

# **Food Deserts in Alachua County**

Identifying Food Deserts and Methods for Improvement

David Babb

Virginia Goff

David Mocilan

Wendell Stainsby

## **Problem Statement**

Identify food deserts within Alachua County using GIS and Census 2010 data, with consideration given to SNAP locations.

## **Background**

A food desert is a geographic region where healthy food is not available or accessible to low-income residents. These deserts are located everywhere across the US, in both rural and urban areas, as shown as pink blocks in the map below (<http://www.ers.usda.gov/data/fooddesert/fooddesert.html>).

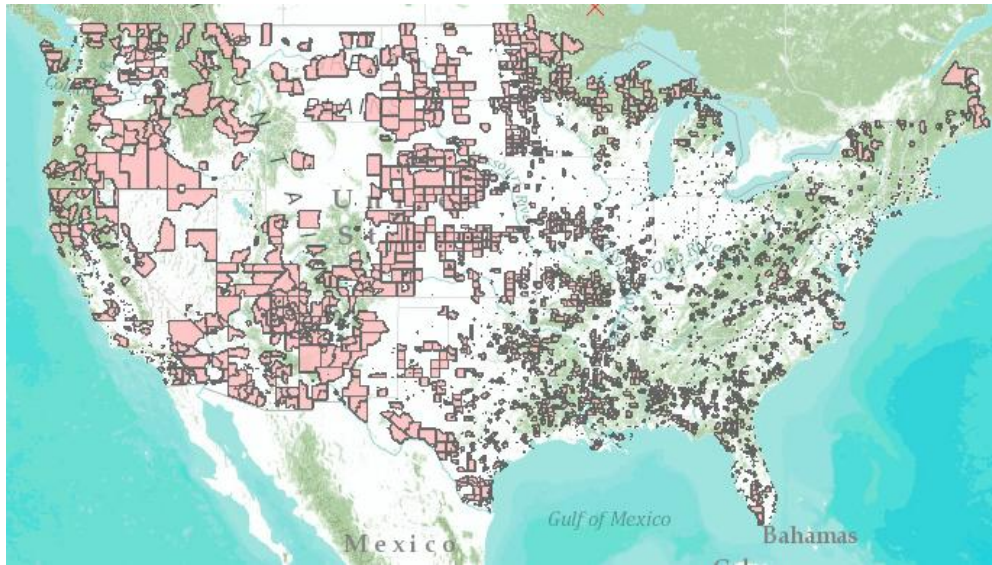


Figure 1: Food Deserts in the US

The impact of these food deserts is far reaching and devastating. Lack of availability of healthy foods leads shoppers to settle for food that does not provide adequate nutrition - with fast food and gas stations becoming the main choice for meals. As a result residents of food deserts become prone to obesity, diabetes, and chronic illness. A solution to the low accessibility of healthy foods is the Supplemental Nutrition Assistance Program, or SNAP for short, which provides monetary assistance to low or no income families in the United States. However only some stores will accept SNAP customers and so they do not present an overall solution to food deserts.

## **Study Area: Alachua County**

The study area for this project assessment was Alachua County, located in central northern Florida. With an area of about 560,000 acres, Alachua County is home to 9 municipalities and a population of 124,354 residents (<http://quickfacts.census.gov/qfd/states/12/12001.html>). The main municipality is the city of Gainesville, which is home to the University of Florida and the Gator Nation.

Alachua is a diverse county, made up of college students, faculty, and employees of the University of Florida and its many subsidiaries. In addition to the population supported and maintained by the

presence of the University, the municipalities surrounding Gainesville are mainly agricultural and rural in nature.

Identifying the needy people of Alachua County was a main concern of this assessment, and these people were designated by their location within an assistance based or low income housing project or their obtainment of food based aid if they were in public grade school. Within Alachua County, there are a total of 51 assisted rental housing, assisted housing and mobile home park locations. These locations represent high density clusters of low-income, needy people that this study targeted. The study area included 21,012 grade school students who accounted for one of the main focuses of the assessment. Of these students nearly 32% are receiving some form of meal aid at their schools including free lunch and reduced price lunch. (Census 2010)

Another factor examined were the number of “healthy” food stores located in Alachua and their distance from the needy people. For the purpose of this project, a healthy food store was established as one that sold a variety of fresh produce, fresh meats, and non-perishable food items i.e. not a gas station. Within the county boundaries 63 healthy food selling locations were identified, however only 36 of these stores accepted SNAP. While nearly accounting for 57% of the healthy stores, these SNAP locations weren’t located within many of the different municipalities and therefore didn’t service some of identified needy people.

