NYC Food Desert Predictor

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Flatiron School Capstone
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What are food deserts?

Food deserts are areas that have **limited access** to **fresh, healthy** and **affordable foods**.

Can lead to:

- Increased disease rates
- Food insecurity

What exists now to mitigate food deserts?

Food Retail to Support Health (FRESH) program to improve food access

- Tax and zoning incentives for supermarket expansion

- 18 projects completed

- 22 underway

- 1,000 jobs

Business Questions

What aspects contribute most to food deserts?

Do current FRESH boundaries correlate with census tracts identified as food deserts?
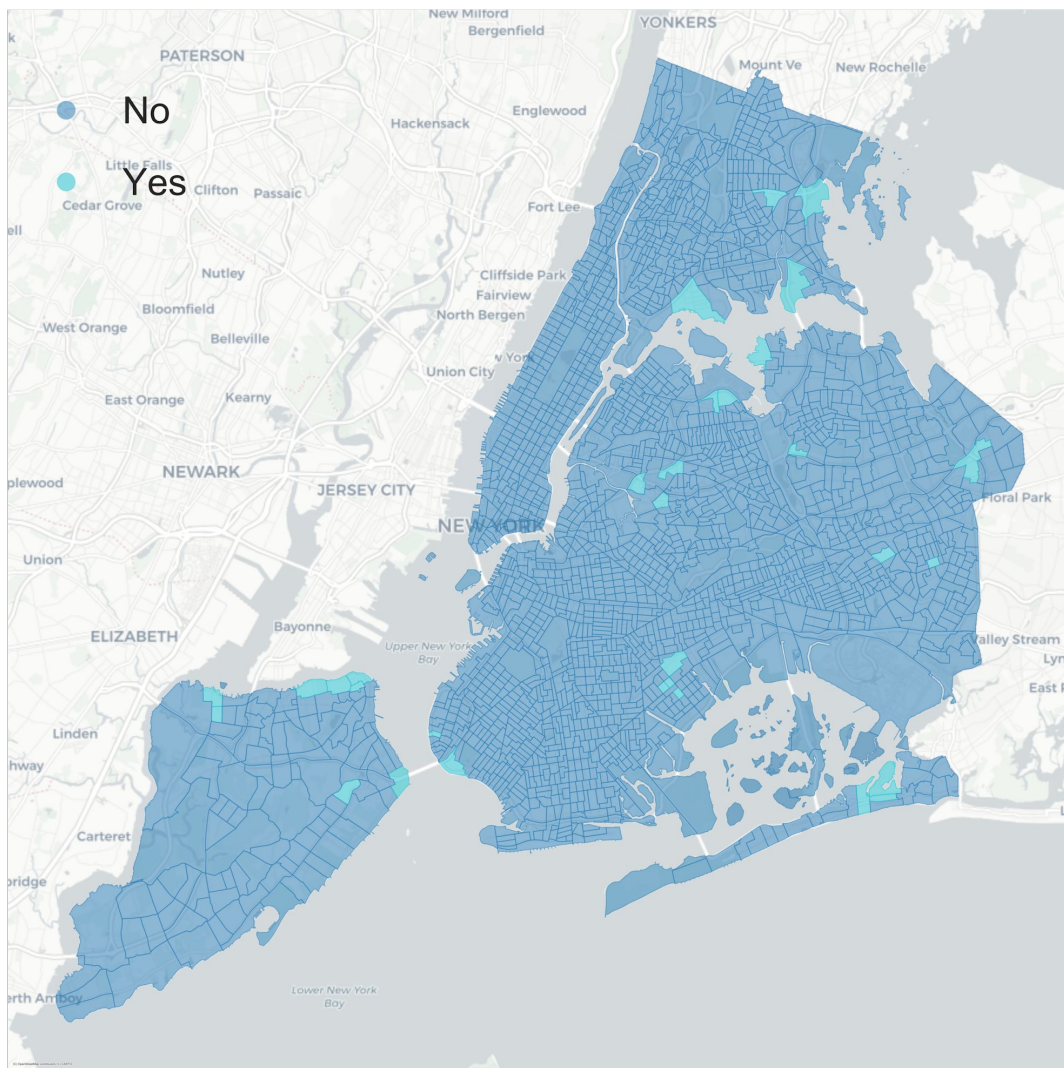
Data

