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The Global Food Fight: Tackling Food Deserts and Their Effects

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Writing Studies
December, 2019

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Essay completed in partial fulfillment of the requirements for graduation with Global Honors,
University of Washington, Tacoma

Dedication

This paper is dedicated to my grandmother AKA Gaga, Betty Jean Tolbert (1942-2019). Her passion for education and excellence helped mold me into the writer, student and woman I am today.

Introduction:

During his 2013 TED Talk, gardener, Ron Finley told the audience he lived in an area characterized by “liquor stores, fast food restaurants and vacant lots” (Finley, 2013). He further explained, the obesity rate in his neighborhood was “five times higher, than say, Beverly Hills which is eight to ten miles away” (Finley, 2013). For these reasons, Finley labeled his neighborhood a food desert. Accessing grocery stores is challenging for many people. Using data from 2010, Ver Ploeg, et. al’s (2012) study found “9.4 percent, or 29.7 million Americans lived in low-income communities that did not provide adequate access to healthy food retailers within a reasonable distance from their home” (pg. 2).

The struggle to access grocery stores is intensified for people of color and those who reside in rural areas. For example, a 2012 study on obesity and the food environment among minority groups, found neighborhoods with predominantly African American populations have “fewer chain supermarkets, more liquor/convenience stores; lower availability of healthy food options and lower-quality produce than predominantly white neighborhoods” (Odoms-Young, et. al, 2012, pg.142). In the United States, eight percent of the rural population lacks access to healthy food and thirty five percent of those who lacked access were low income. (Reinvestment Fund, 2011).

The mini marts and fast food restaurants present in food deserts normally do not sell the foods necessary for a healthy diet. In addition to staying within one’s daily calorie needs, the 2015-2020 Dietary Guidelines for Americans suggests a healthy diet “emphasizes fruits, vegetables, whole grains and fat-free or low-fat milk products” (USDA, 2015). Though often filling, the food available in food deserts are not nutritious. The mini marts and fast food

restaurants commonly sell “a wealth of processed, sugar and fat laden foods” (Gallagher, 2010). Which begs the question - what happens when one is unable to access the healthy foods needed for their body to function?

Several studies have shown diets high in refined starches and added sugars can lead to increased risk of chronic diseases like diabetes, cardiovascular disease and obesity (Skerrett, P.J, & Willet, 2010). But are food deserts really the main cause of the poor health outcomes? My paper will examine the factors that create food deserts, their link to poor health outcomes and how different global communities have established local and innovative solutions to this issue. I argue that these local solutions will increase food availability and affordability—two crucial steps towards decreasing the poor health outcomes associated with food deserts in these areas.

Methodology:

To answer these questions, I conducted a series of online interviews with non-profit leaders around the world and in Tacoma whose organizations are tackling food deserts in their communities. More specifically, I spoke with Tara Ramkhelawan (personal communication, March 6th, 2019) the Senior Coordinator of Good Food Markets. This is a mobile supermarket in Toronto, Canada. This interview provided crucial information about the issue of food deserts and the communities impacted by them in Toronto. It also helped to expand upon food desert definitions and explain the effectiveness and challenges the mobile supermarket faces. I also interviewed Travis Weller, the Grants and Communications Manager for Nourish Pierce County. My interview with Weller highlighted the ethnicities and races affected most by the mobile food banks in Tacoma. Additionally, it identified a potentially more immediate solution for Oakland Madrona, which is an area I canvassed for this project.

Lastly, I used a series of peer-reviewed studies and statistics from the Tacoma Pierce County Health Department, United States Department of Agriculture and the Centers for Disease Control. I also used the Urban Sustainability Exchange (USE) platform to examine a case study of the Non-governmental Organization, Cities Without Hunger. This platform comes from Metropolis which is an international organization.

What are Food Deserts: Defining the Key Terms

There isn't a standard definition for food deserts. However, the United States Department of Agriculture's Economic Research Service defines food deserts as "low-income tracts in which a substantial number or proportion of the population has low access to supermarkets or large grocery stores." (USDA, 2014).

Low-income tracts

Areas where the poverty rate is greater than or equal to 20 percent. Or areas where the median family income is 80 percent or less than the states' median family income. (USDA, 2014).

Low-access tracts

Areas where at least 500 people and/or a minimum of 33 percent of the census tract's population lives more than one mile from a supermarket or large grocery store. For rural census tracts, the distance is more than 10 miles from a large grocery store or supermarket. The region contains at least 1,000 to 8,000 people. (USDA, 2014).

When asked ‘How would you define a food desert? Is Canada’s definition similar or different to the definition from the USDA?’ Tara Ramkhelawan, Senior Coordinator of Good Food Markets in Toronto, Canada said:

“I would only add to [USDA’s] definition, ‘low access to healthy, affordable’ [supermarkets or large grocery stores] as some food deserts in [Toronto] with mixed incomes are close to grocery stores but [are unable to buy healthy food] because they are at higher price points.” (see Appendix A for full interview).

Researchers like Heather Shaw stress an importance on “classifying food deserts according to causative factors as they may facilitate the development of a “more precise definition” (2006). Therefore, expanding our definition of access is important to understanding food deserts.

Food Access

There are many ways to determine food access outside of spatial proximity. One study in the UK which used 234 interviews found “non-spatial factors such as fear of crime and the unreliability of the bus service mitigate against access to grocery shops” (Shaw, 2006). Other studies like McKinney (2015) noted economic and cultural factors determined food access.

