

# Food Accessibility in Relation to Income

## A Multi-Regional Analysis for Jefferson County, Kentucky

### Introduction

After industrialization and urbanization in the 19<sup>th</sup> century, America's food shifted from the back yard to large multinational corporations. The small farmer was replaced with monocultures and factory farms that paved the way for fast food, chain restaurants, and highly processed commodities. What was in season, what you had planted, or what had done well that year was no longer important. Food now came from a single provider that distributed to the local grocery store, restaurant, or fast food chain. What food you had access to was no longer in your hands, but in the hands of the government and corporations. Food accessibility has changed as the United States has gone from small individual farms to large monoculture factory farms and fast food, and more recently back again to the slow food movement and farmer's markets.

This shift in food access has changed the way Americans eat. Different groups of people, however, are affected in different ways. For example, in the past few decades, a new issue has been brought to attention, food deserts. A food desert describes an area that is lacking access to enough fresh and nutritious food to allow residents to maintain a healthy diet. These areas tend to lack access to fruits and vegetables, unprocessed foods, and restaurants that prepare fresh meals, and are instead, dominated by fast food establishments. Food accessibility has fluctuated the past few centuries throughout the United States, affecting different races, classes, and areas in many different and complex ways. I have chosen to look at how income affects accessibility to fresh food in today's society by analyzing three different zip codes in Louisville, Kentucky, in relation to the number of restaurants, grocery stores, farmer's markets and fast food establishments available (Figures 1-2).



