

FOOD ACCESSIBILITY AND FOOD CHOICE: A COMPARATIVE ANALYSIS OF FOOD CHOICE IN DEVELOPED AND DEVELOPING POPULATIONS

Korin Tangtrakul
Geography and Urban Studies Department
Temple University
Philadelphia, Pennsylvania 19130

ABSTRACT: *The literature surrounding nutrition and development in Sub-Saharan Africa often depicts the population as underfed, unable to acquire the proper nutrients to satisfy daily caloric requirement, and suffering from nutrition deficiencies. Meanwhile, most Americans meet caloric intake standards (and often surpass them) yet many suffer from diabetes and obesity. The prevalence of food deserts in low-income communities and their relation to malnutrition has been well researched in metro regions in America, while hunger and famine are pervasive themes in the literature of Sub-Saharan Africa. In this study, I examine the opportunities to improve food accessibility among two study areas. In Malawi, I highlight some of the smaller projects to improve agriculture that have developed in contrast to larger government programs. In America, I focused my research in Philadelphia, Pennsylvania. I use interviews at farmers' markets and with non-profit organization leaders to demonstrate the growing opportunities for low-income residences to have access to nutritious food. It is my belief that individual choice plays an important pole in improving a food environment. In both study areas, I find that there are opportunities to make individual choices towards improvement.*

Keywords: *Food choice, Malawi, Philadelphia, Food Justice*

INTRODUCTION

If anyone knows a little bit about Malawi, he or she probably knows that Malawi is a small land-locked country in Sub-Saharan Africa, and that it is one of the poorest countries in the world. Upon further research, one may come across some common statistics, that 90%¹ of the population lives rural livelihoods of small-scale, rain-fed agriculture (Meerman, 2008). Some other prominent findings are that in 2005, “approximately 52% of the population fell below the poverty line, and one in five Malawians [was living] in such severe poverty that they [could not] afford to meet daily-recommended food requirements” (Meerman, 2008). Due to several factors, predominantly food insecurity and lack of awareness about nutrition (Meerman, 2008), Malawi experiences high rates of malnutrition, so much so that about a third of children die before the age of five, and many of those that survive suffer from nutritional stunting. (Quinn, 1994).

However, at the global scale, there are 1.6 billion people that are either overweight or obese. In many places around the world, people have a large variety of foods to choose from, which has in turn reshaped the diets of many populations. Easy access to foods high in fat and high in sugar has contributed to the shift in consumption patterns, leading to significant levels of obesity and nutrition related disease (Bates and Hemenway, 2010). This description rather clearly depicts America, where nutritional-related health issues such as heart disease, cancer, obesity, diabetes, dyslipidemia and hypertension are prevalent (Larson and Sory, 2009). Yet in America, people have considerably more access to a variety of foods than do people in Malawi, and spend a significantly smaller portion of income in a less time-intensive process.

This study evaluates food choice in very different contexts. Malawi is a developing country with a history of food shortage and malnutrition. By contrast, cities in America have a range of options to choose from at the supermarket, but are often influenced by their food environments to eat cheap, calorically dense, highly processed food. With Philadelphia as a U.S. case study, I look at food choice in both locations, given moderate access to nutritious food. In Malawi and in Philadelphia, choices are dictated by very different influences. The first difference in food choice comes from a simple question. In Malawi, it is “What to grow?” In Philadelphia, it is “What to eat?”

BACKGROUND

Malawi

In Malawi, agriculture accounts for a large portion of the GDP, estimated at 35% in 1998, 70% of which in the form of smallholder subsistence agriculture. The remaining 30% is the estate sector, which focuses on cash crops, namely tobacco, for exportation (Chilowa, 1998). Maize is the staple crop of Malawi, and dominates much of the smallholder sector's food production.

Dr. Kamuzu Banda, the dictator from 1963 to 1993, implemented development goals focused on food security. The Agricultural Development and Marketing Corporation (ADMARC) reported that most years there appeared to be a commercial surplus of maize, so both government and donors believed food insecurity was not an issue in Malawi (Chilowa, 1998). Dr. Banda had been focusing on the production of maize, and national food security was bolstered by the country's surplus of maize. However, the side dishes that accompany maize, such as beans, vegetables and livestock products, are not included in the discussion of food security in Malawi (Chilowa, 1998). While maize production in Malawi was prospering, and smallholder farmers were indeed maize-secure, this did not indicate that they were food secure.