USDA 2017 Food Research Atlas

2010 Census Tract Shapefile

FRESH Food Store Zoning Boundaries

- **2165** Census Tracts in NYC (rows)

- **~70** features (columns)

- Race, Income, Poverty, SNAP (Supplemental Nutrition Assistance Program), Kids, Seniors, Vehicle Access

No

Yes

Low-income and low-access at .5 mile

31 of 2165 Census Tracts

1.43%

were classified as food deserts
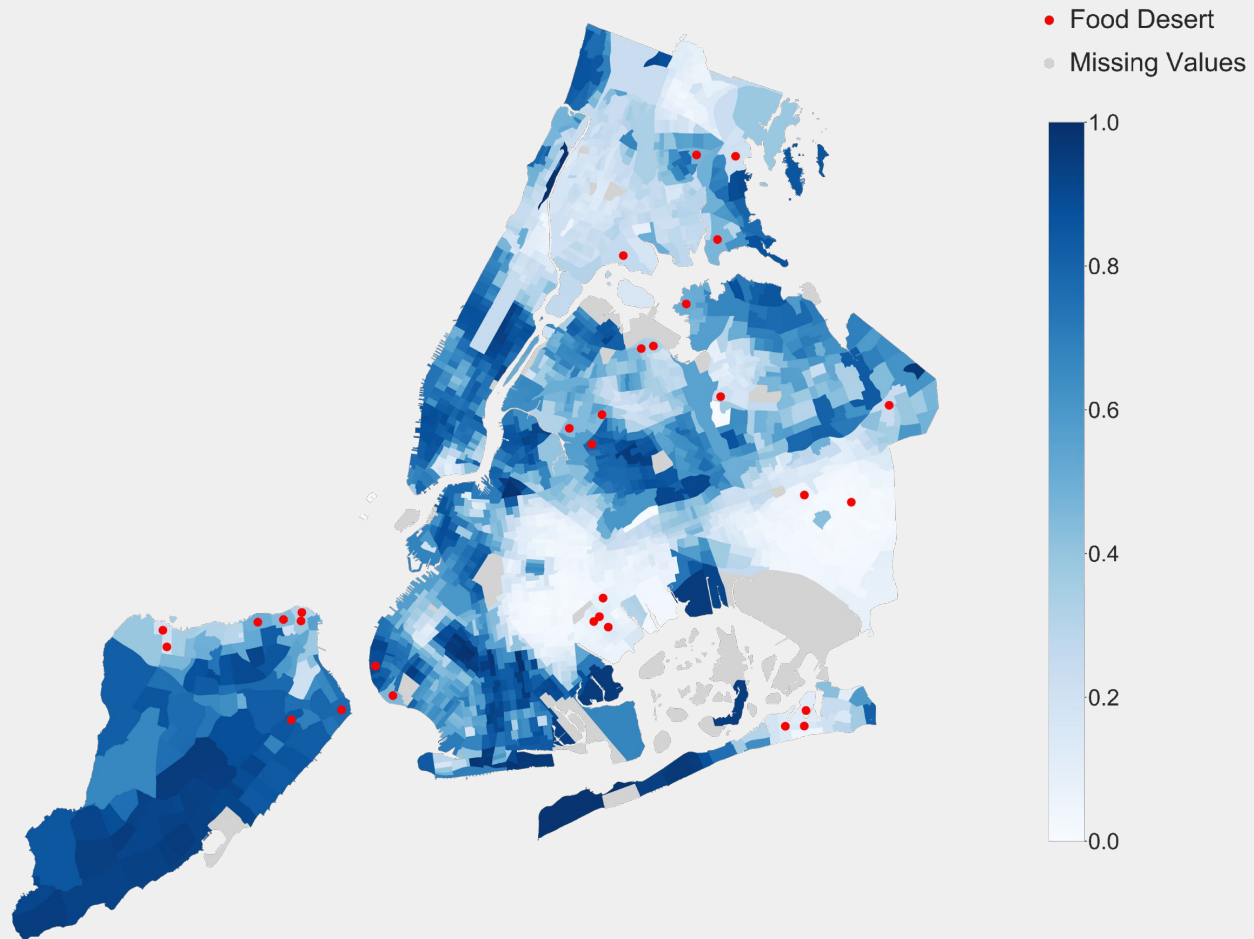
Methodology