The USDA’s Food Access Research Atlas, formerly called the Food Desert Locator, has “several indicators to measure food access” (USDA, 2017). This includes distance to a store as

well as “other census-tract-level characteristics that provide context on food access in neighborhoods; such as whether the tract has a high percentage of households far from supermarkets and without vehicles, individuals with low income, or people residing in group quarters” (USDA, 2017).

How are Food Deserts Formed?: A Glimpse of Oakland Madrona

In 2012, the USDA’s Food Access Research Atlas found 6,529 census tracts. Using this tool, I examined the Oakland-Madrona community in Tacoma.

Brief History

Formerly known as Oakland Addition, Oakland Madrona is a neighborhood that stretches along Center Street and exists between S Tyler Street and S Union Ave. According to historians, it started as a sawmill in 1893. From 1899 to the 1970’s, it later flourished with “several grocery stores, a barbershop, meat market, ice cream parlor, taverns, a gas station and fuel oil company” (Heritage League of Pierce County, 1990). Historians write in 1900, “57% of Pierce County residents were of ‘foreign stock’ (Heritage League of Pierce County, 1990). They also listed the 15,877 immigrants that resided in various parts of Tacoma to be European. They were of “Croatian, Austrian, Scandinavian, German and Irish [decent]” specifically (Heritage League of Pierce County, 1990) specifically.

Oakland Madrona Today

Today, Oakland Madrona is largely populated by non-European people of color. It is important to mention race here, because a 2012 summary of the USDA’s Characteristics of food

deserts found, “in all but very dense urban areas, the higher the percentage of minority populations, the more likely the area is a food desert” (Dutko, 2012).

Data specific to Oakland Madrona from the USDA’s Food Atlas is presented below (USDA, 2017):

- In 2015, 284 of 2571 or 11.1% of total households were without vehicles and were more than one-half mile from a supermarket. This was an increase from the 9.4% in 2010.
- The poverty rate in this tract is 24.1%
- The majority of the population (3,458) consists of people of color: Black (1,310), Asian (387), Native American (102), Mixed-race (874) and Hispanic (725). An estimated 3,397 White population live in the neighborhood.

While canvassing the Oakland Madrona area myself, I noticed several small businesses, gas stations and mini marts, but very few grocery stores. Another 2016 study conducted by Linda Choi from the Tacoma Pierce-County Health Department found similar results. In her report, she states “many local corner stores that used to carry a wide selection of fresh food turned to places to purchase candy cigarettes and beer” and “the disappearance of food businesses was gradual, yet steady” (Choi, 2016).

Why are areas like Oakland Madrona who now have populations of majority people of color left with few grocery stores or markets? One report points to a practice called “White Flight” by white middle-class and working-class families in the 1960s and 70s. The study claims when these families left their homes “supermarket chains went with them, leaving many inner-

city neighborhoods with few or no full-service grocery stores—often for decades” (Bell, Mora, Hagan, Rubin & Karpyn, 2013).

The Tacoma-Pierce County Health Department’s Health Equity Assessment makes a similar claim about the link between health outcomes and historic policies by referencing “redlining”— a practice in the 1930s-50s which involved banks drawing “a red line around neighborhoods on a map to determine how to invest in those communities based on how many non-white residents lived there” (Tacoma-Pierce County Health Department, 2015). Such policies have led to the barriers in wealth and education for minority populations seen today (pg. 5). They have also contributed to the creation of food deserts -- which can create complications for the health of residents.

Food Deserts & Public Health

Chronic illnesses such as heart disease, asthma, diabetes and cancer are top health concerns for many in the United States and in Pierce County (Tacoma-Pierce County Health Department, 2015). The 2014, Pierce County Community Health Assessment found most deaths in Pierce County were related to chronic diseases and obesity was one of the top contributing factors of these poor health outcomes. (Tacoma Pierce-County Health Department, 2014).

However, research about food deserts and their link to contributing factors like obesity and other chronic diseases like diabetes are mixed.

Various studies support a connection between food deserts --- or access to healthy food and health outcomes. In 2016, The Pierce County Health Department released their 2015 Health assessment which found “zip code is more predictive of health than genetic code” (Tacoma

Pierce-County Health Department, 2015). For example, (Figure 1) is an infographic used in the Tacoma Pierce-County Health Department's "Health Equity Assessment Summary" and shows the life expectancy at birth and percentage of people of color living in neighborhoods in Pierce County.

The Health Equity Assessment also found the life expectancy for those living in Oakland Madrona area to be between 65.7 - 73.2 years. This is a sharp contrast from residents of Fircrest. Despite being only 1.7 miles away, residents of Fircrest have a life expectancy estimated between 80.6 – 84 years. To better illustrate the contrast between these two areas, below is data specific to Fircrest, WA. (U.S. Census Bureau QuickFacts, 2017):

- Most residents in this area are white. 69.6% of residents identify as white alone. Black or African Americans make up 7%, American Indian and Alaska Natives make up 0.8%, Asians make up 5.6%, Native Hawaiian and other Pacific Islander 1.2%, Two or more races 14.7% and Hispanic or Latino 5.4 %.
- The poverty rate in this area is 13.4%

While canvassing the Fircrest area, I noticed less liquor stores and mini marts and larger grocery store chains, including Safeway, Harbor Greens and Fred Meyer. This is important to note as neighborhoods with "easy access to opportunities have better health outcomes" (Tacoma Pierce County Health Department, 2015). Income has a significant impact on health (Krisberg, 2015). Unfortunately, lower-income neighborhoods often lack opportunities --- such as large supermarkets and/or gyms necessary for healthy choices. Because of this, "People in a neighborhood with 6% more poverty than another can expect to live for one less year" (Tacoma Pierce County Health Department, 2015)

In 2010, the Healthy Food Financing Initiative was created to combat high levels of obesity and other chronic diseases linked to limited access to healthy choices (Healthy Food Financing Initiative, 2017). The initiative expanded grocery stores into food deserts and equipped small retailers, corner stores and farmers markets with healthy food.

