Food Insecurity in Tucson, Arizona

AN ANALYSIS OF THE POTENTIAL IMPACT OF FOOD DISTRIBUTION RESOURCES TO COMBAT FOOD DESERTS

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ABSTRACT

This research paper aims to examine the food insecurity in Tucson, Arizona and how the use of surplus food distribution markets could be a factor in relieving some of that insecurity. The resources that will be included in this study will be community gardens, farmers markets, and Market on the Move (MOM)/Produce on Wheels Without Waste (POWWOW) projects. After surveying 140 users of MOM/POWWOW, there was no clear demographic of the users. Additionally, less than 10% of the markets were located in food deserts, which emphasizes that there is room to expand markets to these areas to serve vulnerable populations.

INTRODUCTION

This project studies the relationship between income level and the accessibility and functionality of community resources that contribute to sustainability and healthy-living in households in the Tucson Metropolitan Area. One of the nation's top hunger relief charities estimated in 2014 that 16% (156,000) of the total population in Pima County were food insecure (Feeding America Map the Meal Gap 2014). The USDA defines food insecurity as "a lack of consistent access to enough food for an active, healthy life" (USDA). It is not only important to provide access and availability of resources that provide healthy, fresh foods; it is imperative to make sure the all persons feel comfortable and welcome in that environment.

Consequently, this capstone sets out to examine the difference and correlation between different income-level communities and the availability and functionality of sustainable resources available to the public in Tucson, Arizona. Additionally, it will analyze the uneven distribution of community resources among different level income neighborhoods. The resources that will be included in this study will be community gardens, farmers markets, and Market on the Move (MOM)/Produce on Wheels Without Waste (POWWOW) projects.

The availability and distribution of these programs across different parts and neighborhoods of the city are important to study; as are social equity and the extent to which household incorporate healthy and sustainable habits in their lifestyle. For example, there are important relationships between automobile ownership/use,

income levels, and access to various community goods and services. However, it is not clear, how, if at all, low-income households access the same sustainability-oriented community programs and resources. This paper begins to address this important knowledge gap. It does so using Tucson, AZ as a demonstration.

LITERATURE REVIEW

DEFINING THE TERMS AND THEIR RELATION TO TUCSON

There are a few key terms that will be referenced throughout this paper. A "Food Desert" is defined by the United States Department of Agriculture (USDA) as, "parts of the country vapid of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to a lack of grocery stores, farmers' markets, and healthy food providers" (American Nutrition Association 2010). Former First Lady Michelle Obama created an online tool called the "Food Desert Locator" (that can be accessed on the USDA'S website) as part of the Let's Move Initiative to end childhood obesity and create awareness (Let's Move 2010). Apparicio, Cloutier and Shearmur (2007) concluded that food deserts in metropolitan areas are not as straightforward as just being physically far from fresh, whole foods, but also due to, "social and cultural norms, physical disability, economic assets or attitude towards and knowledge about food and cooking area few examples of non-geographic barriers to accessing good food."

As of 2017, 11.8% of U.S. households were considered food insecure. (USDA 2018) Tucson was rated the second poorest among the twelve Western U.S.

Metropolitan Statistical Area (MSAs). Because of this large number, Tucson has an estimated 156,000 people (16% of the total population) who were food insecure. Unfortunately, out of all food-insecure individuals in Tucson, 1/3 are deemed ineligible for Federal Nutrition Assistance. (Tong, Buechler, and Boa 2016).

David Morris (2007) discusses the importance of buying food that has been produced locally, and what it can do for the community. Among the key takeaways for practitioners, Morris observes that "Distance kills community" (Morris 2007). Despite the presence of chain grocery stores and markets, farmers' markets and programs like M.O.M./P.O.W.W.O.W. create a unique sense of community; in 1995, the Urban Land Institute issues a book Around the country, food banks are working to create this sense of about public markets and call for the following characteristics:

1. Public markets have public goals, giving a defined purpose to the activity;
2. Public markets create a public space within the community, a place where people mix and can become the "heart and soul" of a community – its common ground;
3. Public markets are made up of locally owned, independent businesses, lending a local flavor and distinctiveness to the experience (Spitzer and Baum, 1995).