This is where Malawi's nutritional problems began to surface. In half of the developing countries, households spend 50-80% of their incomes on food (Phororo, 1999), and Malawi is no exception. In any developing country, the availability of jobs and income levels are lower in the rural regions where subsistence farming takes place. Therefore many farmers have little income, if any at all outside of their surplus yield, and must spend a large proportion of their little income on supplemental foods they have not grown. In Malawi, maize accounts for 60-80% of all agricultural production, the remainder being tobacco, cotton, groundnuts (peanuts), local beans, pigeon peas and other crops (Snapp et al., 2002). Therefore the majority of their nutrition, other than the limited nutritional value of maize, must be accounted for by the remaining 20-40% of the land, in addition to whatever cash crops the farmer chooses to grow.

Modern global nutrition solutions often reach Malawi, but are often not seen as sustainable solutions. International programs, such as UNICEF and Oxfam, are prevalent in Malawi and other developing countries, and aim to assist in nutrition and education, particularly for children. Project Sprinkles, an international effort by UNICEF to combat child malnutrition was at one point brought to Malawi. Similar to past micronutrient treatment attempts, Project Sprinkles distributes sachets of powdered vitamins and nutrients to supplement the common diet of low-income families in developing countries. Though successful in relieving malnutrition, aid attempts such as Project Sprinkles has other unforeseen problems. Stacia Nordin, a researcher with extensive experience in Malawi, cites that, "a message is being sent that nutrition comes from a pill or packet, made by a foreigner, and requires money ... [rather than] supporting local solutions to problems" (Nordin, 2005). She acknowledges that Project Sprinkles deserves the praise it receives for helping starving malnourished children in developing countries. However, it could do a better job of making those countries self-sustaining by increasing education about malnutrition or advertising local fruits and vegetables on the packaging of imported produce. This would, as Nordin sees it, be a more promising solution than sending local money back to the producers in America. She states, "I'm sure that pre-packaged, imported products have their place in wars, tsunamis, a few cities, and other disasters, but for the majority of the 750 million children in the developing world, their own indigenous foods would have just as much effect, with a longer-term impact on the society's nutritional health" (Nordin, 2005). Though perhaps idealistic, promoting various foods through the indigenous diet would be a sustainable solution for eliminating malnutrition in Malawi as well as other developing countries.

Philadelphia

The factors that affect urban populations in America obviously differ from what influences Malawian agriculture. Some of the factors influencing food choices are convenience, ubiquity, proximity, frequency, variety, portion size and price (Nestle, 2006). The most interesting phenomenon is that there seems to be a variety of choice at the supermarket, yet some researchers claim that customer choice is heavily influenced by supermarket or grocery store executives (Nestle, 2006). They attribute this reasoning to government subsidies and marketing. Other researchers define factors determining food choice according to differences in social, community, physical, and macro-level environments (Larson and Story, 2009). I call these influences the "food environment", or the elements around us that dictate what to eat. In addition to the above stated factors, food environments can be shaped by food supplies, household eating habits, advertisement and the process of supply and demand.

A large environmental factor in Philadelphia is the presence of “food deserts”, or areas where disadvantaged populations have little access to fresh and nutritious foods. Food deserts often are populated by corner stores and franchise drug stores. Numerous studies have shown the tendency for low-income Americans to have poor access to healthy foods, because they have the mobility to travel easily to supermarkets and chain stores that provide affordable healthy food (Beaulac, Kristjansson and Cammins, 2009). A U.S. Department of Agriculture study indicates that 23.5 million people lack access to food, which was defined as no supermarket within one mile of their home (Karpyn and Treuhaft, 2010). However, this broad study does not address accessibility issues in cities, where access may not be defined by proximity, but rather convenient public transportation to the supermarket. To compensate for the lack of supermarkets, many city-dwelling households utilize corner stores. To fill the void created by the lack of supermarkets, corner stores—a “hallmark of Philadelphia foodways”—are abundant and easily accessible (Cannuscio, Weiss and Asch, 2010). They typically offer no fruits or vegetables but rather a variety of snack foods, none of which are healthy (Lucan, Karpyn and Sherman, 2010).