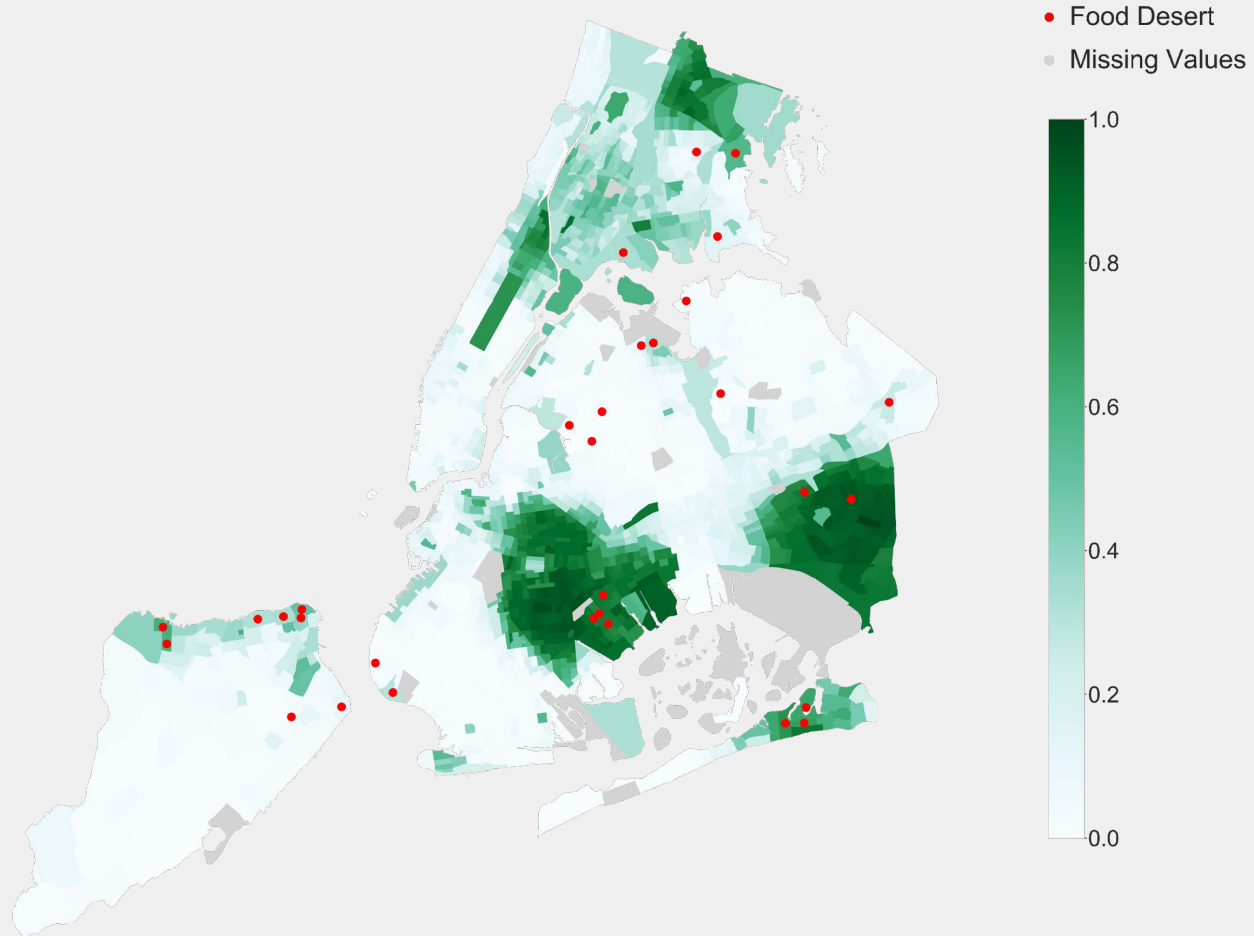Exploratory data analysis:

- **Geospatial** analysis

Modeling focused on:

- High **interpretability**
- **F1** (harmonic mean)
- Secondary metric of **Recall** (actual positives)
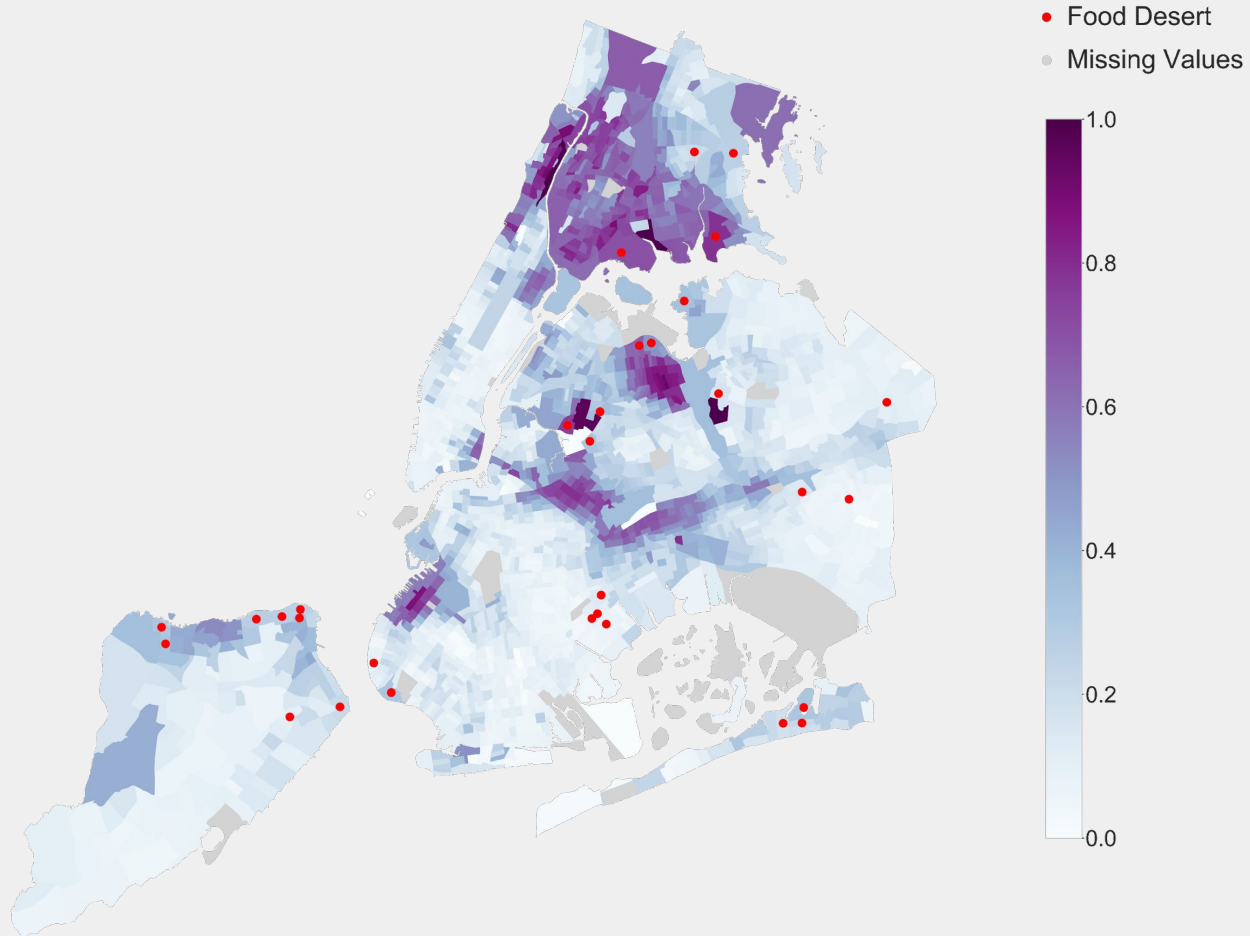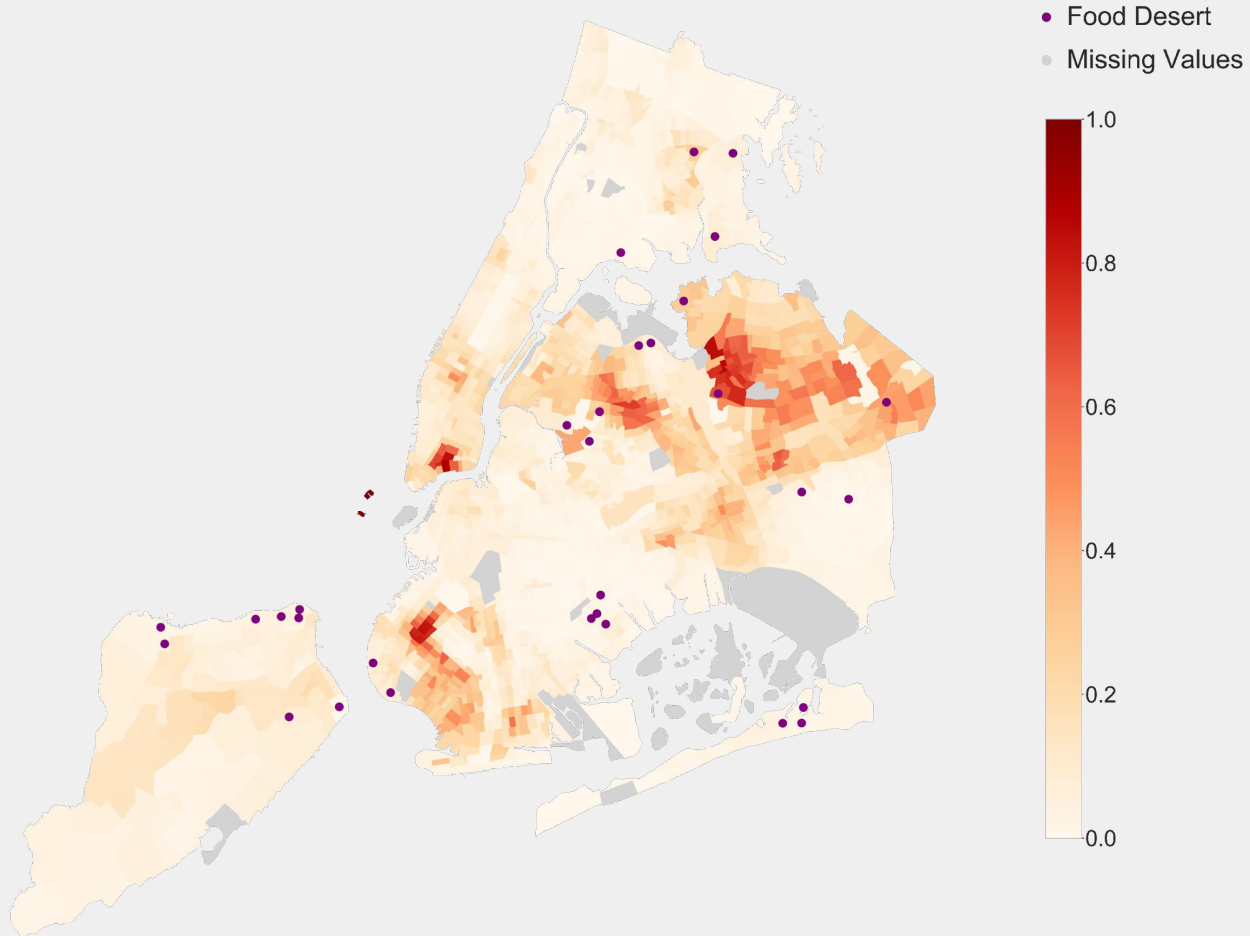
White per Census Tract & Food Deserts

