Predicting Food Deserts

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Project Description:

We have observed that our friends and family members in the USA are encountering challenges when it comes to accessing groceries. Some reside in remote rural areas, while others live in close proximity to urban centers, yet they all face this issue. Consequently, we have chosen to investigate the phenomenon of Food Deserts, which often go unnoticed, existing both within city centers and in rural regions. According to the USDA, residing in a food desert is defined as "living more than one mile from a supermarket in urban or suburban areas and more than 10 miles from a supermarket in rural areas." Notably, we have observed a recent increase in the prevalence of food deserts, and we hypothesize that the COVID-19 pandemic may be a contributing factor. To gain a deeper insight and develop strategies to address food deserts, this study will utilize Generalized Linear Models (GLMs) and decision trees to analyze and forecast their prevalence and features. Additionally, we will explore how variables such as age, race, income, poverty rate, and vehicle accessibility may affect the status of food deserts. The overarching aim is to contribute towards the eradication of hunger across the United States.

Smart Questions:

Specific:

1. What specific factors most significantly contribute to a tract being classified as a food desert?

Measurable:

2. Can we quantify the impact of the "PovertyRate" and "Group Quarters" on the likelihood of a census tract being classified as a food desert?

Achievable:

3. Is it achievable to build a predictive model with a good level of accuracy for identifying food deserts using the given dataset and what model can be used?
4. Additionally, we will derive practical recommendations to combat the prevalence of food deserts based on our model findings.?

Relevant:

5. How relevant is the lack of vehicle access in determining the status of a food desert in urban census tracts?
6. How does the model's performance vary across different demographic groups?

Time-bound:

7. How much does age influence a food desert in the next 4 years compare to 2015?
8. What is the impact of changing median family incomes on the likelihood of an area becoming a food desert.

Data Source:

This data is pulled from the Food Access Research Atlas, and contains information on supermarket access at various distances. This data measures access by the Census-Tract, and as such provides a fairly granular overview. Additionally, it combines Food Access data with other fields such as age, race, rural or urban, and income. It has 4000 observations.

Link : Food Access Research Atlas

Team Link: https://github.com/Keerthana0620/DATS6101-Intro-to-DataScience-Project1