

ID/X Partners Data Scientist Virtual Internship Program : Credit Risk Prediction

by: Indra Maulidin





Problems

Credit Risk : a likelihood that a borrower would not repay their loan to lender.

A Loan Company suffers a losses due to 11.62% of their Borrowers is Bad Borrowers.

Goal

We aim to create Machine Learning Algorithm to predict Credit Risk of Loan Company which are expected to have an impact on :

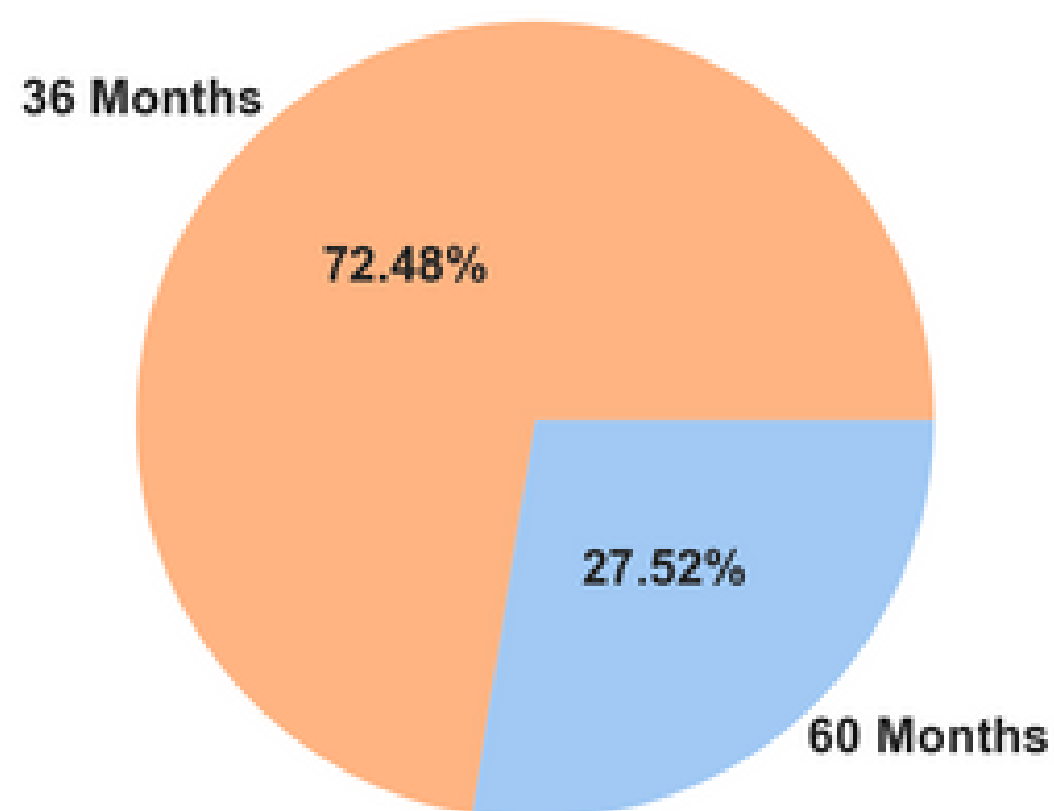
- Reducing the number of Bad Borrowers to under 10%.
- Increase in the amount of profit earned by the company.





