

CAPSTONE PROJECT

By Min Kit Loh

PROBLEM STATEMENT

- A bank manager is concerned about a growing trend of customers discontinuing their credit card services. They would like to gain insights into customer profiles and segments that are at risk of churning. This study is to take proactive measure customers churn, enhancing the bank services and churn prevention to keep customers.

DATASET

- Dataset retrieved from below link in csv form.

<https://www.kaggle.com/datasets/sakshigoyal7/credit-card-customers>

- There are total 23 columns which as below.

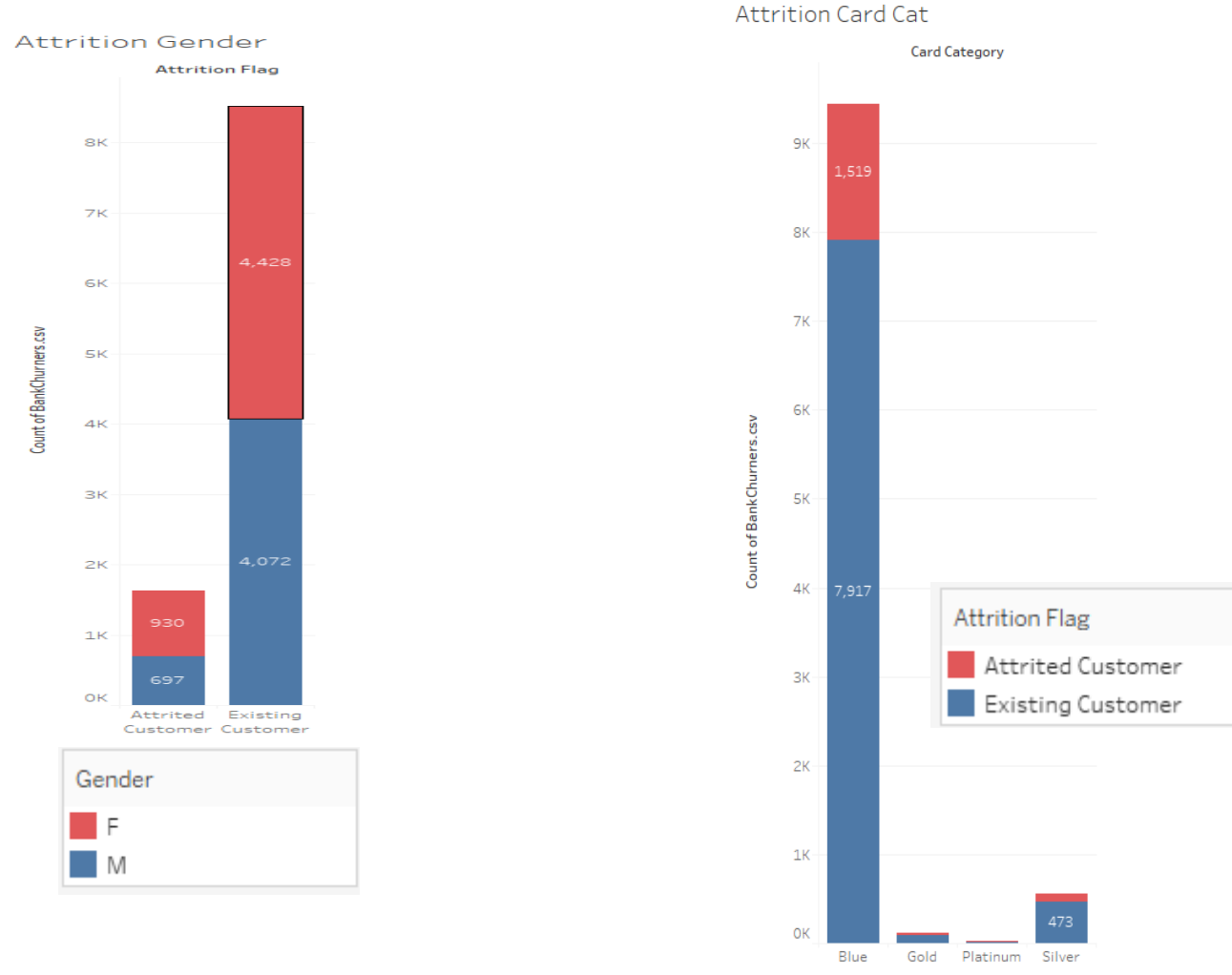
Columns				
CLIENTNUM	Attrition_Flag	Month_Inactive_12_mon	Total_Relationship_Count	Total_Amt_Chng_Q4_Q1
Customer_Age	Gender	Credit_Limit	Contacts_Count_12_mon	Total_Ct_Chng_Q4_Q1
Dependent_count	Education_Level	Avg_Open_To_Buy	Total_Revolving_Bal	Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1
Months_on_book	Marital_Status	Total_Trans_Ct	Total_Trans_Amt	Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2
Card_Category	Income_Category	Avg_Utilization_Ratio		