Black per Census Tract & Food Deserts

Latinx per Census Tract & Food Deserts

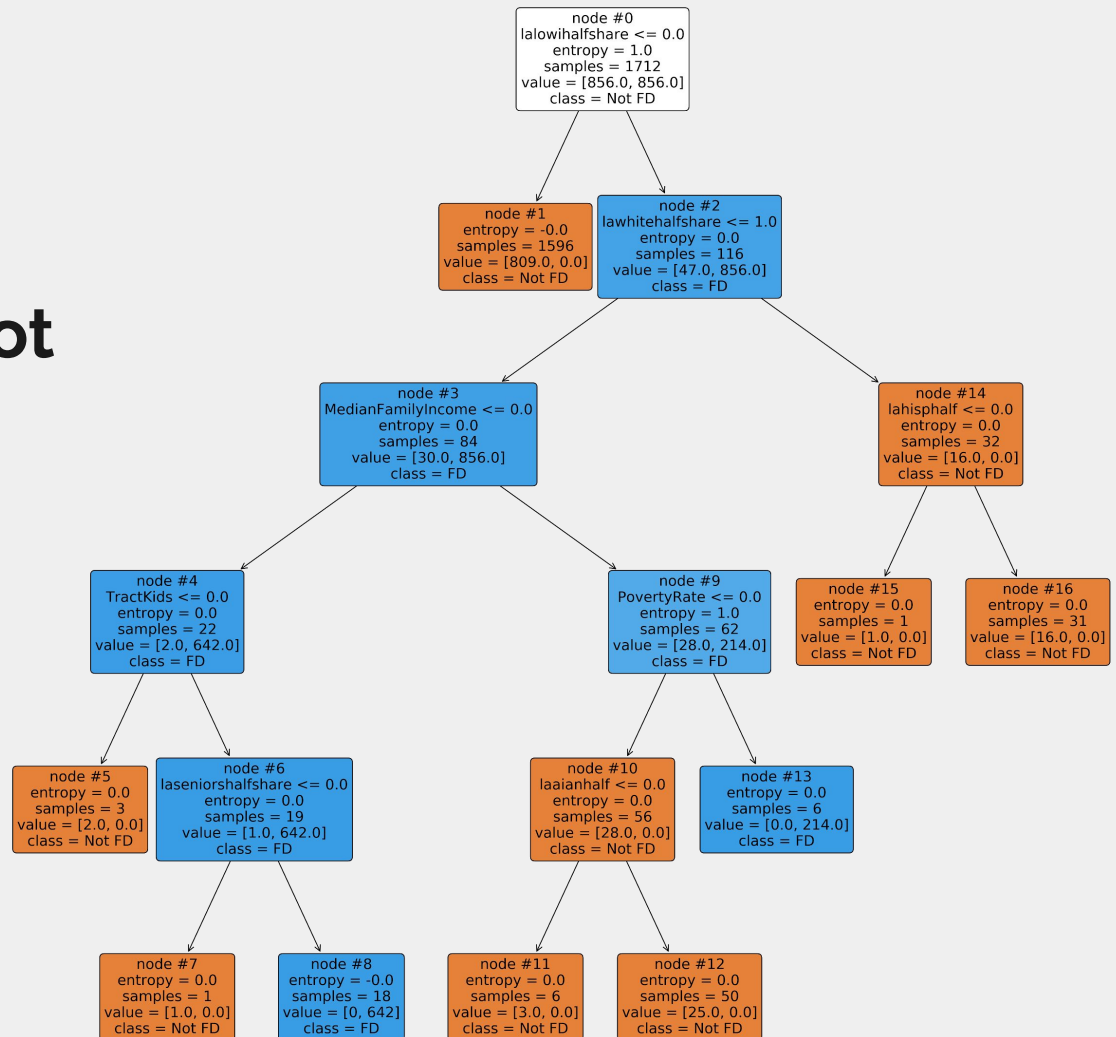Asian per Census Tract & Food Deserts