The last goal of the assessment was to identify locations where future SNAP-accepting stores should be built. Making up more than 35% of the overall county area, lakes, conservation lands, and state parks where ruled out as viable locations.

### **Objectives and Variables**

In order to identify the residents of Alachua County without access to healthy food several goals had to be developed. Our main objective was to create a map in ArcGIS that identified food deserts and their relative distance from healthy food stores that accepted SNAP. Then several variables and criteria were decided upon to develop the aforementioned map. These variables are outlined below:

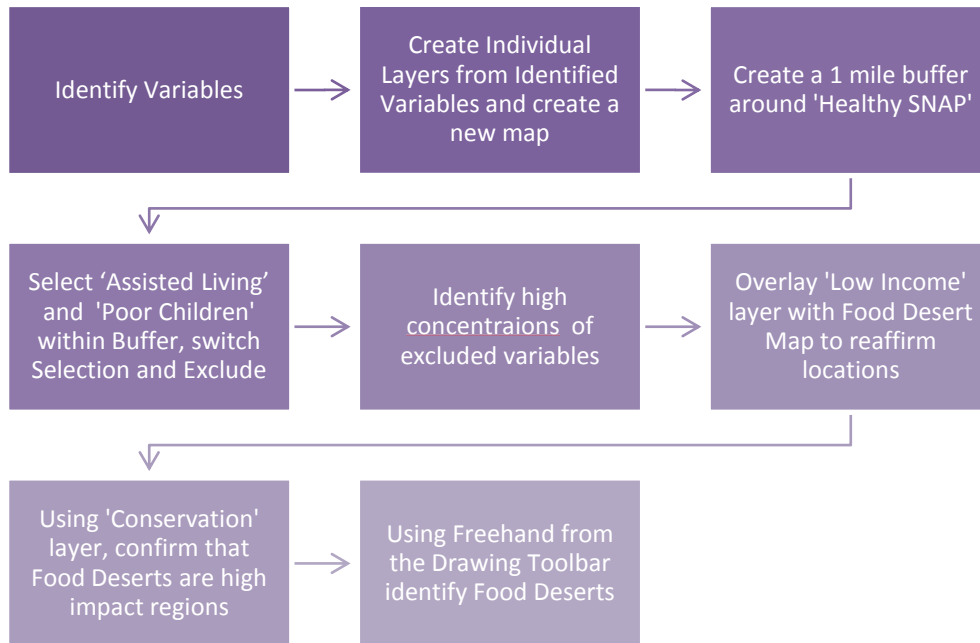
- Locate large concentrations of poor children
  - Poor Children Criteria:
    1. Automatic Free Meals
    2. Free Lunch
    3. Reduced price Lunch
- Locate large concentrations of poor housing
  - Poor Housing Criteria:
    1. Assisted Housing
    2. Assisted Rental Housing
    3. Mobile Home Parks
- Healthy Food Locations
  - Criteria:

1. Accept SNAP
- Uninhabitable Areas to Rule out of Food Deserts
    - Criteria:
      1. Lakes
      2. Parks
      3. Conservation Areas Types I/II
  - Low Income
    - Criteria:
      1. According to the US government \$40,000 marks the current-year low income level for a family of 5

Since the Census data was so vast, some variables were purposefully excluded. One group of what might be considered “poor” are the University of Florida students. Students were excluded because many are technically poor as they have limited income, but many have resources that these other groups have no access to. Students often receive monetary aid in the form of scholarships and resources from their parents. Including university students in the population would have skewed the reality of the food deserts in Alachua.

The bus system in Alachua was also omitted from the study. The bus layer did not offer a real understanding of how the bus system actually works because it does not display individual routes, only the individual stops. This data would not have provided a real enough understanding of how users would navigate from their residence to the food store.

## Methodology



**Figure 2: Overall Methodology for Project**

The above flow chart details the overall methodology followed in identifying food deserts within Alachua County. Using the variables outlined in the prior section, individual layers were created and put into a new map. Following are layouts of the individual variables being selected from the Census 2010 data into layers and a buffer being placed around the Healthy SNAP locations.

