

Predicting Food Deserts Using Census Tract Data

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What Is A Food Desert?

- **USDA defines a food desert as an area where at least 33% of the population:**
 - **Lives farther than 1 mile from a grocery store in urban areas**
 - **Lives farther than 10 miles from a grocery store in rural areas**



Why Predict Food Deserts?

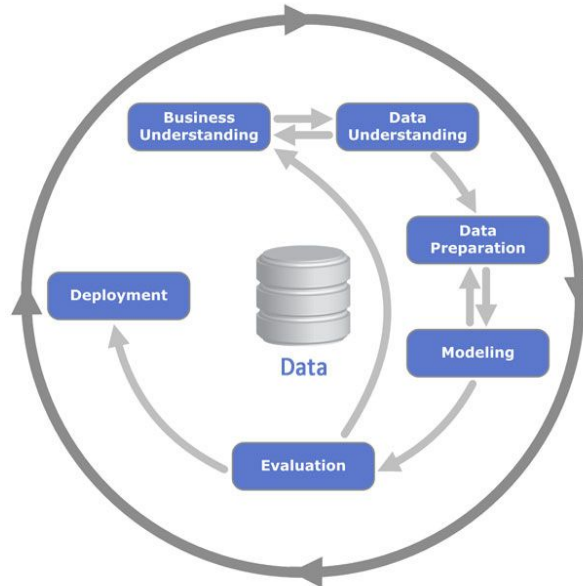
- Diabetes - world leader
- Obesity - world leader
- USDA last released a food desert locator in 2015
- Model to predict where food deserts are likely to occur
- Update the model as new socioeconomic data is brought to light
- NFFI



Data

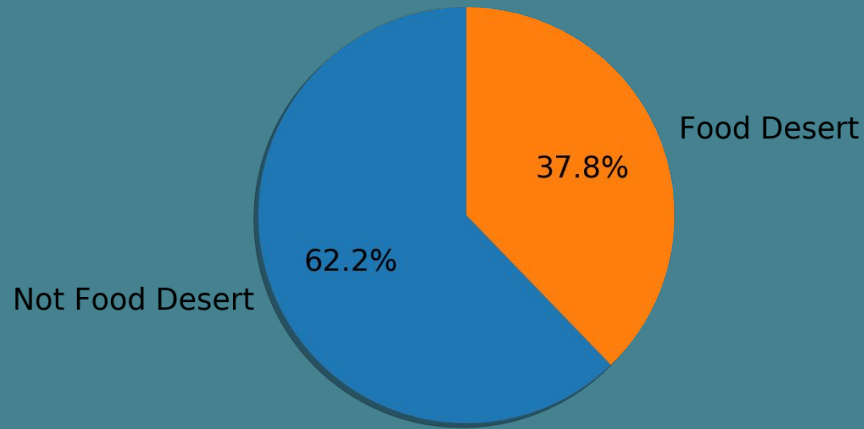
- ERS.USDA
- CENSUS
- Census Tracts
- 72,865 rows and 51 features

