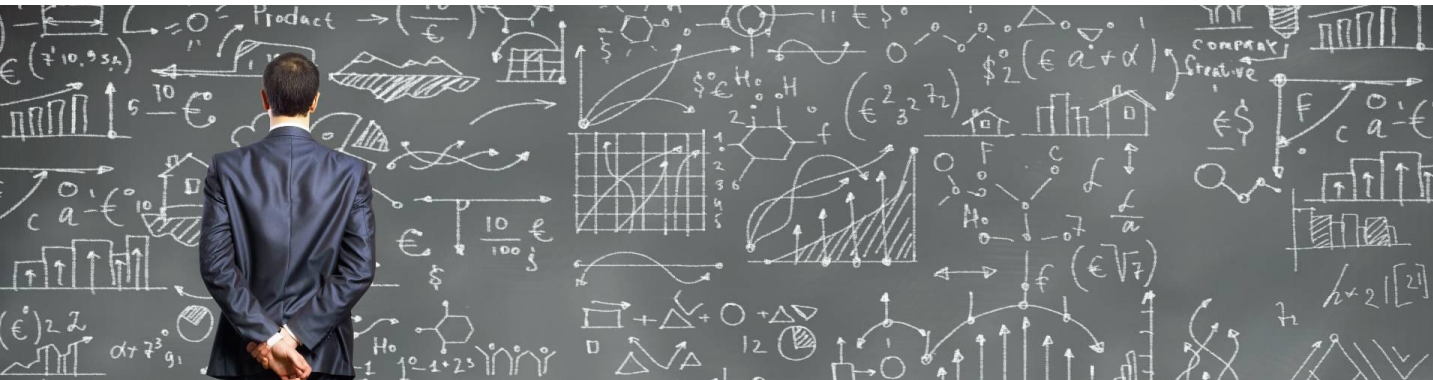


[Mahdiazhari Austian]



Data Science

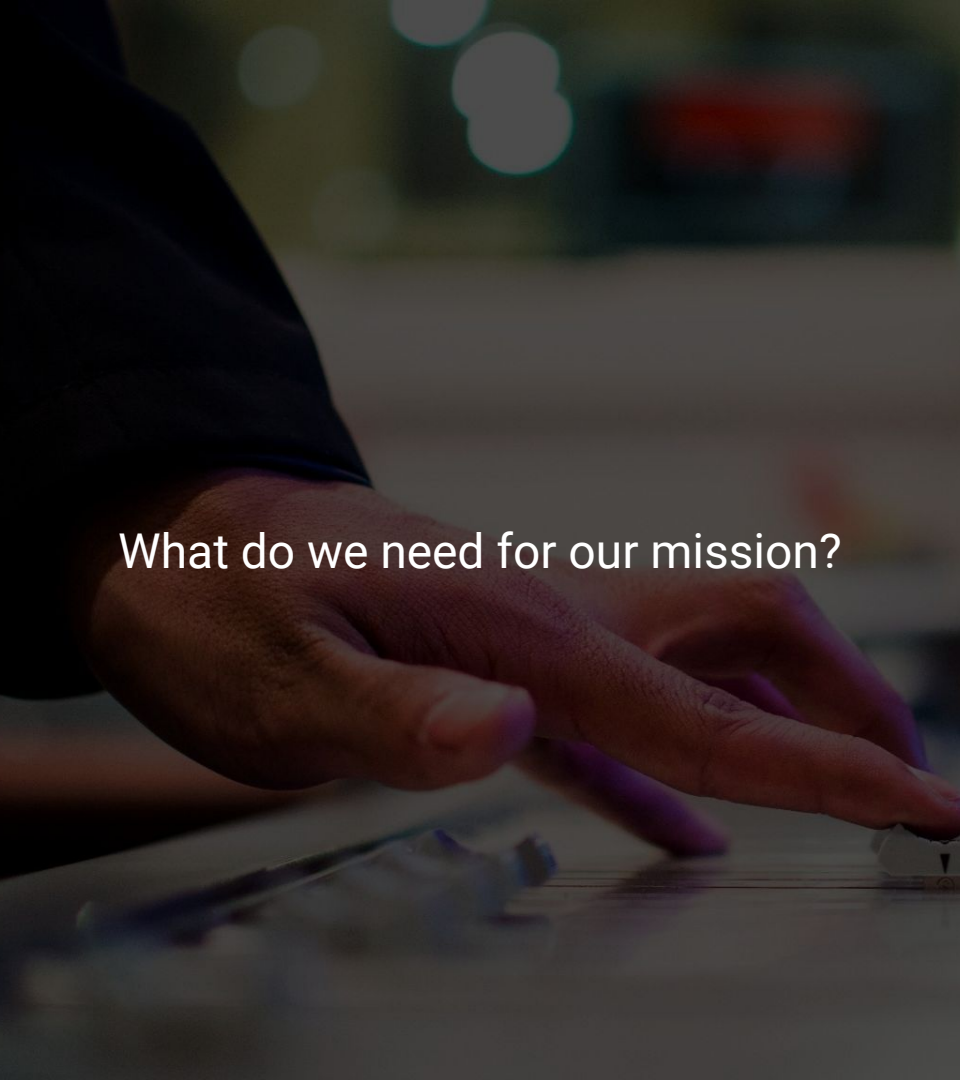
[A deep dive into segregating Defaulters]

