Predicting Credit Card Churn Rate from Consumer Data

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Background

In response to a surge in customer credit card cancellations, the bank sought Team 1 to investigate and address dissatisfaction trends. Analyzing a 10,000-customer database, Team 1 has developed innovative models to proactively engage potential churn-risk customers and offer personalized solutions. This strategic initiative aims to mitigate the current 16% churn rate, fostering increased customer satisfaction and retention.

EDA

- ❏ 10,127 customer dataset for discovery of patterns of attrition
- ❏ Explored the distribution of clients credit card cancellations across different education levels
- ❏ Investigated the customers age in order to uncover any potential age-related patterns
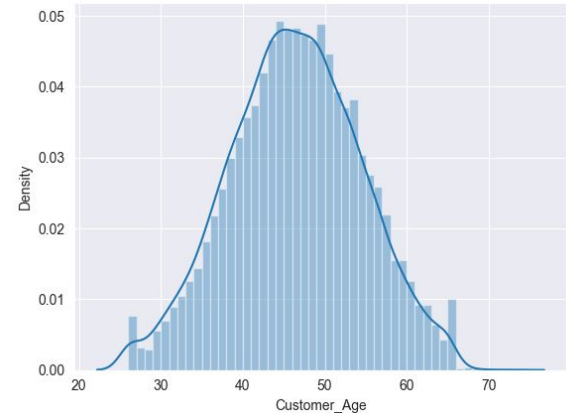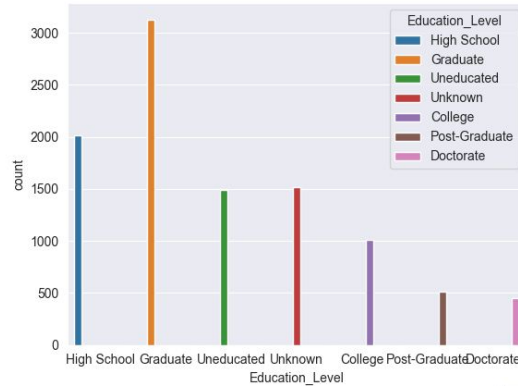
Building a Model to Predict Consumers Likely to Discontinue their Credit Card

Using Historical Data to Train Models

❏ Total data: 10,127 consumers' demographic, financial, and credit card data & if they churned or not
❏ Trained algorithms on 7,088 consumers' data
❏ Validated algorithms on 3039 consumers' data

Model Training & Testing

❏ Tried many different models; used model with highest AUC (metric that seeks to minimize both false positive & false negative rates)
❏ Best Model: Random Forest Model (creates many decision trees on various subsets of the data, then combines them all for final predictions)

Investigate Key Features

❏ Remove extraneous features (using recursive feature elimination)
❏ Gut check top features by consulting with SMEs

Data Source: [Kaggle](#)