- The column titles highlighted in “RED” may not consider to apply for analysis.

EXPLANATION OF EACH COLUMN IN THE DATASET (AS WERE STATED IN KAGGLE)

Explanation	
• CLIENTNUM - Client number. Unique identifier for the customer holding the account	• Total_Revolving_Bal - Total Revolving Balance on the Credit Card
• Attrition_Flag - Internal event (customer activity) variable – Existing or Attrition status	• Avg_Open_To_Buy - Open to Buy Credit Line (Average of last 12 months)
• Customer_Age - Demographic variable - Customer's Age in Years	• Total_Amt_Chng_Q4_Q1 - Change in Transaction Amount (Q4 over Q1)
• Gender - Demographic variable - M=Male, F=Female	• Total_Trans_Amt - Total Transaction Amount (Last 12 months)
• Dependent-count - Demographic variable - Number of dependents	• Total_Trans_Ct - Total Transaction Count (Last 12 months)
• Education_Level - Educational Qualification of the account holder	• Total_Ct_Chng_Q4_Q1 - Change in Transaction Count (Q4 over Q1)
• Marital_Status - Demographic variable - Married, Single, Divorced, Unknown	• Avg_Utilization_Ratio - Average Card Utilization Ratio
• Income_Category - Annual Income Category of the account holder (< \$40K, \$40K - 60K, \$60K - \$80K, \$80K-\$120K, > \$120K, Unknown)	• Contacts_Count_12_mon - No. of Contacts in the last 12 months
• Card_Category - Product Variable - Type of Card (Blue, Silver, Gold, Platinum)	• Credit_Limit - Credit Limit on the Credit Card
• Months_on_book - Period of relationship with bank	• Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_mon_Dependent_count_Education_Level_Months_Inactive_12_mon_1 – Naïve Bayes
• Total_Relationship_Count - Total no. of products held by the customer	• Naive_Bayes_Classifier_Attrition_Flag_Card_Category_Contacts_Count_12_mon_Dependent_count_Education_Level_Months_Inactive_12_mon_2 – Naïve Bayes
• Months_Inactive_12_mon - No. of months inactive in the last 12 months	

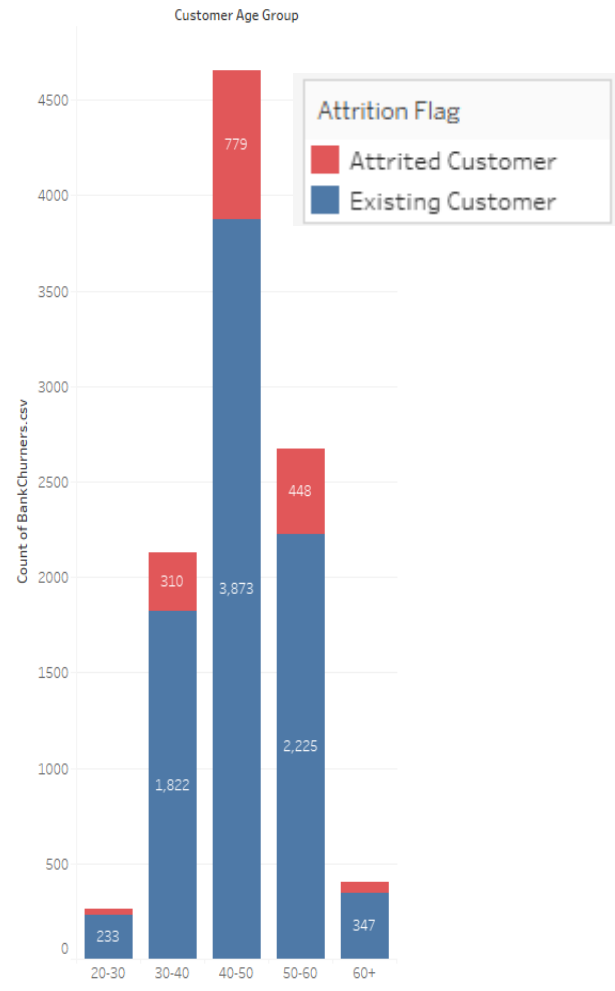
STORYBOARD 1 : FINDINGS FOR CUSTOMER CHURN



