Credit Card Market Segmentation

Will the customer leave us?

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Dataset Description

❖ This dataset contains a wealth of customer information collected from within a consumer credit card portfolio, with the aim of helping analysts predict customer attrition. It includes comprehensive demographic details such as age, gender, marital status and income category, as well as insight into each customer's relationship with the credit card provider such as the card type, number of months on book and inactive periods.

❖ Additionally it holds key data about customers' spending behavior drawing closer to their churn decision such as total revolving balance, credit limit, average open to buy rate and analyzable metrics like average utilization ratio.

❖ Faced with this set of useful predicted data points across multiple variables, capture up-to-date information that can determine long term account stability or an impending departure; therefore, offering us an equipped understanding when seeking to manage a portfolio or serve individual customers.

Income Category vs Total Revolving Balance


Income_Category vs Total_Revolving_Bal by Attrition
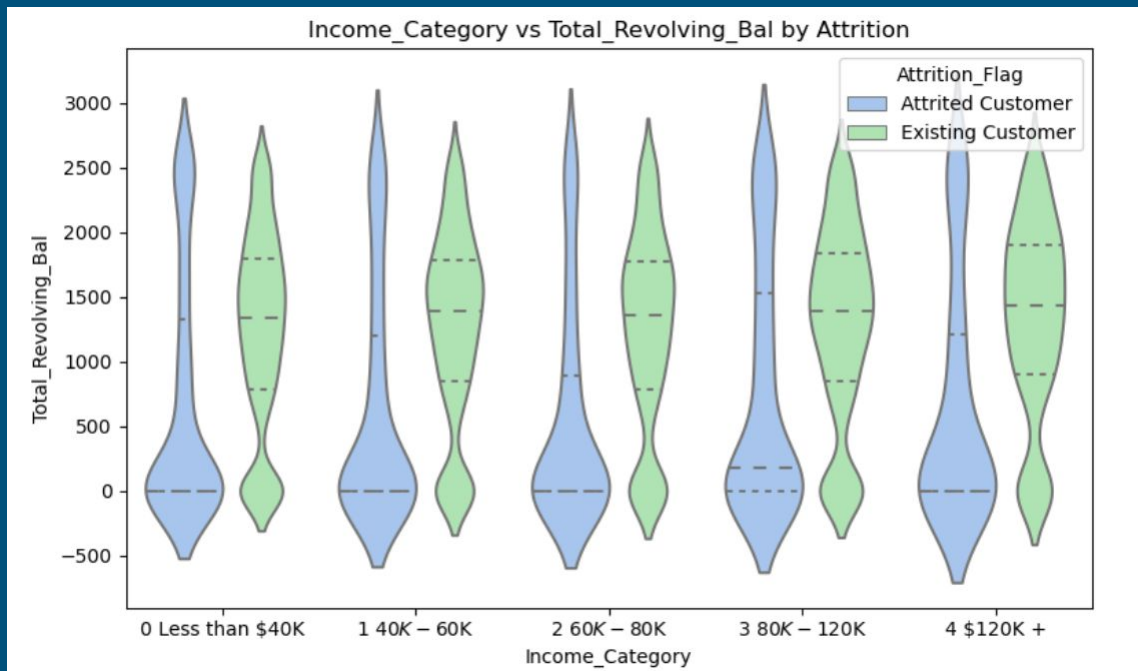
- ❖ **Credit card customers with $0 balance tend to exit the credit card company.**
- ❖ **Credit card customers with a range of total revolving balance leave credit card, with slight bubble at maximum Total Revolving Balance.**

Avg Available to Buy vs Avg Utilization Ratio

Average Open to Buy : The difference between the credit limit assigned to a cardholder account and the present balance on the account.

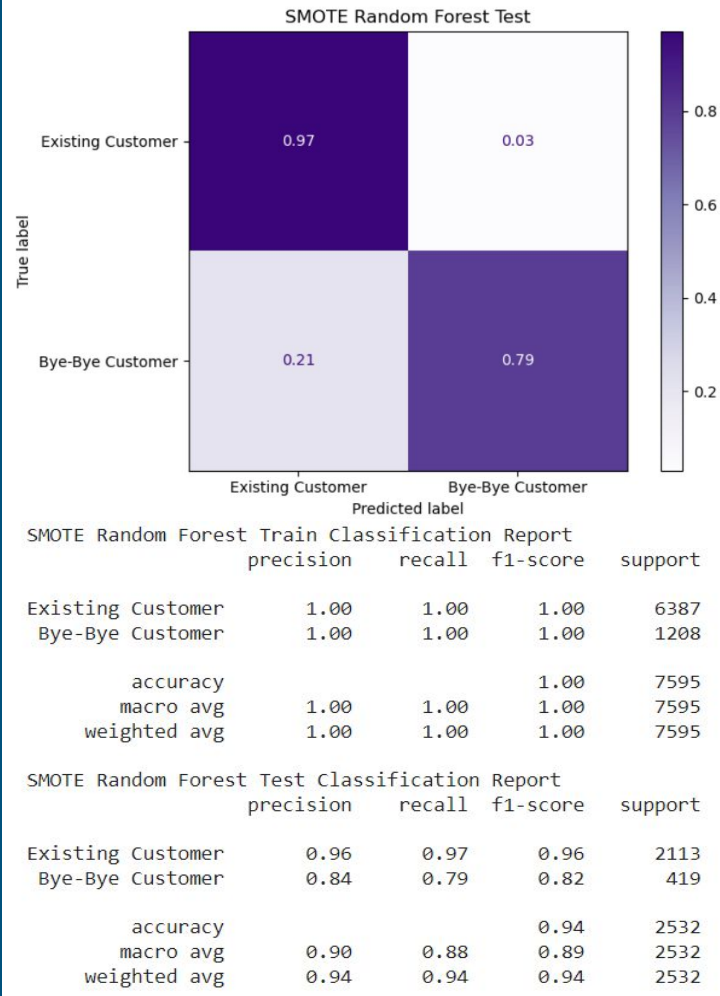❖ **Credit card Customers using less credit available have more credit available to purchase, yet choose to exit the credit card company.**

