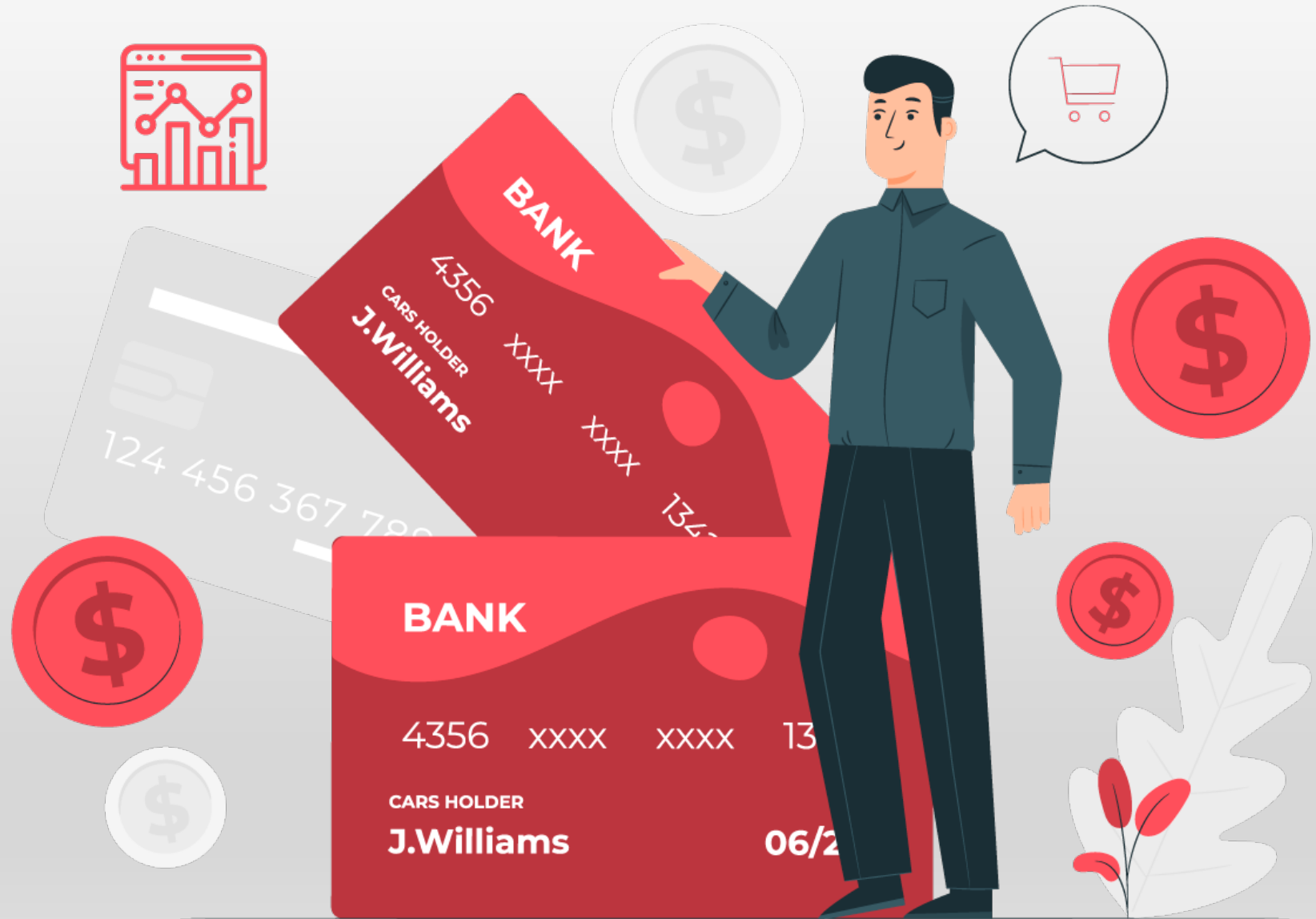# Credit Card Customers Analysis

BY: LIM LI HUI

My Tableau Dashboard

Introduction: Credit Card Attrition in Banking

Credit card attrition poses a prevalent challenge in the banking industry as customers close their credit card accounts, triggering significant financial consequences and associated risks. This phenomenon disrupts revenue streams, impacting interest income, fees, and overall profitability for banks. The potential risks include heightened customer acquisition costs and alterations to the credit risk profile. Beyond financial implications, attrition signals dissatisfaction among customers, necessitating a strategic focus on customer relationship dynamics. Addressing these challenges is essential for banks to sustain financial health and foster lasting customer loyalty in a dynamic banking landscape.