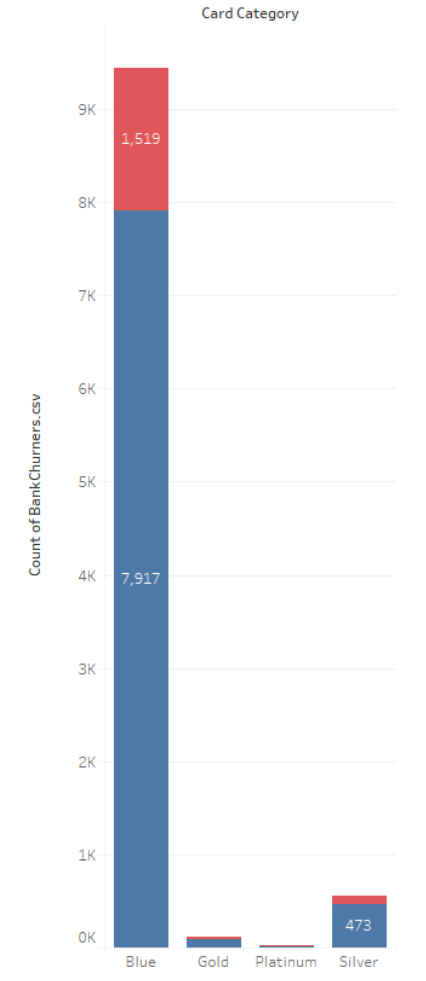
- 57% of female customer churning of the Attrition customer group
- Total 16% of attrition customer up to date.
- Numbers of Male and Female (52%) existing customer are quite balance
- Total 16% attrition occurred in the Blue card holder and the highest among the cards.