Around the country, food banks are also working to create this sense of community with their events that bring citizens out from their homes and side-by-side with their neighbors to obtain fresh, healthy foods for people who are food insecure (Morris 2007).

COMMUNITY FOOD BANK OF SOUTHERN ARIZONA

There are dozens of non-profit groups and organizations that are working to decrease food insecurity in Tucson. The biggest of these is the Community Food Bank of Southern Arizona (CFB). The food bank has a website that has a variety of resources and information available to the residents of Southern Arizona. For example, on their "Realities of Hunger" tab of the website, there are links titled "Food as Medicine", "Hunger and Poverty in Rural Areas", "Myths and Realities of Hunger", and "Local Food", which all have information about challenges in food insecurity and how poverty relates to that. Additionally, the food bank provides some community events that people can be involved in, such as 5k walks to raise money and free healthy cooking classes. Participants receive a $10 gift certificate to the farmers market when they attend, too.

FARMERS' MARKETS

Farmers' markets are also a potential way to increase the availability of healthy, sustainable food in lower-income areas in Tucson. An issue with this possibility is that lower-income residents tend to avoid the markets due to their traditionally higher-priced food. Dr. Alison Alkon (2008) studied the non-profit organization that manages the North Berkeley Farmers' Markets. Its mission statement

states to “promote environmentally and socially responsible practices through programs that educate, demonstrate, and provide direct services.” Identifying best practices for communities from her observation and analysis of this and similar organizations, Alkon notes that one of the programs implemented by this organization is a process where local youth sell discounted food from the vendors of farmer’s markets to Berkeley’s lower-income communities. Alkon goes on to discuss how this program can create an avenue for accessible fresh organic food, which is often referred to as “yuppie chow” by low-income people (Alkon 2008).

MOM/POWWOW

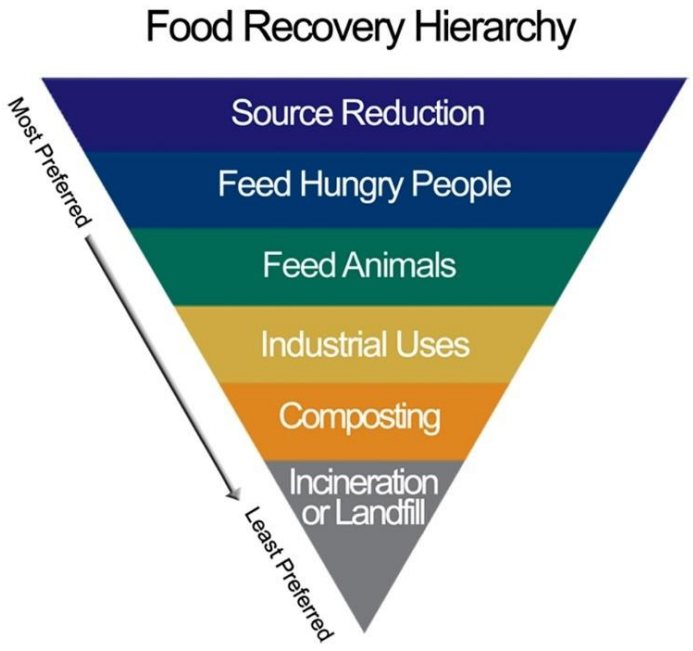
MOM/POWWOW are programs that use rescue surplus fresh produce and distribute it to families across Arizona. POWWOWs website states that during their 2015-2016 season, they “were able to rescue 30 million pounds of fresh produce, of that nearly 7 million pounds (39 varieties) were distributed through our P.O.W.W.O.W. program. This makes a grand total of 107,531 fresh nutritious produce boxes distributed to families across Arizona” (POWWOW 2019). This produce comes directly from the warehouses of the produce distributors where it was set to be sent to the landfill because they were unable to market it.

In 2016, the National Institute of Food and Agriculture (NIFA) published an announcement endorsing mobile food markets (like M.O.M./P.O.W.W.O.W.) as a successful approach to combating food insecurity. NIFA discusses the Forsyth Farmer’s Market mobile food truck in Savannah, GA and their offering of incentives to

those using SNAP benefits, such as health screens by the Mercer University School of Medicine and a food education and outreach program. Similar incentive programs for SNAP participants are also available across the country, backed by an over $1 billion investment from the USDA since 2009 (NIFA 2016).