❖ **Incentiving those with higher average dollars available to buy could decrease attrition from the credit card company.**

Attrition by Average $ Amount Available to Buy vs Average Utilization Ratio
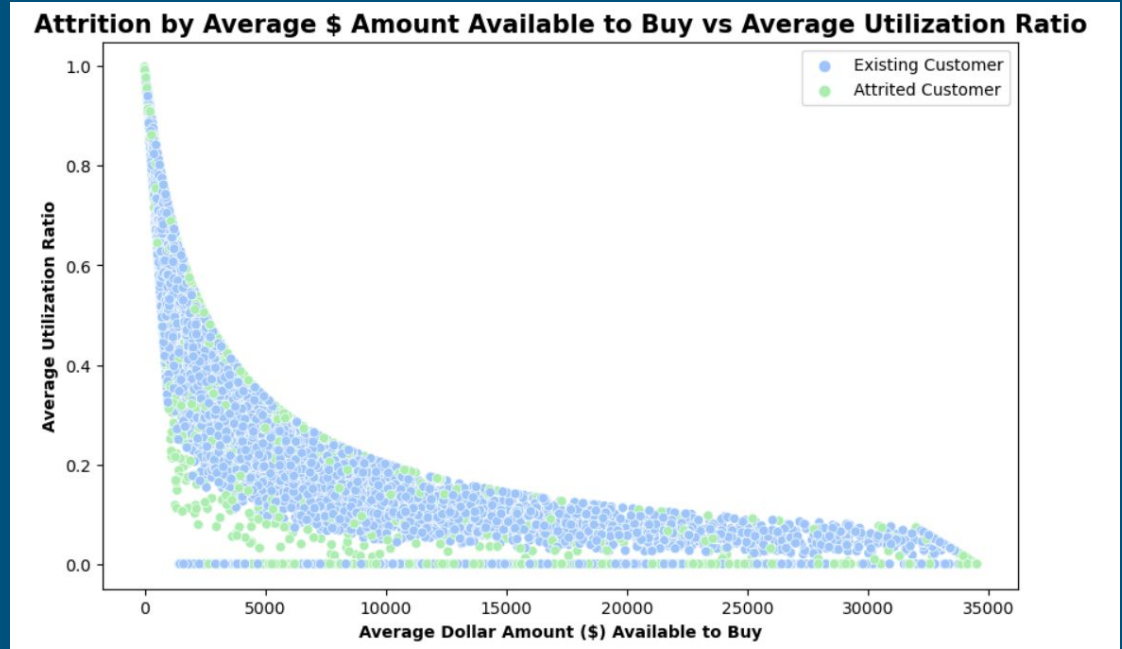
Final Model Selection

The best model is the SMOTE Random Classifier model, *without PCA*.

❖ By optimizing class imbalance, Test recall improves from 74% to 81%. Recall tells you the False Negatives. In this case, a False Negative is where the model predicts the customer would not leave but the customer actually does leave! *No leaving!*

❖ Precision score is slightly less, down from 90% to 83%, but a False Positive is not such a bad thing. This would mean the Model predicted that the customer would leave but the customer actually stayed.

❖ The SMOTE default Random Forest Classifier has an accuracy of 94%.

SMOTE Random Forest Test

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SMOTE Random Forest Train Classification Report
                    precision   recall   f1-score   support

Existing Customer        1.00     1.00       1.00      6387
Bye-Bye Customer         1.00     1.00       1.00      1208

        accuracy                             1.00      7595
       macro avg         1.00     1.00       1.00      7595
    weighted avg         1.00     1.00       1.00      7595

SMOTE Random Forest Test Classification Report
                    precision   recall   f1-score   support

Existing Customer        0.96     0.97       0.96      2113
Bye-Bye Customer         0.84     0.79       0.82       419

        accuracy                             0.94      2532
       macro avg         0.90     0.88       0.89      2532
    weighted avg         0.94     0.94       0.94      2532
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Final Recommendations for Credit Card Attrition

❖ Marketing to those with lower Average Utilization ratio, higher Card class could prevent customers from leaving credit card company.

❖ Credit card customers that do not carry a balance are more likely to leave credit card company. These customers may have been inactive or have contacted us recently. Sometimes contacting us indicates dissatisfaction. Offering incentives could entice these customers to utilize more credit, resulting in more profit for credit card company.

❖ Those with more Available balance to Buy (better credit, higher incomes) often leave credit card company. Marketing to these income classes could help in retaining more customers.