The choice an individual makes on food shapes the community and their food-related behavior, which will shape and reinforce the community’s food environment (Cannuscio, Weiss and Asch, 2010). At the individual level, low-income individuals have been proven to choose the most calorie-dense food at the lowest cost to prevent hunger and meet energy needs. However, these foods are hardly nutritious and are often heavily processed, further extracting any nutrients the original food contained (Larson and Story, 2009). What some researchers find as most influential are “local food environments”, which are often found to be correlated with racial or economic factors (Freedman, 2009). The geographical segregation of food environments suggests a broader indication of race and oppression issues (Freedman, 2009). The issue in America is not necessarily that deprived populations are underfed. Rather they are overfed and undernourished. Indeed nation-wide, “low-income groups seem to have about the same nutrient intake as people who are better off, but they *choose* diets higher in calories, fat, meat and sugar, and they display higher rates of obesity and chronic diseases” (Nestle, 2006). Though economic status is indeed a factor in these choices, poor eating habits are furthered by the food environments in which people live in. Placing blame on the food environments that are products of marketing and advertising, Nestle argues that, “most of us believe that we choose foods for reasons of personal taste, convenience, and cost; we deny that we can be manipulated by advertising or other marketing practices...nutrition becomes a factor in corporate thinking only when it can help sell food” (Nestle, 2006). Other research agrees that individual choice regarding healthy eating habits are more likely to be sustained if the food environment reinforces healthy eating habits.

METHODOLOGY

Over three weeks in Malawi, I spent 11 days in a small mission in the Ntcheu district, located in the southwestern part of the country (Figure 1). For the time I was in the capital, Lilongwe, I visited a permaculture project that contributed to my research. The remainder of my research took place in the mission. Included in this portion of the trip were two trips to irrigation projects in the neighboring village. In the mission, I conducted a series of interviews and focus groups, both formal and informal. I completed six semi-structured interviews with the mother or father of a farming family, and two semi-structured focus groups with Form Four students².

For the remaining five weeks of data collection, in Philadelphia, I interviewed 30 individual shoppers at farmers’ markets and four organizations’ leaders with focuses on food justice. I conducted random interviews at three different locations, selecting areas in different parts of the city where 13% to 37% of the residents fall below poverty level (U.S. Census, 2000). These locations have relatively good access to a grocery store, all within one mile, but not necessarily accessible via public transportation. They also have access to the farmers’ market run by Philadelphia-based non-profit, the Food Trust, once a week. These markets accept food stamps as well as government and non-profit issued coupons and incentives. With permission from the Food Trust, I used the farmers’ markets in these areas as a venue to conduct interviews. The three farmers’ markets were West Oak Lane in Northwest Philadelphia, Haddington in West Philadelphia, and Palmer Park in Fishtown, or East Philadelphia. I classify these neighborhoods as “moderate access” neighborhoods, because they are not as deprived as food deserts, though nutritious, affordable food is not readily accessible either. Since food deserts deprive populations of food choices, I chose these study areas of moderate access because I was interested in evaluating individuals’ decisions, given a variety of options.

RESULTS

Malawi

Through the interviews, I gained some insight into how Malawians perceive nutrition. Unsurprisingly, each household cultivates maize in their gardens, and continually have a surplus of maize. Many reported their preference for maize, saying “If I haven’t eaten maize, I haven’t eaten at all”. The preference for maize has restricted households from diversifying their crop selection. Since maize requires considerably more land for less yield, maize as a staple crop has significantly limited the land available to diversify crop selection. This leaves little room for supplemental crops that could potentially provide nutrient that the Malawian diet is lacking. I asked each household why they think nutrition is a problem in Malawi, and if they have considered diversifying their crops to provide a greater variety of nutrients. The content of the responses had some variation, but for the most part, every respondent spoke about financial problems. The largest problem is a lack of protein. Some farmers are able to raise livestock, but opt to sell the livestock instead of using it in their own meals. A mother of seven children said families can’t afford to keep livestock to eat, because when cow, goat, chickens, etc., are slaughtered, the meat can be sold for 50 kwacha (about 33 cents in US currency) per kilogram. That money they can use to buy soap, clothes, or go to the grinding mill. Those that said anything about the status of nutritional problems affirmed that nutrition in Malawi is a problem, but it is getting better. Several attributed this to the newly gained knowledge of soybeans as a protein. One mother said that lack of protein used to be a much larger issue, but then they found out that soybeans were a source of protein from the Health Clinic. Now, instead of selling the soybeans, families are using the soybeans in their porridge or through other means to get more protein.