Figure 1: Jefferson County, Kentucky

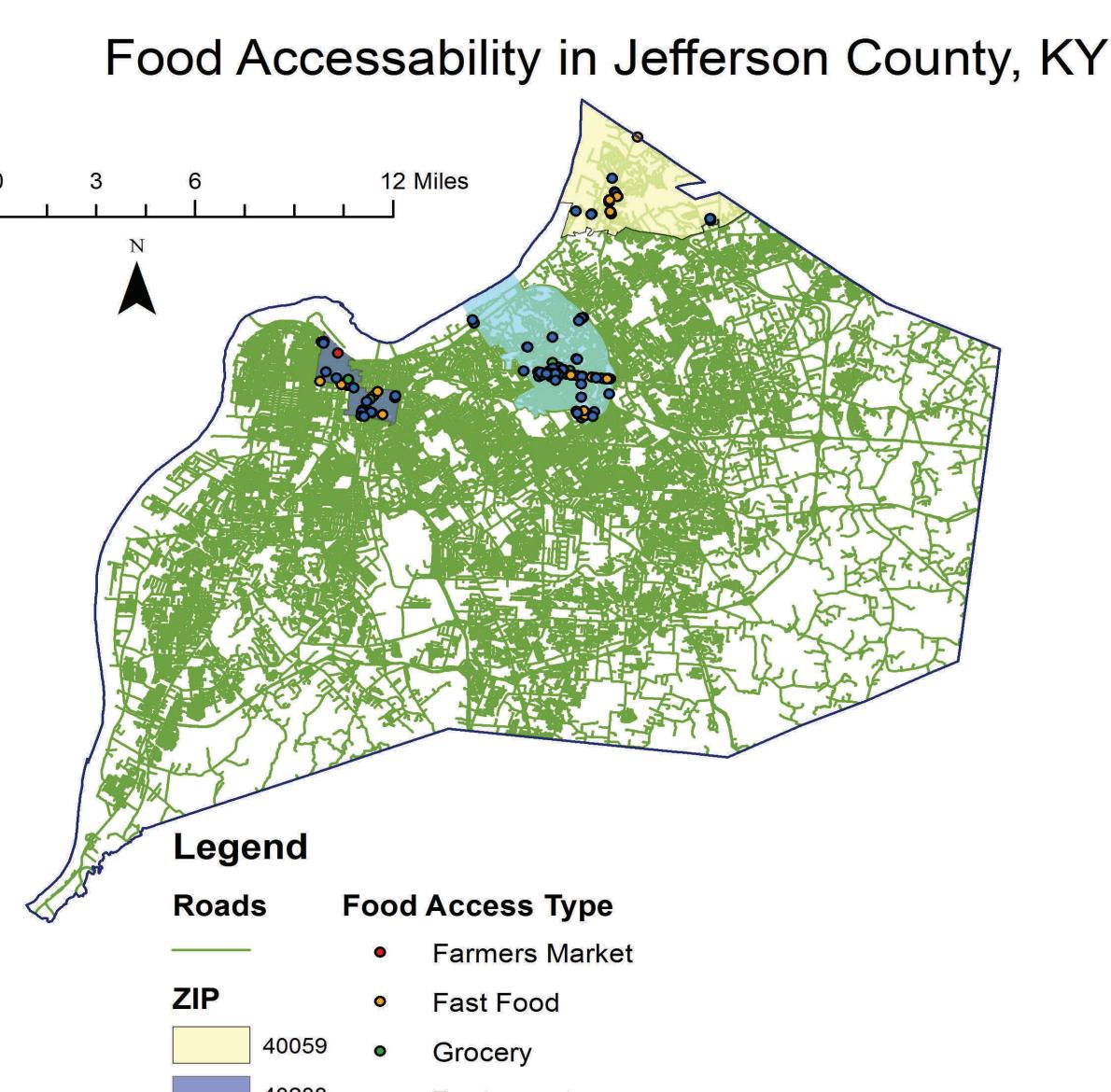


Figure 2: Locations of farmers markets, fast food establishments, grocery stores, and restaurants in 3 zip codes of Jefferson County, Kentucky

### Methodology

To begin, I choose three zip codes in Louisville, KY, that represented a range of median incomes: a high-income, middle-income, and low-income area. As no current data was available for food accessibility in these zip codes, I had to create my own data. I compiled addresses for four types of food access (restaurants, grocery stores, farmer's markets, and fast food establishments) within these areas, and then geocoded the information to create point data. I then used the select by attribute query and the clip tool to condense census, street, and topography data to the extent of my analysis. Once, I had created a reference layer for my chosen zip codes, I joined the point layer data with the median income census data layer and performed a spatial join. This revealed the amount of each type of food accessibility in relation to the median income within the three different zip codes. I then used proportional symbology to show the relative distribution of each food access type in relation to median income on the map (Figures 6-9). The resulting maps showed a relationship between food accessibility in accordance to the number of restaurants, grocery stores, fast food chains, and farmer's markets in relation to median income within the three

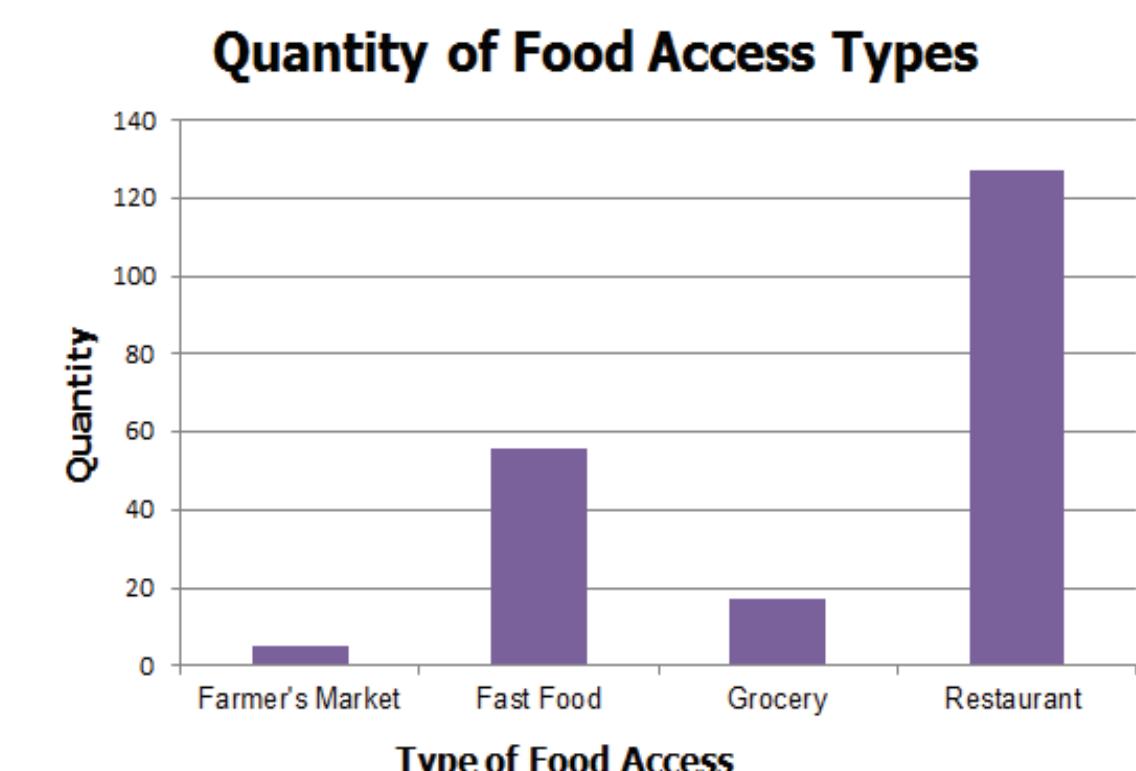


Figure 3: Number of farmer's markets, fast food establishments, grocery stores, and restaurants, in 3 zip codes of Jefferson County, KY.

