

# Food Deserts and Obesity: A Study of Food Outlets and Access in Binghamton, NY

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## Introduction

- The United States has the heaviest population in the world. 36.5% of adults in the U.S have obesity. Binghamton has been rated as the second most overweight city in America.
- Low income and minority areas tend to suffer the most from obesity due to food deserts. Food deserts are defined by areas with a high quantity of low nutritious food options, like fast food restaurants, and a low quantity of high nutritious food options, like supermarkets.
- Amount of vehicle ownership in an area is a determinant of whether a person will have access to nutritional food.
- Public transportation plays a role in defining an area as a food desert.

## Methods

### Qualitative Methods:

- Researched and studied food sources in Binghamton, New York to create and classify four different food outlets accessible in the Binghamton metropolitan area:

**Supermarkets:** Supermarkets offers a variety of foods and products. Supermarkets contain fresh produce, meat, dairy, and baked goods in addition to packaged or canned goods. Can have limited hours, but depends on the grocery store.

**Fast food:** Fast food is intended to be prepared quickly and is mass produced. Fast food is usually high in saturated fat, sugar, salt and calories. Usually open 24/7 or close to it.

**Convenience store:** Has a limited range of groceries, mostly canned and packaged goods. Has extended opening hours.

**Small Grocery Store (Bodega):** Locally owned store with limited goods. A small assortment of fresh produce, but mostly canned/packaged goods.

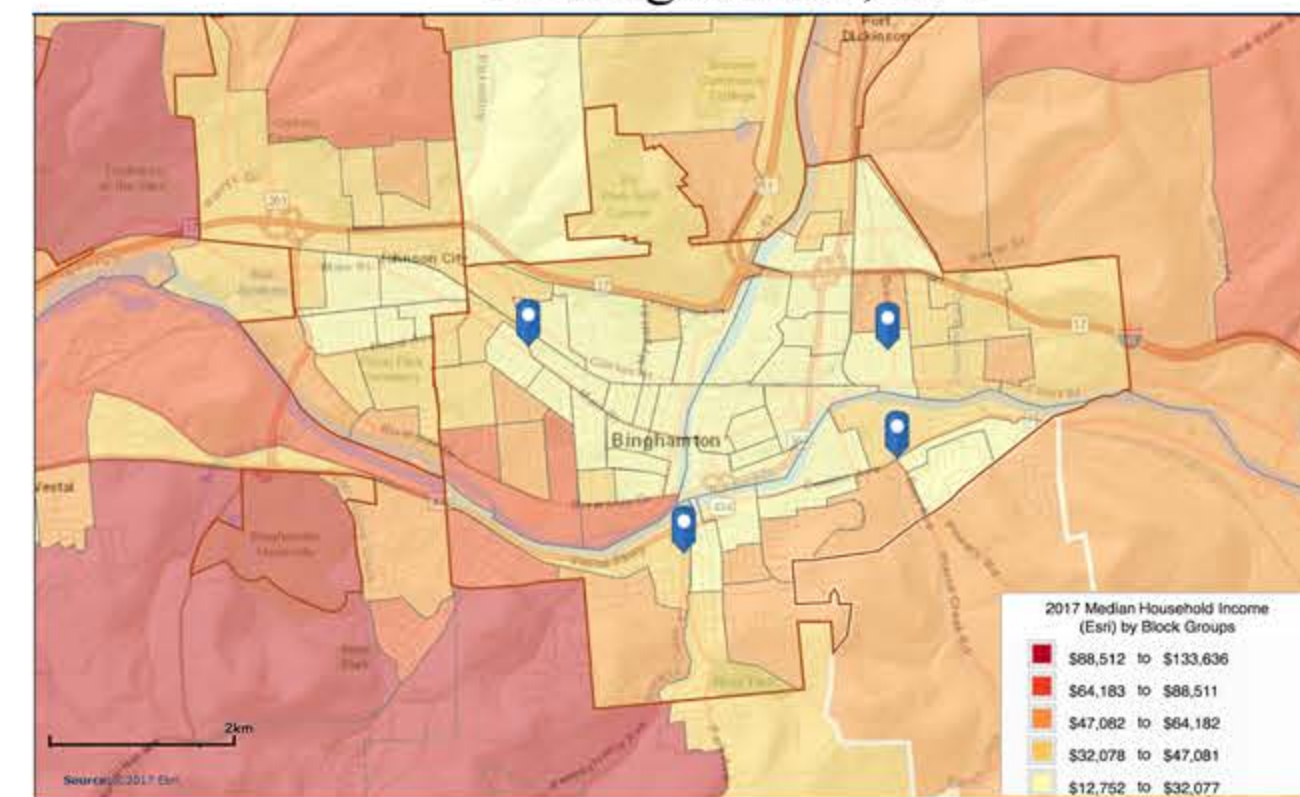
Investigated the correlation between lack of access to nutritional foods and obesity.