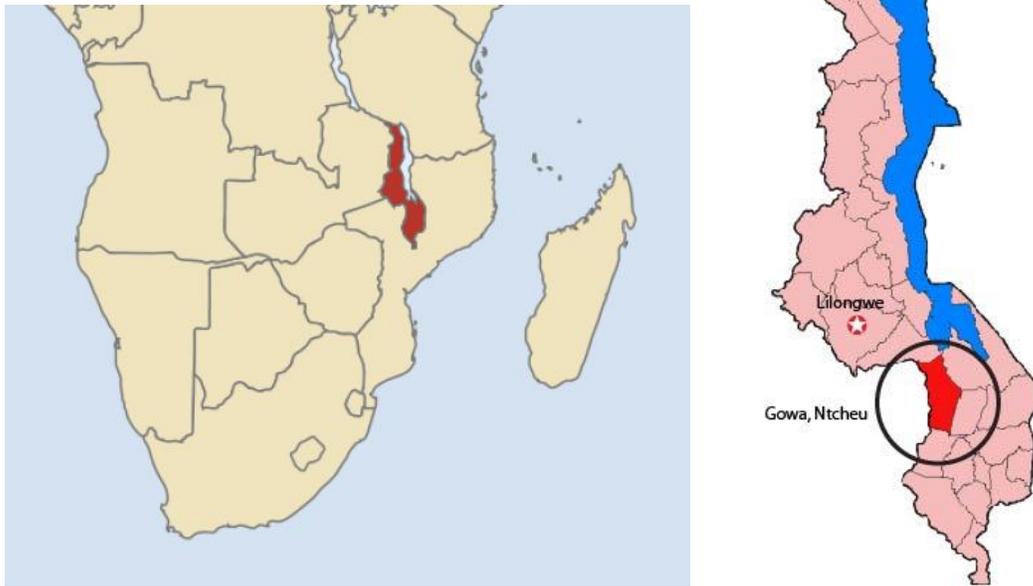


Figure 1. Map of Sub-Saharan Africa with Malawi in red (left) and Malawi expanded with Ntcheu district in red (right).

Malawi has several projects to combat nutrition problems, only a few of which I had the opportunity to visit. Just outside of the capital in Chitedze is a permaculture garden that has been established for six years now. During this visit, I learned the agricultural history of maize, and how dependent Malawians have become on the crop, so much so that it has completely taken over their agricultural production, according to Kristoff Nordin who started this project. Nordin stated that “if you’re not growing nutritious food, you won’t have a nutritious diet”, which is more and more becoming the case in Malawi. He claims that Malawi every year produces enough maize to feed the country, but it hasn’t had any effect on the nutrition rates, because maize does not help nutrition; it is just the staple crop Malawians rely on for each meal. And every day it’s the same; there is no variety. So he presents an

alternative to monocropping maize, which is called permaculture. The idea behind permaculture is to mimic a forest ecosystem, creating a system that feeds off itself, and eventually is able to function and produce food throughout all months of the year with very little maintenance. Nordin's system produces fruits, grains, vegetables, legumes, and other crops that used to be grown in Malawi and consistently has a variety of food available to harvest throughout the year. Other than trips to the market for olive oil, wine, and other luxuries, Nordin and his family would be able to nutritiously live off their land.