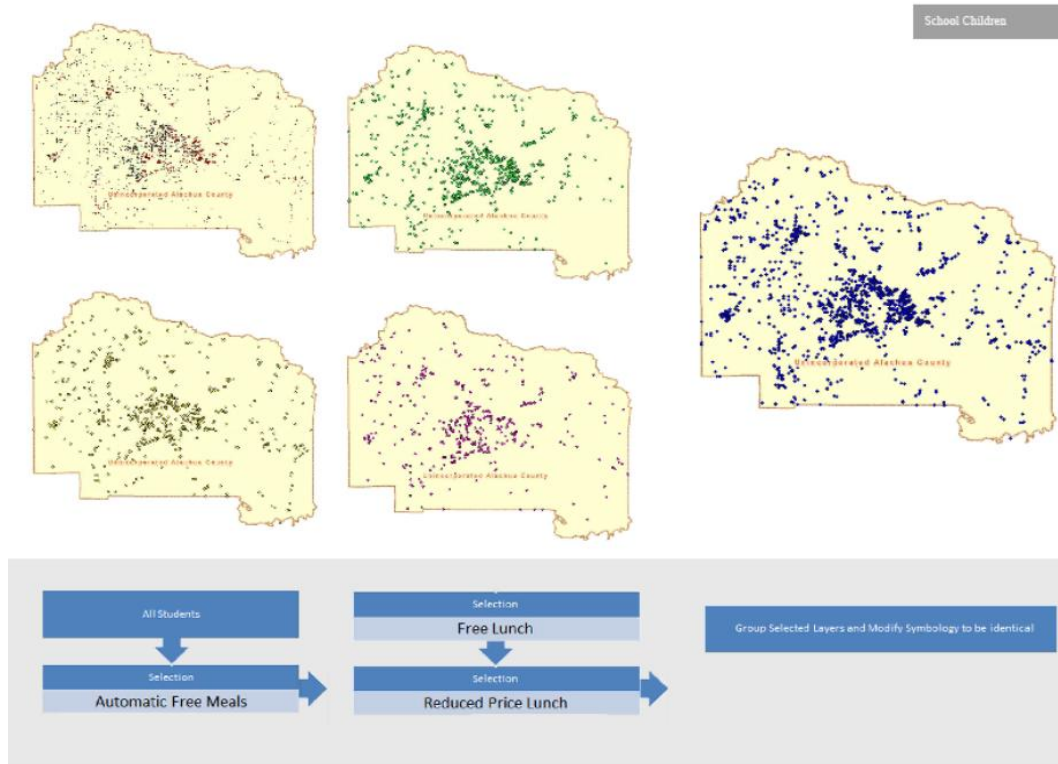


Figure 3: Poor Children

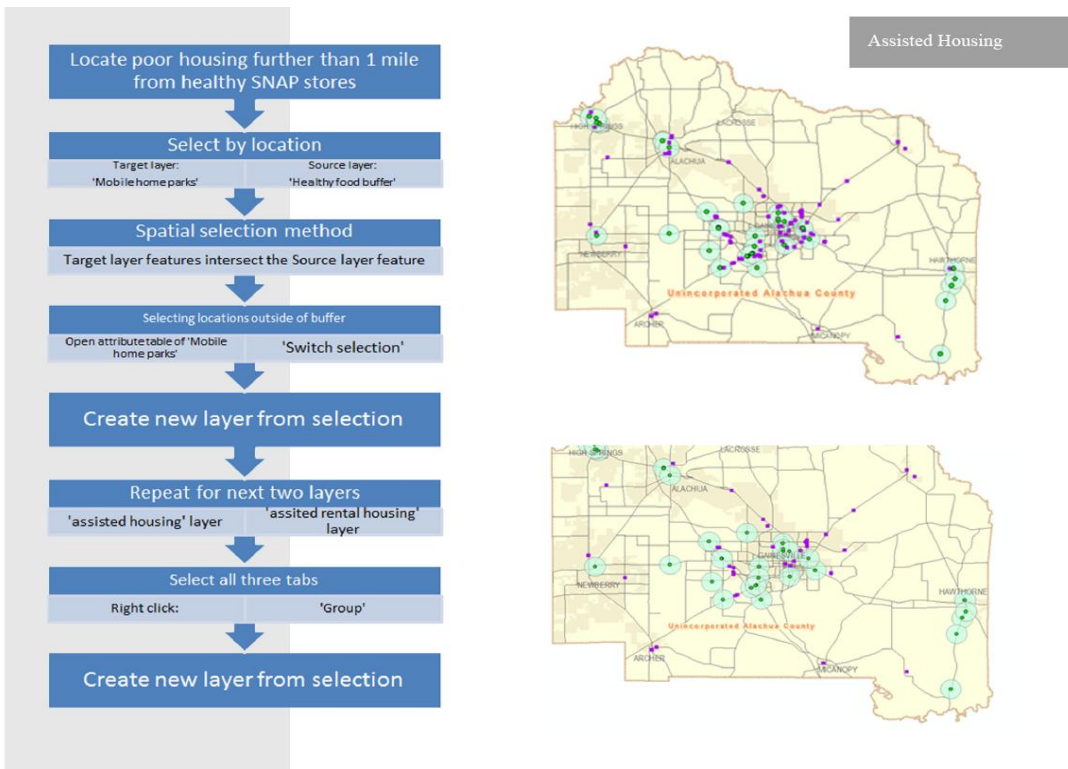


Figure 4: Assisted Living/Poor Housing

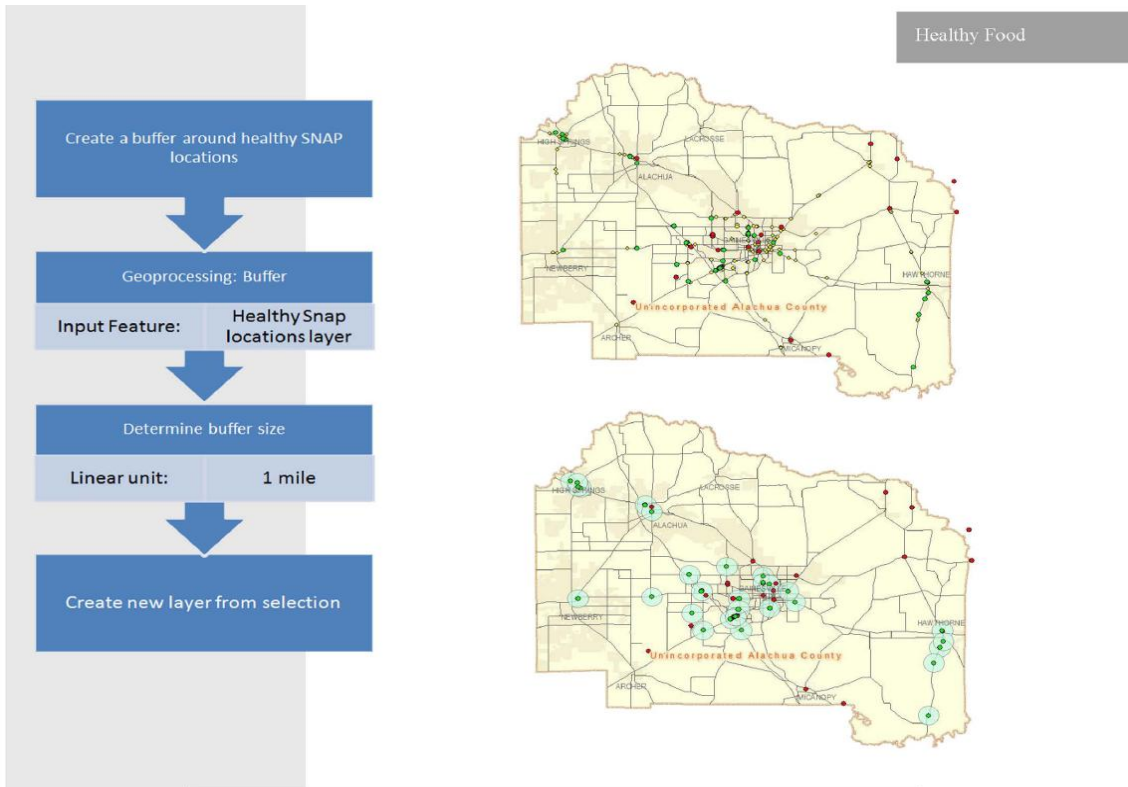


Figure 5: Healthy Food



Figure 6: Conservation Land

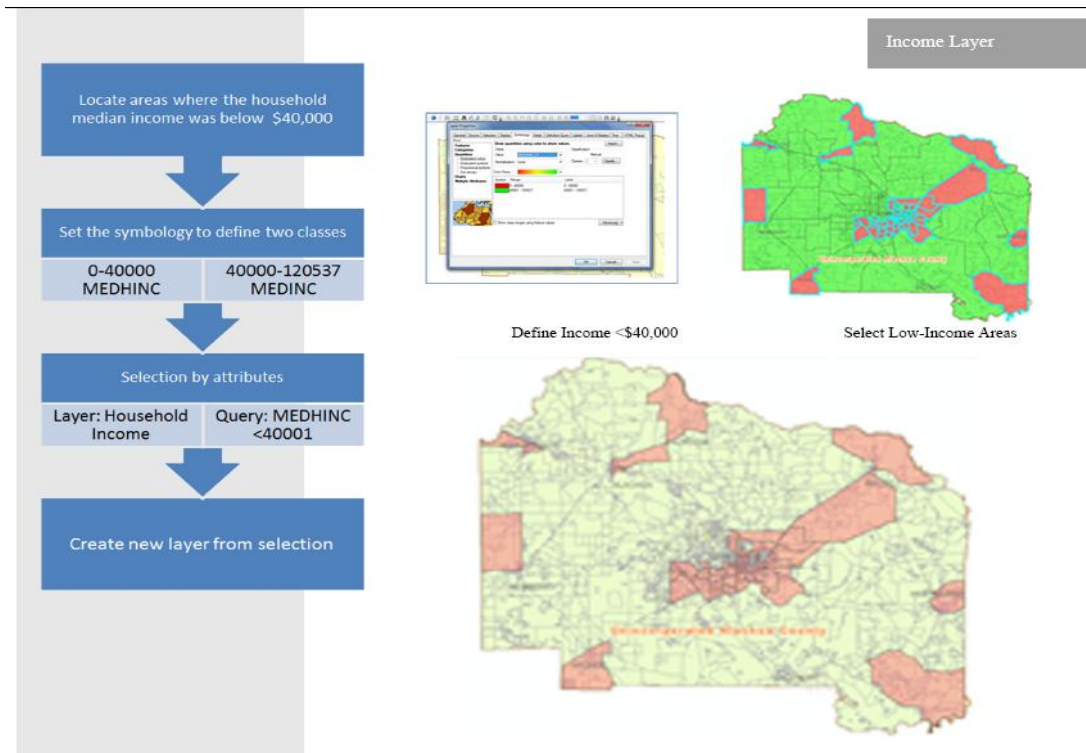


Figure 7: Low Income

The four new layers created, 'Children', 'Assisted Housing', and 'Healthy Food' were all put into a new map of Alachua