

Predicting Maximum Credit Before Loan Default

Phase 3 Presentation

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Goal of Project

This project hopes to create an algorithm that will allow users that, given certain data points about a person, would allow one to:

(1) Determine whether an individual should be considered safe from default.

(2) Determine what the maximum amount of credit he/she could receive before being unable to return the full quantity of the loan.

Model Accuracies

Step 1 - Default Prediction:

Our (f1) **scores peaked around 65** with multiple models, but slightly higher with XGBoost.

	precision	recall	f1-score	support
Charged Off	0.30	0.67	0.42	13228
Fully Paid	0.89	0.64	0.75	56011
accuracy			0.65	69239
macro avg	0.60	0.65	0.58	69239
weighted avg	0.78	0.65	0.68	69239

Step 2 - Loan Maximization:

Modelling the amount lost gave us a **score of 72**, with an average error of $\pm 2,200$.

Our **iterative stepping method** has no good measurement metric, and is assumed to be **equivalent to Step 1 results**.

Outcomes

Work here is **promising, but not over**.

It is unclear how much of our model inaccuracy was due to inherent factors of the data versus the efficacy of the models chosen.

Our results were **not enough to distribute professionally** as they currently are, **but show promise** that, with stronger data and more research that lead to more accurate conclusions, there is potential for a novel use-case for these algorithms.

Recommendations/Considerations For Future Work

- Usage of data not pre-processed by a lender
- Usage of other models for predicting defaults
- Development of methods where levels of risk can be customized to loaner preference
- Development of loan maximization methods with less computational complexity
- Testing loan maximization techniques against data where the final (lower) loans were later followed up on to see the accuracy of the predictions