

Food Access Data Analysis



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Food Access Research

- Motivation to identify and analyze communities with limited access to healthy food.
- Urban neighborhoods and rural towns without access to fresh, affordable food are known as food deserts.
 - About 23.5 million Americans live in food deserts.
 - Urban population more than 1 mile from nearest supermarket
 - Rural Population more than 10 miles from nearest supermarket



Inequities Associated with Food Deserts

- Dominated by fast food providers and corner stores with lack of fresh produce
- These populations are thus prone to health issues:
 - Obesity, cardiovascular diseases, diabetes.
 - Covid-19 Pandemic exacerbated these issues.



Research Questions

- What socioeconomic factors are associated with communities with limited food access?
- Does race share a correlation with food access?
- Motivation: Understand and analyze underserved communities.

Dataset Description

- Source: United States Department of Agriculture Food Access Research Atlas 2019
 - Contains census tract information for every county in United States
 - Census Tract: a subdivision of the county level
 - 3143 counties, over 73,000 census tracts
 - Key Variables: demographic data, median family income, population, poverty rate, low access 1 and 10.

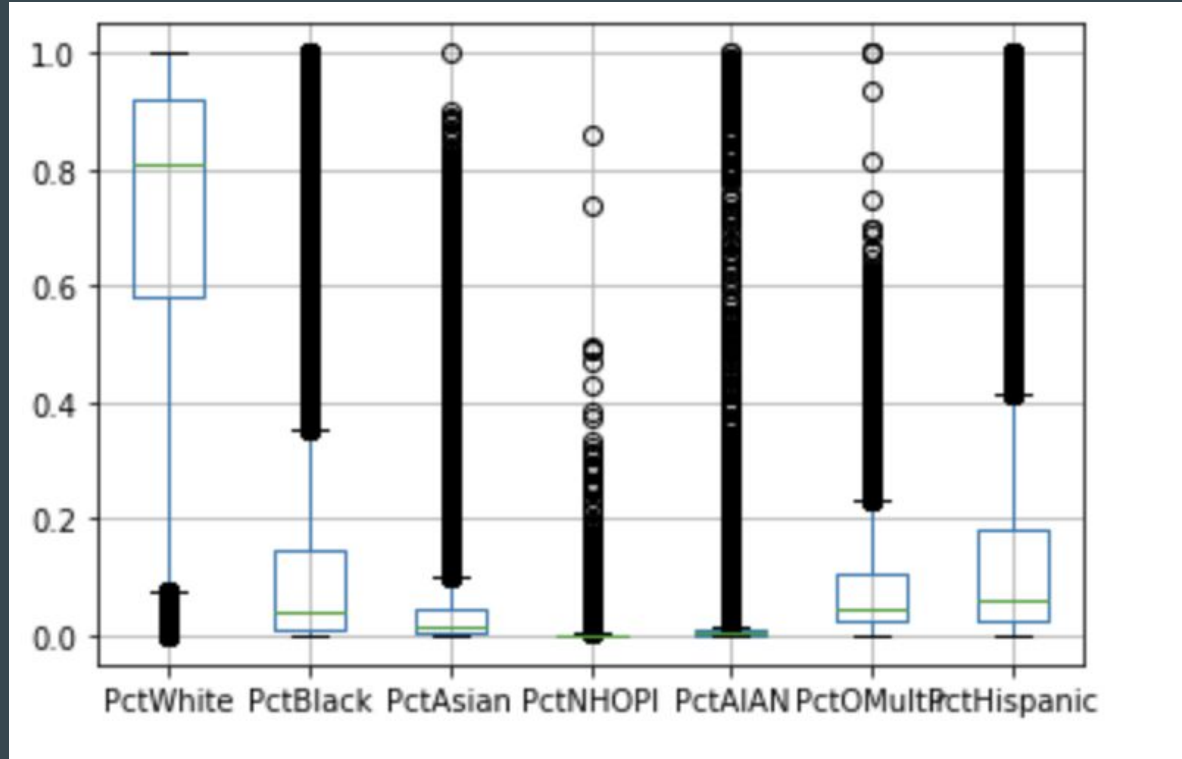
Exploratory Data Analysis

- Originally looked at racial data:

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Logistic Regression: 0.974  
Scaled Logistic Regression: 0.981  
Undersampled Logistic Regression: 0.982  
SVM Accuracy: 0.982
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- Great accuracy, however, PCA indicated one variable had too much weight
- Thus, we looked further at the income data.