Through this dataset, we hope to understand the reason for credit card attrition and provide suggestions to reduce attrition by analysing attrition rate by customer segmentation and transaction behaviour.
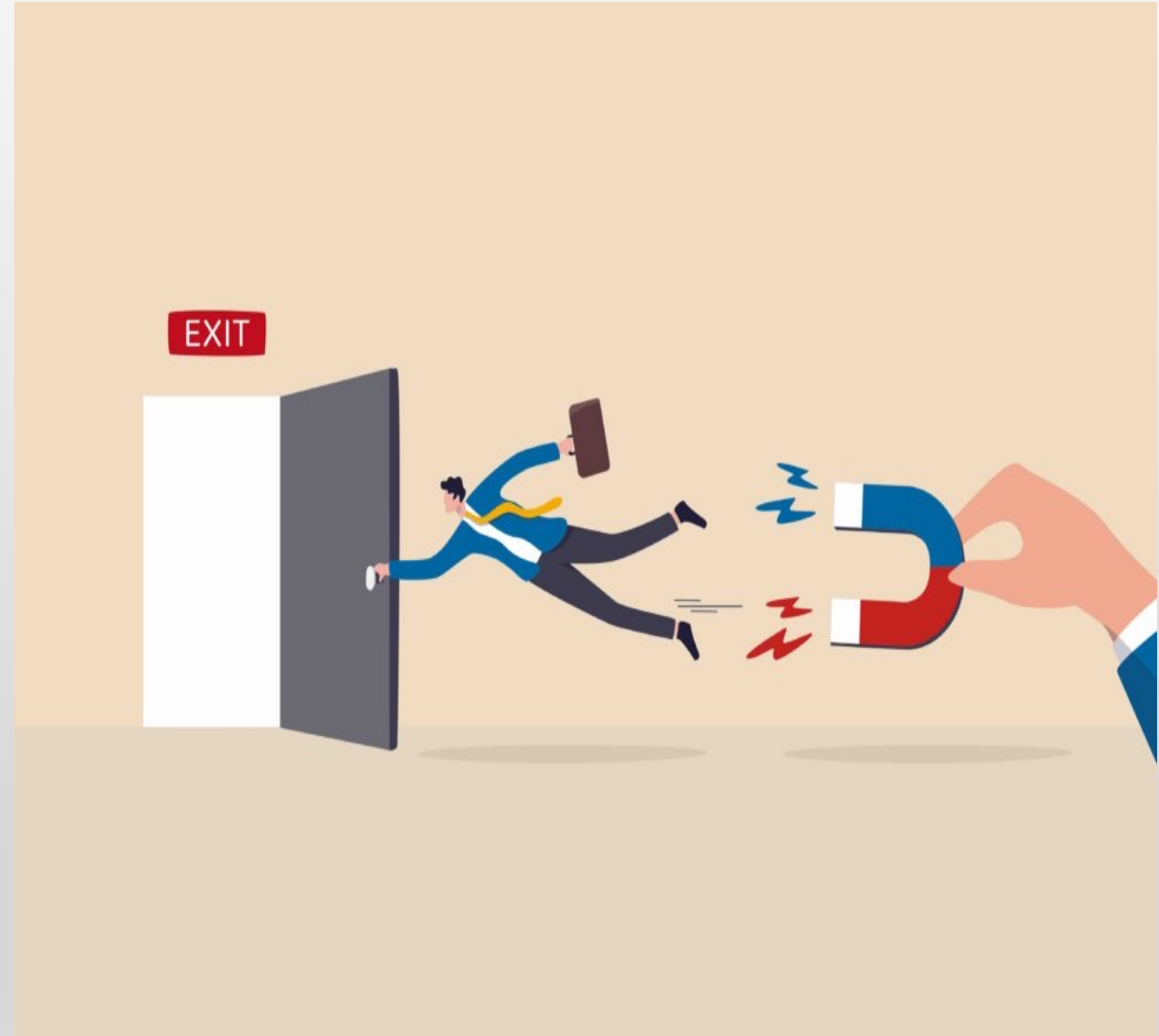
Dataset Source & Cleaning