County. A 1 mile buffer was formed around the SNAP accepting healthy food locations through Geoprocessing, representing the 1 mile that is considered "walk-able" by food desert standards. To locate the low-income children and housing locations that are not serviced by the healthy SNAP locations, select by location twice using 'Poor Children' and 'Poor Housing' as the target layers and 'Healthy food buffer' as the source layer. Using the spatial selection method, target specific layer features that intersect the source layer feature. Then to select the items that are outside the buffer open their respective attribute layers and select 'switch selection'. Creating a layer from these selections will then represent the residents outside of the reach of the healthy SNAP locations.



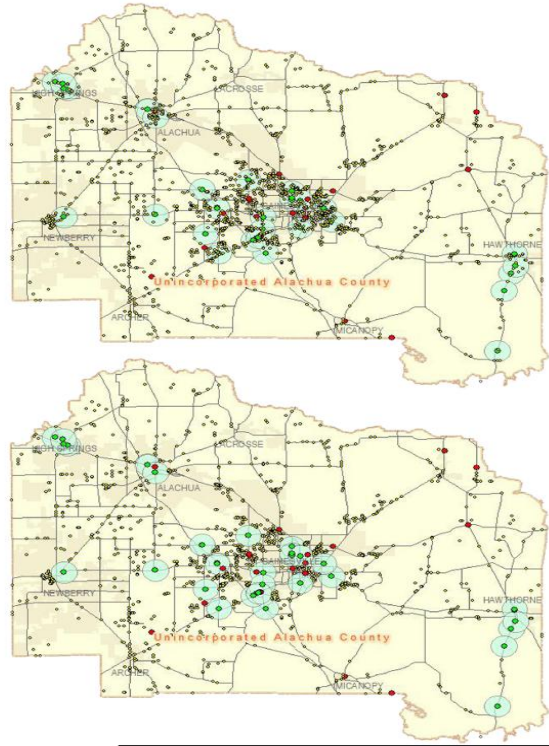
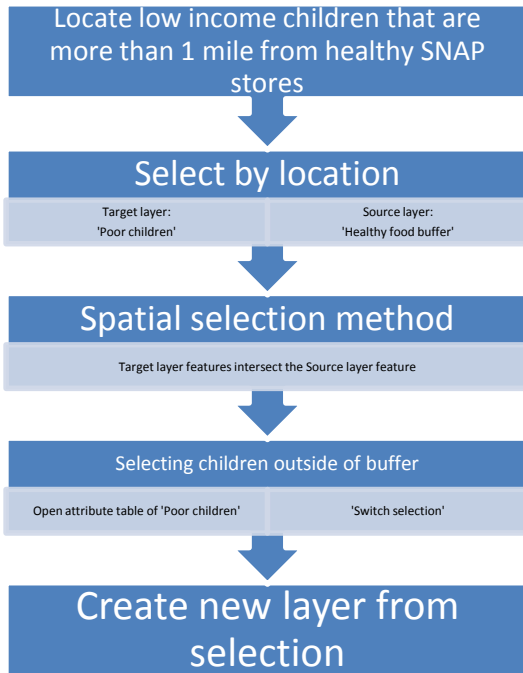