REDUCING FOOD WASTE

The USDA states that "In the United States, food waste is estimated at between 30-40 percent of the food supply. This estimate, based on estimates from USDA's Economic Research Service of 31 percent food loss at the retail and consumer levels, corresponded to approximately 133 billion pounds and $161 billion worth of food in 2010" (USDA 2019).



1 Food Recovery Hierarchy, EPA 2019

Additionally, food waste also negatively impacts the environment when it is disposed of in landfills; “when food waste is disposed in landfills, methane and carbon dioxide are produced as part of its natural decomposition process. Methane and carbon dioxide are GHGs contributing to climate change, with methane being the more potent of the two, trapping 21 times more heat than carbon dioxide (Adhikari et al., 2006). It is estimated that the waste sector accounts for approximately 3% of global GHG emissions, with the same figure applicable for the UK (Defra, 2011; UNEP, 2010; Stern, 2006)”. Environmental impacts of food waste also include natural resource depletion such as soil, water, and energy. In Figure 1, the EPA’S Food Recovery Hierarchy shows that the second most preferred method is to “feed hungry people” (EPA 2019).

FOOD DESERTS IN TUCSON

Currently, in the far eastern and western parts of Tucson, residents have to travel an average of four miles to buy food as food stores currently underserve these areas. The USDA has revealed that food insecurity rates in Arizona are increasing by as much as 4% each year, while 2014 unemployment rates in Arizona is at 6.9% (Weinfield et al. 2014). One of the nation’s leading hunger-relief charities, Feeding America, reported in 2014 that 16% of the population in Pima County are estimated to be food insecure (Feeding America Map the Meal Gap, 2014). It is also estimated that 30% of all food-insecure individuals in Pima County are deemed ineligible for Federal Nutrition Assistance.

METHODOLOGY

This study will be conducted in the Tucson Metropolitan Area, incorporating a large variation in income-level neighborhoods across the area. This will be a mixed-methods study, which utilizes both quantitative and qualitative research methods.

Quantitative research is collecting numerical data sets to explain a phenomenon by mathematical analysis (Muijs, 2004). For this study, there will be data collection done at the sites POWWOW and MOM across Tucson through a survey (shown below). The survey will be done at 1 POWWOW event, 1 MOM event, and online through social media. The quantitative data collected at these sites will be the number of people, the type of transportation used to get there, and documenting the age and type of users of these resources. Also used will be census data of the areas of each location to compare with the income-level of those users to that location. The survey used included the following questions:

-Age: ☐Under 18 ☐18-34 ☐35-64 ☐65+ **Gender**: ☐Male ☐Female
-Income Range: ☐Less than $25,000 ☐25-34.9K ☐ 35-49.9K ☐50-74.9K ☐75-99.9K ☐ 100-124.9K ☐ 125K+
-Household Structure: ☐ Married with kids ☐ Married with no kids ☐ Single with kids ☐ Single with no kids
-Major intersection nearest your home: _____
-Primary Mode of Transportation: ☐Bike ☐Public Transit ☐Car ☐Walk ☐Carpool
-How Did you get here today? ☐Bike ☐Public Transit ☐Walk ☐Car ☐Carpool
-How did you find out about the program: ☐Family or Friends ☐News Media ☐Online Search ☐Social Media ☐other_____
-Do you split the produce with family/friends: ☐Yes ☐ No
-Plans for excess produce: ☐Canning ☐Freezing ☐Compost ☐_____
-How willing are you to change your lifestyle to reduce your family's impact on the environment?
☐Extremely willing ☐Very willing ☐Somewhat willing ☐Not so willing ☐Not at all willing

Qualitative research is done by gathering data with tools such as focus groups, observations, and surveys to collect information about lived experiences that are difficult to capture numerically (Nieswiadomy, 2007). For this study, the information that would be collected would be the typical experience of users at these locations- including the demographic encountered, factors in favor of/against visiting these locations, the atmosphere, and any other experiences that may be relative to the study. This will be done using both primary sources and secondary sources (Nieswiadomy, 2007).