Another impressive project was an irrigation project in a neighboring village in the Ntcheu District. This project was started by a local Malawian ten years ago. Mr. Fulagombe has set up a system that diverts water from the river during the dry season so he can water his crops throughout the year. Through this system, as well as the practice of permaculture, Mr. Fulagombe is able to grow onions, cabbages, okra, Irish potatoes, sweet potatoes, cassava, maize, and a variety of fruit, such as papaya, mango, and passion fruit. Because of the diversity of crops he grows, he now has green crops every year, and can eat those instead of going to the market, while providing the village with his leftover vegetables. He leases his larger project (75-80 hectares) to different farmers, and has a separate plot of about 10 hectares for himself. Though he encourages the other farmers of the project to grow a variety of crops other than maize, he said they continue to mostly grow maize. Growing other crops, and adopting a permaculture system requires farmers to learn another system, and some people don't have the time to learn it, or sometimes don't trust it. They think, "If I start something new, I may lose what I had". Mr. Fulagombe has been a great leader in this village and has tried to combat that way of thinking. Many people are interested in what he is doing, and they know that if they try something he has had success with, they will also be successful.

Philadelphia

In an attempt to map food accessibility in Philadelphia, I used U.S. Census data to map the distribution of supermarkets and farmers' markets at the census tract level (Figure 2). The points in the map in orange mark all of the locations for the following supermarkets: Fresh Grocer, Superfresh, Acme, Whole Foods, Trader Joes, Cousin's Supermarket, Shop 'N Bag, Save-A-Lot, Thriftway and Pathmark. The supermarket locations were found in the Philadelphia phonebook for 2010. The interview locations for data collection are highlighted in yellow. The choropleth map displays per capita income. The interview areas, as displayed in this map, are in a middle-income zone, and have several supermarkets and farmers' markets in the vicinity. The highest concentration of farmers' markets and supermarkets is in center city, where middle and high income groups are prevalent. The lowest concentration is in the area that has the lowest income distribution. The three interview locations are in middle zones, with moderate access to supermarkets and farmers' markets, and are areas of neither high nor low income.

Of the 30 individuals I interviewed, two-thirds were African American. Almost all respondents fell below the \$75,000 income level, about half of which were under \$25,000³. Over all three locations, the most common mode of transportation, about two thirds of the sample, was driving to the farmers' market⁴. Of the remaining respondents, there were even amounts of shoppers that walk, take public transportation or get a ride. This finding is consistent with the comments I received from the non-profit organization in West Philadelphia, Mill Creek Urban Farm. This community-based organization aims to improve food access in the immediate neighborhood, which includes the location of the Haddington Farmers' Market. One of the organizers of this farm expressed her concern for transportation in the neighborhood. Even though the Haddington farmers' market is at the intersection of two bus lines, and four blocks from a major subway station, she notices that "people don't want to walk more than a block" and many people coming to the market drive there. This seemed to be the case at the other two markets as well. Both are strategically located on a major bus line, and Palmer Park is also a few blocks from the elevated rail. However, the distribution of shoppers commuting by car was equally high in all three locations.

The market at West Oak Lane receives produce from neighboring school, Martin Luther King High School's urban farm. One of the coordinators of the urban farm has very different views of food access. He thinks that attaining access is a myth; it's really just about awareness. The high school group's leaders are doing the work to make access physically possible, but this doesn't necessarily mean the neighborhood is improving. The coordinator provided an example that he provided a corner store with fresh fruits and vegetables at a competitive price. He went back to check on the sales, and saw that his fresh produce had rotted on the shelves, untouched. This, he says, is because of a lack of awareness. The largest obstacle in Philadelphia, he says, is not a lack of access, but a lack of awareness. The food issue is grounded in "a historical race/class issue intertwined with the food system". Unfortunately, the underserved communities have been relying on bodegas and processed foods for so long that it has become part of their food culture. Similarly, some of the interviewees that were advocates of the West Oak Lane farmers' market said that people just down the street don't even know the farmers' market or the co-op is here.

The Food Trust, the local non-profit that brings most of the farmers' markets to the city, has found successful results in their projects. They currently run over 30 farmers' markets in the Philadelphia in the city. In an effort to incentivize low-income residents to shop at farmers' markets, the Food Trust farmers' markets (as well as other farmers' markets in the city) accept food stamps, and provide coupons for those that purchase a certain amount using their food stamps card. They were happy to report that in 2009, almost half of the farmers' markets shoppers have increased their fruit and vegetable consumption. However, the immeasurable variable is how effective the Food Trust's efforts have been in low-income neighborhoods, where there is no comprehensive way to measure their improvements and effectiveness other than among those that already shop at the markets.