### Results

The resulting maps revealed several patterns in relation to median income and food accessibility. There are more restaurants, grocery stores, and fast food chains per area in the middle-income zip code than there are in either the low or high-income zip codes. However, there are more restaurants per area in the high-income zip code than there are in the low-income area, while there are more fast food restaurants per area in the low-income zip code than in the high-income zip code. In addition, there is an equal number of grocery stores in both the low and high-income zip codes, while there are more farmer's markets per area in the low-income zip code than in either of the other two areas. different zip codes (Figures 4-9).

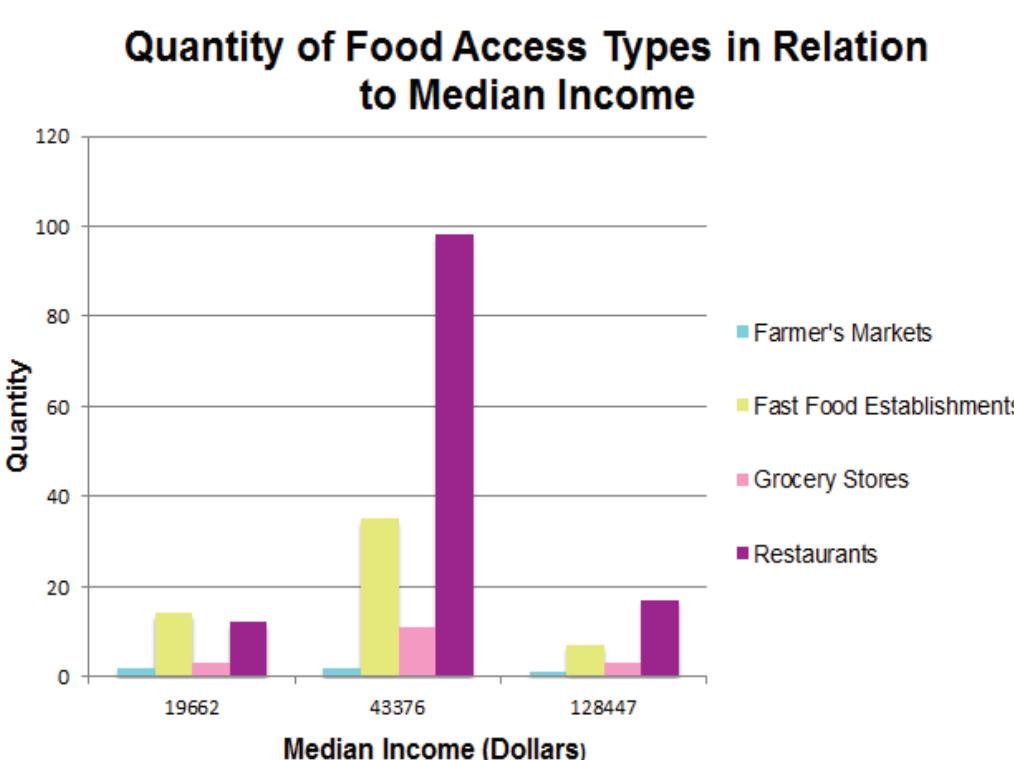


Figure 4: Number of farmer's markets, fast food establishments, grocery stores, and restaurants in relation to median income