STORYBOARD 2 : FINDINGS FOR CUSTOMER CHURN

Attrition Age Funtion



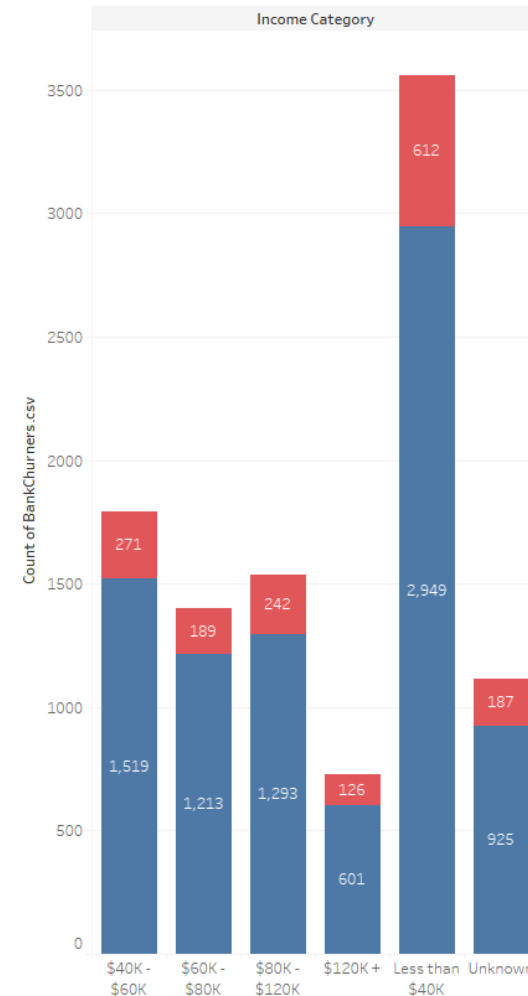
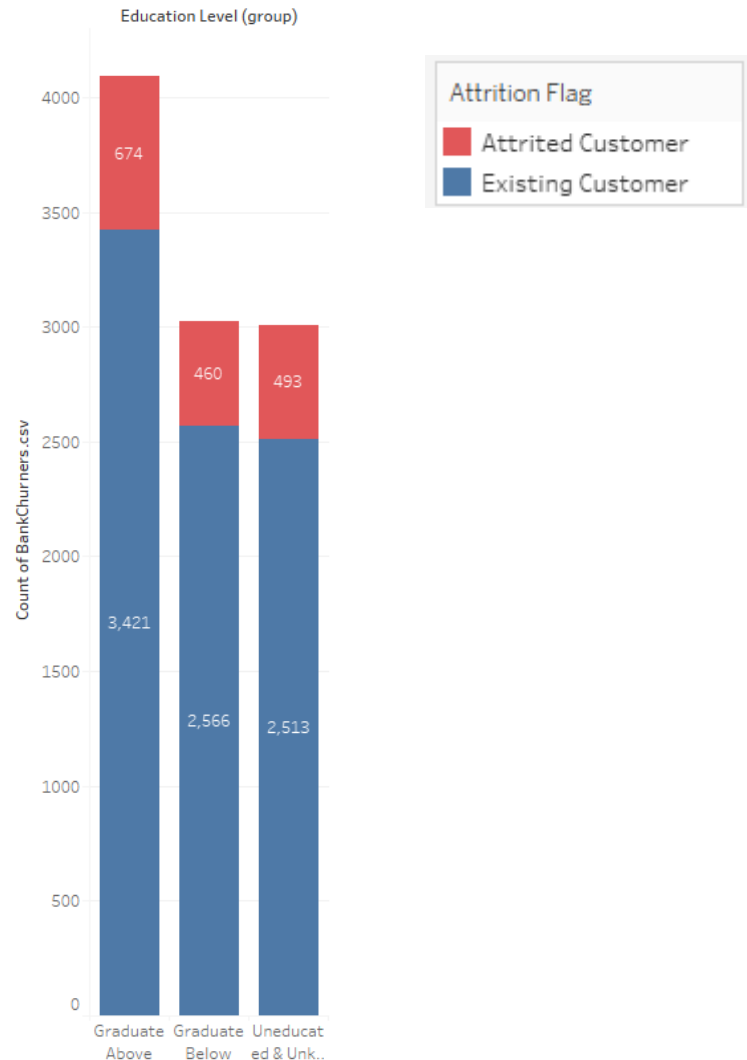
Attrition Card Cat



- The highest attrition of 50.7% in the age of 40-50. of the total attrition count
- The second highest of 29.1% in the age of 50-60.
- The third highest of 20.2% in the age of 30-40.

