Customer Loyalty Classification

Purpose: Reward Loyalty

Problem to Solve

Elo, one of the biggest credit card company, is running a loyalty program.

How to identify loyal customers?

Process & Tools

01 | Data
02 | Exploratory Data Analysis
03 | Model Selection
04 | Visualization

Data

Unique Credit Cards

200K

Customers are classified as “Loyal”, “Neutral” and “Disloyal”

Total Transactions Observed

20M

Data was joined from four different datasets use SQL

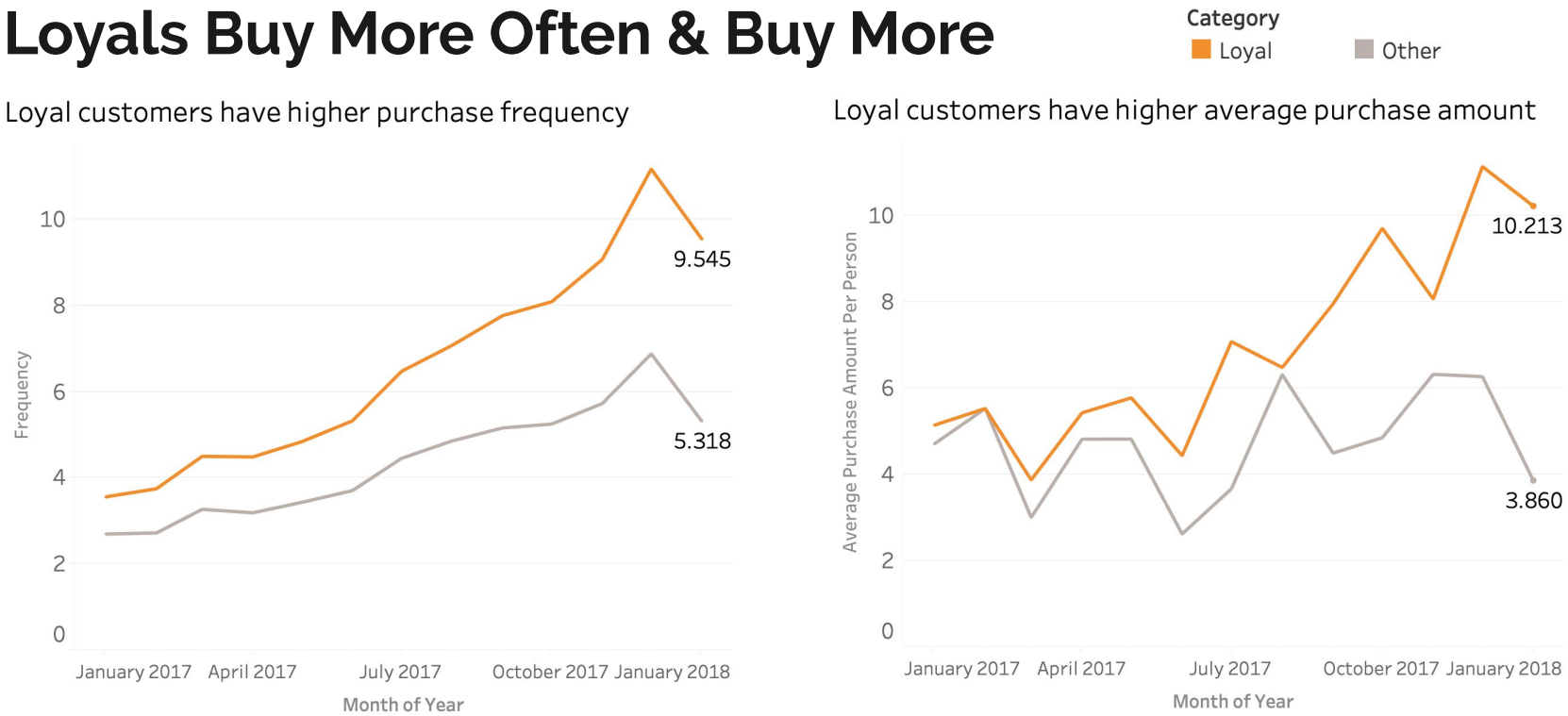
Features

30+

Include transaction, merchants and card information

All data is simulated according to certain rules to resemble normal operation

Loyals Buy More Often & Buy More



Model Selection

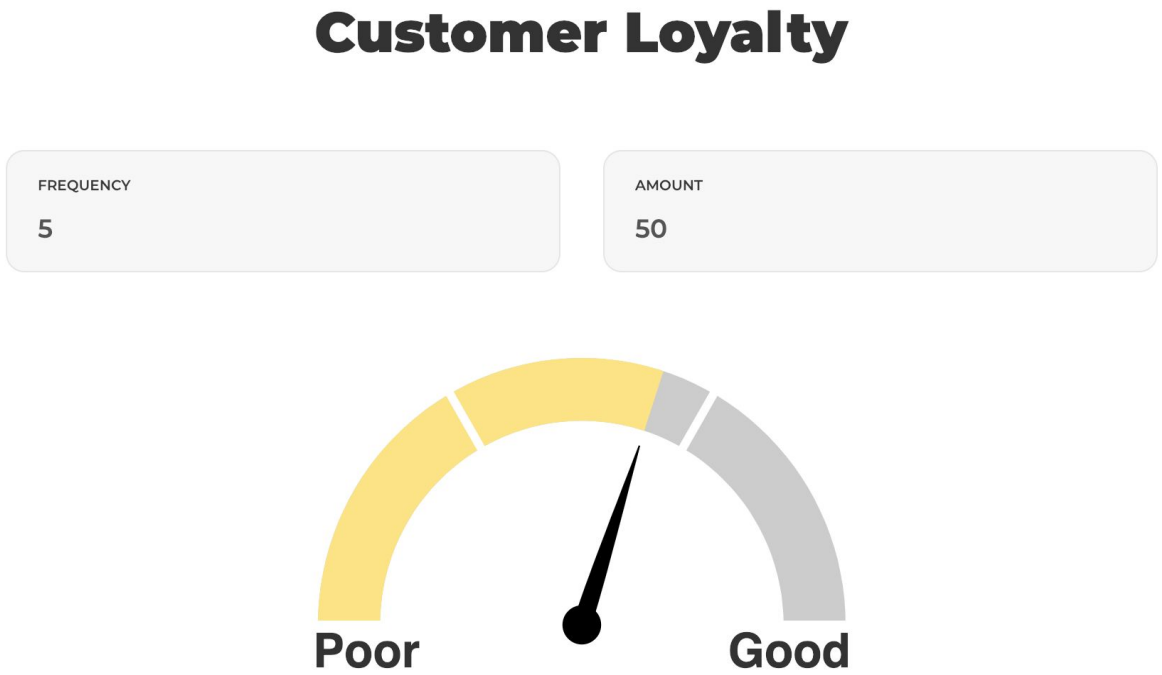
Model	Precision
Bayes	0.19
Decision Tree	0.18
KD Tree	0.17
Random Forest	0.20