The Healthy Corner Store Initiative, a new project run by the Food Trust, partners with corner storeowners to create the Philadelphia Healthy Corner Store Network. To become a member of this network, corner storeowners must introduce two new healthy food items from each of the following categories: fresh fruits and vegetables, preserved fruits and vegetables, dairy, whole grains, and proteins. Upon participation, the corner store will be recognized by the Healthy Corner Store Network, and promoted through the Food Trust's publications. This program's mission is to revitalize 1,000 corner stores over the next two years that are in areas of low-income at high risk of obesity ("Healthy Corner Store Initiative" 2010). Though in its beginning stages, this program seems to be a promising new approach to improving food environments through existing grocery venues.

The inability to quantify improvement remains to be a limitation in my research. Though all organizations are confident that they are making a difference in their communities, they have yet to find a comprehensive measurement of progress.

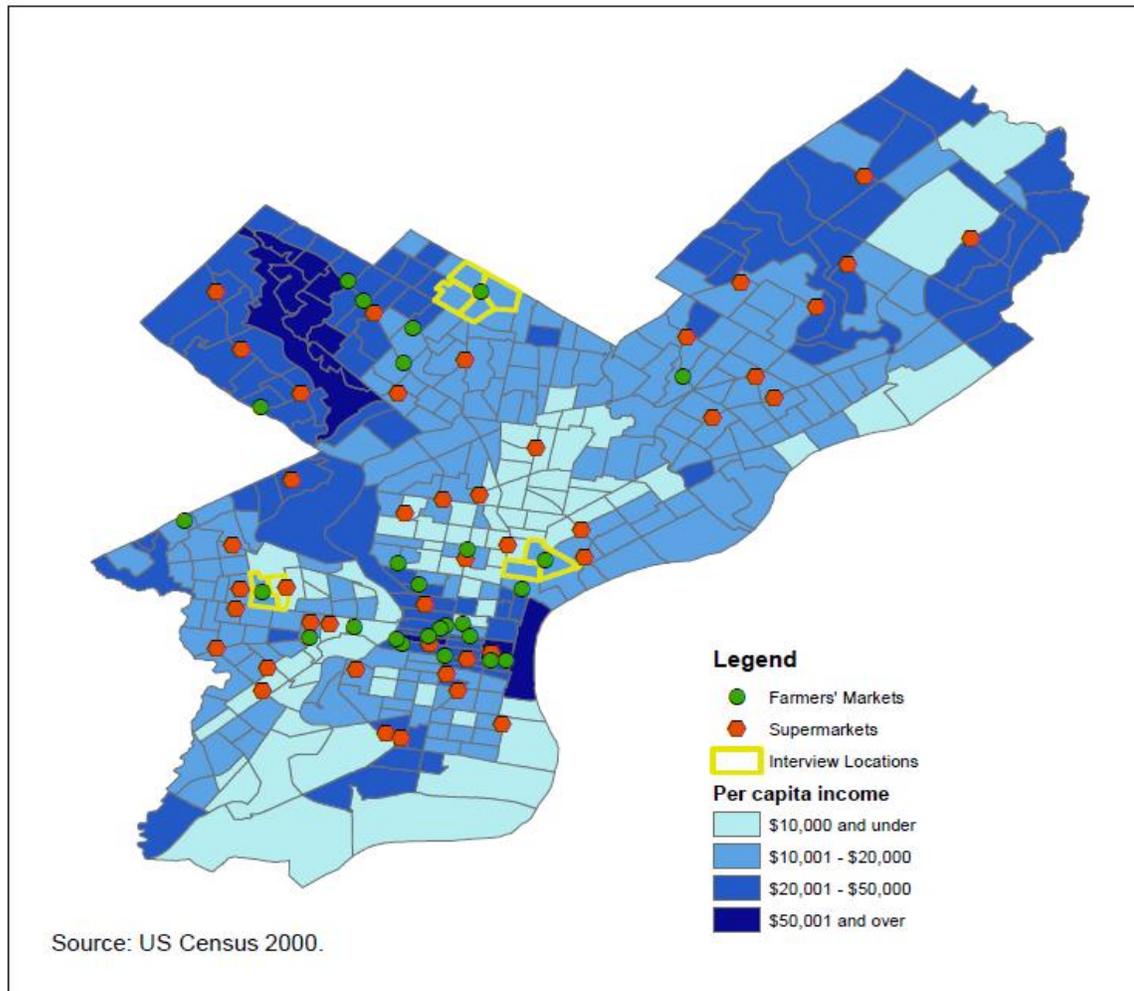


Figure 2. Map of Philadelphia census tracts.

ANALYSIS

Malawi and Philadelphia's food systems are undoubtedly different. Comparing subsistence agriculture in a small developing country to an industrial food system in a large American city is indeed a harsh comparison to make. The people of Malawi are much more connected to their food supply, in that they grow, harvest and cook most of their food. Residents in Philadelphia are hardly aware of their food sources, and are instead challenged to manage their diets through purchasing foods they had no handle in producing. Perhaps the only similarity between the two study areas is that a large portion of the population suffers from nutrition-related disease.

Individuals, non-profits and government bodies are addressing the solution to the many nutrition problems in both Malawi in Philadelphia. There are a variety of solutions that are proposed, and many movements to ameliorate the arising nutritional deficiencies caused by poor diet. In Malawi, efforts such as Project Sprinkles exist, are immediately effective, yet have seemingly minimal impacts on the sustainability of nutritional improvement. The smaller, local efforts such as the irrigation or permaculture project are designed for permanence, and provide long-term solutions to nutritional and agricultural problems. These projects are well designed, can be accomplished by an individual or village, and are only lacking in the will by others to try something new. In Philadelphia, food environments have negatively impacted many communities to eat calorie-dense foods lacking nutritional value. Yet America has the most readily available diverse foods available in supermarkets around the country. Some are better stocked and more affordable than others, but the options are available. In a country where we spend an average of 10% of our income on food, and can have a meal prepared in a matter of minutes, compared to developing countries that spend over half of their incomes on food supplemental to what they grow themselves and spend hours a day preparing their