Figure 8: Select and Exclude 'Poor Children' within the Healthy SNAP buffer

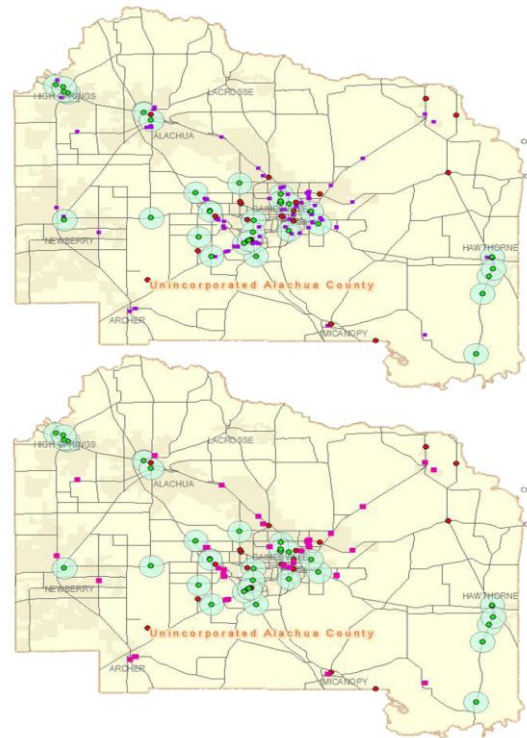
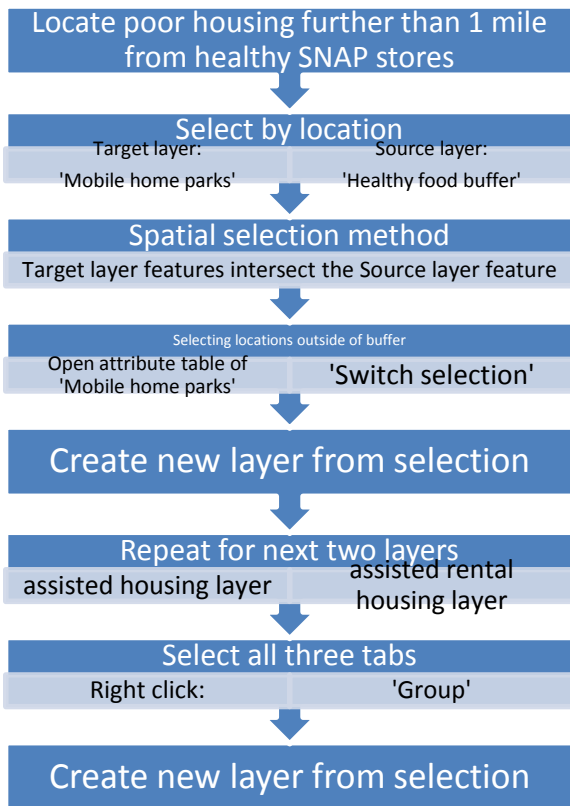


Figure 9: Select and Exclude 'Poor Housing' within Buffer of Healthy SNAP

Next identify high concentrations of the residents who are not being properly served. Overlay the 'Low Income' layer with these identified high density regions to reaffirm these locations. To make sure that the high density regions would be high impact, they shouldn't include an area that is uninhabitable, so we turned the 'Conservation' layer on to confirm that our identified regions were high impact. Finally using Freehand from the Drawing toolbar, the regions of interest were outlined and officially identified as food deserts.

### Results and Discussion

After developing a map of Alachua County that outlined low income areas, children densities, conservation areas, and their locations relative to healthy food stores and farmer's markets we were able to come up with seven target areas.