Another study in New Orleans of over 4,000 adults found that additional supermarkets in the participant's neighborhood reduced risk for obesity (Boder, Rice, & Farley 2010). While researchers like Lisa M. Powell, from the University of Chicago found decreasing produce prices and raising fast food prices increased fruit and vegetable consumption as well as lowered BMI in teens (Powell, 2010).

However, there is research that questions the connection between health outcomes and food deserts. For example, a study in Pennsylvania found that the introduction of a new supermarket into a food desert did not improve "fruit and vegetable intake or body mass index" of those in the area (Cummins, 2014).

One interesting analysis which examined the relationship between childhood obesity found low-income neighborhoods of color had greater access to both healthy and unhealthy foods (Lee, H., 2012). The researcher concluded that better understandings of transportation measures and "the psychology of food purchase patterns" affected childhood obesity (Lee H., 2012).

Another fascinating observation is the occurrence of diabetes in both of the Fircrest and Oakland Madrona areas. (See Figure 2) the infographic shows both areas have a 10.2 % - 14.6% prevalence of diabetes.

It is always important to keep in mind that our health is determined by several factors. In the Pierce County Health Department's 2015 health assessment, an infographic (Figure 1)

adapted from the CDC shows our genes and biology have the least impact on our health. Instead, “social factors such as housing, education, income and employment have a much more significant influence on health and quality of life, accounting for more than half of our total health” (Pierce County Health Department, 2015).

Another large determinant, (at least 20%) of health outcomes is access to clinical care. The Pierce County Health department states “access to healthcare is greatly dependent on income” and lists barriers to health care as “lack of insurance or few doctors in the community” (Tacoma Pierce County Health Department, 2015). In (Figure 3) the total number of those covered with health insurance in Pierce County is shown.

From this map one can see that Oakland Madrona, in addition to having a lower life expectancy, also has a greater population of less insured people than Fircrest. These factors may contribute to the lower life expectancy seen on (Figure 1) because those without access are unable to seek “preventative health care, such as immunizations and adequate medical care when sick” (Pierce County Health Department summary)

The third largest determinant (20%) is our health behaviors. The 2014, Pierce County Community Health Assessment listed smoking as the second major contributor to chronic illness. About “one in five adults in Pierce County smokes” (Pierce County page 6). See Figure 4 for the Tacoma Pierce County’s adaptation of the CDC’s Social Determinants of Health.

This information, along with a few mixed reviews are evidence food deserts, though a factor, are not the sole cause of chronic health issues like obesity and diabetes which plague residents in food deserts. Nevertheless, this is a complex issue that needs a solution.

Solutions

The poor health outcomes associated with food deserts are attributed in part, to the limited intake of vegetables and fruits (Hossfeld, Kelly, Smith & Waity, 2015). Therefore, the first step to decreasing these poor health outcomes is to look at solutions which will improve fruit and vegetable intake in communities. The following are possible solutions:

Community Gardens

Frustrated with the lack of quality and affordable produce in his neighborhood, Finley (2013) created a community garden in one of the abundant vacant lots in his neighborhood. It later became the Ron Finley project, a non-profit organization which seeks to build more community gardens in the South Central LA area. Community gardens are “collaborative projects on shared open spaces where participants share in the maintenance and products of the garden” (CDC-Community Gardens, 2010). These gardens are often owned by local governments, non-profit organizations or religious groups (University of Wisconsin School of Medicine and Public Health, 2017).

Evidence suggests that the implementation of community gardens can increase access and consumption to fresh produce fruit and vegetables (Self, Handforth, Hartman, Mcauliffe Olude, 2016). For example, a study in California found teens and adults who lived in low-income communities, but worked in community gardens, ate a half-cup more fruits and vegetables than their peers who didn't (Keihner, Sugerman & Mitchell, 2013). Another study on the impact of community gardens on immigrant populations found reduced food insecurity during the harvest months (Hartwig, 2016). In that same study, 61% of gardeners saved at “least \$25 during the gardening season” (Hartwig, 2016).

Case study: Cities without Hunger and the East Zone of Sao, Paulo Brazil

There are many communities, non-governmental agencies and non-profit organizations around the world working towards a solution for food deserts. My first case study was of the non-governmental organization Cidades sem Fome or “Cities Without Hunger” and its work in the East Zone of Sao Paulo, Brazil. To give a bit of background, The East Side of Sao Paulo has a population of 3.3 million. The 2011 report from researcher Thiago Barbizan found many of those are migrants who have moved from poorer Brazilian states in “search of jobs or better living conditions” (pg. 62). Unfortunately, most are unemployed due to their “age, poor health, or lack of education” (Barbizan, 2011). Prior to the Cities without Hunger intervention, many would rely on “food baskets for nourishment” (Metropolis, 2013). Barbizan’s study found “poor social conditions, precarious road access and low economic activity keep it segregated from the city” (pg. 61) so many residents lack physical and economical access to fresh produce.

Cities Without Hunger was established in 2004 and has worked over the course of 15 years to implement 25 community gardens in the Sao Paulo area (Cities Without Hunger, 2018). The organization also offers classes which teaches residents how to garden. This is important because it makes not only the food accessible but also offers knowledge of how to turn gardening into profit. Cities Without Hunger claims that “after one year, gardeners are able to manage their plots autonomously and sell their produce directly to the people from the neighborhood” (Cities Without Hunger, 2018).

