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:

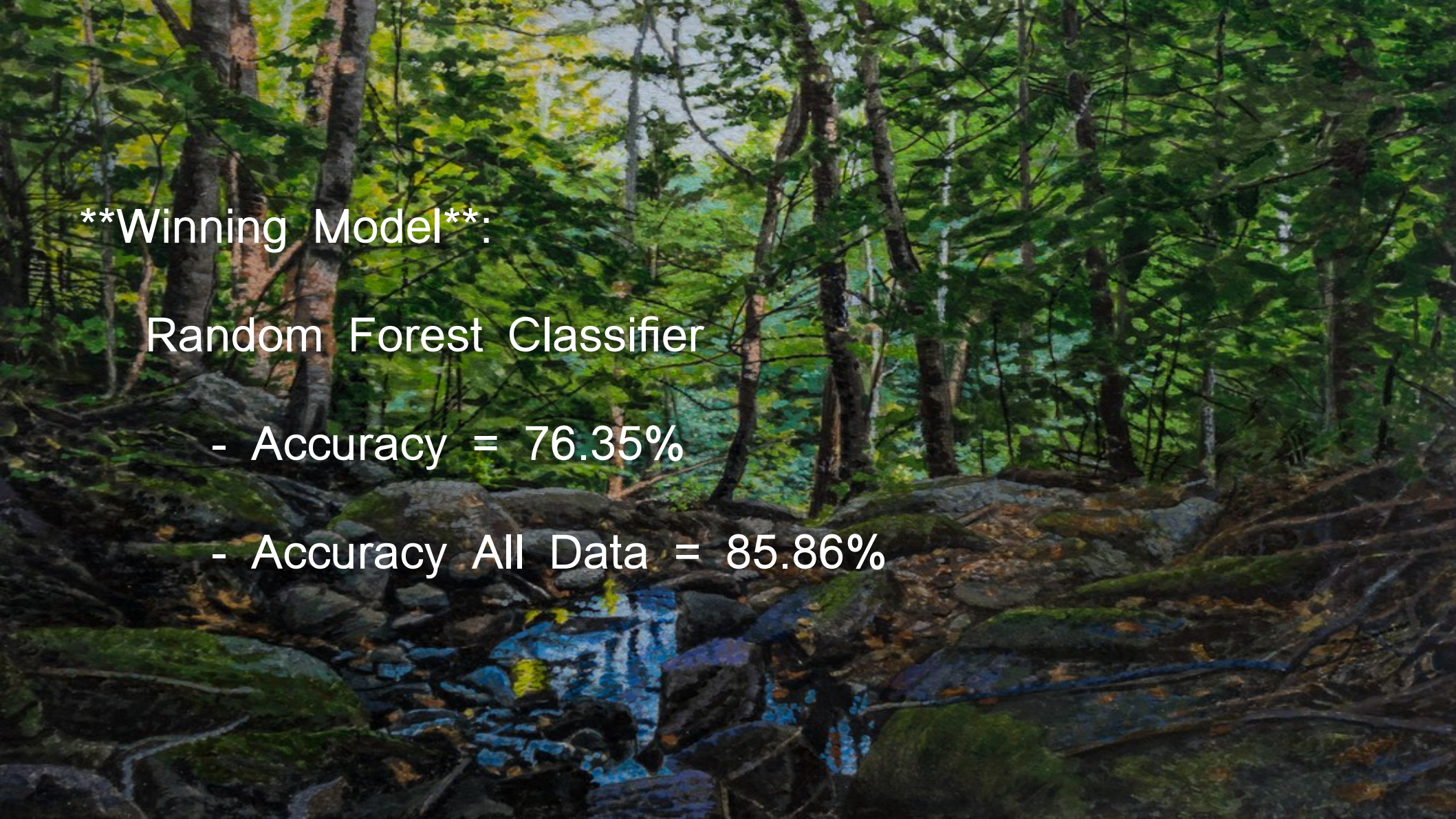
- Risk category
- Date
- Zip
- Inspection type
- Income
- Population

Methodology

Model Chosen: Random Forest Classifier

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

Results


Winning Model:
Random Forest Classifier
- Accuracy = 76.35%
- Accuracy All Data = 85.86%