Metadata

Data-source:

Credit Card customers src: Kaggle.com

Data Cleaning:
- ✓ Checked if count of customer ids = to count of unique customer ids

Datacheck

Count of Clientnum	10,127
Distinct count of Clientnum	10,127

Data Name	Description
CLIENTNUM	Client number. Unique identifier for the customer holding the account
Attrition_Flag	Internal event (customer activity) variable - if the account is closed then 1 else 0
Customer_Age	Demographic variable - Customer's Age in Years
Gender	Demographic variable - M=Male, F=Female
Dependent_count	Demographic variable - Number of dependents
Education_Level	Demographic variable - Educational Qualification of the account holder (example: high school, college graduate, etc.)
Marital_Status	Demographic variable - Married, Single, Divorced, Unknown
Income_Category	Demographic variable - Annual Income Category of the account holder (< $40K, $40K - 60K, $60K - $80K, $80K-$120K, > $120K, Unknown)
Card_Category	Product Variable - Type of Card (Blue, Silver, Gold, Platinum)
Months_on_book	Period of relationship with bank

What is Attrition Rate?

The attrition rate, also known as the churn rate or customer churn, is the rate at which customers stop doing business with an entity. ([src](#))
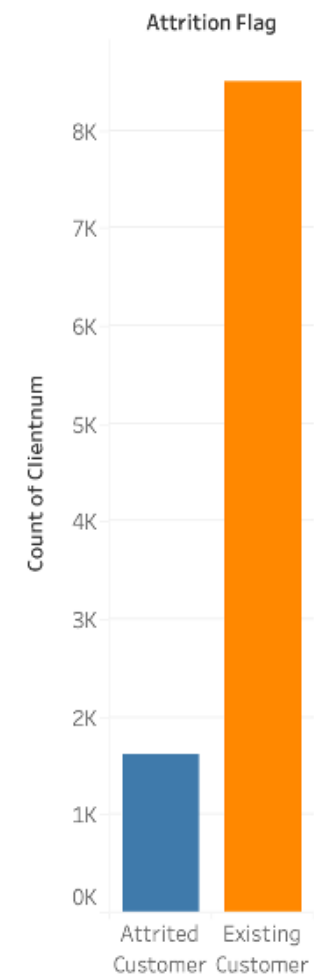
Since each Clientnum is unique, we will assume that 'Attrited Customer' means that customers stop doing business with the bank entirely.

Attrition Rate = Number of Attrited Customers / Total Number of Customers * 100 = **16.07%**

Number of Attrited Customers: 1,627

Original Total Number of Customers: 10,127

Number of Customers Remaining: 8,500

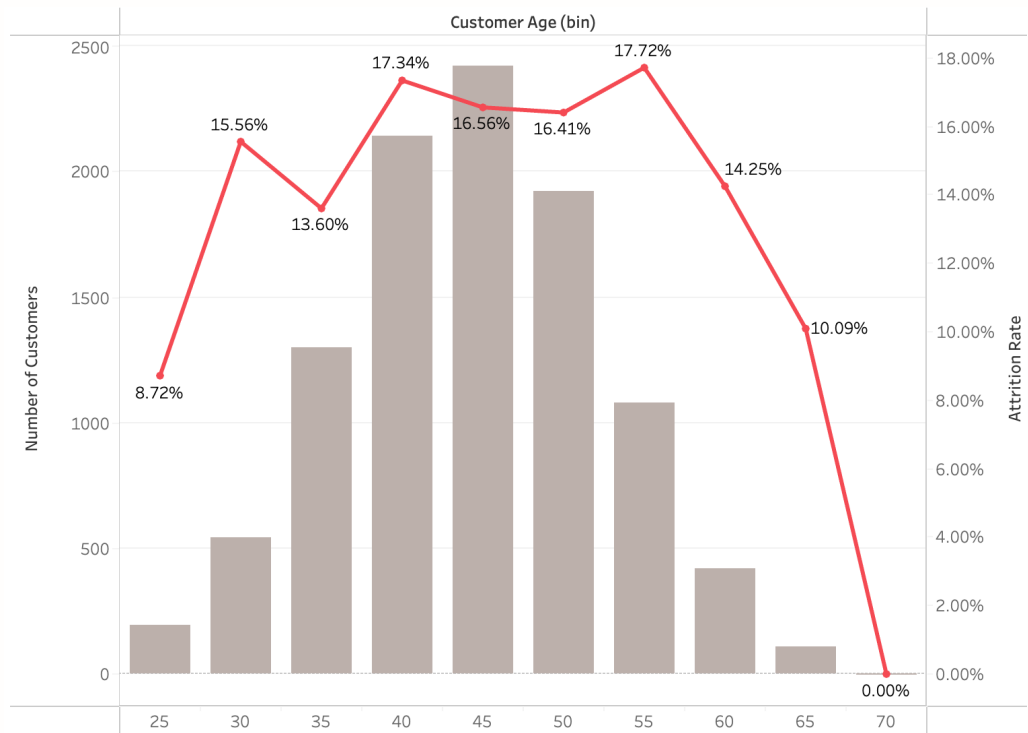| Attritted / Attrition Flag	
0	1
Existing Customer	Attrited Customer
83.93%	16.07%

