Metis Project 4

Prediction: Credit Card Churned

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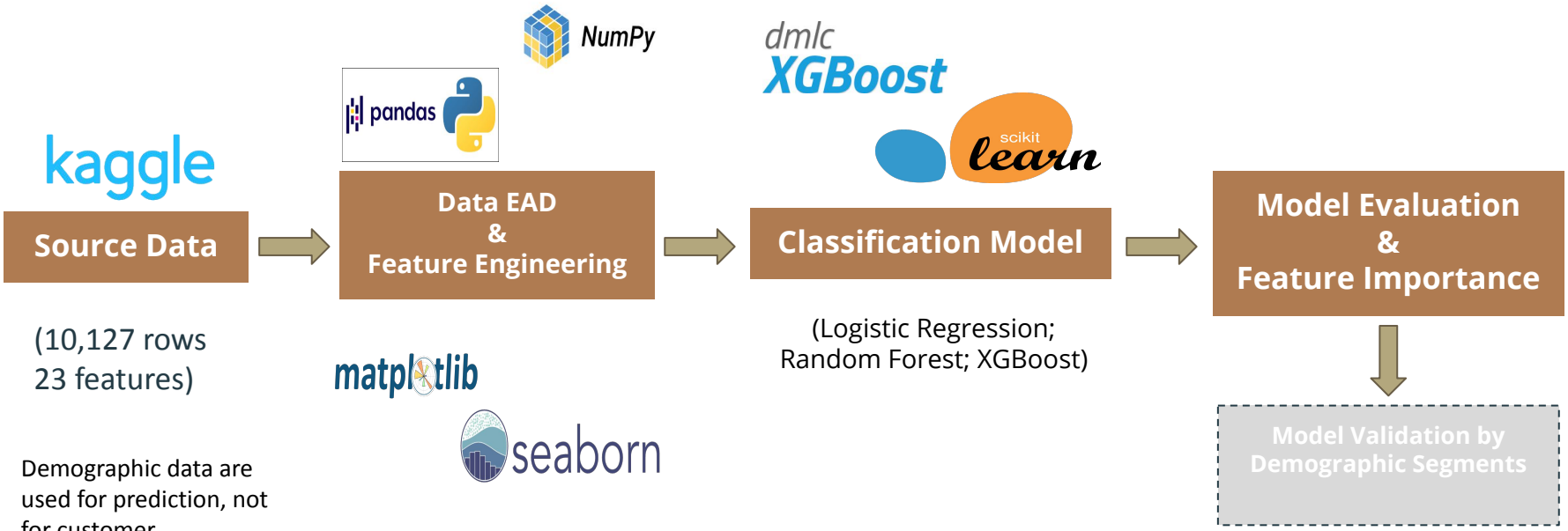
Objective

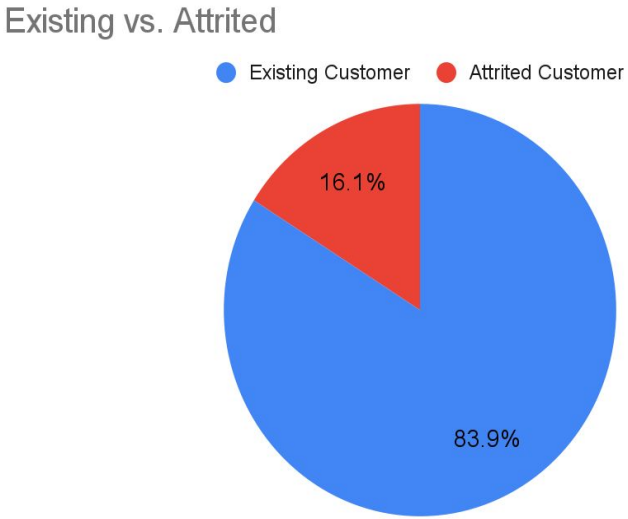
Build a classification model to predict churned credit card holders

Business Solution: send 0% APR offers of X months to improve customer retention

Data & Tools


kaggle
Source Data
(10,127 rows
23 features)
Demographic data are used for prediction, not for customer segmentation
pandas
NumPy
Data EAD
&
Feature Engineering
matplotlib
seaborn
dmlc
XGBoost
scikit
learn
Classification Model
(Logistic Regression; Random Forest; XGBoost)
Model Evaluation
&
Feature Importance
Model Validation by Demographic Segments