Food Access in Comparison to Median Income

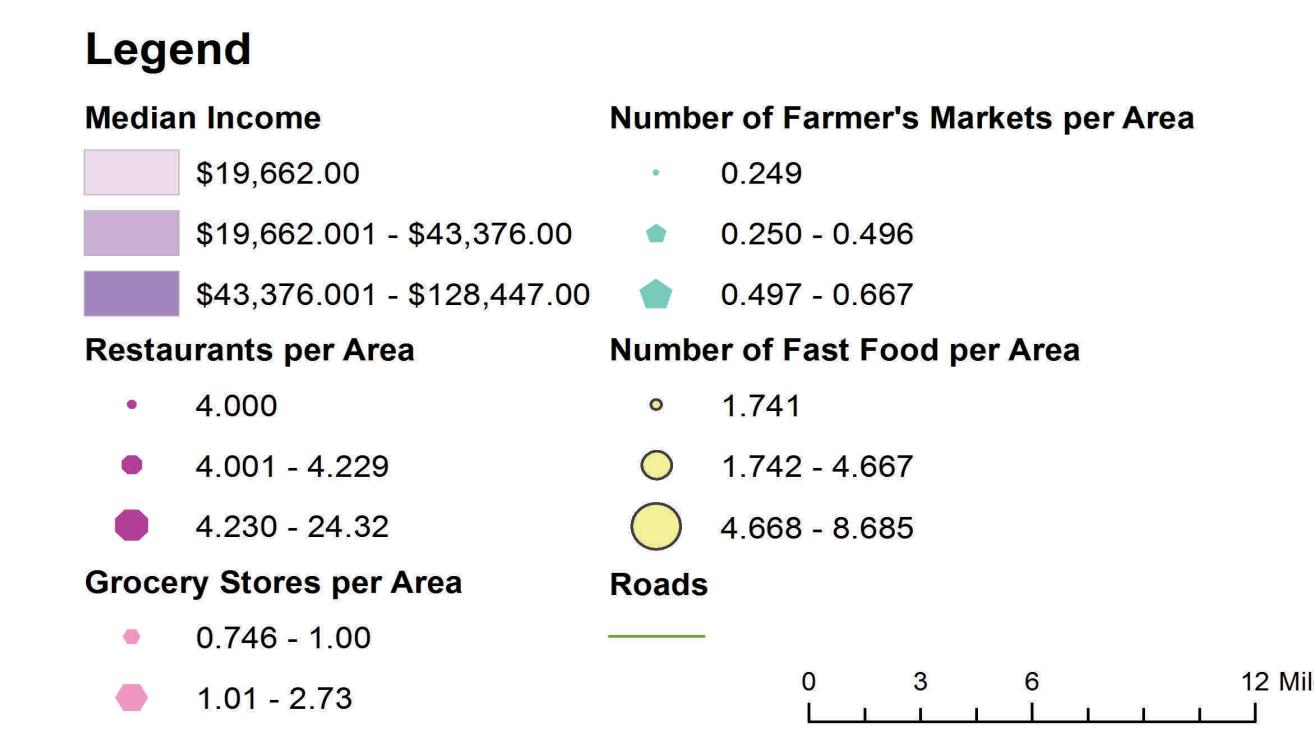
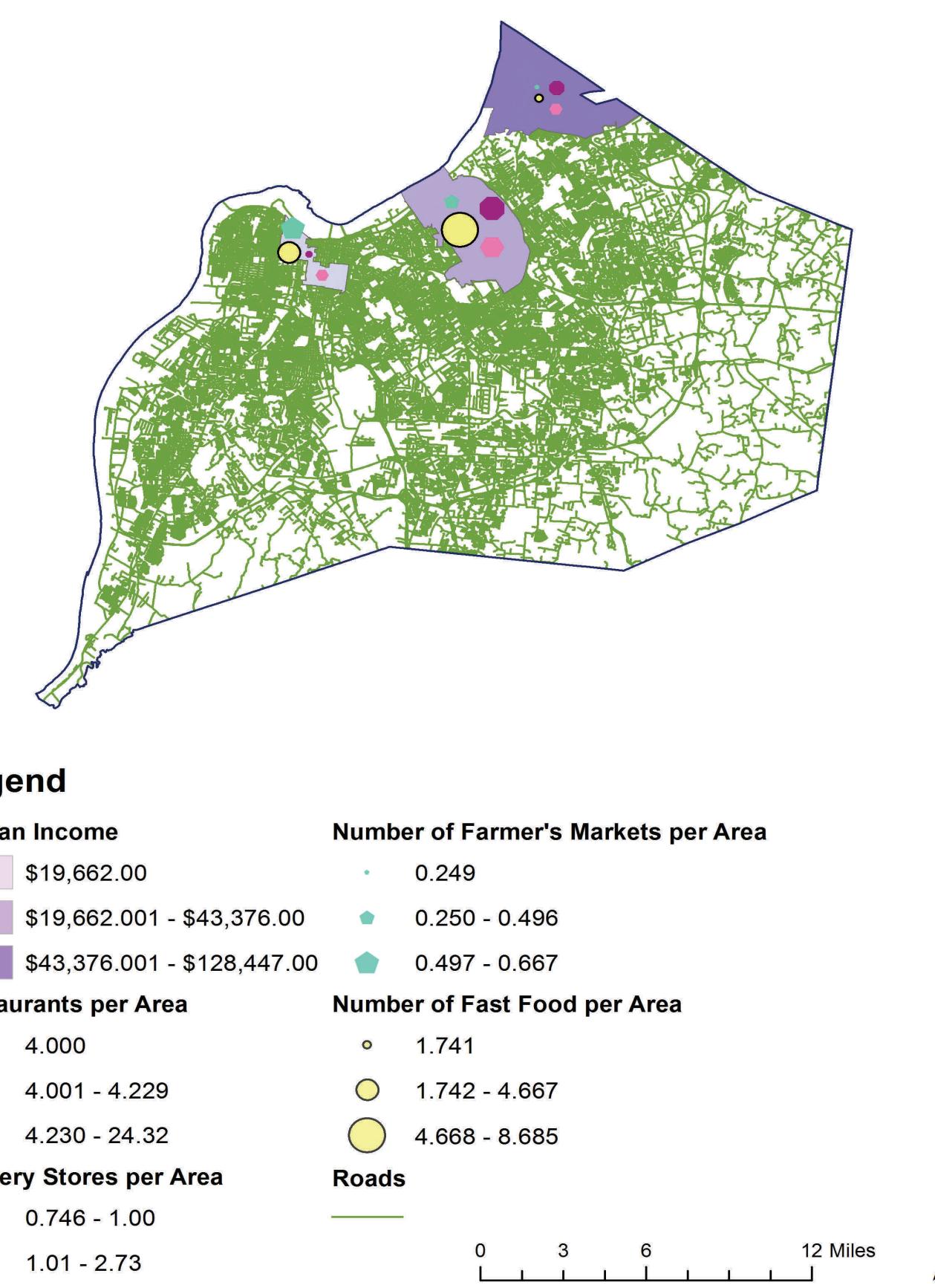


