Predicting Food Deserts Using Census Tract Data

Jose Ramirez

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**
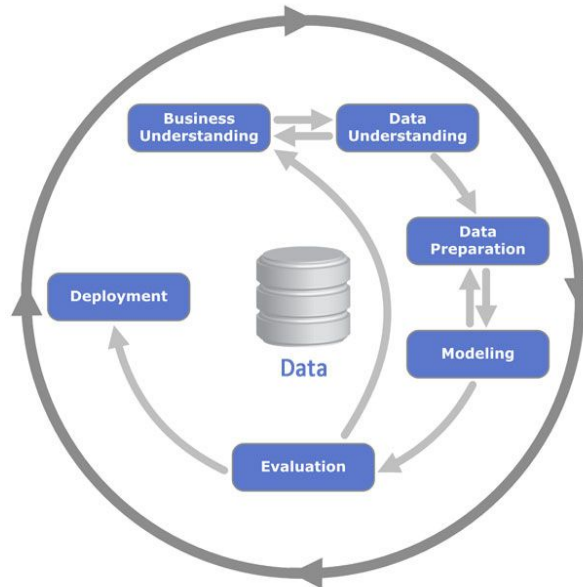
Why Predict Food Deserts?

- **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**
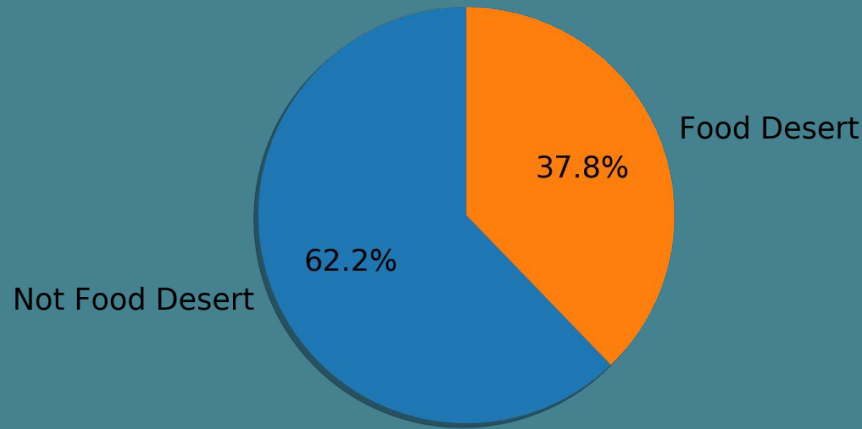- **Update the model as new socioeconomic data is brought to light**
- **NFFI**

Data

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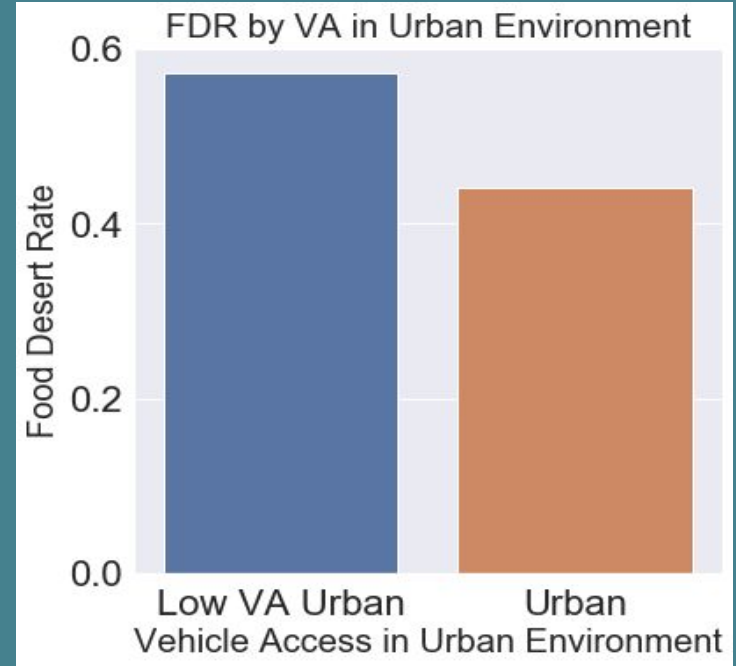- **72,865 rows and 51 features**