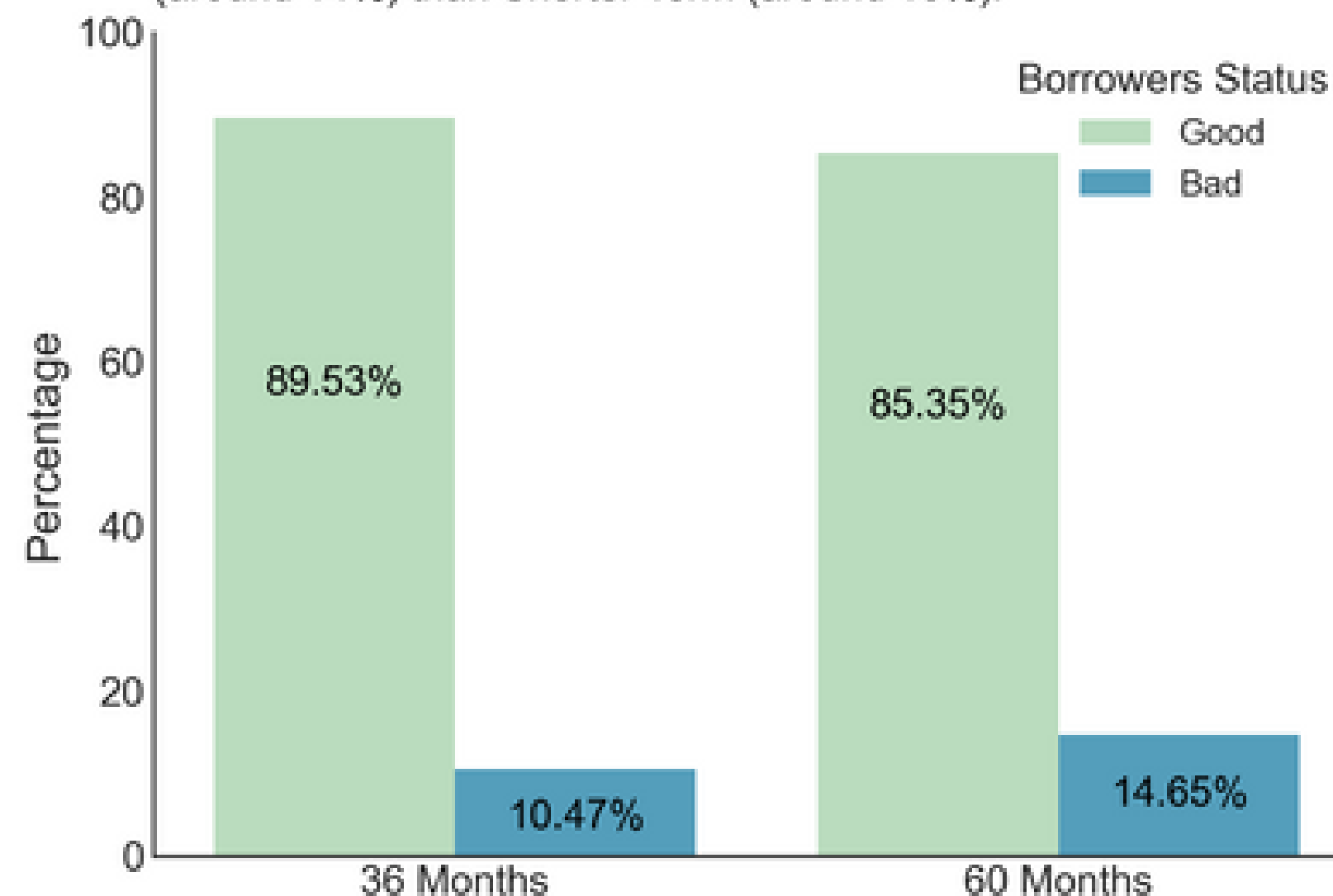
Term vs Borrowers Status

Percentage of Borrowers Term



More Than 70% of Borrowers use Shorter Term

