

An Analysis of Removed Loan in Georgia Paycheck Protection Program Application

By Chung-Hao Lee

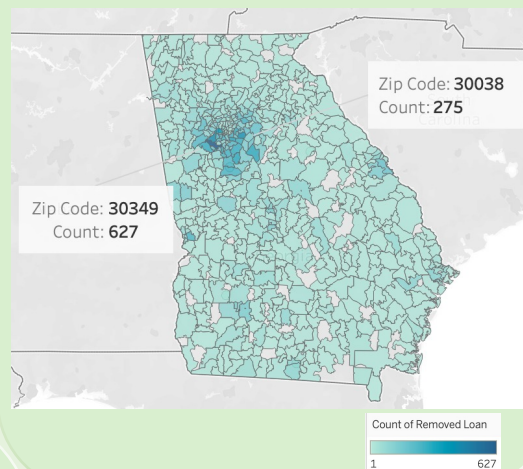
Background:

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

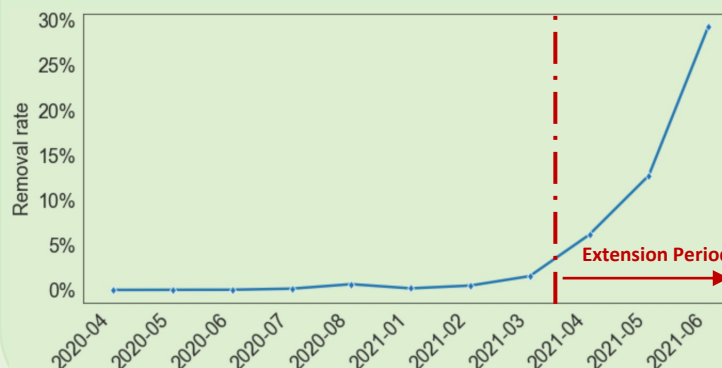
Goals:

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

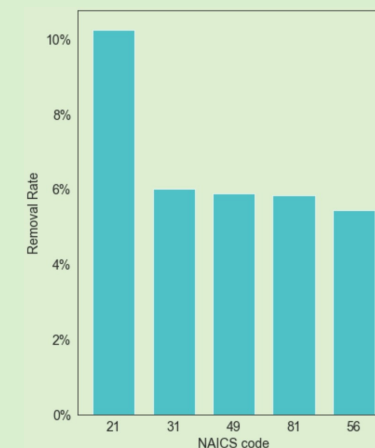
Removed Loans by Zip Code



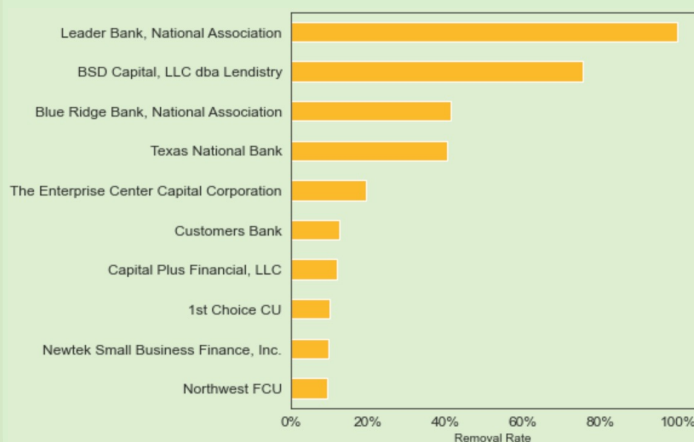
Removal Rate by Year-Month



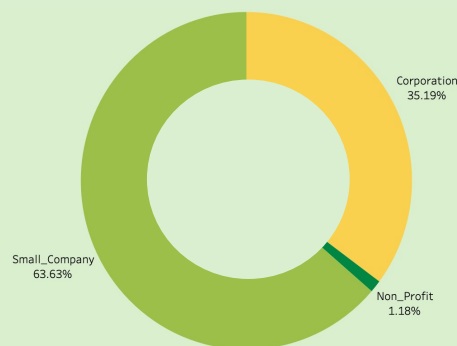
Removal Rate by Industries



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
 - from Atlanta, GA
 - are small company
 - in extension period
 - borrowed from certain lenders
 - from mining, oil industries
- Machine Learning models performed good on predicting removed loans