Figure 5: Number of farmer's markets, fast food establishments, grocery stores, and restaurants in relation to median income for 3 zip codes in Jefferson County, Kentucky

### Conclusion

These revealed patterns allow for several deductions to be made. The middle-income and high-income zip codes have access to a large proportion of fresh food, while the low-income zip code, with the exception of access to farmer's markets, may be considered a food desert due to a higher proportion of fast food establishments than other fresh food access types (Figures 4-5). The causes for these relationships, however, could be the consequences of a variety of social and governmental factors. For example, the high proportion of farmer's markets in the low-income area could be the result of advocacy groups or governmental intervention working on decreasing a food desert in the area, or it could be that people in the high-income areas tend to eat out more often than those with less income, having little use for farmer's markets. The possibilities are endless for what social and governmental inducers may have created these relationships. It is, however, clear that there is a definite connection between income and food accessibility in these regions of Jefferson County, KY. With further analysis, it may even be possible to apply these relationships to a broader spectrum, such as the United States as a whole.

### References

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- ArcGIS Online. *North America Streets Layer* [Data File]. Retrieved from ArcMap 10.01 ArcGIS Online.
- [www.urbanspoon.com](http://www.urbanspoon.com), [maps.google.com](http://maps.google.com), [www.city-data.com](http://www.city-data.com)
- Projection: NAD\_1983\_StatePlane\_Kentucky\_FIPS\_1600