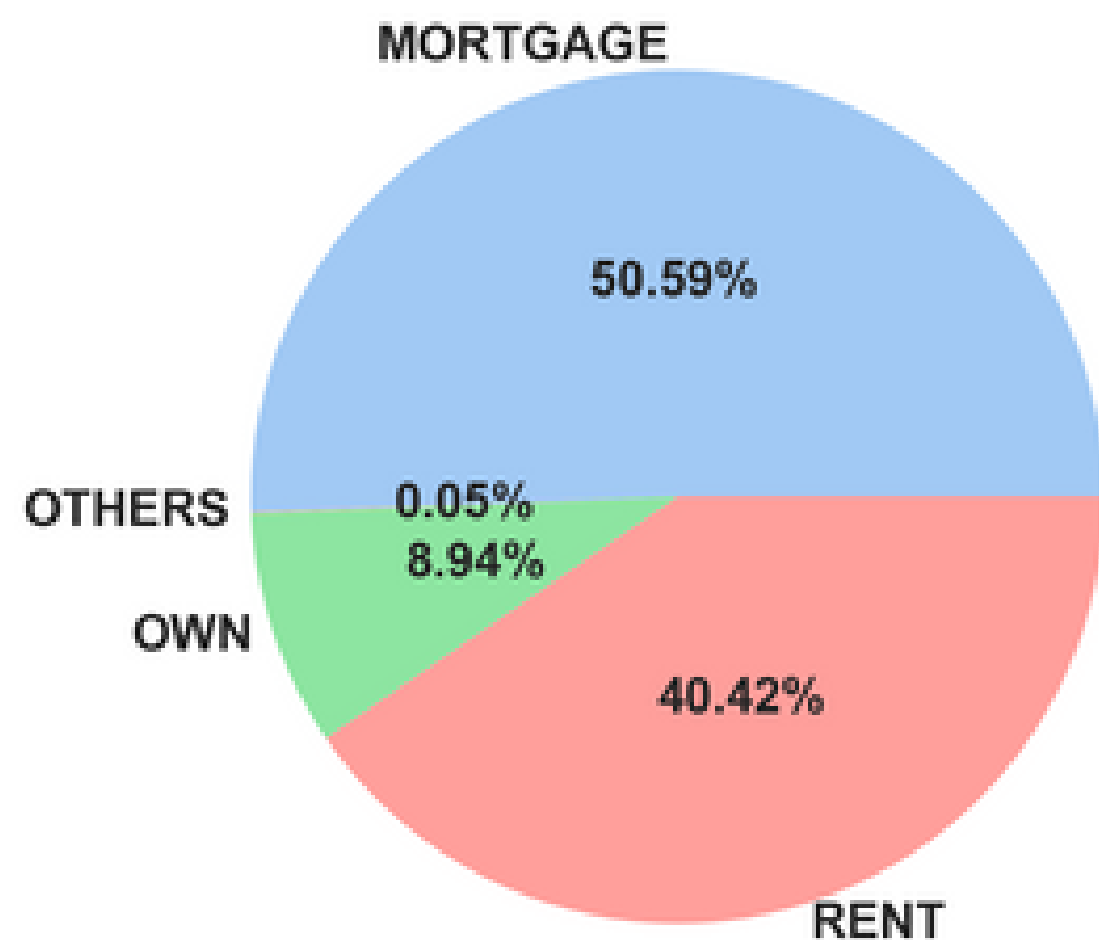
But Longer Term have a higher percentage of Bad Borrowers (around 14%) than Shorter Term (around 10%).