Defaulters

- Who are they?
 - Customers who fail to pay on time
- Why? To whom?
 - Lender potential loss of profits
 - Defaulters
 - penalty
 - loss of collateral
 - legal action
- How it affects us?
 - Costs from attempts to recoup loan
 - Money could be lent elsewhere



Definitely not the default skin users from Fortnite!

A close-up photograph of a person's hands, wearing a dark long-sleeved shirt, using a purple marker to draw on a whiteboard. The background is blurred, showing some bokeh lights. The text "What do we need for our mission?" is overlaid on the left side of the image.

What do we need for our mission?

Identify Defaulter
Characteristics

Predict potential
Defaulters

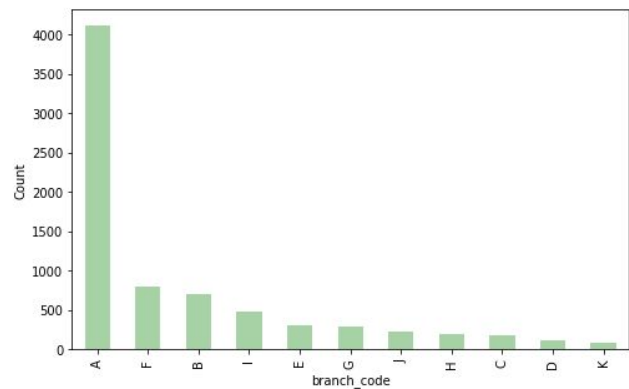
How will this help?

- For us:
 - Eliminate **information asymmetry**
 - Predict and categorize future lenders
 - Less risk of losing out on loans
- For customers:
 - Better credit score
 - No penalties
 - Less pressure

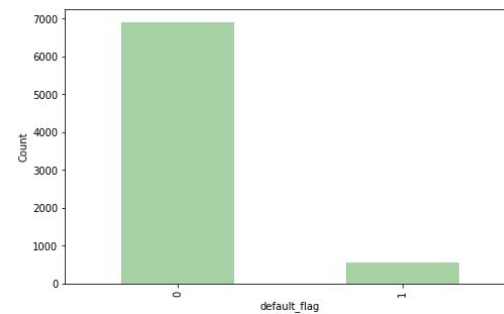
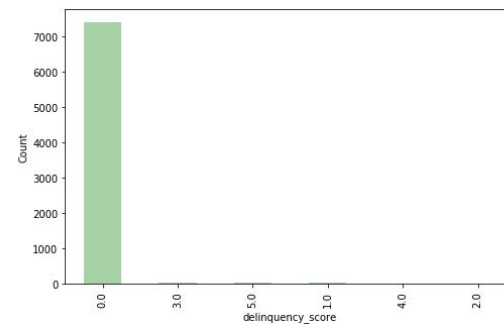
Key Takeaways/ Executive Summary

- Defaulter characteristics:
 - **Lower payment ratio**
 - **Lower credit card usage**
- Other findings:
 - **Avoid** lending to users with **delinquency score** > 0
 - **Prioritize** users with delinquency score of 0
 - **Branch G** performs the best out of all the branches
 - Presence of low income group -> give them longer repayment plans
- Model:
 - Select based on **recall score**
 - **Feature importance** confirmed above findings