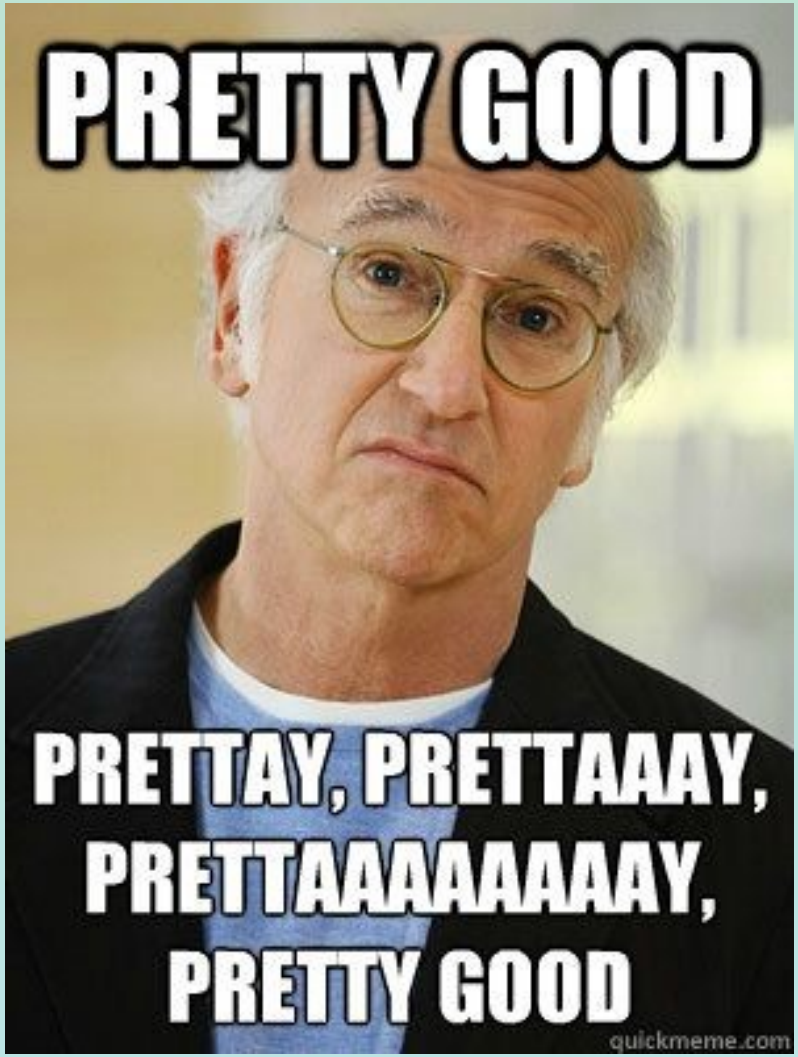
Results

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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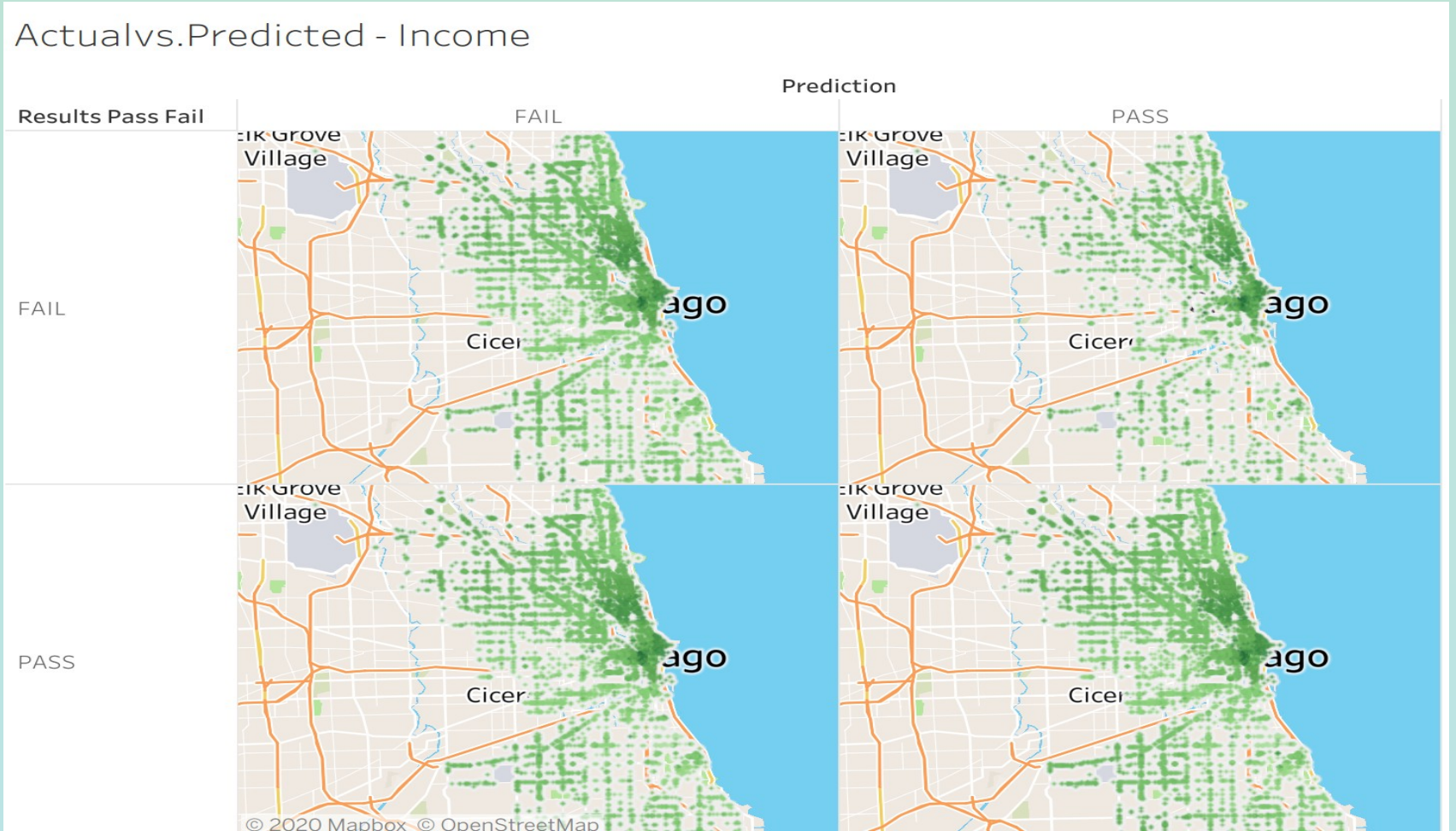
Visualizations



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