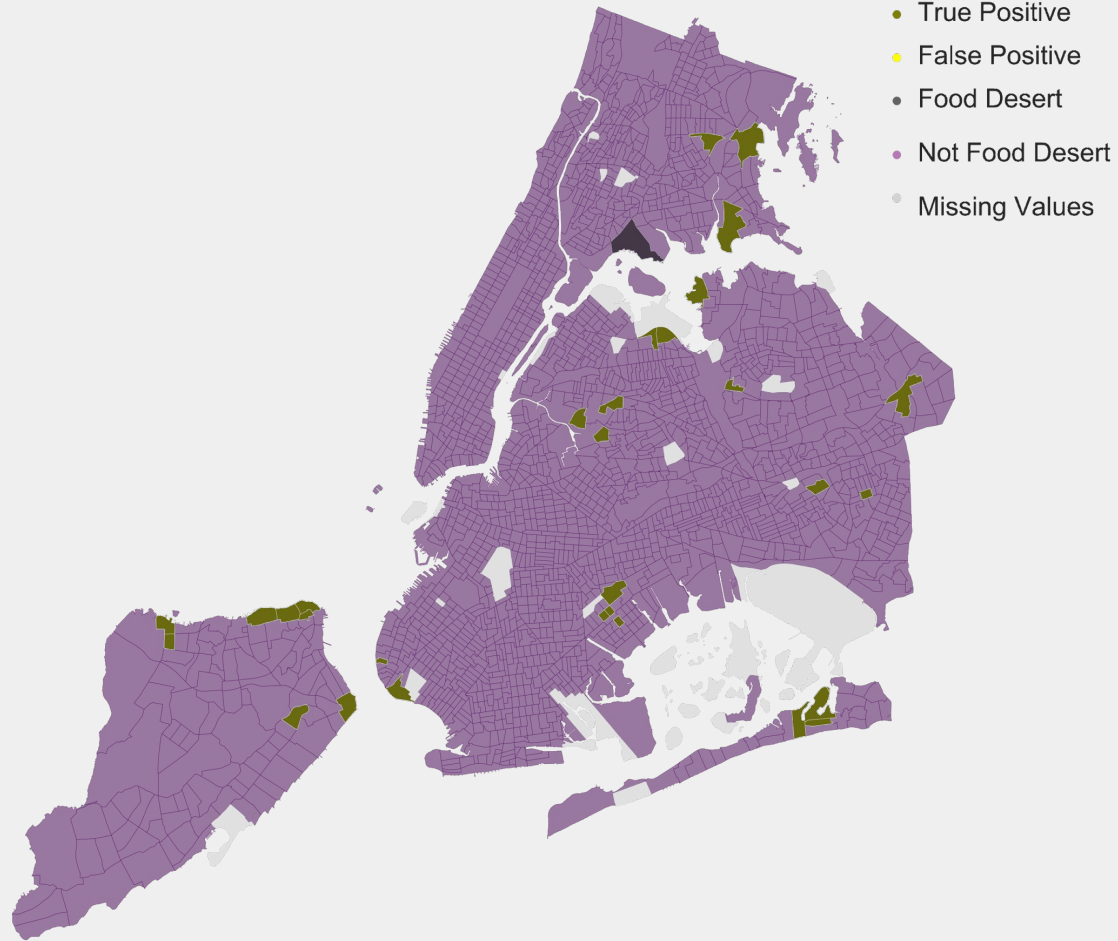# Modeling

Decision Tree Classifier

Metrics

- F1 = .92 (harmonic mean)

- Recall = .85 (actual positives)

