FOOD INSECURITY IN SEATTLE, WASHINGTON EVALUATING THE SPATIAL DISTRIBUTION OF QUALITY GROCERY STORES

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Introduction and Purpose

Food insecurity is often measured in terms of physical distance to grocery stores; however, this project considers the quality rather than the quantity of grocery store facilities in Seattle, Washington. Using data on health inspection violations during the time period of 2007 to 2017, as well as income data from the American Community Survey, we were able to map the quality of food access to measure whether or not low-income areas were disproportionately serviced by low quality grocery options.

Methods

First, a table of all of the names, addresses, and dates of inspections and violations for grocery stores in Seattle was added to ArcMap. A Python script was used to count the number of violations over the last ten years for each individual grocery location. Then, using a street network layer, an Address Locator was created, which was then used to geocode the grocery stores. A census tract layer was then added and joined with ACS data on median household income. A spatial join was performed, including a sum calculation, with the grocery layer. A local cluster analysis (Moran's I) as well as a hot spot analysis was performed to illustrate areas where lower quality facilities are located.



Median Household Income 10865 - 52031 52032 - 69423 69424 - 84299 84300 - 102760 102761 - 190972







Findings and Conclusions

This analysis demonstrated that the spatial distribution of quality grocery stores in Seattle is spread out throughout the city. However, a closer look at the relationship between income level and relative grocery quality reveals that lower quality grocery stores may tend to serve lower income areas more frequently. The hot spot analysis reveals that there are certain areas in the city that contain a statistically significant amount of lower quality food facilities. The cluster analysis shows that there are some outliers in this data, however.

Using the statistics tool to understand the mean of the median household income for census tracts in the lowest quantile, the highest quantile, and the city as a whole in terms of food inspection violations also supports the findings that lower income areas may be disproportionately served by lower quality food facilities. While health inspection violations may not fully represent the quality of a store, this data can provide a basis for understanding the qualitative aspects of food security in a way that a quantitative analysis of physical access could not.



References

United States Census Bureau / American FactFinder. "B19013 : Median Household Income in the Past 12 Months in Inflation-Adjusted Dollars." 2016-2017. American Community Survey. U.S. Census Bureau's American Community Survey Office, 2017. Web. 27 February, 2018.

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