

### Homework #3

Food deserts are described as areas where residents have limited access to affordable and nutritious food which poses a significant challenge for public health as well as their economic well-being. In this report for the Department of Health and Human Services, I focus specifically on food deserts in Wake County, their demographics, and recommend a new location for a supermarket based on factors such as low-income households and vehicle ownership.

Before being able to extensively research, we must define what a food desert is. For this report, a food desert is an area more than a mile away from a supermarket. Figure 2 illustrates the distribution of food deserts in relation to supermarkets in Wake County specifically. When conducting this analysis, some scenarios came up where the census block was only partially a food desert. In these cases, I made sure to include them as a food desert block. I felt like this approach ensured that all areas were being accounted for when it came to the analysis of food access challenges.

To get a better understanding, I did a more detailed analysis of Wake County. One of these analyses was to see what percentage of Wake County is considered a food desert. According to my analysis, 9.9% of Wake County is considered to be a food desert. Beyond identifying these areas, I wanted to see the socioeconomic impact of food deserts and if low-income households are disproportionately affected. From what I found, 21.46% percent of households are considered low-income households (income less than \$35k), and 3.89% of households in food deserts have no vehicle. These findings emphasize the importance of targeted interventions that help uplift the lower class who are disproportionately affected by factors such as food insecurity.

To determine the optimal location for the new United States Department of Agriculture-funded supermarket, I identified the Census block group with the highest percentage of low-income individuals when it came to the percentage of households in poverty. The analysis helped reveal that the block group with the GEOID 371830524091 is the most suitable candidate as it experiences the highest concentration of residents facing economic hardship. According to the data, 74.04% of households in this Census block are considered low-income households (income less than \$35k. To better visualize where this block is, figure 3 highlights the selected location with a blue marker, highlighting the importance of intervention in this area.

As I said in the paragraph above, the primary reason for selecting this location is the high percentage of low-income households. Rather than choosing the census block group with the highest aggregate low-income households, I felt it would be more appropriate to choose based on percentages, allowing for smaller and often looked upon blocks to be chosen. On top of having a high percentage of low-income households, the percentage of households without a vehicle is 22.9%. When a household has no vehicles, this places even more importance on having a supermarket close by.

I feel it is important to focus on the smaller counties as they are often neglected for larger, more populated areas. These areas frequently experience limited investment in their infrastructure and essential services, leading to a lower quality of life such as food deserts. Prioritizing food access in smaller counties can ensure that these rural communities are not left behind.