- 1 False Negative

Decision Tree Plot

○ 8 out of ~70 features
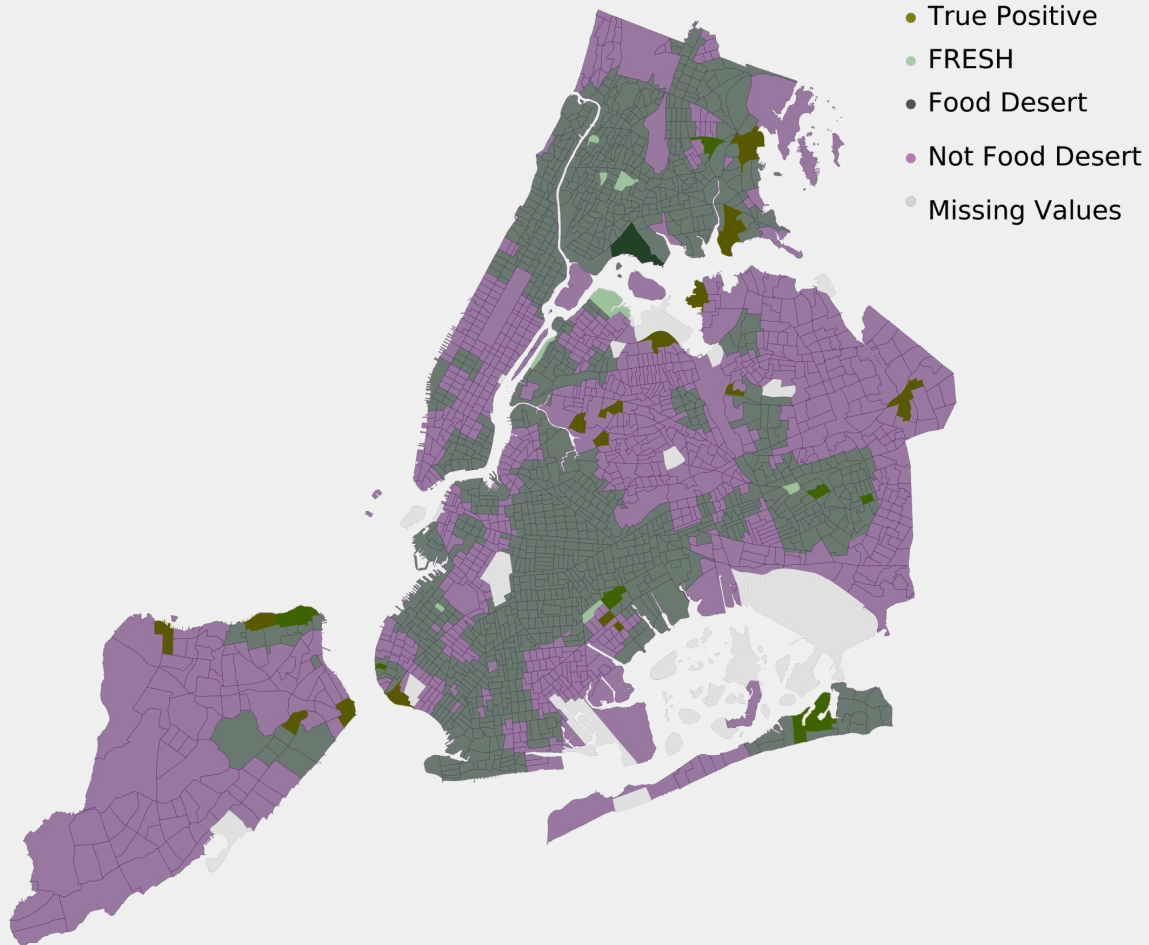
○ 16 nodes

DTC Final Model Predictions

- True Positive
- False Positive
- Food Desert
- Not Food Desert
- Missing Values

DTC Final Model Predictions with FRESH

- True Positive
- FRESH
- Food Desert
- Not Food Desert
- Missing Values

Findings

- **Low-access/low-income** are greatest indicators of food deserts
- Secondarily share of **white demographic** has direct correlation to food deserts
- **Median income** and **poverty rate** as well as share of non-earners **Kids** and **seniors** have a significant effect.

Recommendations/Next Steps

Recommendations

- Adjust **FRESH** boundaries to offer incentives for supermarket expansion within food desert tracts.

Next Steps:

- Perform analysis on newer data
- Explore opportunities for local community **urban agriculture** by conducting a suitability analysis of city owned sites in close proximity of food desert tracts.

Thank you!

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