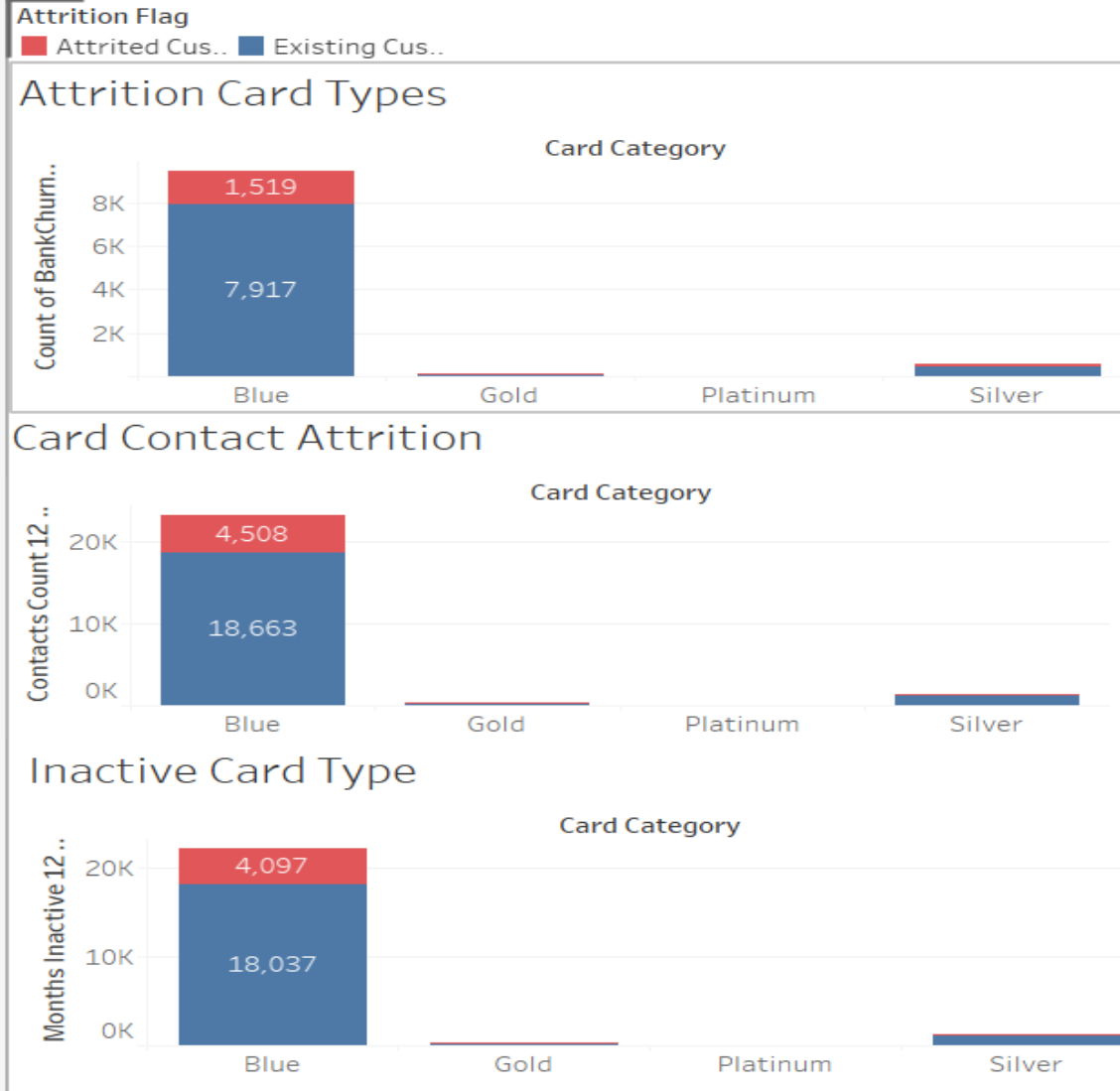
STORYBOARD 3 : FINDINGS FOR CUSTOMER CHURN

Education Group



- The highest attrition of 41.4% with the education of Graduate above.
- The second highest of 30.3% with the education of Graduate above.
- The third highest of 28.3% with the education of Graduate above.
- The highest attrition of 34.9% with income range 40K below.
- The lowest attrition of 7.2% with income range 120K above
- The second attrition of 15.5% with income range 40-60K.