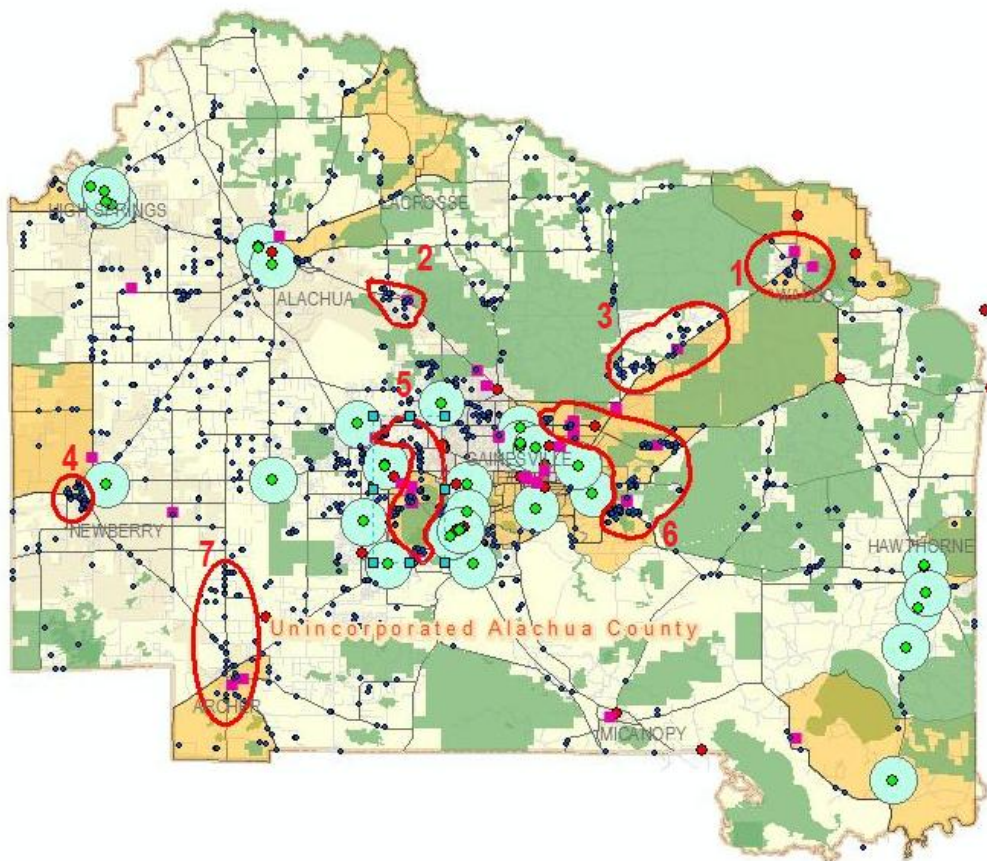


Figure 10: Food Desert Locations

These seven areas that grouped together the highest concentrations of impoverished children along with the concentrated housing areas that were determined poor. These areas are outside the one mile buffer zone for healthy food stores that accept SNAP.

**Area 1:**

This food desert encompasses the most impoverished part of Waldo. It includes Matthew's Mobile Home Park, assisted rental housing, and the largest concentration of poor children of Waldo. There are no healthy SNAP locations in Waldo and the nearest food store is Waldo Supermarket. There is a farmer's market north of this zone but SNAP is not accepted. A small grocery that accepts SNAP, located somewhere in this desert, is needed.

**Area 2:**

This food desert is located southeast of Alachua and contains Progress Mobile Home Court as well a relatively large concentration of poor children. There are no grocers anywhere close to this desert let alone a healthy SNAP location. Some sort of farmer's market or healthy food location is needed.

**Area 3:**

This food desert is located northeast of Gainesville halfway to Waldo. It consists of Steve's Service and Trailer Park, Elwood Trailer Park and one of the densest concentrations of poor children. Similar to Area 2, there are no grocers or healthy SNAP locations close to this desert. A SNAP grocer is needed to provide this large desert with health food options.

**Area 4:**

This is the smallest food desert on the map but the poor children density is very large. It is located in the low income section of Newberry. There is a Hitchcock's (fresh marketplace), which accepts SNAP located just outside the desert. The one mile buffer actually intercepts a small portion of this desert so no action might suffice.

**Area 5:**

This food desert is located on the eastside of Gainesville. It encompasses Cornerstone Mobile Park, Westgate Manor Mobile Park, numerous assisted housing and assisted rental housing and a large collection of poor children outside the one mile buffer. The closest grocer is a non-SNAP Winn-Dixie. The closet SNAP locations are three Publix stores and a Mother Earth Market. While no buffer is inside this desert no action might suffice as there are SNAP grocers within two miles.