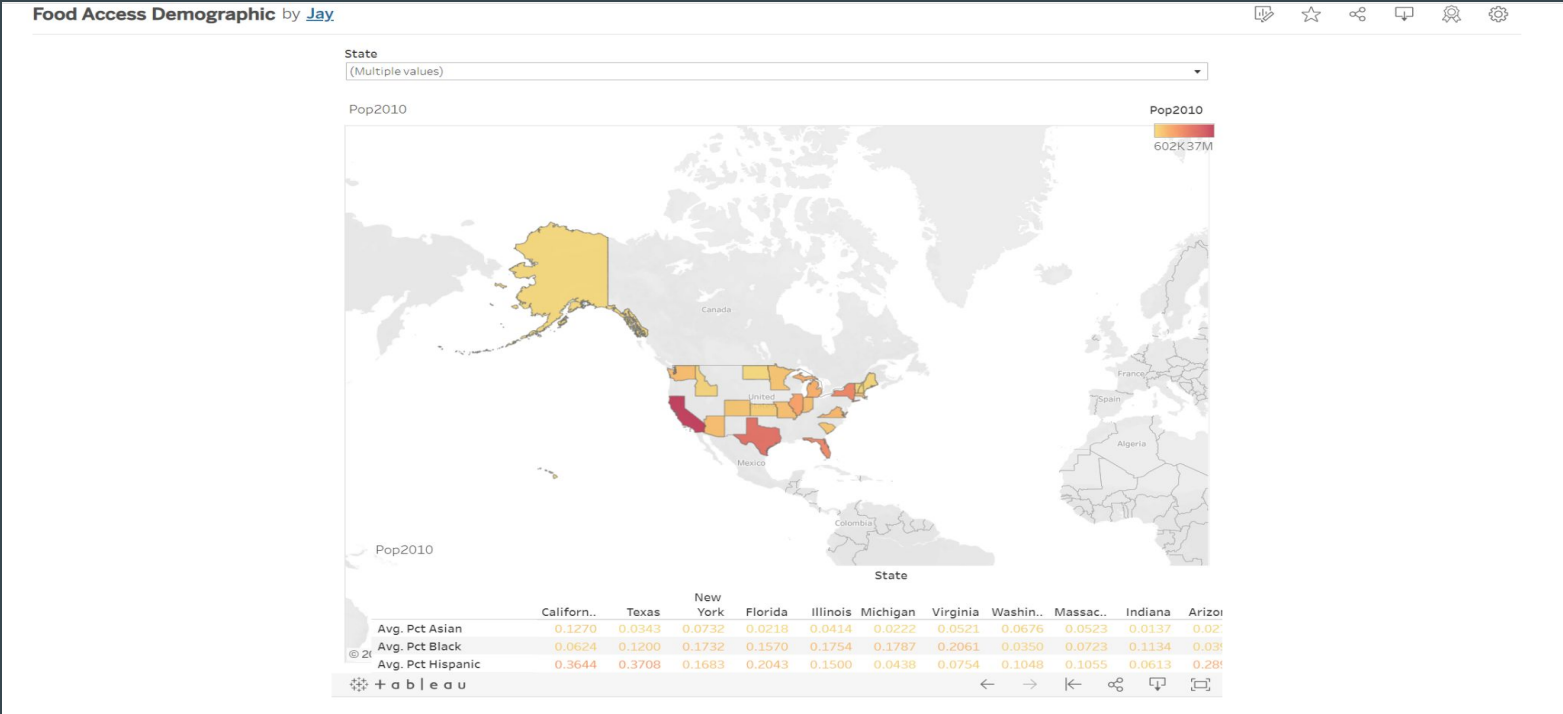
Exploratory Data Analysis



Machine Learning Analysis

- Predicted food deserts with 65% accuracy
- Predicted non food deserts with 60% accuracy
- Used Supervised Machine Learning Model with low access 1 to 10 as target variable.

Dashboard



Conclusion

- Racial data is significantly significant
- Income does not define food access for all populations.
 - This indicates other factors at play.