Metropolis, one of the leading international organizations dedicated to exploring issues in cities lists the NGO, Cities without Hunger, as a case study on its use platform and found the results of this project were “improved nutrition and job creation” (Metropolis, 2013). An

estimated 650 people benefit from the project. Through a series of interviews, Cities without Hunger reported beneficiaries had “greater use of vegetables in their daily diets” and “increased income generation” through the series of trainings, courses and workshops. (Metropolis, 2013)

However, Cities Without Hunger’s community garden project does have its challenges. An earlier study of the organization conducted by Metropolis found, only “three of the 21 gardens were financially self-sufficient” and many of the gardens “still depended on sponsorships from companies and foundation” (n.d.). Since then, efforts to “increase gardens’ economic outputs” has been done to mitigate the issue (n.d.). Doubts about the garden from the community was another issue. The Founder, Hans Dierter Temp, says to overcome this hurdle, “extensive community meetings with community members” (Metropolis, n.d.) helped immensely. This brings about a strong point that the voices of community members are necessary for change.

Other Challenges Facing Community Gardens

Community gardens have also been hailed to reduce obesity and promote healthy eating habits (Center for Disease Control and Prevention, 2011). However, community gardens do have limits. One study on food deserts in Edmonton, Canada found that community gardens tended to cluster with supermarkets (Wang, Qiu & Swallow, 2014). Meaning those areas with limited supermarkets also “tend to have limited access to community gardens” (Wang, Qiu & Swallow, 2014). A study in Florida, found legal issues such as zoning, confusing regulations, composting limits and access to water were also barriers to community gardens (Perch, S.R., 2011). However, once these issues are addressed, they yield great results for the community.

Addressing Food Affordability and Accessibility

Why buy a browning apple for \$3.25 when you can purchase two double cheeseburgers for the same price? One study on Native American Reservations found of the 22 Native American reservations in Washington State, 15 did not have an on-reservation supermarket. To make matters worse, the cost of off-reservation supermarkets were 7 percent higher than the national reference cost (O'Connell, 2011).

Many studies list cost as one of the primary influences of dietary choices. (French, 2003). One report examining the consumption behavior of low-income women residing in food deserts found the women listed price as the most significant factor in their food shopping choices (MacNell, 2017).

Other studies have found stores or markets not allowing the Supplemental Nutrition Assistance Program or SNAP, affected participants and their consumption choices (MacNell, 2017). Simply placing a grocery store, especially those which carry expensive products will not encourage purchasing behavior. However, a study on people of color in Detroit found that increasing consumer income improved fruit consumption (Weatherspoon, Dembele, Coleman & Urban, 2013). While income does play a huge factor, transportation also affects consumption rates.

Going Mobile

Case Study: Mobile Good Food Market and Residents in Toronto, Canada

My second case study is of the Mobile Good Food Market in Toronto, Canada. This project began in 2012 as a response to the significant amount of Torontonians who struggled with accessing “healthy and culturally appropriate food” (FoodShare, 2013). While income

played a role, transportation was also an issue as some neighborhoods lacked “quality and affordable food retail options within easy walking distance” (FoodShare, 2013). For areas that did have retail options available, mobility was still an issue especially for those who were “seniors or disabled” (2013). The mobile market tackles issues of affordability and accessibility by traveling to neighborhoods identified as food deserts and offering food at a discounted price.

When asked how prices compare to other supermarkets Tara Ramkhelawan, said:

“They are like most of the affordable large grocery stores (in Toronto: e.g. No Frills, Food Basic).”

No Frills is a store commonly associated with discounted and generic food. According to Food share, an estimated 48,305 pounds of fresh vegetables and fruit were delivered in 2017 (FoodShare, 2019). In their earlier report, the organization claims fruits and vegetables such as “okra, bananas, avocados and coconuts” (FoodShare, 2013) are not only nutritious but culturally appropriate. It is important for food to be culturally appropriate so consumers will recognize the items and want to buy them. The mobile food market has 8 stops around Toronto and determines its stops through “consultation with local communities to analyze gaps in food access and identify an ideal area for the market” (FoodShare, 2019). Other main criteria neighborhoods must meet in order to be added as a stop for the market are as follows:

Neighborhood Criteria according to FoodShare:

- At least one kilometre walking distance from the nearest discount grocery store.
- Have a high single parent family and/or senior population.
- Have a cluster of high-rise residential apartment towers.

- Have a significant low-income population

Challenges for the Mobile Supermarket

In FoodShare's 2013, "Improving Food Access: Stories from the Mobile Good Food Market" report, finding resources and funding for the program were amongst the organization's top concern.

When asked what recent challenges the mobile supermarket faces, Ramkhelawan replied:

Recent challenges the mobile supermarket faces are:

- Outreach/promotion in areas that we are not familiar with.
- Maintaining quality of highly perishable produce. For example, berries, spinach and leafy greens, herbs. This is especially true in summer as the items are often out of the cooler all day. If unsold, these items come back to us.
- Finally, maintenance of vehicles (which are decommissioned Toronto Transit Commission "Wheel Trans" buses).

Ramkhelawan also listed a potential challenge the Mobile Market faces as having the "City of Toronto as the primary source of funding." (Ramkhelawan, 2019). She states "if we lost that [funding], it will be very difficult to continue the program.

My recommendation is for the organization to find sources of income outside the City of Toronto, via grants might be a viable option for this organization and its program. Increased social media presence and fundraising events which inform and encourage the community to donate to the program may also lessen these burdens.