Section 1
Analysing Attrition Rate by customer segmentation:

Age
Card Type
Annual Income

Attrition Rate by Age

Observation

Customers in age bin 55 experienced the peak attrition rate at 17.72%, which indicates that customers around the age of 55 were more likely to discontinue or leave the service compared to other age groups.

The trend observed is that as the age bin increases beyond 55 and approaches 70, the attrition rate decreases. This suggests a correlation between age and attrition, with older customers, in this case, exhibiting lower rates of attrition.

Assumption

Possible Reasons for high Attrition Rate of age bin 55

Lifestyle changes such as retirement planning leads to decreased income. A decrease in income may lead to financial strain, making it challenging for individuals to manage existing credit card debt and meet repayment obligations. Hence, customers may opt to cancel their credit cards to better manage their expenses. Most attrited customers belonging to the age 55 bin have an annual income of less than $40K.

Reduced Number of Dependants

As customers with children gain financial independence, the number of dependent decreases. This may imply a shift in priorities. With fewer dependents, there may be a reduced financial burden on the primary cardholder. This could lead to a reevaluation of the need for multiple credit cards or certain features that were initially chosen to support family-related expenses

Suggestion for Bank Manager:
- **Personalized Communication:**
Engage in personalized communication to understand their financial goals and align credit card benefits with their current life stage.
- **Review and Adjust Credit Card Terms:**
Regularly review credit card terms, interest rates, and fees. Consider offering loyalty-based incentives such as lower interest rates or reduced fees.
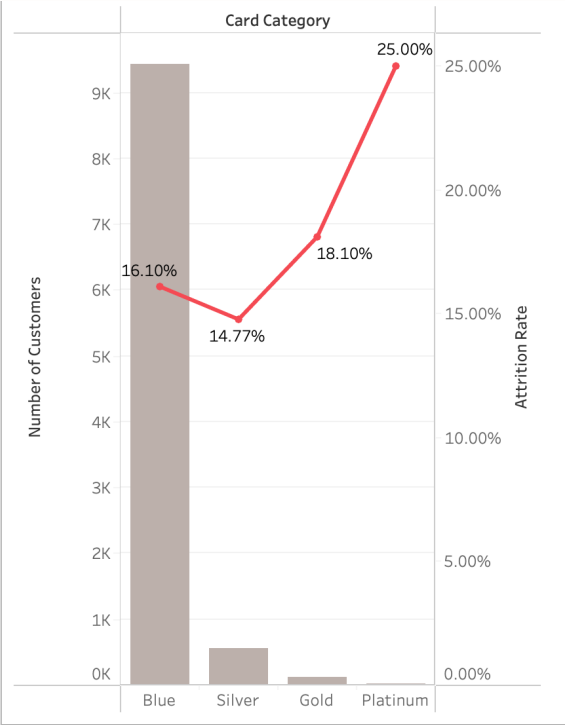
Age vs. Income

Customer Age (bin)	Income Category	Number of Attrited Customers
55	Less than $40K	66
	$40K - $60K	27
	$60K - $80K	25
	$80K - $120K	27
	$120K +	21