### Quantitative Methods:

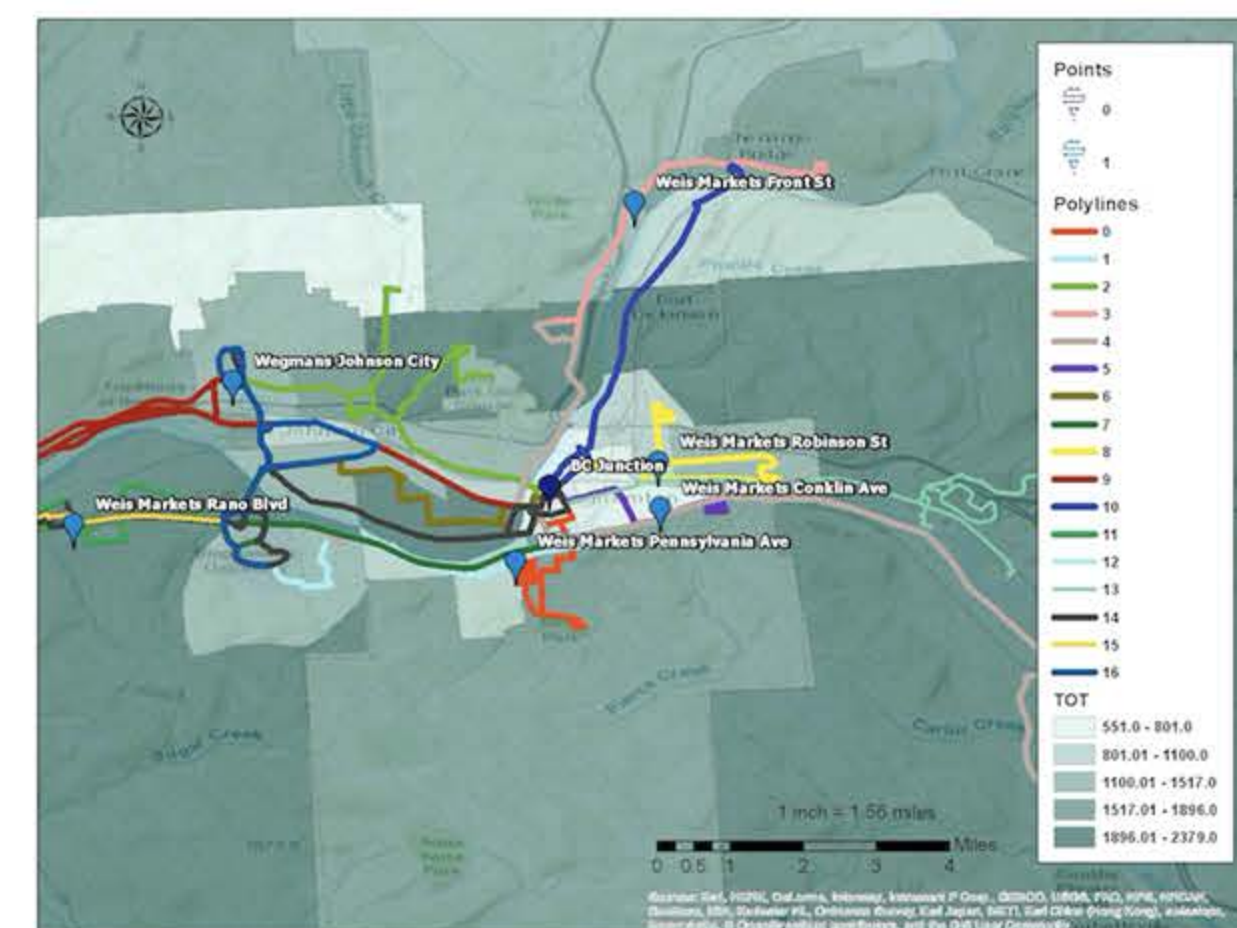
- Utilizing ArcGIS systems to determine the location of food outlets in correlation to median income in the city of Binghamton
- Gathered data from the United States Census Bureau on vehicle possession in the city of Binghamton
- By using the Broome County Transit database we collected transit routes in relation to food outlets and compared the routes to vehicle possession for Binghamton residents.