DATA

SITE OBSERVATIONS

MARKET ON THE MOVE ON 1/26/19

On Saturday, January 26th, the 3000th Club Warehouse opened at 8 am to customers looking to buy their discounted bulk produce from M.O.M. The warehouse doubles as a thrift store in a strip mall; users walk in and pay their $10 donation and get a ticket. Users then pick up a cardboard box (usually one the produce came in) and wait for their turn at the buffet-style assembly line. There are volunteers at each produce station to assist each user and let them know how many of each vegetable or fruit to take. At the end of the line, there are carts to help get the box to the users' car if they wish, or volunteers are also able to assist with carrying. In addition to the produce available at this event was various squash, tomatoes, green beans, peppers, and melon, users were also able to take one loaf of sliced bread as well.

Initially, the surveys were to be used as the "tickets" after they pay for their produce, but once there, the volunteer receiving payments was uncomfortable with that arrangement. Instead, users in line were asked by the author if they would be willing to take a survey for a University of Arizona student doing a project on MOM/POWWOW in Tucson. After the event, the director of MOM confirmed that the surveys being given directly through the volunteers should not happen to not scare away undocumented people from using the service (she also reiterated that it was

important to make sure it was clear the survey was not identifying any individuals or groups). There were 20 surveys collected at this event.

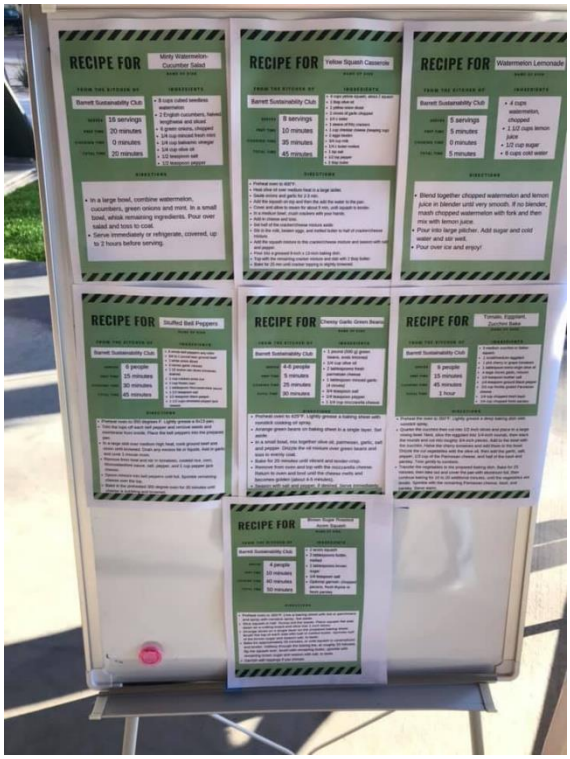
2 MOM produce line, MOM Facebook Page, 2018

PRODUCE ON WHEELS WITHOUT WASTE ON 2/15/19

On Saturday, February 16, the Pima Community College Downtown Campus held the POWWOW event from 8 to 11 am in the parking lot. The set up was similar to MOM, except there was a sign-in sheet in order to get a ticket for produce. The assembly line was almost exact to that of MOM - with volunteers to help users at

every produce station (it was the same assortment as the MOM event). Again, people were asked to take a survey while they stood in line for their turn; seventeen people were surveyed at this location.