Age vs. Dependents
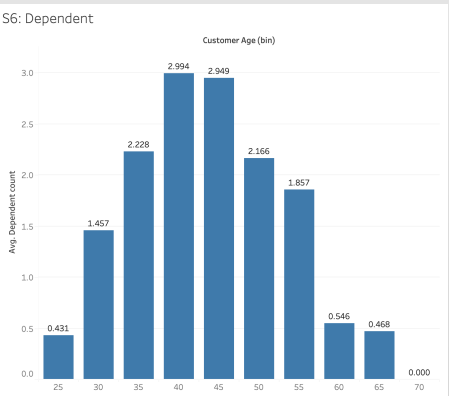
Attrition Rate by Card Type - Blue

Attrition Rate by Card Category

Red Line shows attrition rate, Grey Bars shows number of customers.

The Blue Card has the highest number of card ownership.

Card Category	Attrition Rate	Number of Attrited Customers	Number of Customers
Blue	16.10%	1,519	9,436
Silver	14.77%	82	555
Gold	18.10%	21	116
Platinum	25.00%	5	20

Observation
Blue Card has the highest number of customer attrition at 1,519. Comparing the number of customers in each card category, the barrier to entry for Blue Card is low, with 7,917 remaining customers, compared to 15 under Platinum.

Assumption
Possible Reasons for high Attrition Rate of Blue Card:
Blue card is an entry-level credit card, designed for individuals with limited or no credit history. Thus, the cost of switching to another credit card is low.

Suggestion for Bank Manager:
- Introduce simple loyalty programs that reward cardholders for continued usage and on-time payments. Loyalty points or tiered programs can encourage ongoing engagement.
- Introduce simple rewards and incentives that align with the spending habits of entry-level cardholders. This could include cash back, discounts, or loyalty points for specific types of purchases.

Attrition Rate by Card Type - Platinum

Attrition Rate by Card Category
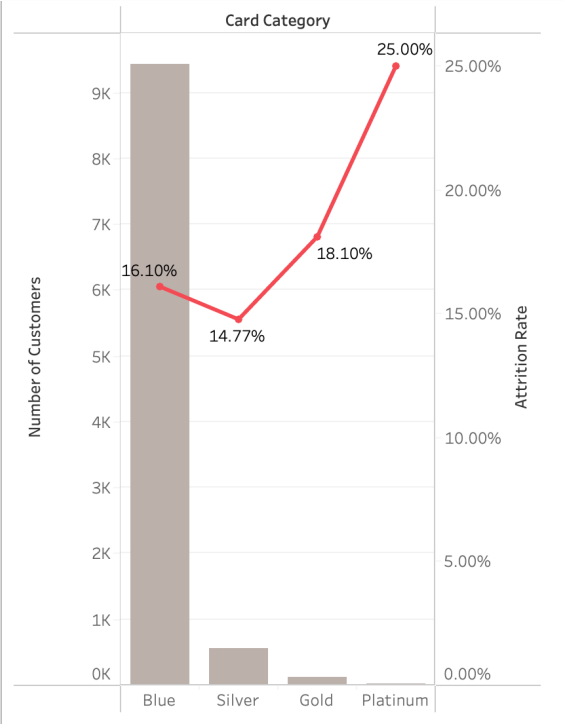
Red Line shows attrition rate, Grey Bars shows number of customers.

The Attrition Rate for Platinum Card is the highest at 25%.

Card Category	Attrition Rate	Number of Attrited Customers	Number of Customers
Blue	16.10%	1,519	9,436
Silver	14.77%	82	555
Gold	18.10%	21	116
Platinum	25.00%	5	20

Card Category	Number of Customers	Total Trans Amt Field	Average Transaction Per Customer
Platinum	20	179,995	9,000
Gold	116	891,531	7,686
Silver	555	3,657,718	6,590
Blue	9,436	39,870,938	4,225

Observation
The Attrition Rate for Platinum Card is the highest at 25%. The average transaction made per customer holding a Platinum Card is the highest amongst the 4 Card Category at 9,000. For every Platinum Card customer lost, it is equivalent to 2 Blue Card customers lost.

Assumption
Possible Reasons for high Attrition Rate of Platinum Card:
- **Fee Sensitivity:** Platinum credit cards often come with higher annual fees. Cardholders may become more fee-sensitive over time, especially if they perceive that the benefits do not justify the cost.
- **Poor customer service experiences**, unresolved disputes, or difficulties in accessing premium services can contribute to dissatisfaction and prompt cardholders to seek alternatives.