CRISP-DM Process Diagram

Source: Kenneth Jensen

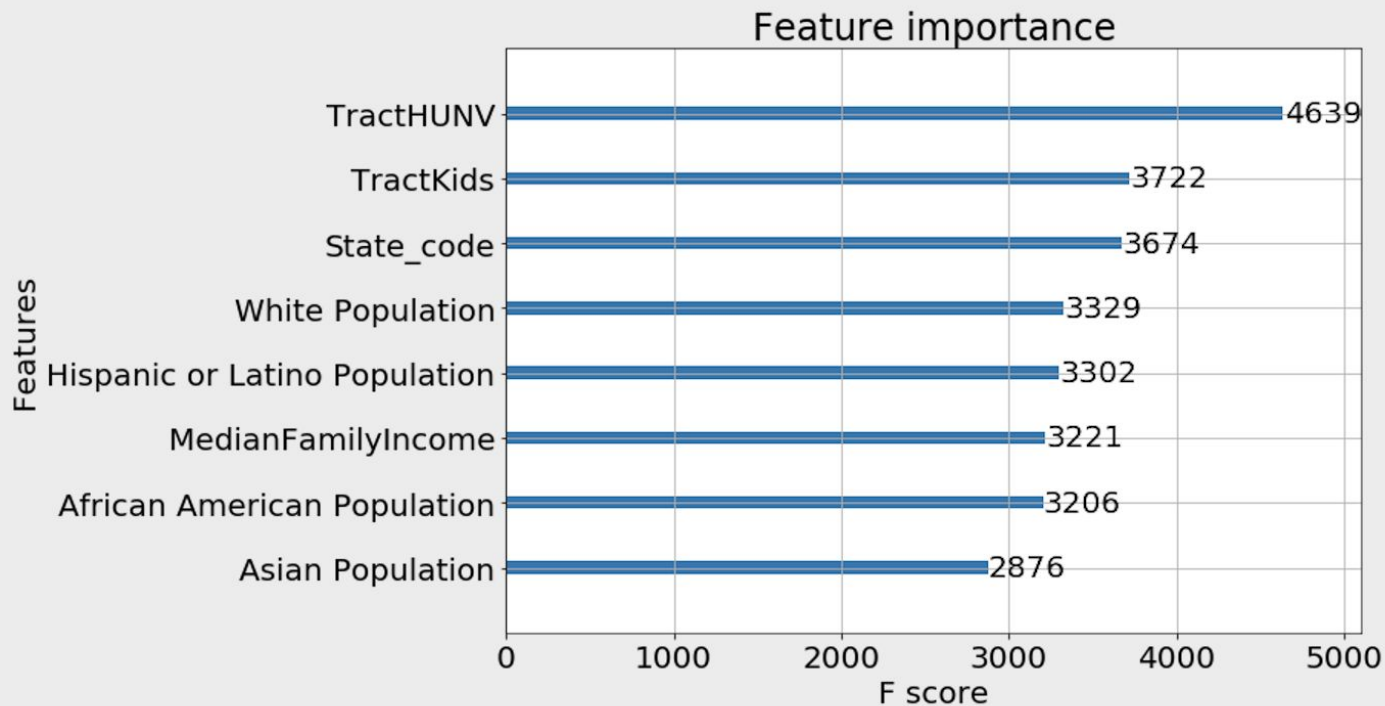# EDA / Feature Engineering

Class Imbalance

P-Value of 2.28x10^-163
Test Statistic of 27.24

Modeling Selection

Model Type	Recall	F1 Score
Baseline Model	.40	.42
Decision Tree	.75	.68
Random Forest	.77	.70
XG Boost	.71	.71

Conclusions

Feature importance

Next Steps

- **Food Swamps**

Any Questions?

Sources:

https://health.usnews.com/health-news/health-wellness/articles/2014/05/28/america-tops-list-of-10-most-obese-countries

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/