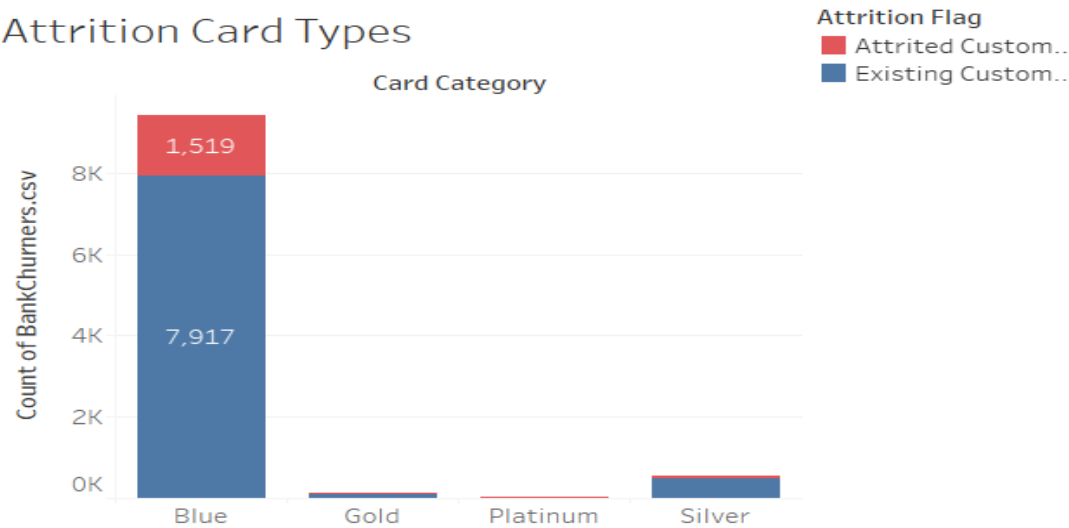
STORYBOARD 4 : FINDINGS FOR CUSTOMER CHURN



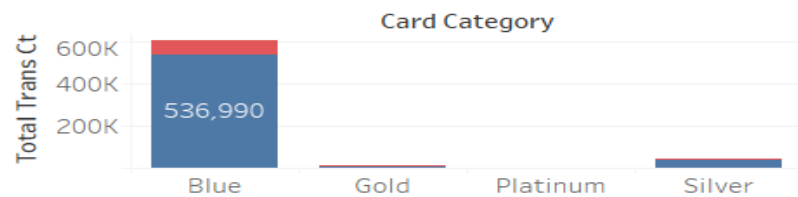
- The number of contacts occurred for the inactive card used within 12 months are related. However, the number of contacts (Ave 3 calls/customer) did not effective for reducing the customer attrition in blue card
- The inactive card customer in 12 months would directly be relative to the rate of attrition.