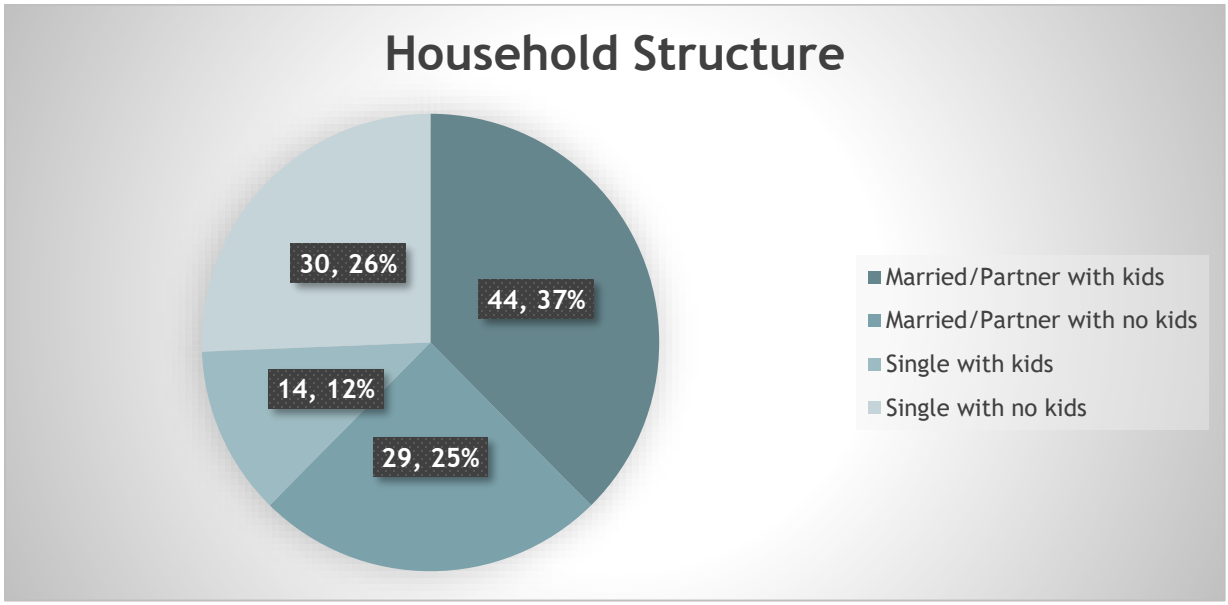
3 POWWOW produce line, POWWOW Facebook page 2019



4 POWWOW recipe board at the market, author photo 2019

SURVEY RESULTS

There were 140 surveys collected in total. Twenty at MOM event on 1/26/19, seventeen at POWWOW event on 2/16/19, and 103 taken online. Out of 140 users, all 140 utilized a car as their main form of transportation. One user commented on the survey, “It's very far and hard for me to go since I don't drive, but I do love being able to feed my family environmentally friendly produce.”



Most survey respondents were “married/partner with kids” at 37%, while the lowest percentage was “single with kids” at 12%. “Married/partner with no kids” and “single with no kids” were about even with 26% and 25%, respectively. This is interesting because it would seem as if the demographic who would benefit the most from the program would be the “single with kids,” as that is a one-income family with dependents, but it is the lowest percentage. Some reasons for this could be that SNAP

benefits are not accepted at MOM/POWWOW or maybe because the produce amount is so large that a small family might feel as if its too much for them and they may not know how to can or freeze the produce for later use. There is a wide variety of reasons families may not take advantage of this program. For household income, there was no clear majority category, but there were clear minorities – the two income ranges over $100,000 were significantly less frequent than the rest of the income ranges, by about half. This indicates that a wide range of income-earners use these food distribution markets.

	Splitting Produce vs Household Income			
	Less than 25K - 34,999K	**35K - 74,999K**	**75K - 125K+**	
Yes	36 *36.11* (0.00)	40 *40.31* (0.00)	34 *33.59* (0.01)	**110**
No	7 *6.89* (0.00)	8 *7.69* (0.01)	6 *6.41* (0.03)	**21**
	43	**48**	**40**	**131**

$\chi^2 = 0.048$, $df = 2$, $\chi^2/df = 0.02$, $P(\chi^2 > 0.048) = 0.9763$

expected values are displayed in *italics*
individual χ^2values are displayed in (parentheses)

