

An Analysis of Removed Loan in Georgia Paycheck Protection Program Application

By Chung-Hao Lee

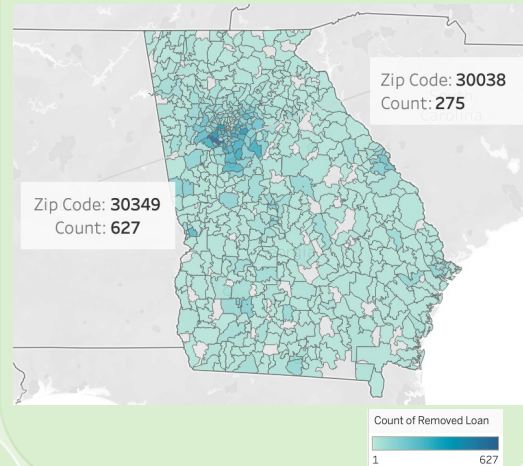
Background:

- Paycheck Protection Program provided loans to business during COVID-19 period
- Some loans were removed for untold reasons

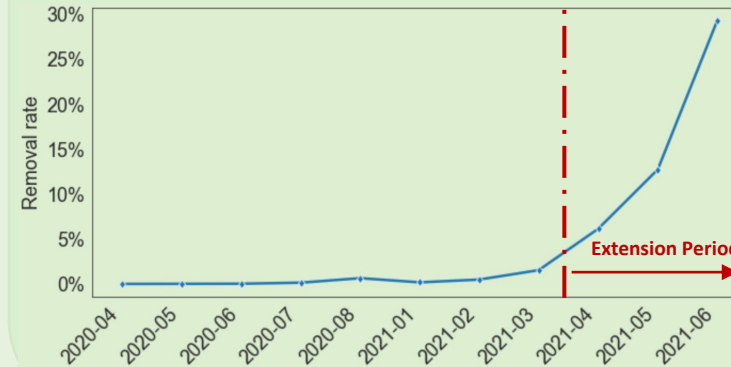
Goals:

- Find out the characteristics of removed and non-removed loans
- Predict if a loan would be removed

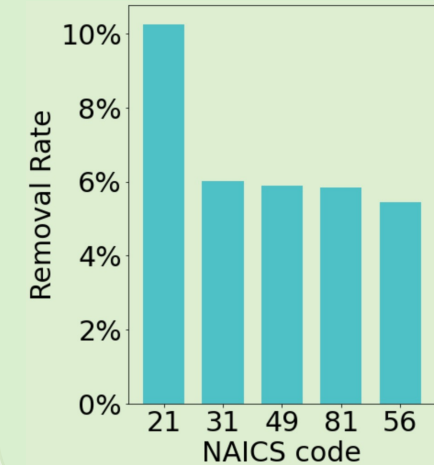
Removed Loans by Zip Code



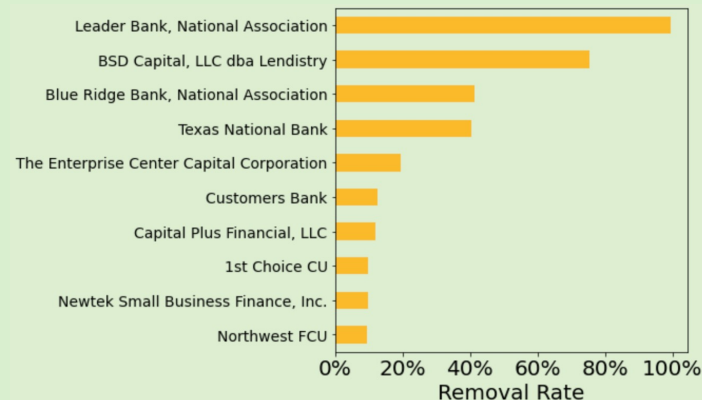
Removal Rate by Year-Month



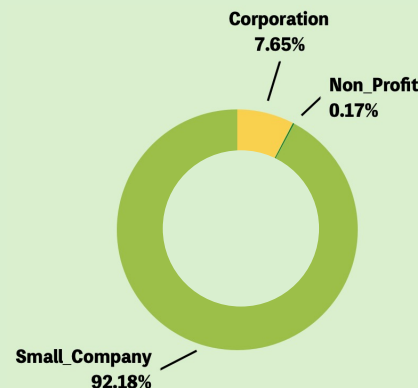
Removal Rate by Industries



Removal Rate by Servicing Lenders



Removed Loans by Business Type



Machine Learning

XGBoost

- Accuracy: 99.5%
- AUC: 0.949

Logistic Regression

- Accuracy: 97.5%
- AUC: 0.765

Summary:

- Loans were more likely removed when applications
 1. from Atlanta, GA
 2. are small company
 3. in extension period
 4. borrowed from certain lenders
 5. from mining, oil industries
- Machine Learning models performed good on predicting removed loans