STORYBOARD 5 : FINDINGS FOR CUSTOMER CHURN

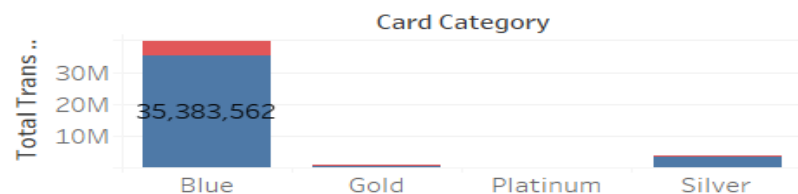
Attrition Card Types



Trans Cnt for Card

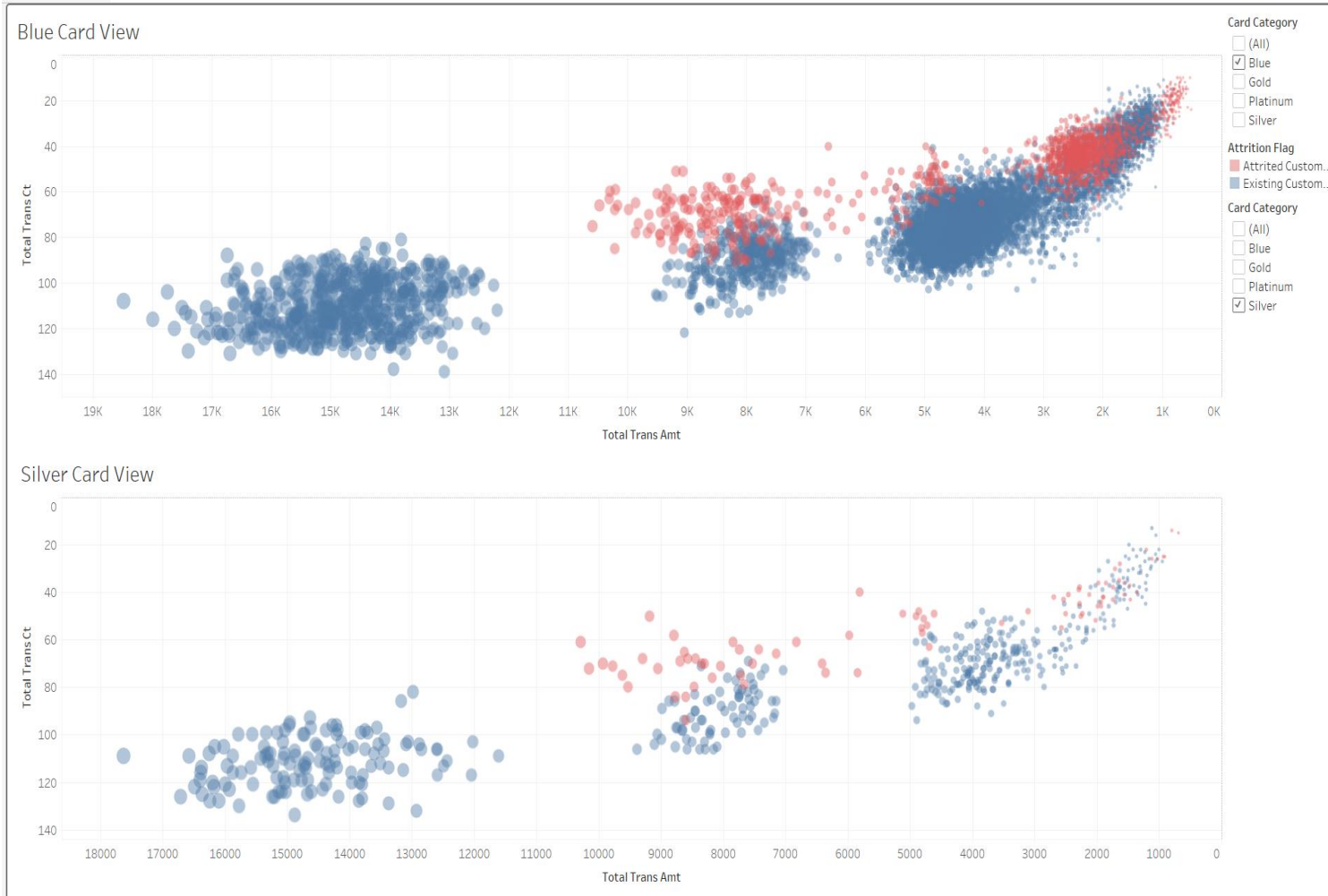


Trans Amt for Card



- The attrition customer of 1519 in blue with transaction count per customer is 44
- Total 11.1% transaction has been missing for the blue card attrition
- Total 10.5% transaction has been missing for the Total of 82 out of 505 Silver card holder.
- Total 11.3% (4.45M) transaction amount for the blue card attrition.
- Total 11.0% (442K) transaction amount for the Silver card attrition.

STORYBOARD 6 : FINDINGS FOR CUSTOMER CHURN



- Blue Card: 2 groups with high attrition:
 - Group 1: Trans Amt- 2-4 K and Trans Ct-20-60
 - Group 2: Trans Amt- 7-11 K and Trans Ct-50-90
- Silver Card: 2 groups with high attrition:
 - Group 1: Trans Amt- 1-3 K and Trans Ct-30-50
 - Group 2: Trans Amt- 6-10 K and Trans Ct-60-80

RECOMMENDATIONS

- Pay more focus on the Blue Card customers (regardless gender) to reduce the attrition rate.
- Create product or reward system for the Blue card holders to boost retaining rate and new customer base.
 - Implement the new account for higher interest rate eg multiplier account. Those who hold the blue card which spent >10 transaction with minimum amount will increase the saving interest rate.
 - Personalized offers and rewards: Tailor rewards and benefit for the Silver above cards.
 - Implement the loyalty programs : Implement tiered loyalty program with exclusive benefits for long-term card holders.
- Proactive retention strategies: Identify at-risk customers and offer personalized retention offers and incentives.
- Regular communication: Send personalized messages, offers and statement to keep customer engaged.