Data Set



Branch A most customers



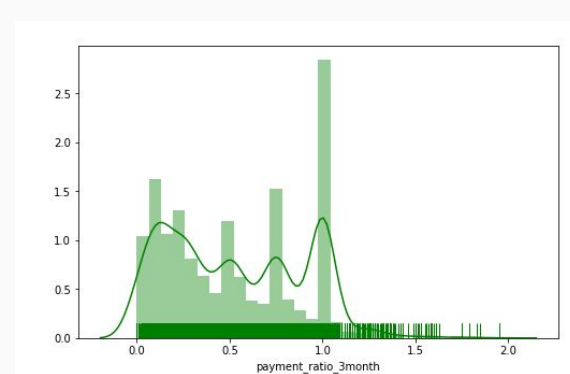
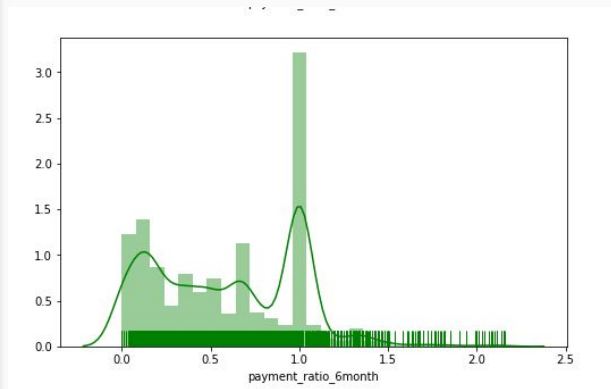
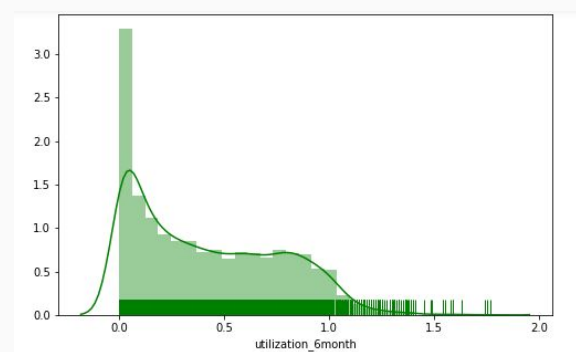
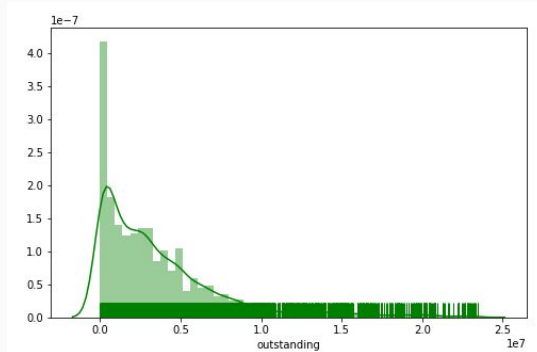
Most users are good.

Data Set

- Variables related to usage and bills are **skewed right**
- Variables related to user payments **seem to be skewed left**

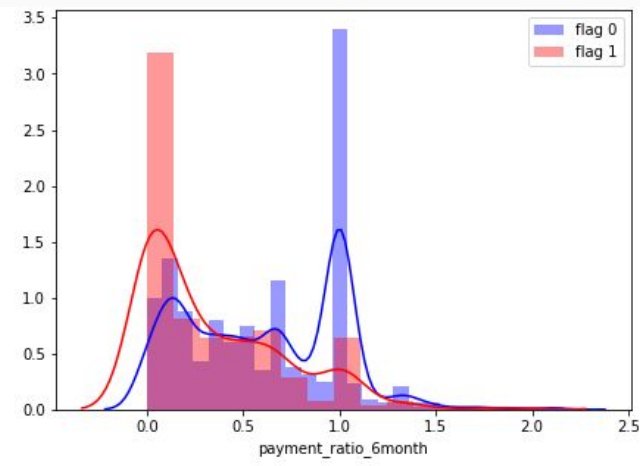
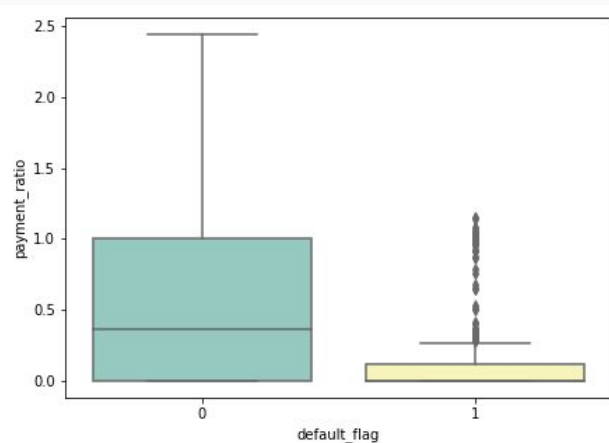
Indonesian credit user behavior:

- Most users use credit for small transactions
- Most users pay on time within 6 months



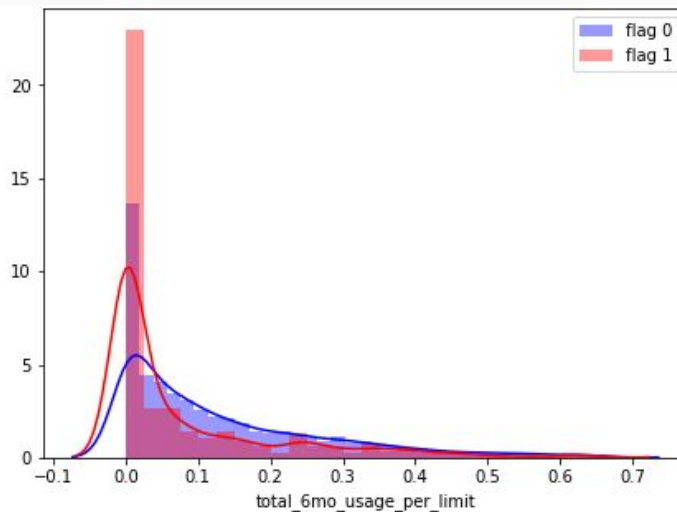
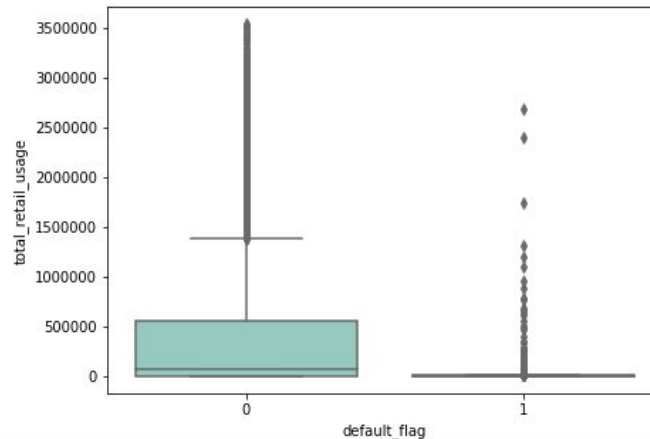
Payment Differences

- In general, Non-defaulters pay credit better
- Skewed left mostly for non-defaulters
- Skewed right for defaulters



Usage Differences

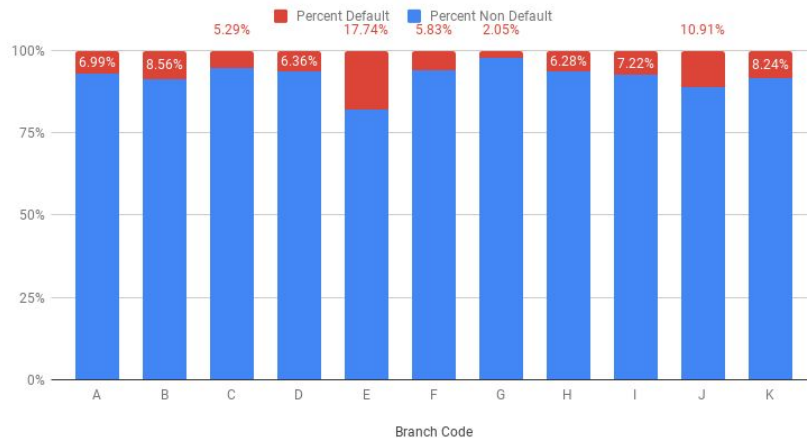
- Defaulters utilize their credit less compared to the other group