Home Ownership vs Borrowers Status

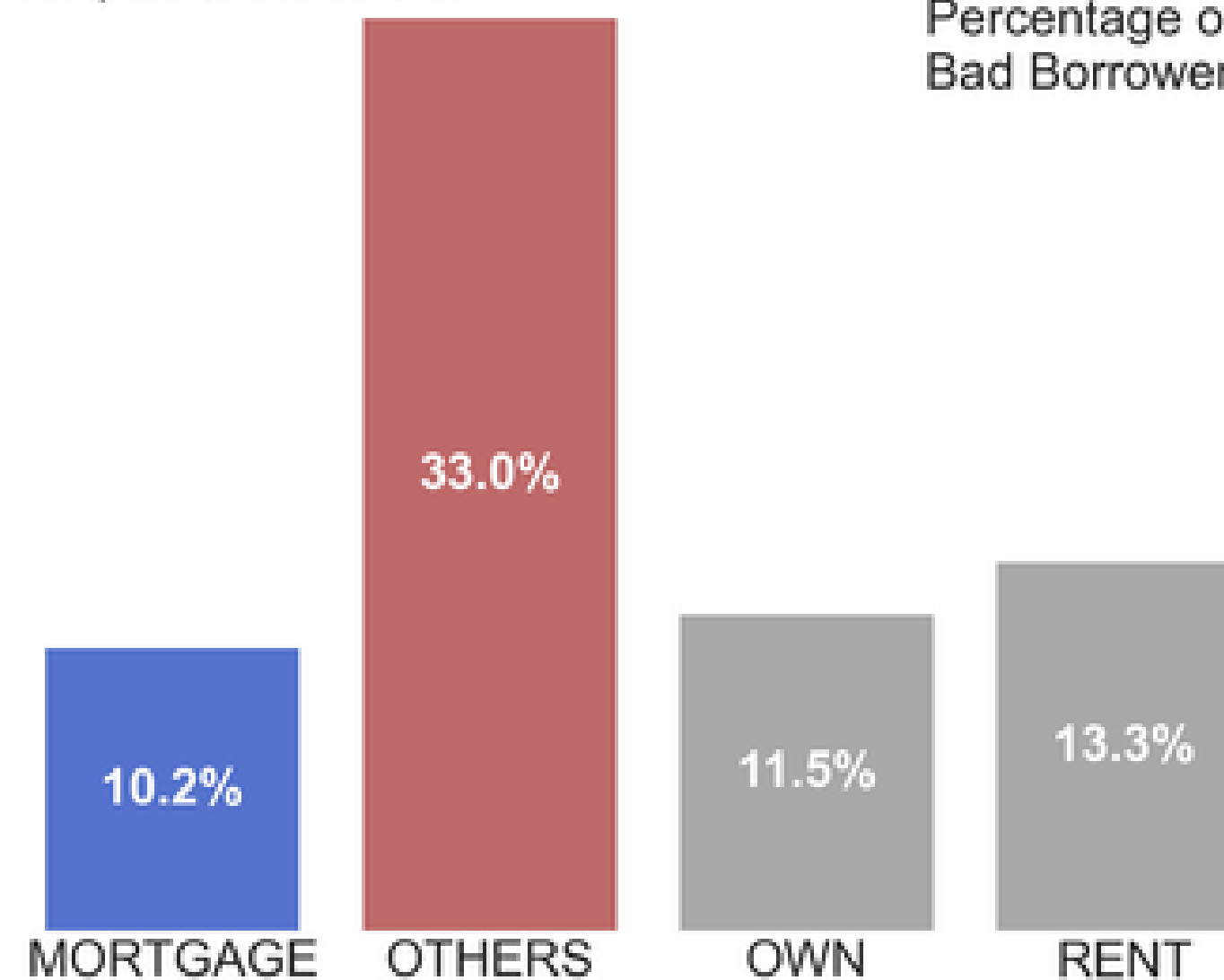
Percentage of Borrowers Home Ownership



Most Borrowers have an existing Mortgage (around 50%)

And these Borrowers have a lowest percentage of Bad Borrowers compare to the others.

Percentage of Bad Borrowers





Modeling

Model	Accuracy	AUC Score
Logistic Regression	87.59%	66.26%
Decision Tree	83.31%	61.31%
Random Forest	88.77%	84.57%

- Metrics evaluation that will be used is **AUC Score**.
- Based on the following result, the best model is **Random Forest Classifier**.



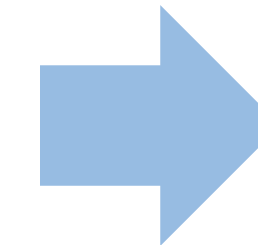
Business Impact



Actual Label	Predict Label	
	Good	Bad
Good	122046	1588
Bad	14117	2135

Before

11.62%



After

10%

- We managed to reduce the percentage of Bad Borrowers to 10%.
- Since the labels are imbalanced, we may need to collect more data to get better results.