The Problem



imbalanced

Methods

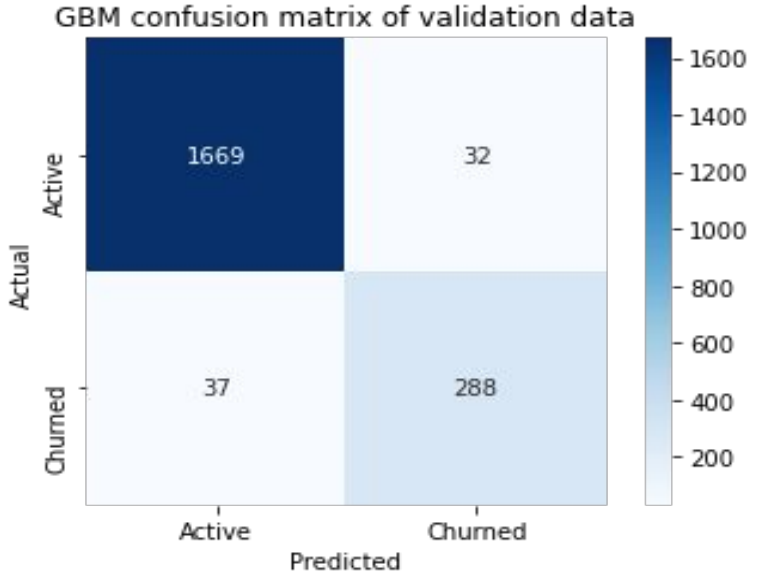
- **Base Model with 9 features**
- **Metric Selection:**
  - F2 score (beta = 2)
  - Recall: sensitive to detect churned customers
  - Precision: control offer cost
- **Cross Validations:**
  - feature selections
  - model selections
- **GridSearchCV**
  - Hyperparameter test

	F2 Score
Logistic Regression	0.73
Random Forest	0.89
XGBoost	0.90

Model Results

Final Model: XGBoost

	Test	Validation
F2 Score	0.90	0.89
Recall	0.91	0.89
Precision	0.87	0.90



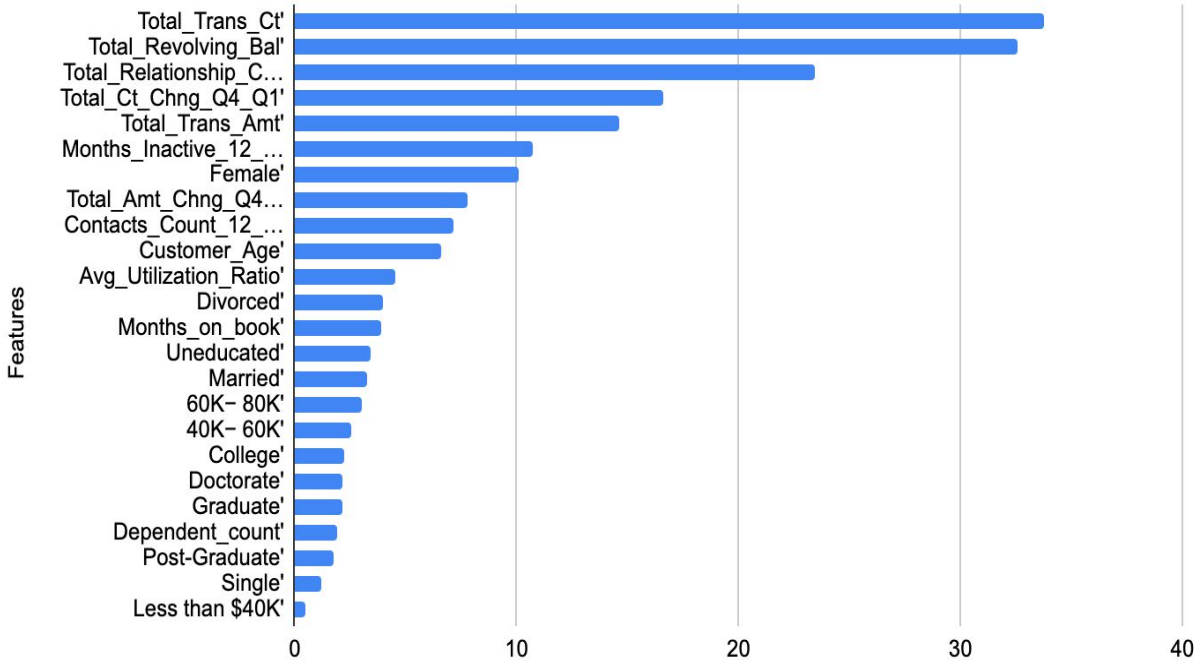
Similar performance on gender segments (see appendix)

Threshold: 0.3

Feature Work

- Continue to test the model on different demographic segments
- Additional analysis for offer designs - customer purchase and revenue data

Appendix: Feature Importance



Appendix: Model Test by Genders

	Male	Female
F2 Score	0.95	0.92
Recall	0.95	0.93
Precision	0.92	0.90