Thank you

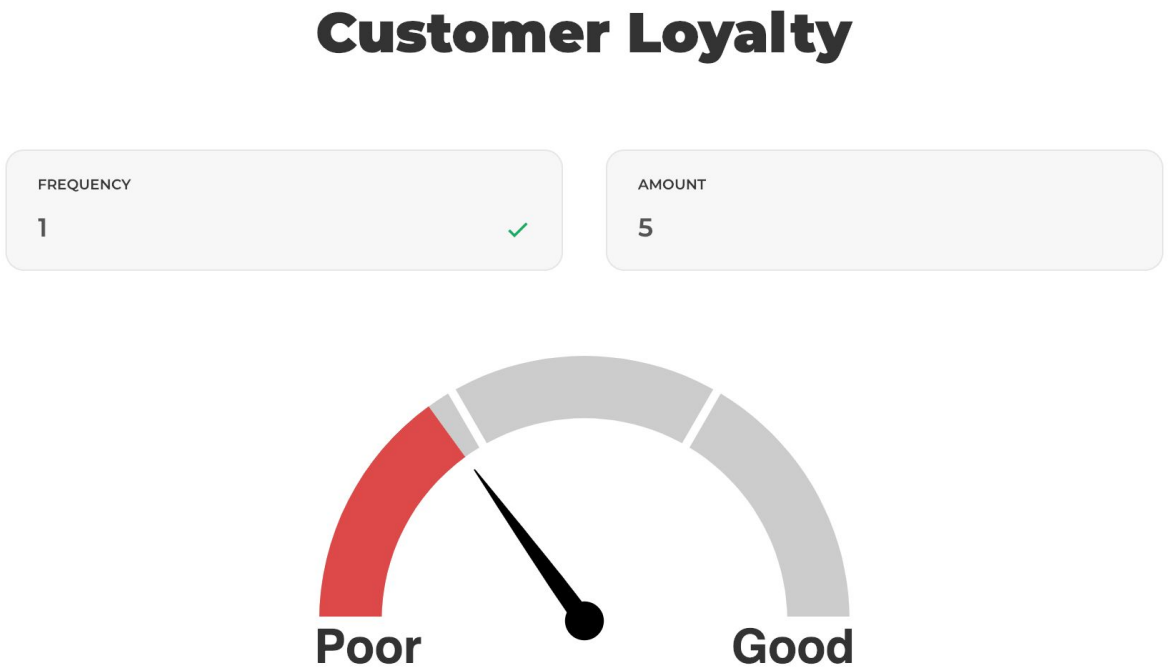
Future Work

- Explore other machine learning algorithms such as Gradient Boosting, Neural Networks, etc.