One local example, comes from the Nourish Pierce County non-profit organization in Tacoma. In 2017, the organization held three successful fundraising events including a 5k run, A Place at Our Table Luncheon and NOURISH! Dinner & Auction (Nourish Pierce County, 2019). With 7 brick and mortar sites and 10 mobile food bank sites Nourish Pierce County also combats food deserts and their negative effects.

Case Study: Nourish Pierce County's Mobile Food Bank

Nourish Pierce County's mobile food bank is Pierce County's first completely self-contained mobile food bank and one of the few in the country. (Nourish Pierce County, 2019) Like its brick and mortar food banks it is designed like a grocery store but the food is free and it reaches areas of the county with high need but no food bank access.

According to their 2017, "Annual Report", 6.3 million pounds of food has been distributed by the mobile food bank and brick and mortar banks. Many of these items are canned goods, like fruits and vegetables, but fresh produce is also available. (T. Weller, personal communication, 2019). Around 67,177 people benefit from Nourish Pierce County's brick and mortar and mobile food banks (Nourish Pierce County, 2017).

Weller provided specific data about populations and ethnicities the mobile food bank has served in two mobile food bank stops near Oakland Madrona (see Appendix B & C). When asked how routes/neighborhoods are determined as stops for the mobile food bank, Weller replied:

“There isn’t a formal process, specific analysis or application. However, we get a variety of requests via email or calls. If a strong ask from the community is presented we first look into the location of our other sites and then look into whether or not it’s a viable place to bring our food bank” (T. Weller, personal communication, 2019).

Weller also mentioned Nourish Pierce County having an established relationship with the community or organization requesting was helpful and key in their determination process. He gave their recent partnership with Bethel High School as an example of this.

When asked if anyone from the Oakland Madrona area requested for their neighborhood to be added as a stop, Weller replied,

“Not sure. But we are always happy to have a conversation with any individual or community about this issue. If you live in this area or know of a community or organization in need in this area, the best thing to do is to leave an email or a phone call and talk to Sue Potter [executive director] and we can start a conversation and check our availability [of the mobile food bank truck]” (T. Weller, personal communication, 2019).

Challenges Nourish Pierce County Mobile Food Bank Faces

Challenges the mobile food bank faces are acquiring “dairy products and protein, like eggs and meat as they are the most expensive.” (T. Weller, personal communication, 2019). Other challenges Weller mentioned are

“Not having the ability to distribute directly to homes. Which can be limiting to some.” (T. Weller, personal communication, 2019). This may include elderly and disabled populations who may have mobility issues.

My recommendation, as with the other non-profit organizations is to increase diverse funding and community support via volunteering or donations to help with this issue.

Conclusion

My research was able to unveil a wide-reaching amount of information surrounding food deserts, their link to poor health outcomes and possible solutions. However, there were some limitations worth noting. The first, is the lack of live qualitative data. All of my interviews were conducted online which led to varying response times and quality of answers. I believe if more interviews were conducted both in handwritten form and face to face or via skype, responses would have been a bit more consistent. Another limitation is the number of interviews conducted, it would have been beneficial for this study to incorporate more voices. In a future study, gathering at least ten or more interviews from official representatives from various organizations, local and government agencies would be helpful.

The poor health outcomes found in populations which reside in food deserts are multifactorial. Because of this, we need multiple solutions to combat food insecurity. Community Gardens, Mobile food banks and Mobile supermarkets are three solutions I observed. However, for each of these communities that these solutions are implemented; needs of accessibility, affordability and community are at the forefront. Simply placing a grocery store or planting a garden will not remedy this issue. Each solution will need support both financially and physically to continue making an impact and hopefully expand their efforts.

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Appendix A

Full interview with Tara Ramkhelawan, Good Food Markets Senior Coordinator at FoodShare Toronto.

Bell: In America the USDA's ERS defines food deserts as "low-income tracts in which a substantial number or proportion of the population has low access to supermarkets or large grocery stores." (USDA, 2014). With that being said, how would you define a food desert? Is Canada's definition similar or different to the definition from the USDA?

Ramkhelawan: *I am not aware of any standard definition of "food deserts" here. I would only add to your definition "low access to healthy, affordable" as some food deserts in mixed income areas have grocery stores in the area but they are at a higher price point. Also, some food deserts have food stores, but there may not be a good range of healthy options. Also, "food swamp" came in as a more recent term and sometimes is used instead of food desert, to indicate an area where only unhealthy food is in abundance.*

Bell: Do you know how food deserts formed in Toronto? For example, did certain neighborhoods experience loss of businesses attribute to them?

Ramkhelawan: *I believe some have always been food deserts. As I mentioned, some are in mixed income areas that most people do not view as food deserts, but because the price point is too high for low income people, it is a food desert for them. I know in a couple of areas, a large grocery store has closed down creating a food desert (sometimes for extensive renovations, sometimes permanently).*

Bell: In America, food deserts are more prevalent in low-income or minority neighborhoods. Is this true for food deserts in Toronto?

Ramkhelawan: *I don't think this is particularly true in Toronto. But while we frequently measure food deserts in terms of distance from grocery stores, I think in higher income areas or in the suburbs, they cannot be identified the same way. Higher income people (esp in the the suburbs) may have a vehicle which essentially shrinks grocery store distance for them. Also, with the*

growing prevalence of online ordering of produce, extra costs/delivery fees may not be prohibitive for higher income people to use these services.

Bell: How long has the mobile market been in operation? Have you noticed an improvement in client's diet or vegetable/fruit intakes? For example, are there stories of how fruit/vegetables intake has improved?

Ramkhelawan: Since 2012. Yes, our surveys of customers show that they say there is some improvement in their intake of fruit/veg. For some stories on our Mobile Market and customer feedback:

[*Improving Food Access: Stories from the Mobile Good Food Market*](#)

Bell: How do the prices at the mobile market compared to other supermarkets in the area?