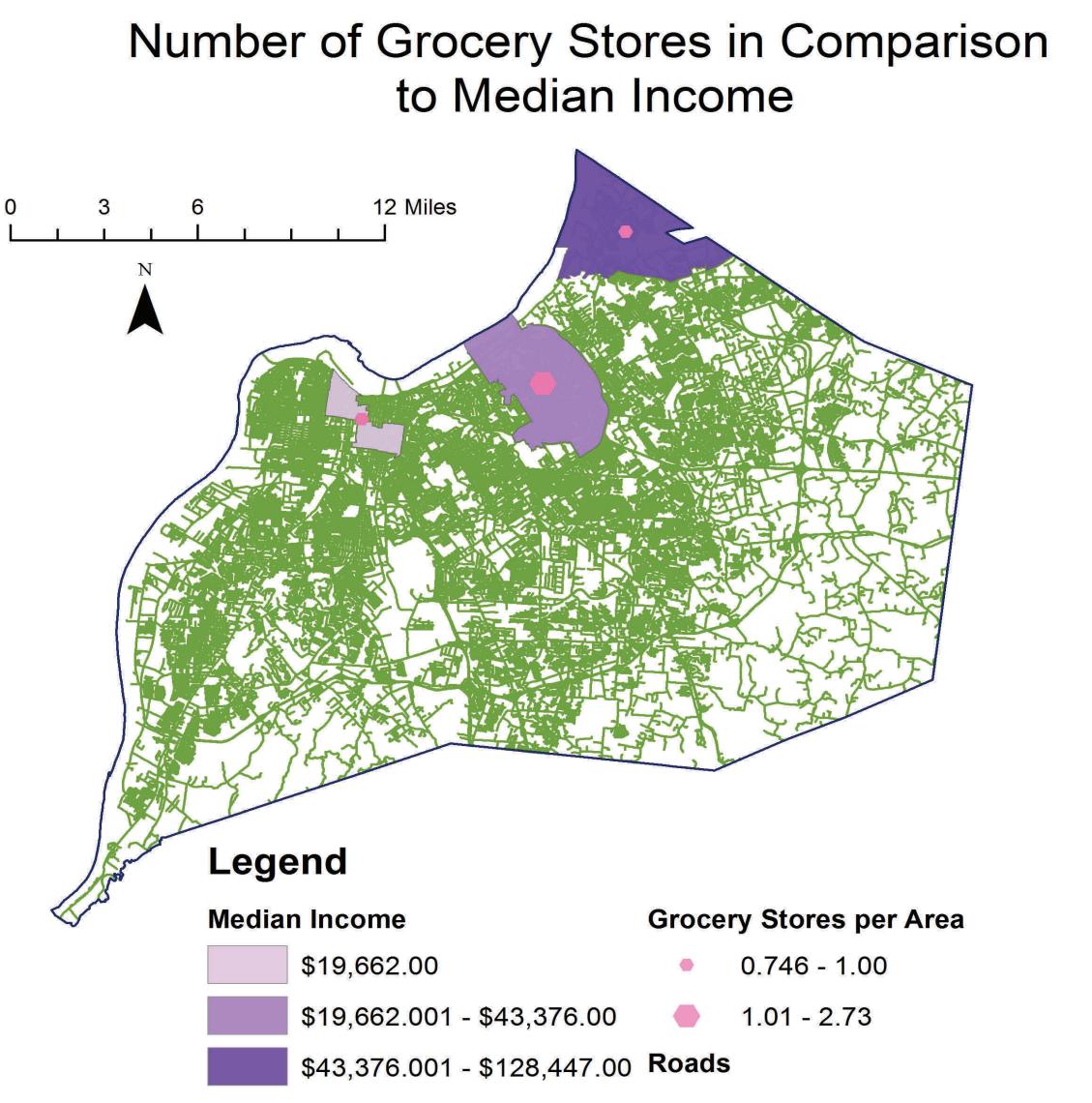


Figure 6: Number of grocery stores in relation to median income for 3 zip codes in Jefferson County, Kentucky