meals, food for Americans is relatively easy to acquire. In Philadelphia, the problem seems to be less related to access, and more on awareness and demand. Efforts by non-profits to supply fresh, healthful options to those with limited transportation access may be contradicted by the large driving population to the farmers' markets. It seems like the option to walk down the block to the farmers' market is not being taken advantage of, even though the Food Trust strategically places their markets to increase access for those in need. The options provided by the farmers' markets, urban farms, nutrition programs, community gardens and non-profits are prevalent in the neighborhoods that need it, yet whether these projects have been received well by the community remains to be seen. Through the results of the interviews with community members and organizations, the obstacle seems to be that the targeted communities aren't the ones taking advantage of these opportunities.

CONCLUSION

In both situations, the solution is there and is growing. It seems like the paradigm shift to nutritious food environments can be started at an individual level, and is mostly a matter of a changing the way people are thinking and valuing food. It seems to be right in front of us, and only needs to be realized by the people that are in need. We make daily choices about what to eat, or what to grow. Better options are becoming more tangible in both Philadelphia and Malawi, and individual choices can progress towards healthier eating and growing lifestyles, and be reflected in those food environments. A favorite example is Malawi's Baobab tree (Figure 3). Once an abundant tree in Malawi, the Baobab produces a fruit rich in Vitamin C and calcium, as well as B vitamins, magnesium, iron, phosphorus and antioxidants; nutrients that are severely lacking in the Malawian diet, which is typically devoid of fruit, except maybe an occasional banana or mango. Through land clearing for cornfields, many of Malawi's Baobab trees have been destroyed, leaving few for the nutrient-deprived country. Within the last few years, the Baobab has become a popular crop for export, but has yet to be realized as an important food for consumption. The Baobab has the potential to be Malawi's next soybean, a once mostly exported crop high in proteins that Malawians were deficient in. There are many crops in Malawi that hold the same nutritional value, but have yet to be recognized. Likewise in Philadelphia, The Food Trust, Mill Creek Urban farm, and other local projects related to food justice, have been working arduously over the last decade to make fresh produce available and affordable to the neighborhoods most in need. Yet the farmers' markets supported by these organizations cannot seem to supply the neighborhoods in which they are situated. Though local markets and farms would not exclusively be able to provide enough foods for a family's entire food supply, they provide a healthy, diverse supplement to the popular food options in low-income communities, and are designed to be easily accessible, geographically and monetarily. The solutions for Malawi and Philadelphia are tangible; it's just a matter of making the decision to embrace it.