**Area 6:**

This food desert is located on the westside of Gainesville and is the largest analyzed desert. It encompasses Brittany Estates Mobile Home Park, Lamplighter Mobile Home Park, Forest Green Apartments (Assisted Living), Eastgate (Assisted Living), Eden Park at Ironwood (Assisted Living), numerous assisted rentals and a large collection of poor children. Shortland Traveling Farmer's Market is located inside this desert so healthy food is accessible for some residents. However the problem with this desert is that with so many impoverished people located inside it there is not a healthy SNAP location nearby. A healthy SNAP location is important because most residents rely strictly on SNAP to purchase their food and with gas stations being the only close SNAP accepted store they would become victim to buying unhealthy food. A Wal-Mart and a Food Lion (both healthy SNAP locations) are located to the right of this desert. However because of how far east this desert stretches an additional healthy SNAP location is needed on the western outskirts of Gainesville.

**Area 7:**

This food desert encompasses the northern low income section of Archer as well as poor children scattered to the north. The desert contains Sleepy Hollow Mobile Home Park, Archer Village (Assisted Housing), assisted rental housing and plethora of poor children. There is one non-SNAP grocer located northeast outside the desert. There is not a single healthy grocery store in Archer or a buffer anywhere close, so development of one is needed.

## Ridding the World of Food Deserts

Food is a right - especially healthy food. One of the most low-impact, low-cost solutions that our team came up with was to convert existing grocery stores/farmer's markets to SNAP accepting. To gauge the impact that this solution might have we went into our map and selected 'Poor Children' and 'Assisted Housing' within 1 mile of a non-SNAP accepting store. This selection identifies low income children and low income housing locations who could be helped. Over 1,000 kids and 17 assisted housing locations (a 1/3 of assisted housing with about 700 people) would be impacted.

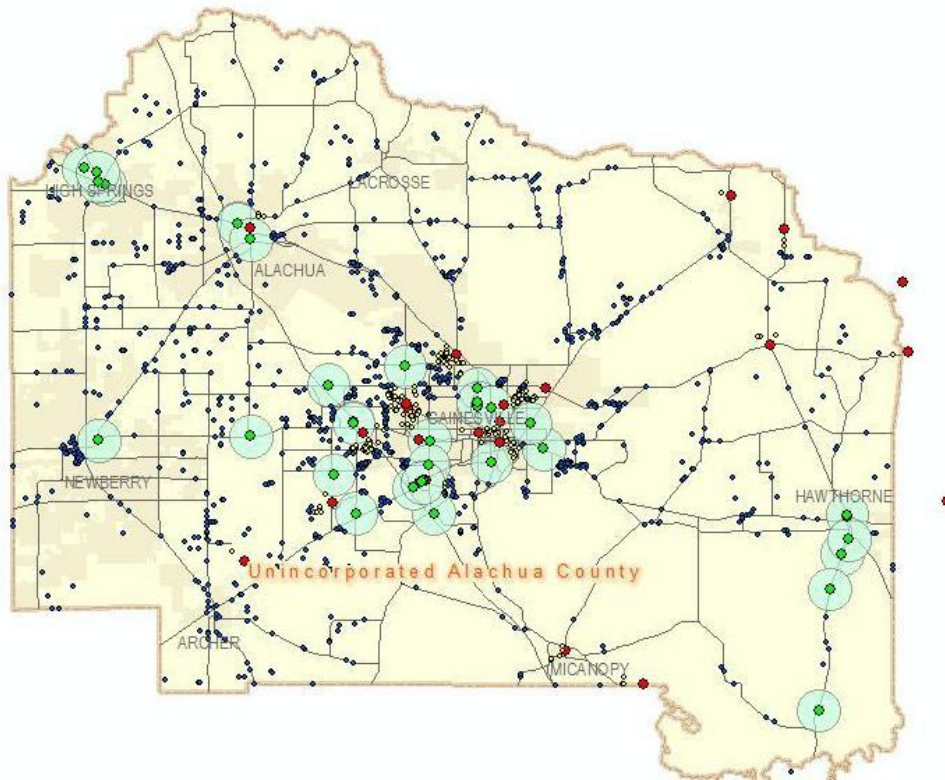


Figure 11: Converting all Healthy Stores to SNAP Stores