## Maps

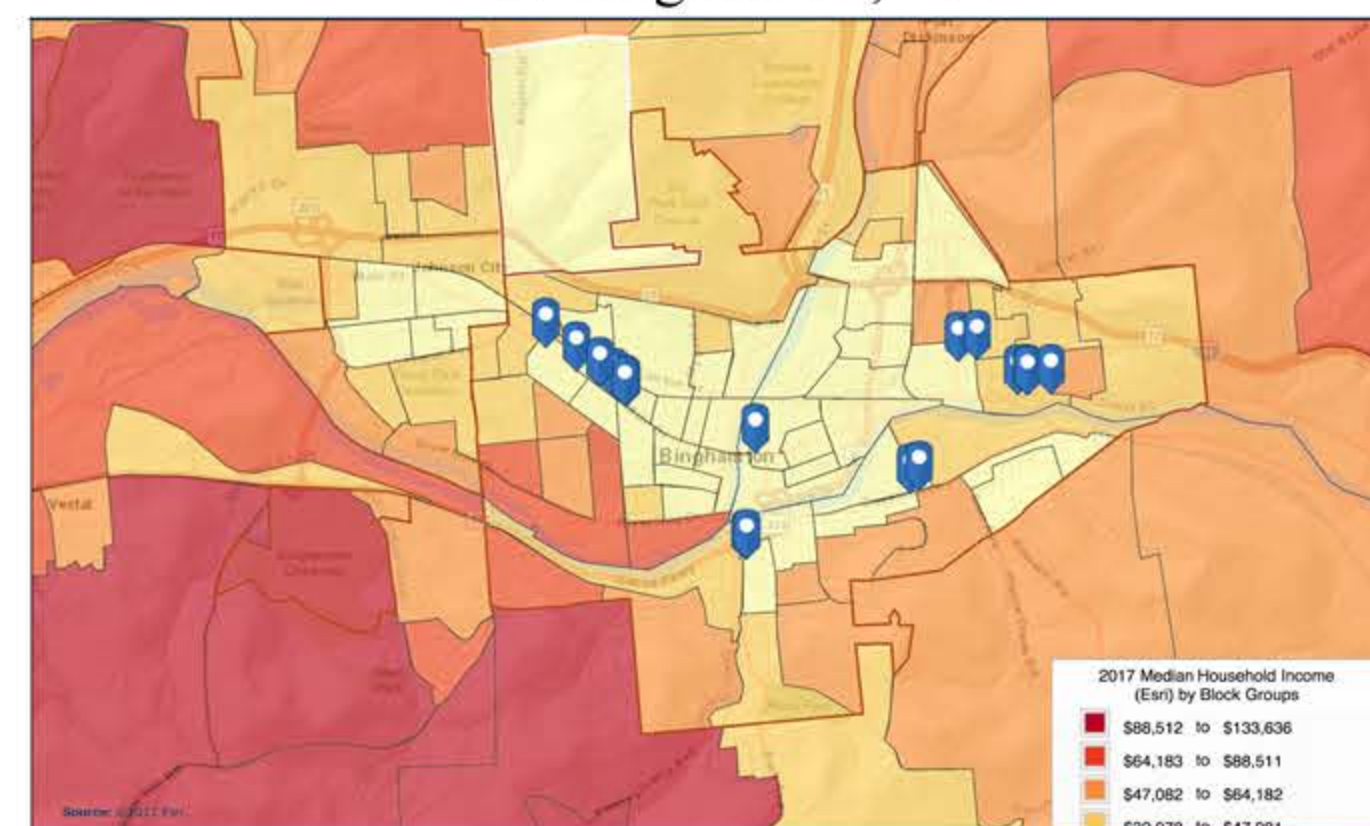
Supermarket Locations Versus Median Household Income in Binghamton, NY