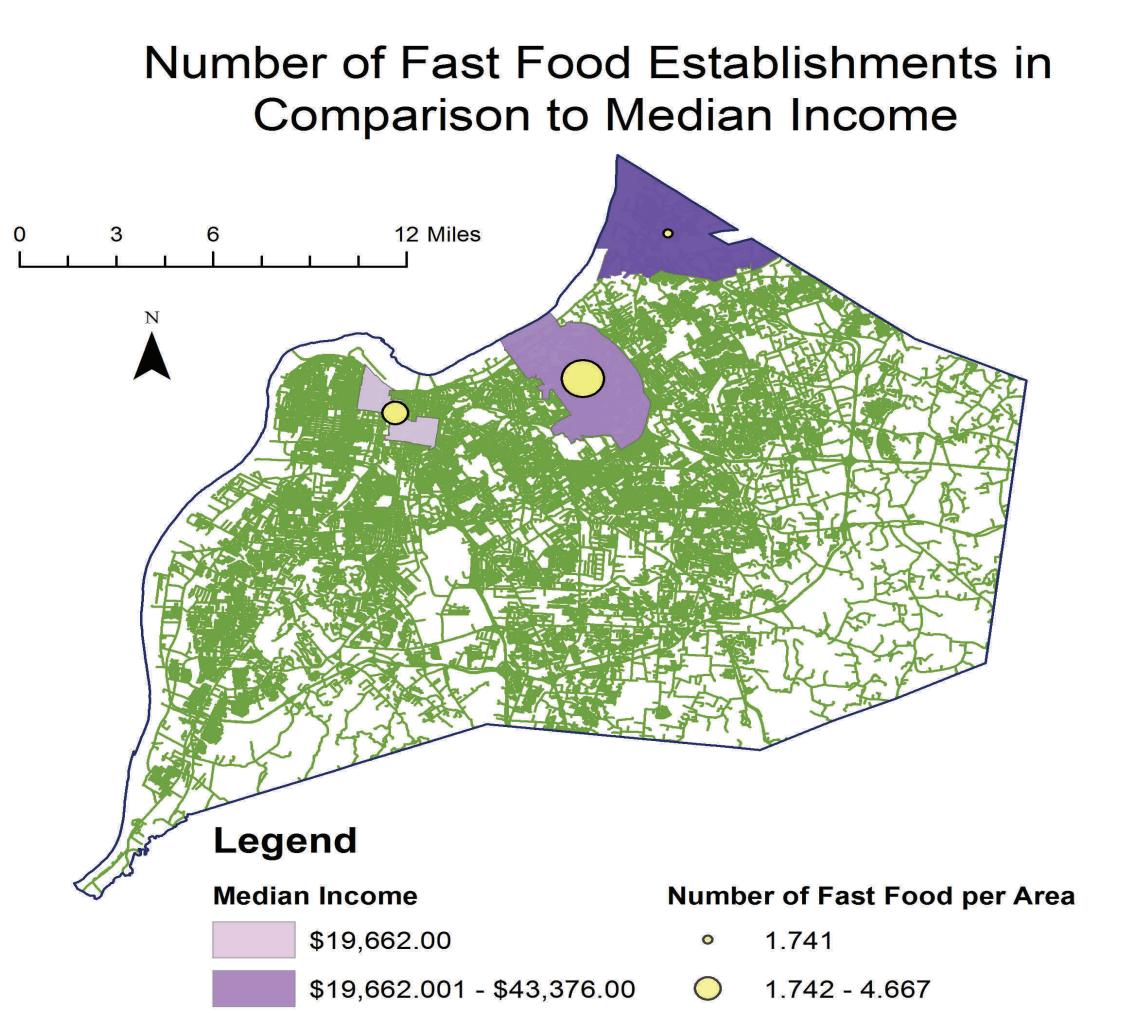


Figure 7: Number of fast food establishments in relation to median income for 3 zip codes in Jefferson County, Kentucky

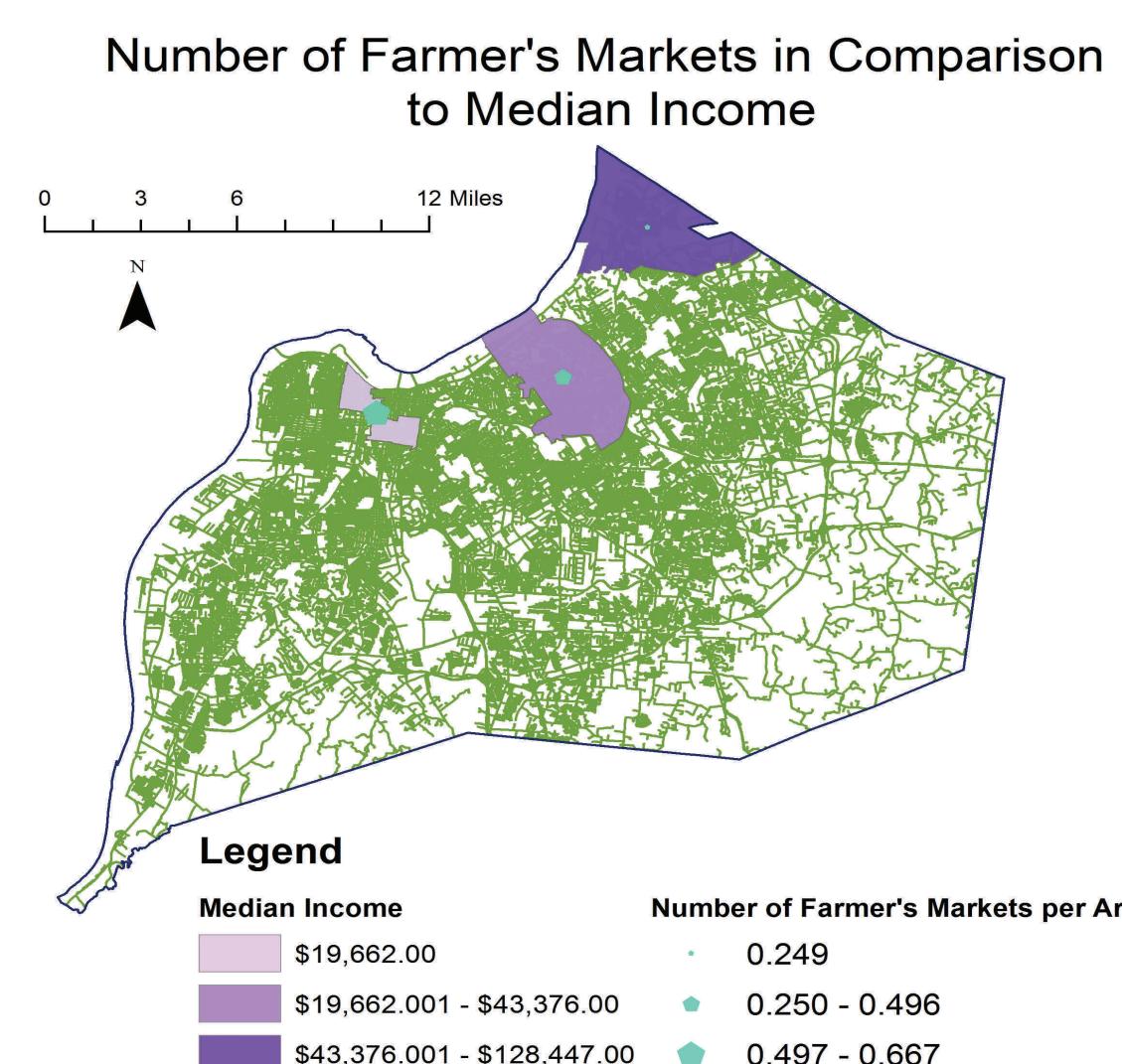


Figure 8: Number of farmer's markets in relation to median income for 3 zip codes in Jefferson County, Kentucky