Business Recommendation

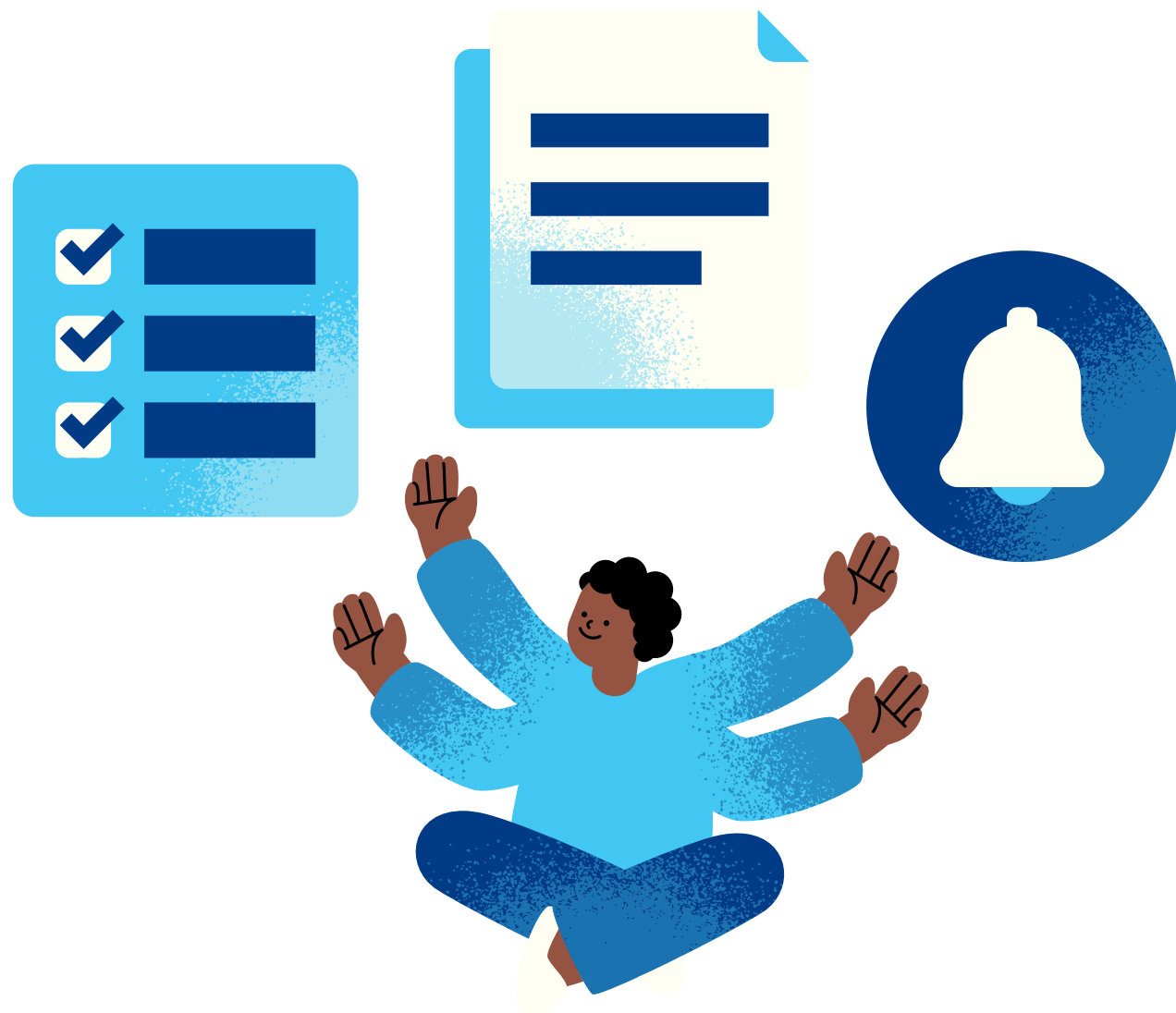
House Ownership

Based on our Analysis Result, around 40% of our Borrowers are currently renting a home. We can offer loan promos to motivate our Borrowers who are still renting to quickly own a home.

Priority Borrowers

Around 88% of our Borrowers are Good Borrowers. We can choose some of these borrowers to be considered as Priority Borrowers. We can offer lower interest rates and increase their loan limit so that they can continue to use our loan services.

Thank You



indramaulidin@gmail.com



[linkedin.com/in/indra-maulidin/](https://www.linkedin.com/in/indra-maulidin/)



github.com/IndraMaulidin