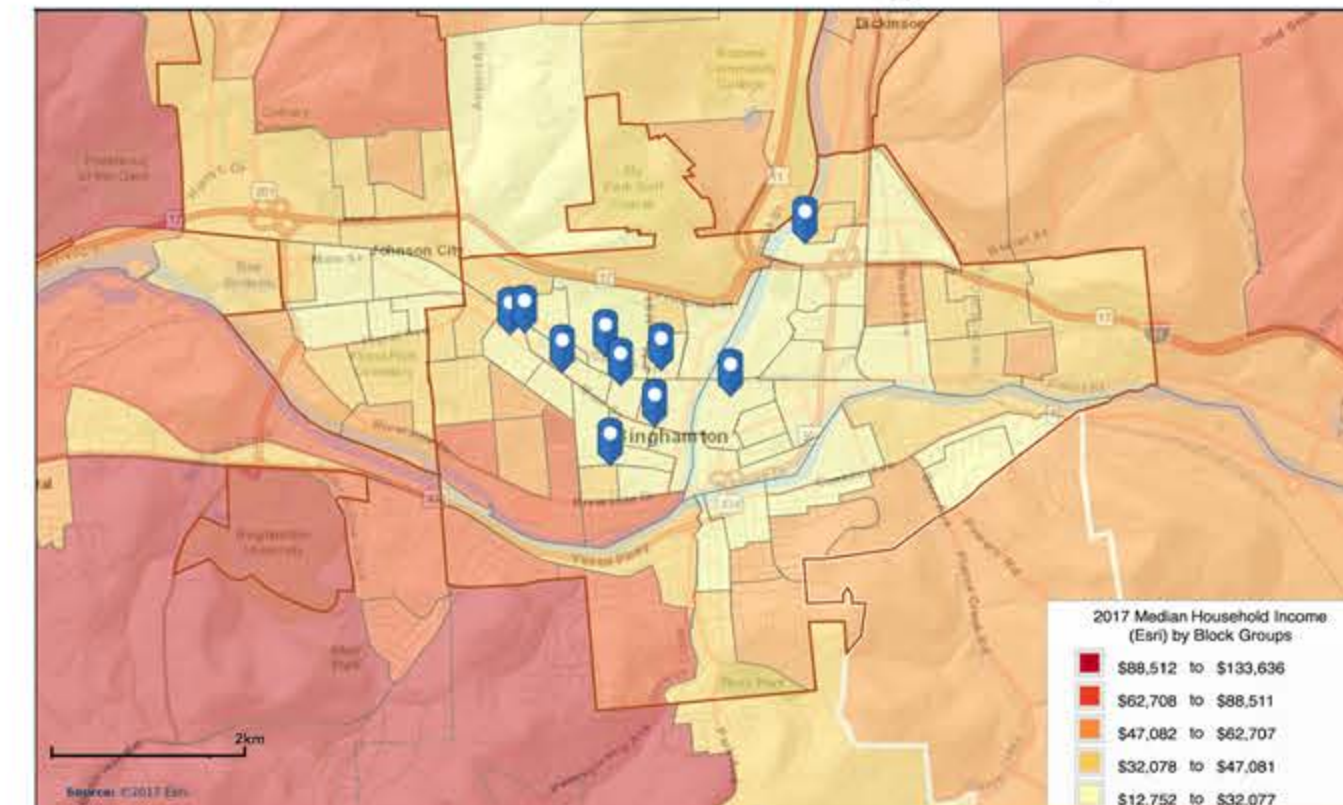
BC Transit System in Relation to Household Size by Vehicles Available