Figure 3. Baobab tree in Gowa, Malawi; taken by Korin Tangtrakul.

REFERENCES

- Bates, A. and Hemenway, T. 2010. From agriculture to permaculture. In *State of the World 2010: Transforming Cultures from Consumerism to Sustainability: the Worldwatch Insistitute*, 47-53. New York, NY: W.W. Norton.
- Beaulac, J., Kristjansson, E., and Cummins, S. 2009. A systematic review of food deserts, 1996-2007. *Preventing Chronic Disease: Public Health Research, Practice and Policy* 6 (3): 1-10.
- Cannuscio, C. C., Weiss, E. E., and Asch, D. A. 2010. The contribution of urban foodways to health disparities. *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 87 (3): 381-393.
- Chilowa, W. 1998. The impact of agricultural liberalisation on food security in Malawi. *Food Policy* 23 (6): 553-569.
- Freedman, D. A. 2009. Local food environments: They're all stocked differently. *American Journal of Community Psychology* 44: 382-393.
- "Healthy Corner Store Initiative." *The Food Trust*. Web. 1 October 2010.
- Karpyn, A. and Treuhaft, S. 2010. The grocery gap: Who has access to healthy food and why it matters. *Policy Link and The Food Trust*; 18 September 2010.
- Larson, N. and Story, M. 2009. A review of environmental influences on food choices. *The Society of Behavioral Medicine*: S56-S69.
- Lucan, S. C., Karpyn, A., and Sherman, S. 2010. Storing empty calories and chronic disease risk: snack-food products, nutritive content, and manufactures in Philadelphia corner stores. *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 87 (3): 394-404.
- Meerman, J. 2008. Making nutrition a national priority: Review of policy processes in developing countries and a case-study of Malawi. Nutrition Requirements and Assessment Service of FAO. EC/FAO Food Security Information for Action Programme, August 2008.

Nestle, M. 2006. *What to eat*. New York, NY: North Point Press.

Nordin, S. 2005. Sustainable super-sprinkle: Powdered local foods. *PLoS Medicine*. 26 July 2005.

Phororo, H. 1999. Vegetable production in the Maseru urban area: The past, the present and the future. In *Urban and peri-urban agriculture in Africa: Proceedings of a workshop: Netanya, Israel, 23-27 June 1996*, eds. David Grossman, Leo Van Den. Berg, and Hyacinth I, 48. Ajaegbu. Aldershot. Ashgate.

Quinn, V. J. 1994. A history of the politics of food and nutrition in Malawi: The context of food and nutritional surveillance. *Food Policy* 16 (3): 255-271.

Snapp, S. S., Rohrbach, D. D., Simtowe, F., and Freeman. H. A. 2002. Sustainable soil management options for Malawi: Can smallholder farmers grow more legumes? *Agriculture, Ecosystems & Environment* 91: 159-174.

U.S. Census Bureau. 2000. *American FactFinder fact sheet: Philadelphia County, P.A.* 27 February 2011.

¹ This percentage fluctuates between 80% and 90% depending on the source.

² The equivalent of high school seniors. The students I interviewed ranged from age 16 to 30, which is typical for secondary schools in Malawi

³ Though these income brackets are not as low as other parts of Philadelphia, it is encouraging that the majority of shoppers at the farmers' market are not high income shoppers. Often farmers' markets have a reputation of attracting white upper class shoppers, and it is encouraging to see this is not the case at these particular farmers' markets.

⁴ Does not include getting a ride from a friend or family member