Ramkhelawan: They are similar to most of the affordable large grocery stores (in Toronto: e.g. No Frills, Food Basic)

Bell: In your opinion, what effect do food deserts have on health?

Ramkhelawan: They create another layer of challenge for people already dealing with many layers of challenges in their lives, but also promotes a culture of unhealthy eating if that is the only option around and all that the people in that neighbourhood. Healthy food, however, is almost always more expensive, and that means that low income people usually cannot buy everything healthy that they would like even if it is right next door. Income is definitely the first limiting factor.

Bell: Is the mobile food market run by a non-profit organization or the government? If this is ran by the government, are there other non-profit organizations or foundations that are known for similar work?

Ramkhelawan: It is run by our charity with major funding from the City of Toronto. I don't think anyone else is running a "Mobile" market in Toronto. We also have a Good Food Market program, where we support agencies to run a market at their location (frequently in low income areas), so there are many other agencies involved in running markets, just not necessarily Mobile markets.

Bell: Would you be able to give me specific numbers of the populations and ethnicities the mobile food market has served?

Ramkhelawan: *I don't have numbers to break down the population by ethnicity. Most of our sites are very diverse. We have a few sites that have greater numbers of Russian, Latin American, or Caribbean populations.*

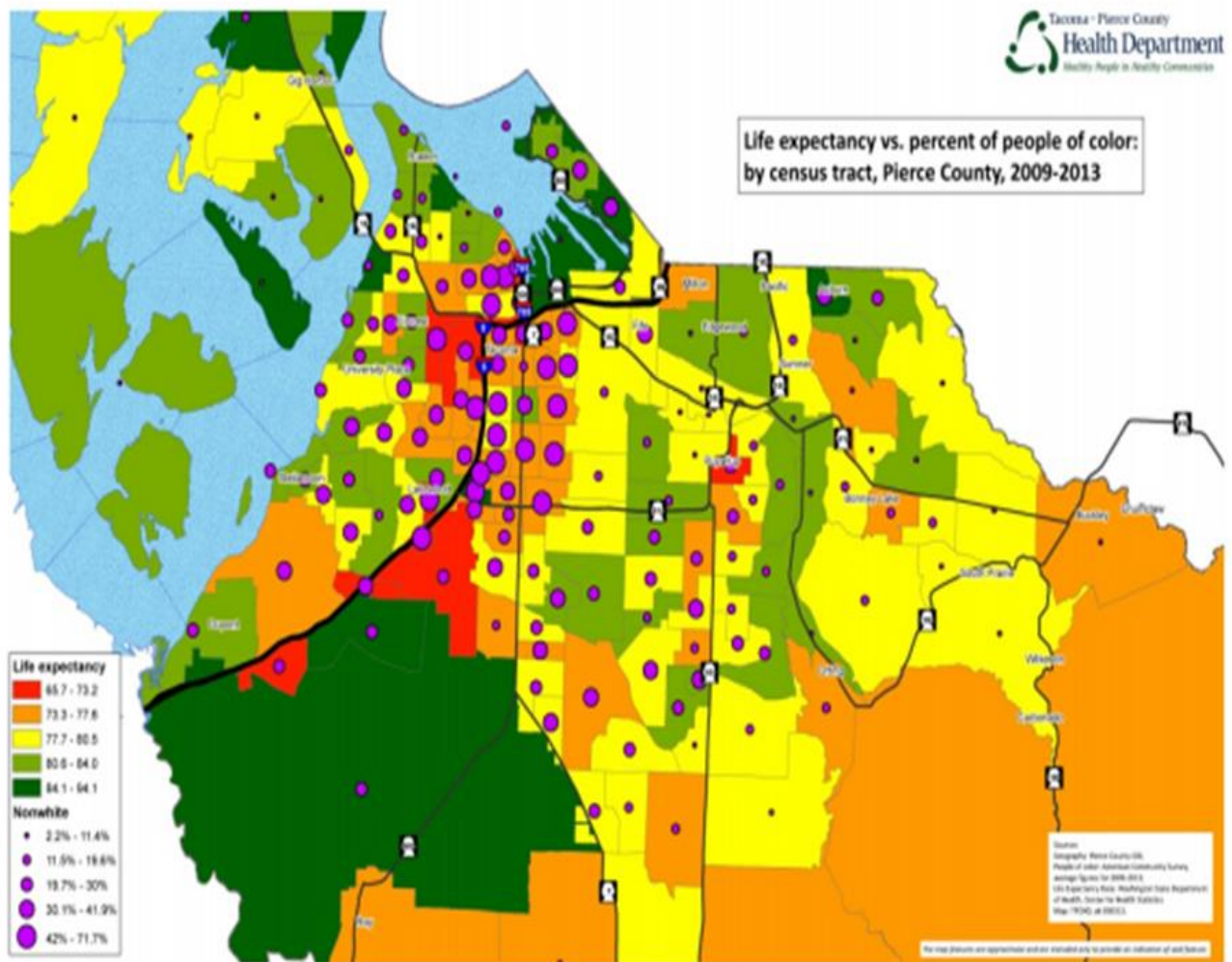


Figure 1. The Life Expectancy and Percentage of People of Color Residing in Pierce County from 2009-2013. Adapted from Tacoma Pierce-County Health Department 'Fairness Across Places? Your Health in Pierce County Health Equity Assessment.' and 'Pierce County GIS, U.S. Census Bureau 2010; Life Expectancy Data: Washington State Department of Health, Center of Statistics.