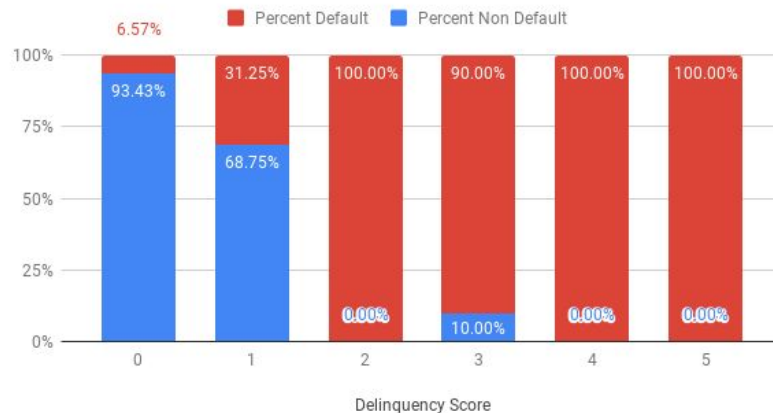
Extra insights

- Prioritize users with 0 delinquency score!
- Branch E should learn from branch G regarding best practices of Defaulter identification.

Default Percentage per branch code



Default Percentage based on Delinquency Score



Very Low Income Group

Amongst users with Very low (≤ 100000) outstanding amounts, there are much high defaulters

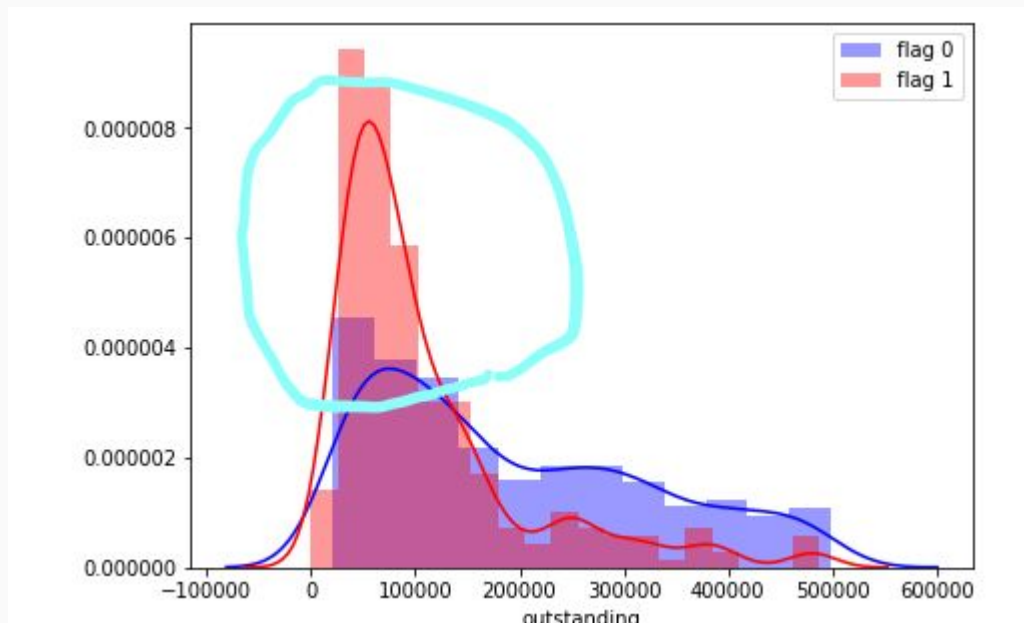
They have a higher payment ratio (0.165) compared to the average defaulter (0.149)

Still < 0.3 payment ratio after 6 months

Low income/needy group

Action:

- Longer repayment plans



Model

- Baseline Accuracy: 92.65 %
- Select based on Recall score, due to costly False Negatives
- For profit, balance out costs of False Positives and False Negatives
- Feature importance confirmed above findings:
 - Payment Ratio
 - Credit Usage
 - With outstanding amount following at third

	Basic Random Forest	Grid Search Random Forest
Accuracy:	0.77937	0.90710
Precision:	0.21649	0.37356
Recall:	0.76829	0.39634
F1 Score:	0.33780	0.38462
AUC Score:	0.77427	0.67191

	importance	features
0	0.22201	total_3mo_usage_per_limit
1	0.18101	payment_ratio
2	0.16208	total_retail_usage
3	0.11167	total_usage_per_limit
4	0.07957	outstanding
5	0.07215	payment_ratio_6month

Future Research

- Learn more about financial terms
- Learn more about credit usage in Indonesia
- Study Additional Methods

Appendix

Assumptions:

- Outlier definition is based on credit card limitation criteria by Bank Indonesia
- Original payment_ratio is actually a percentage, therefore it is recalculated