Fast Food Locations Versus Median Household Income in Binghamton, NY



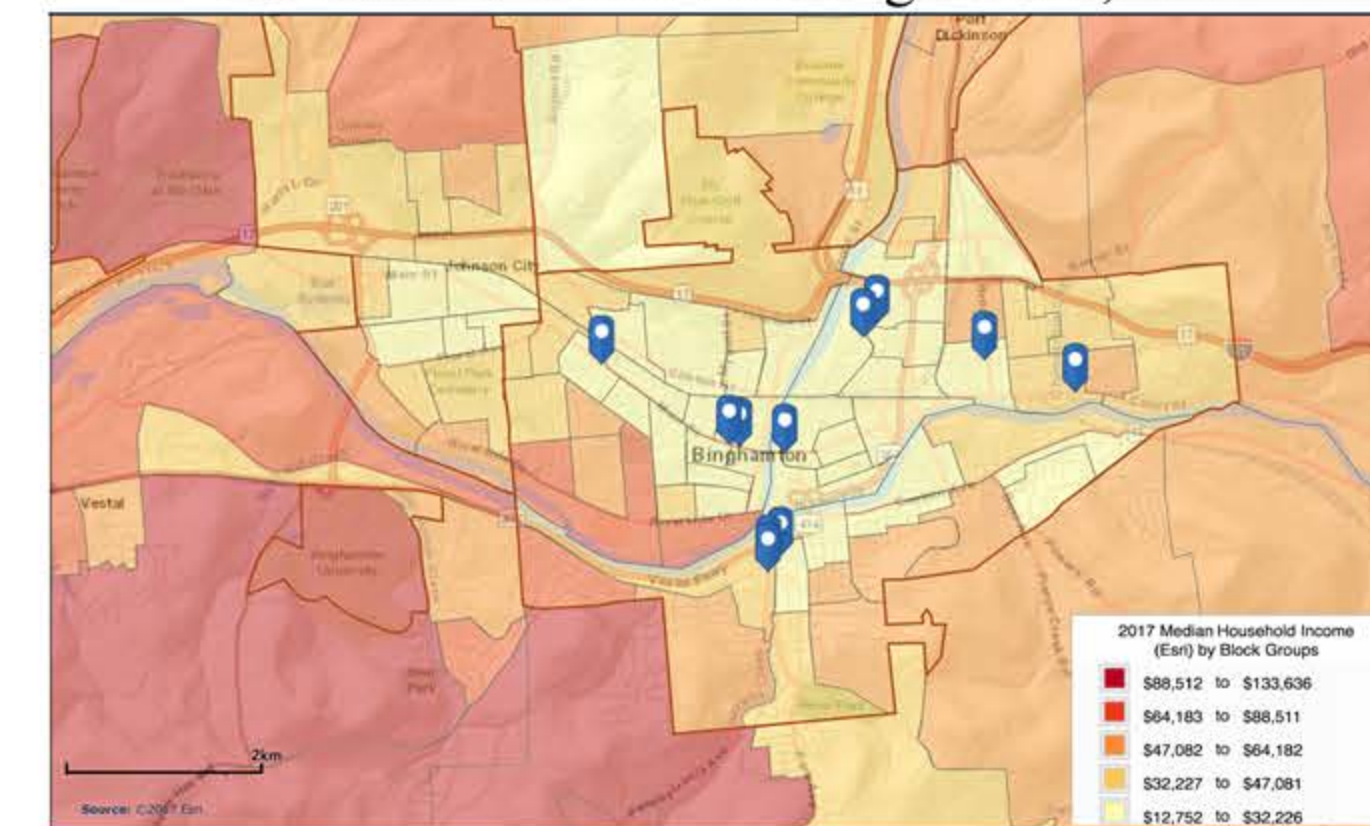
Small Grocers Locations Versus Median Household Income in Binghamton, NY



Typical Food Options in a Food Dessert



Convenience Store Locations Versus Median Household Income in Binghamton, NY



## Hypotheses

- The city of Binghamton is a food desert.
- Lack of access to nutritious food and an overabundance of access to unhealthy food leads to obesity.
  - Particularly, lack of access to transportation (a characteristic of a food desert) leads to obesity in Binghamton.

## Results

- The center of Binghamton is in the lowest income bracket according to the 2017 Median Household Income.
- Our map reveals that supermarkets are scarce in Binghamton compared to the other food outlets. There are no supermarkets in the center of the city, all of them surround the outskirts of the city which are closer to the higher income areas of Binghamton.
- Bodegas and fast food outlets are of the highest amount in Binghamton. Bodegas are scattered evenly amongst the center of the city, while fast food outlets tend to be in clusters around the city.
- Convenience stores are scattered throughout the city but there are noticeable areas lacking convenience stores.
- Bus routes do appear to go to most local supermarkets.
- Residents in the center of Binghamton seem to have the lowest amount of vehicle possession per household, while as you move outward vehicle possession increases.

## Conclusions and Implications

- Buses may appear accessible through the BC Transit map, however, this does not mean they are fully accessible to all Binghamton residents.
  - Price of transportation (\$4.00 to \$6.00 round trip), the amount of time transportation may take, and the physical aspect of carrying groceries plays a role in food accessibility.
  - Fast food and bodegas are more accessible to Binghamton residents.
- Binghamton is a food desert because of the lack of access residents have to healthy food options, resulting in high levels of obesity in residents.
  - Obesity leads to other negative health impacts such as cardiovascular disease, depression, and pulmonary disease.