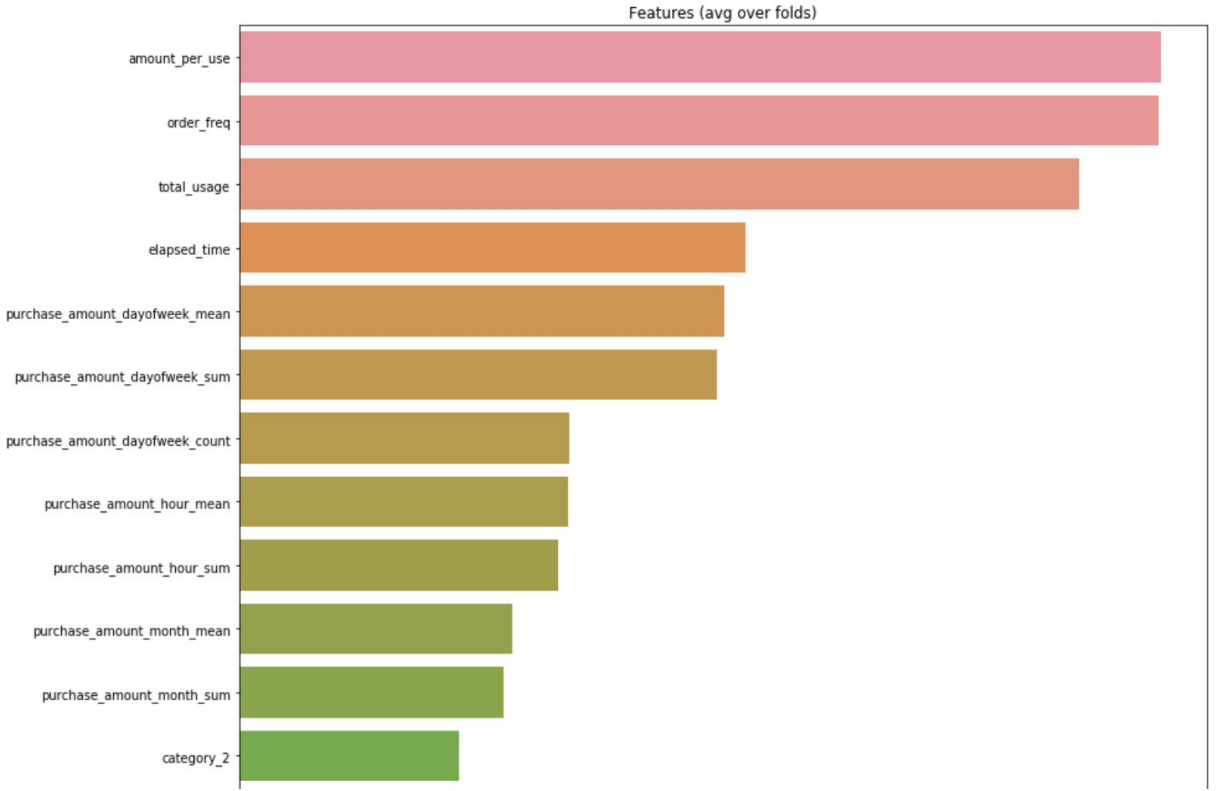
Visualization



Visualization



Feature Importance Analysis



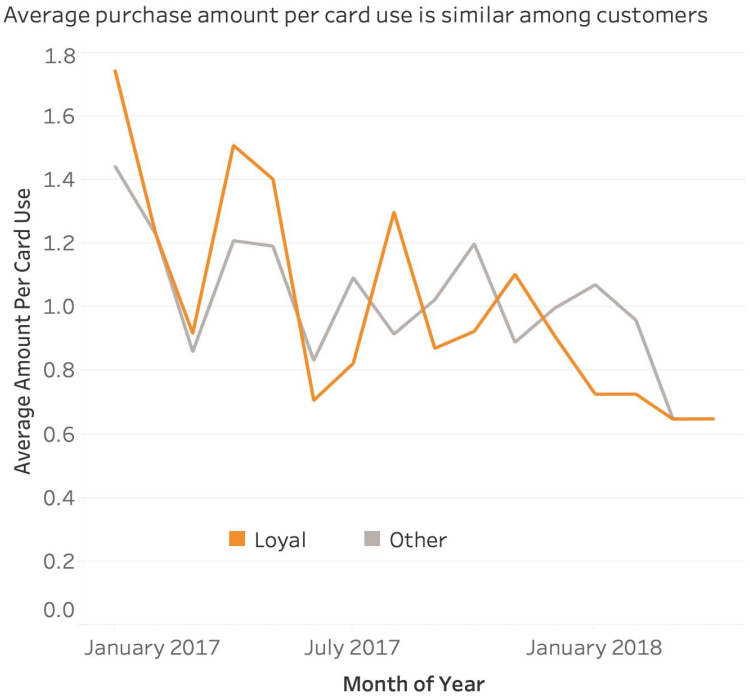
Model optimization

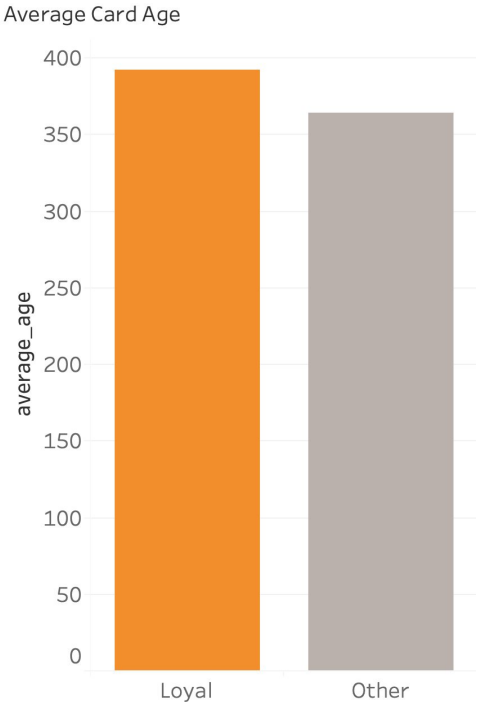
Tried the following methods to improve model performance, but only made minor difference:

- Undersampling
- Oversampling

EDA

- Credit card age is similar among classes
- Average purchase amount per use of card is similar





Model Selection

Model	Accuracy	Precision
Logistic regression	Encountered convergence issue. Tried: solver, max_iter, C, reduce features	
Bayes	0.54	0.19
SVM	Encountered convergence issue. Tried: solver, max_iter, C	
Decision Tree	0.55	0.18
KNN	Computational expensive for large dataset, used KD Tree instead	
KD Tree		
Random Forest	0.57	0.20