

# Classification

## Models:

Predicting if a Chicago Restaurant will Pass or Fail its Food Safety Inspection

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# Goal

Food Inspection Forecasting:

- Predict if restaurant passes or fails
- Look at most important features for prediction

Data:

- Chicago Data Portal – Restaurant inspections
- Median Household Income

# Methodology

## Features:

- Risk category
- Date
- Zip
- Inspection type
- Income
- Population

# Methodology

Model Chosen: Random Forest Classifier

Metrics: CV - train & validation score, AOC &  
ROC, & Grid Search

# Results



A detailed painting of a forest scene. In the foreground, a small stream flows over dark, mossy rocks. The water is clear, reflecting the surrounding greenery. The middle ground is filled with numerous trees, their trunks varying in color from light to dark brown. The foliage is dense and vibrant green. The background shows more trees and a hint of a lighter sky, suggesting a deep forest environment.

**\*\*Winning Model\*\*:**

Random Forest Classifier

- Accuracy = 76.35%
- Accuracy All Data = 85.86%

# Results

Predict class predictions & probabilities for X:

Pass or Fail?	Predicted Total Counts	Actual Total Counts
Fail	96836	85698
Pass	74560	85698

Model was 88.5% correct on restaurants failing

Model was 87% correct on restaurants passing



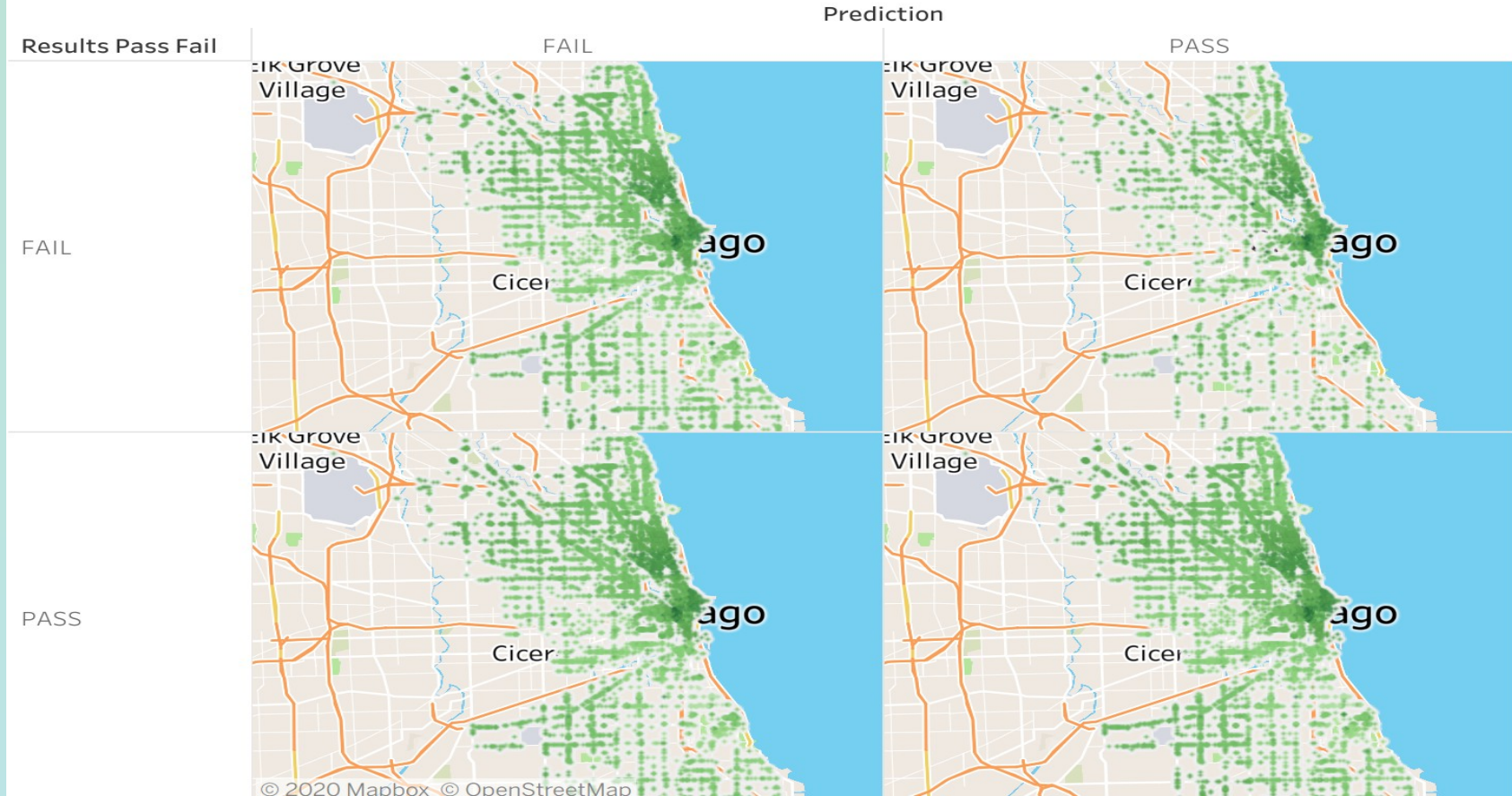
**PRETTY GOOD**

**PRETTAY, PRETTAAAY,  
PRETTAAAAAAAY,  
PRETTY GOOD**



# Visualizations

Actual vs. Predicted - Income



# Visualizations

Thank You!

# Appendix

- City of Chicago. Facts & Statistics:

<https://www.chicago.gov/city/en/about/facts.html>

- City of Chicago. Chicago Data Portal. Food Inspections: Health & Human Services:

<https://data.cityofchicago.org/Health-Human-Services/Food-Inspections/4ijn-s7e5/data>

- Zip Atlas. Median Household Income in Chicago, IL by Zip Code:

<http://zipatlas.com/us/il/chicago/zip-code-comparison/median-household-income.htm>

# Visualizations