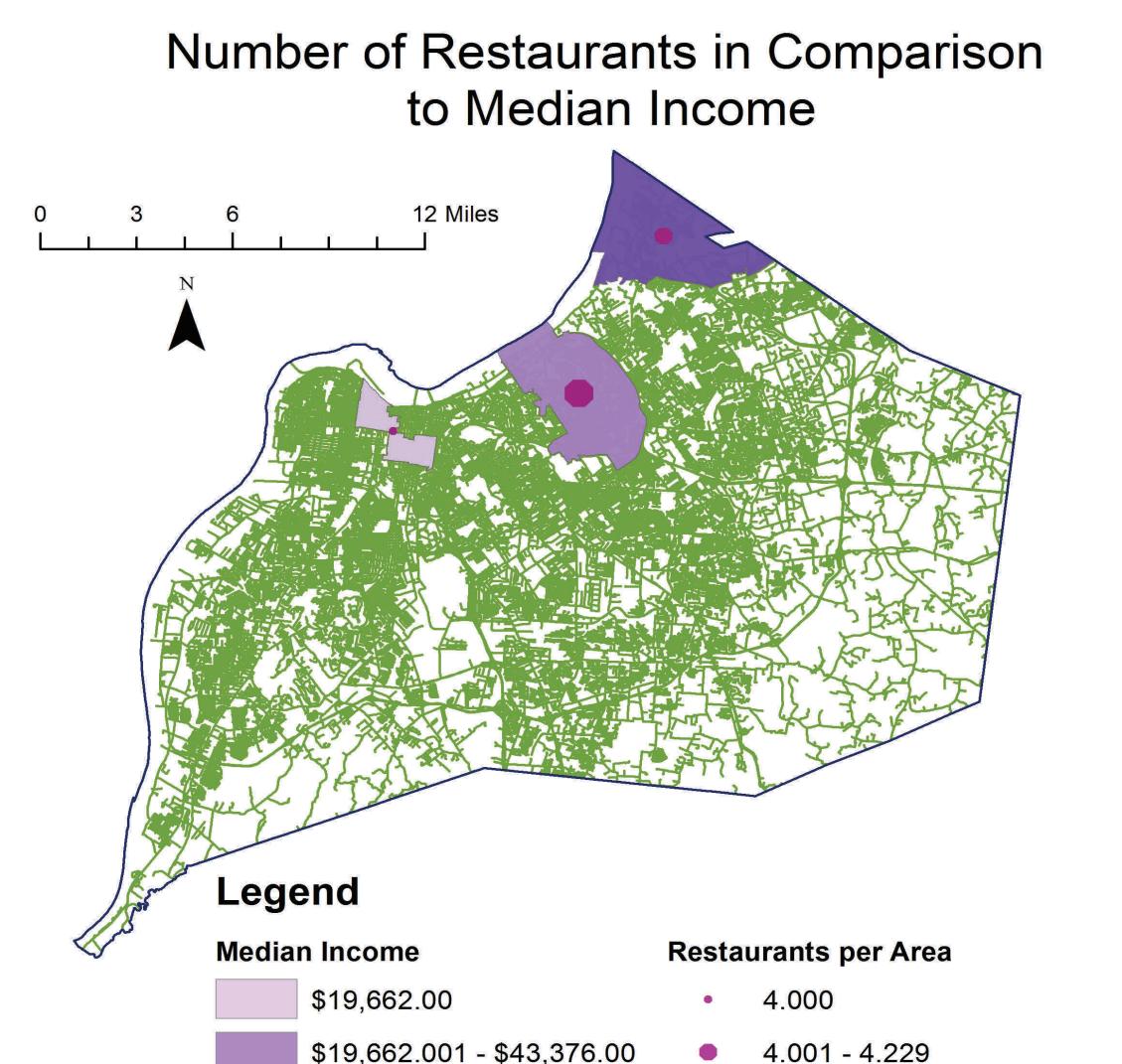


Figure 9: Number of restaurants in relation to median income for 3 zip codes in Jefferson County, Kentucky