CRISP-DM Process Diagram

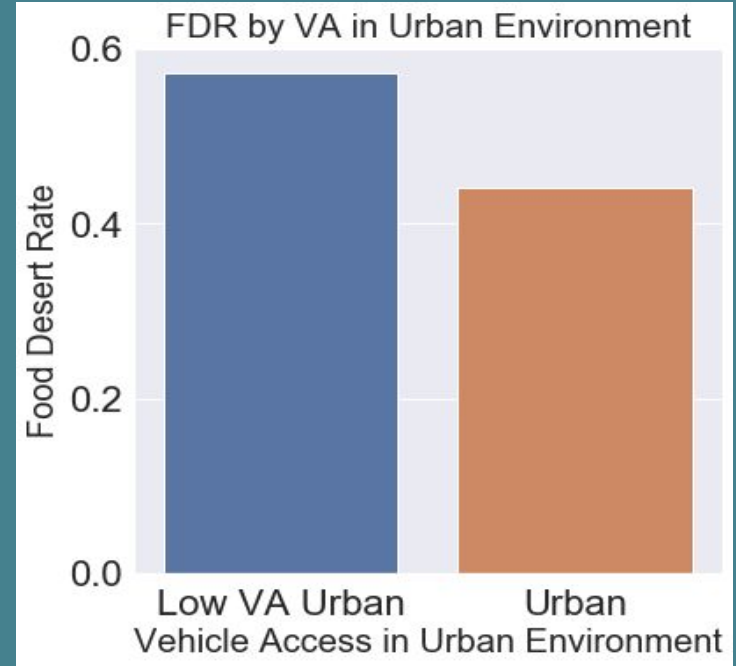


Source: Kenneth Jensen

EDA / Feature Engineering



Class Imbalance



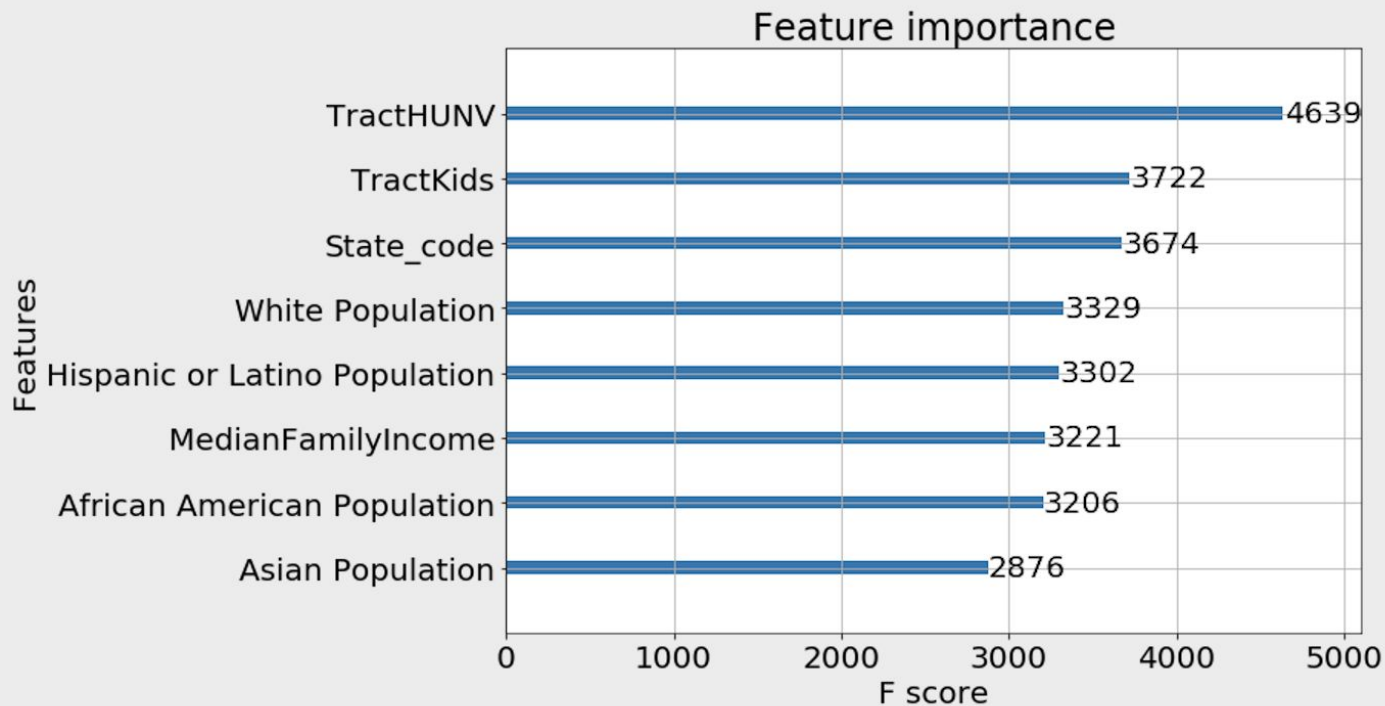
P-Value of 2.28×10^{-163}
Test Statistic of 27.24

Modeling Selection



Model Type	Recall	F1 Score
Baseline Model	.40	.42
Decision Tree (TomekLinks)	.75	.68
Random Forest (TomekLinks)	.77	.70
XG Boost (SMOTEENN)	.80	.67

Conclusions



Next Steps

- Food Swamps



Any Questions?



Sources:

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<https://endocrinenews.endocrine.org/u-s-leads-developed-nations-in-diabetes-prevalence/>

<https://ottawamagazine.com/eating-and-drinking/live-where-basics-are-missing-how-about-access-to-fresh-affordable-food-if-so-you-may-live-in-a-food-desert-even-downtown/>

<https://spoonuniversity.com/lifestyle/food-desert-obesity-rates>

<https://www.bluezones.com/2017/11/news-food-swamps-contribute-obesity-food-deserts/#:~:text=A%20food%20swamp%20is%20an,access%20to%20affordable%2C%20nutritious%20food>

<https://today.uconn.edu/2017/11/food-swamps-predict-obesity-rates-better-food-deserts/>