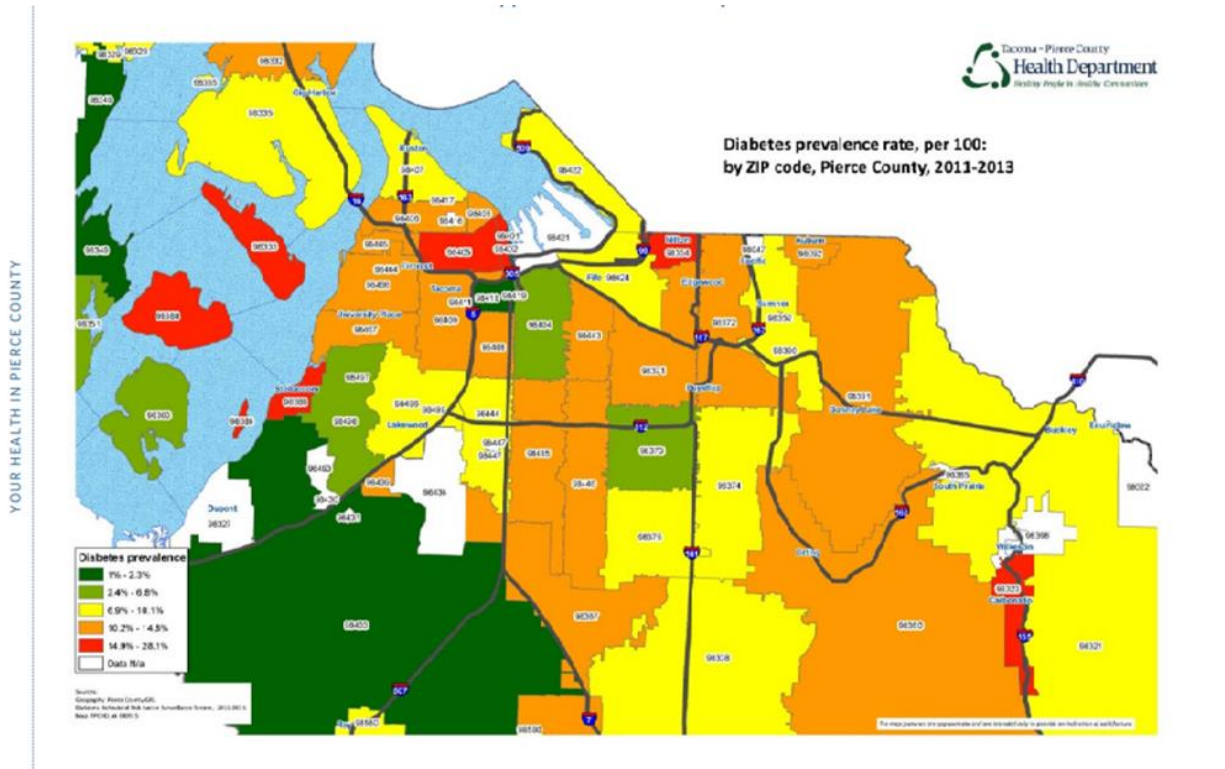


Figure 2. Diabetes Prevalence by Zip code in Pierce County. Adapted from Tacoma Pierce-County Health Department 'Fairness in All Places? Your Health in Pierce County Health Equity Assessment' and Diabetes: Behavioral Risk Factor Surveillance System, 2011-2013.