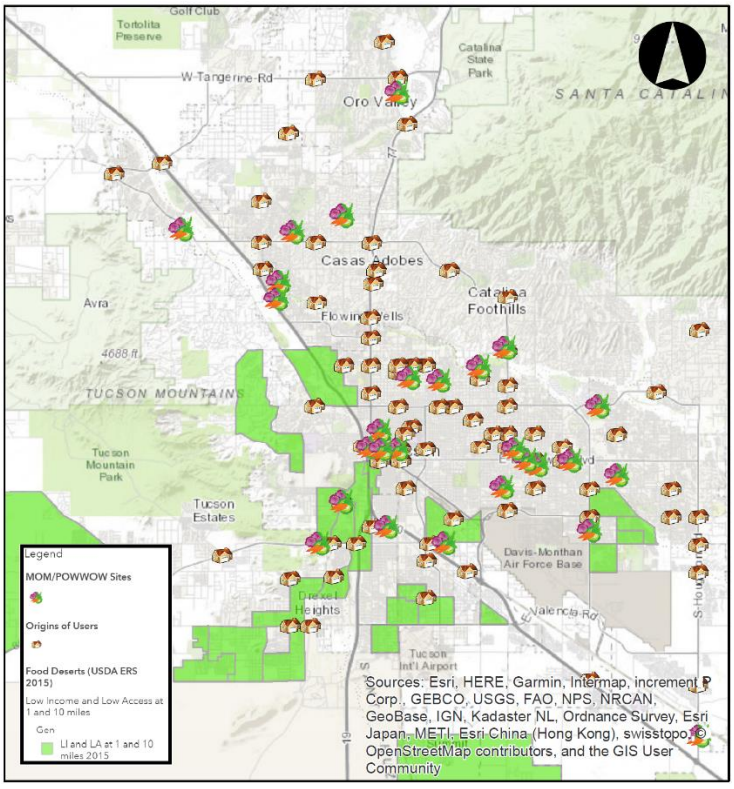
5 Cross-tabulation table showing that there was no significant relationship between whether users shared their produce and their household income

Out of 140 survey respondents, about 81% stated that they shared their produce from MOM/POWWOW with others. A cross-tabulation table of the "Splitting Produce vs. Household Income" showed that there was no significant difference between the variables. This demonstrates that, within this survey, income was not a

factor in whether the produce was shared. One of the comments on the survey about sharing produce was, “Most often a friend and I share one "lot", or whatever you want to call it, because even though we both really like vegetables, it's still a lot. Overall, I love the program and I'm very glad all of that food isn't going into the landfill” (Anonymous Survey Respondent).

MAP

The following map depicts the location of food deserts (green), MOM/POWWOW (vegetable baskets), and program user origins (houses).



6 Map of MOM/POWWOW Sites, Origins of Users, and Food Deserts. Author, 2019

Out of 140 surveys, twelve respondents (8.6%) lived in or on the border of food deserts. Out of thirty-one market locations, three (9.7%) of them were in or on the border of food deserts. These low percentages indicate that there is an opportunity for food distribution markets to expand the availability of low-cost, fresh produce in areas that could use them, like in the food deserts. In the map, there is a slight clustering of markets in central Tucson.

CONCLUSION

This capstone set out to explore how food markets like MOM/POWWOW can contribute to sustainability and decrease food insecurity in Tucson, Arizona. This paper sought to answer the questions: 1) What demographic uses MOM/POWWOW? Also, 2) is there room to expand locations to include vulnerable populations?

Results indicated that most users came from a variety of income levels mostly under $100,000, are married/partner with children, and share their produce with other families. Further, it was clear that the household structure and income variables did not have an impact on the user of the programs. This indicates that the program does reach a wide variety of demographic across the Tucson Metropolitan area and that there were no systematic trends evident in the income levels of MOM/POWWOW users. With less than 10% of MOM/POWWOW markets in food deserts,

expanding locations is an option to increase fresh food availability to vulnerable populations (low-income, low-access to food). Due to users sharing the produce, MOM/POWWOW reach is more extensive than depicted – almost double. This could potentially show that more Tucson citizens have access to healthy, fresh food than estimated.

There were some limitations to this study. Sample size could affect the outcome of the data, as MOM/POWWOW have a combined total thirty-one market sites throughout the year. Surveying at each of these sites across the city would offer the chance to create a larger sampling frame, and perhaps with a more accurate picture of demographic patterns. Another limitation of the study is that the surveys done in person took away some anonymity, which may have attenuated the response rate.

The results speak to several future research topics that could help generate deeper insight into food and sustainability questions. Primarily, have they ever experienced food insecurity? What social services or charitable organizations are they aware of/utilize for this? This would provide a detailed image of food insecurity in the users' lives – past and present.

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