out to cover the entire spread of the grid. During winter months, when the least shading is required, all of the canopies can retract to allow the most amount of sunlight into the building.
CONCLUSION

It is widely recognized that obesity and diabetes have become an epidemic in the United States. The limited access of healthy food options in impoverished areas have led to populations of people turning to fast food venues and convenience stores as their primary source of food. As a result, these communities have high rates of diet related diseases. Changing trends in the food retail economy have pushed retailers out to the suburbs and out of reach to these populations. There are hundreds of reasons why the health of these populations has declined and why the grocers have left the inner-cities. There is no one answer that can solve the problem. It would be overly ambitious to attempt to shift the patterns of the retailers and their shoppers without drastic fundamental changes. The most effective and quickest way to solve the problem would be to approach it through localized intervention.

The Agriculture and Education Center offers a way to bring food back into this Indianapolis community and to teach health education to its residents. If repeated in other cities, hopefully these centers can help fill the gap left by grocers that have left the city. Through localized intervention, health food will be in reach to more people, habits will change, and eventually the health and well-being of these impoverished communities will improve.