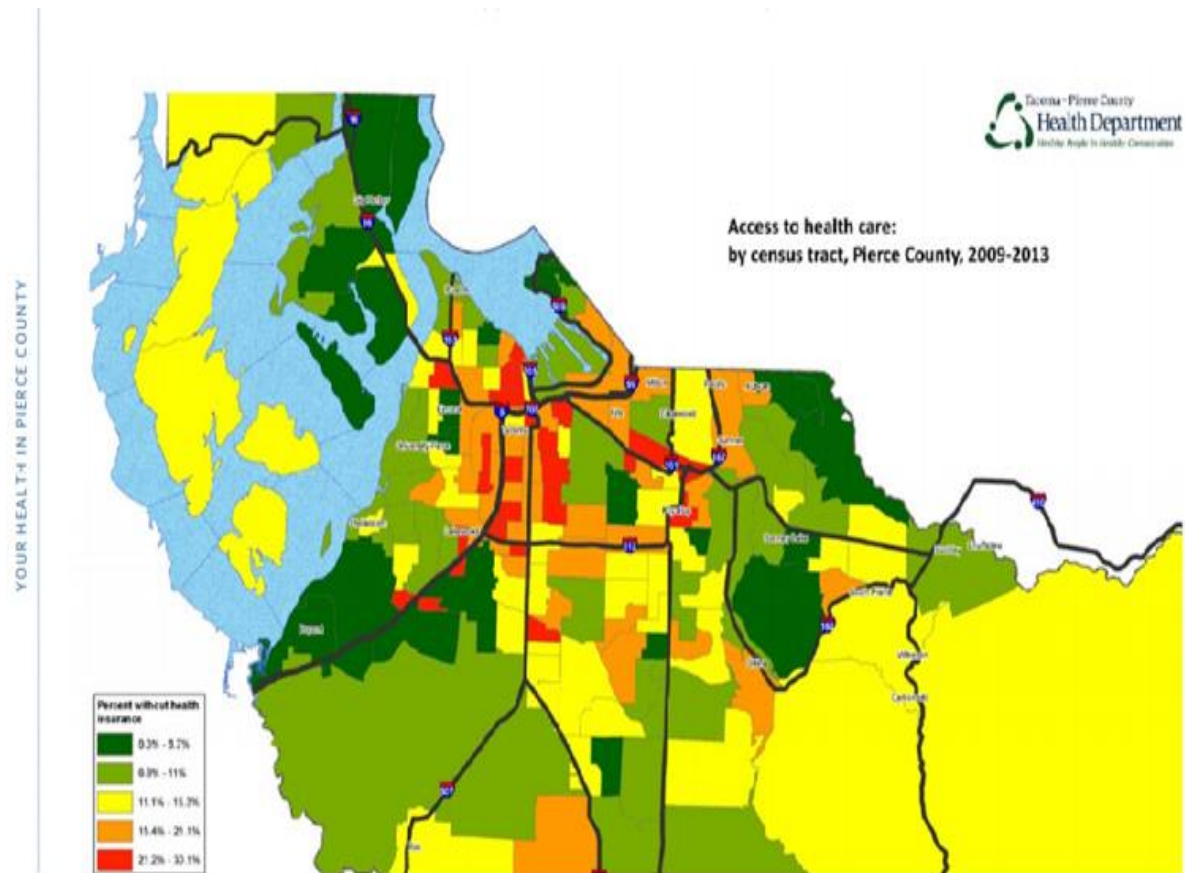


Figure 3. Pierce County Health Department's Access to Health Care Map. Adapted from Tacoma Pierce-County Health Department 'Fairness in All Places? Your Health in Pierce County Health Equity Assessment' and American Community Survey average figures for 2009-2013.

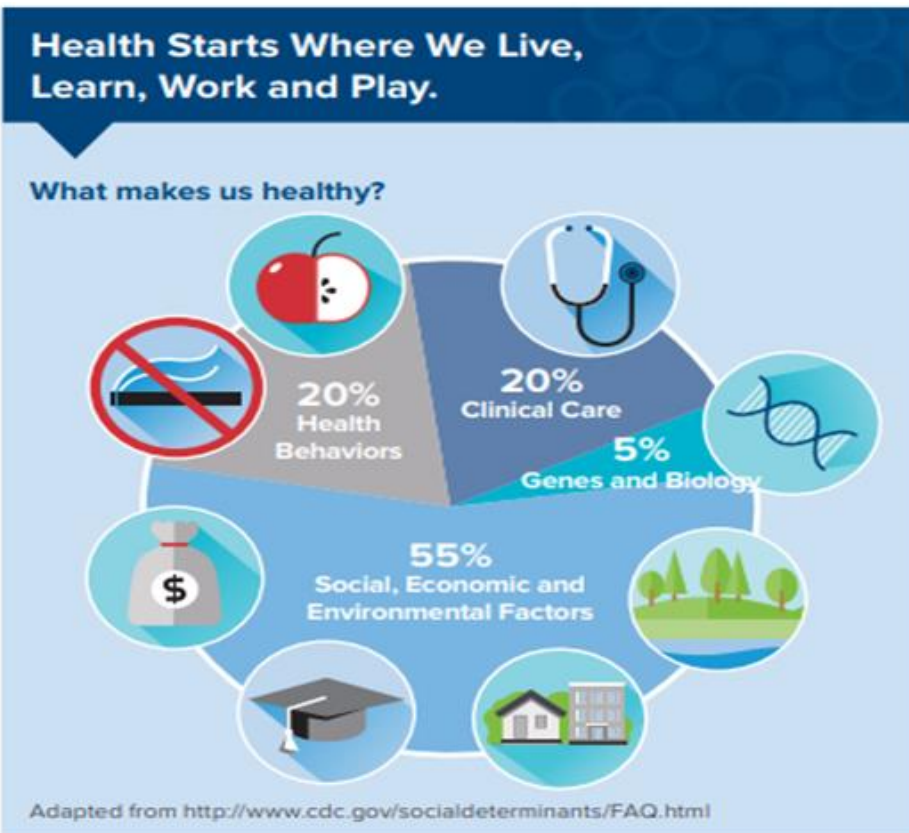


Figure 4. Tacoma Pierce-County’s adaptation of the CDC’s Social Determinants of Health .Adapted from Tacoma Pierce-County Health Department ‘Fairness in All Places? Your Health in Pierce County Health Equity Assessment’ and the CDC’s Social Determinants FAQ

Appendix B

Ethnicity Report of Clients Visiting the Mobile Food Bank’s StarCenter stop.

Mobile-StarCenter Ethnicity Report (unduplicated clients new as of 1/1)

1/1/2014 - 12/31/2018

Race	Total of Race	Hispanic or Latino	Not Hispanic or Latino
	1747	446	1301
American Indian/Alaska Native	45		45
American Indian/Alaskan Native & Bla	4		4
American Indian/Alaskan Native & W	17	1	16
Asian	103		103
Asian & White	24		24
Black/African American	588	5	583
Black/African American & White	57		57
Native Hawaiian/Other Pacific Islande	79	6	73
Other Multi-Racial	270	116	154
White	1365	60	1305
Totals	4299	634	3665

Appendix C

Ethnicity Report of Clients visiting the Mobile Food Bank's Giardrone stop.

Mobile-Giardrone Ethnicity Report (unduplicated clients new as of 1/1)
 1/1/2014 - 12/31/2018

Race	Total of Race	Hispanic or Latino	Not Hispanic or Latino
	1435	71	1364
American Indian/Alaska Native	62	17	45
American Indian/Alaskan Native & Bla	9		9
American Indian/Alaskan Native & W	22		22
Asian	129		129
Asian & White	5		5
Black/African American	456	3	453
Black/African American & White	36	2	34
Native Hawaiian/Other Pacific Islande	52	2	50
Other Multi-Racial	260	129	131
White	949	59	890
Totals	3415	283	3132