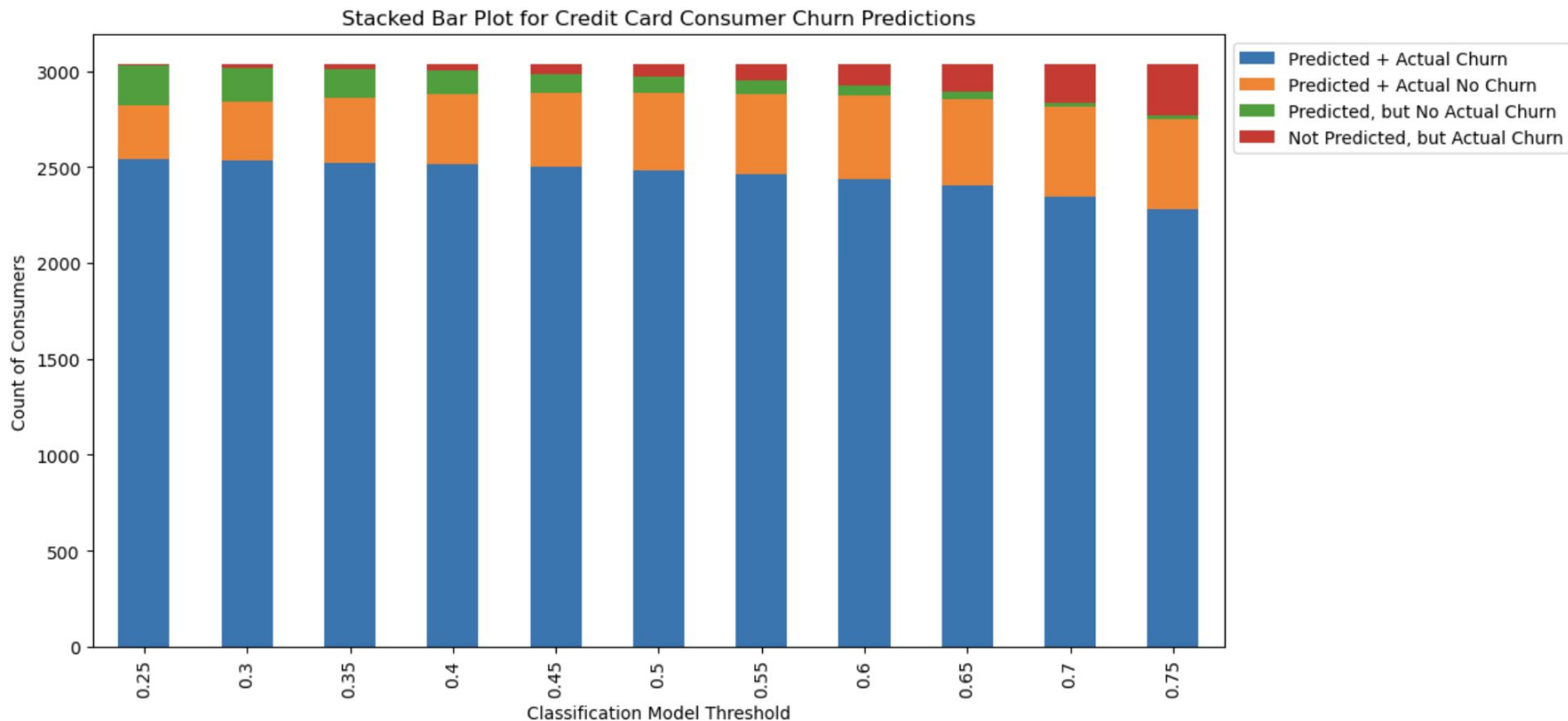# Model Performance on Validation Data for Best-Performing Model

Consumer Left

Model Predicted Consumer Would Leave

	Yes	No
Yes	405	83
No	67	2484

The consumers in the pink box are who banks should preemptively reach out to provide offers to disincentivize to leave credit card service.

Top 10 Random Forest Model Feature Importances
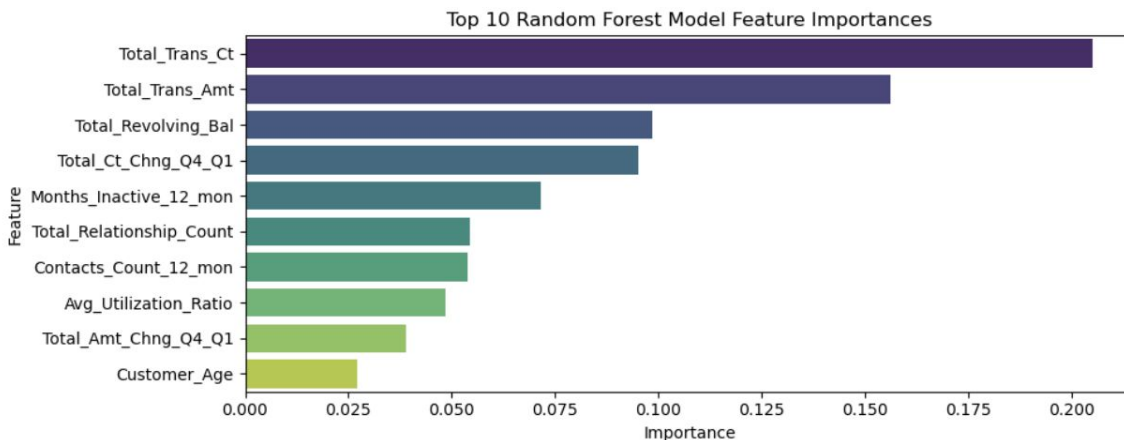
Can Tune Model to Business Needs

Stacked Bar Plot for Credit Card Consumer Churn Predictions

Next Steps

| Set Threshold | Plan Outreach Strategies | Train Account Managers |

Set Threshold

- ❏ Work with business leaders to determine optimal classification threshold and set accordingly for model.
- ❏ Convey monthly metrics to business leaders so they can adjust as needed.

Plan Outreach Strategies

Strategy/Consumer Outreach teams determine outreach strategies for consumers likely to churn, for example:
- ❏ Waiving their next annual fee
- ❏ Offering education about credit card rewards/perks
- ❏ Awarding extra rewards points for keeping account open

Train Account Managers

Train individual account managers/consumer outreach employees to:
- ❏ Expect a monthly list of consumers likely to churn
- ❏ Effectively utilize the aforementioned strategies to convince those consumers to keep their accounts open