Suggestion for Bank Manager:
- Reevaluate the benefits for Platinum cardmembers, ensuring that they are well differentiated from other card segments.
- Ensure continuous engagement between Relationship Managers and customers to gain a deeper understanding of their evolving needs and preferences.

Attrition Rate by Annual Income
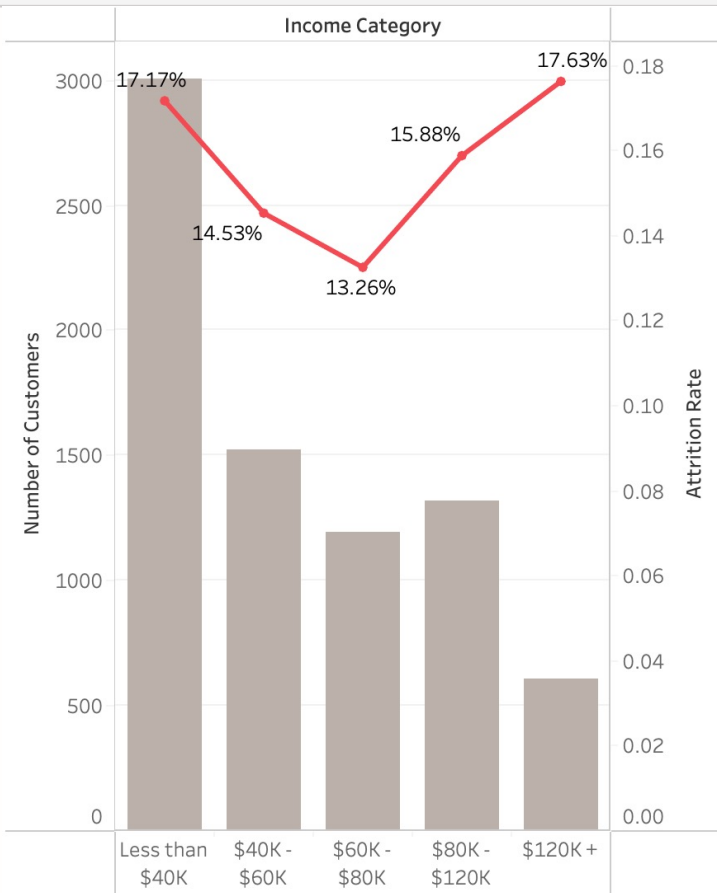
Income Category

Excluded Unknown Annual Income and Unknown Education Level

Income Category	Attrition Rate	Attrited Customers	Number of Customers
$120K +	17.33%	126	727
Less than $40K	17.19%	612	3,561
Unknown	16.82%	187	1,112
$80K - $120K	15.77%	242	1,535
$40K - $60K	15.14%	271	1,790
$60K - $80K	13.48%	189	1,402

Observation:
Customers with more annual salary > $120K has the highest attrition rate. Most customers in this segment choose to cancel Blue Card.

Table: Attrition of Annual Income 120K

Income Category	Card Category	Number of Attrited Customers
$120K +	Blue	113.0
	Silver	11.0
	Gold	2.0
	Platinum	0.0

Assumption
Possible Reasons for Attrition by Annual Income:
To cancel a low-value credit card by customers with high annual salaries is influenced by their individual financial preferences, lifestyle, and the perceived value offered by the credit card in relation to their financial goals.

Suggestion for Bank Manager:
Bank Manager can target customers who have experienced attrition with a tailored offering for another credit card (i.e. Silver, Gold or Platinum), which may be a better fit for their lifestyle.

Section 2
Analysing Attrition rate by transaction behaviour:

Average Utilization Ratio (AUR) , Revolving Balance

Attrition vs Months on Book, Avg Utlization Ratio

Credit Utilization Ratio

What Is Credit Utilization Ratio?

The credit utilization ratio is the percentage of a borrower's total available credit that is currently being used. The credit utilization ratio is a component used by credit reporting agencies in calculating a borrower's credit score.

Credit Utilization Ratio= (Total Credit Card Balance / Total Credit Card Limit)

Example:

Card No.	Total Revolving Balance	Credit Limit
1	1,000	5,000
2	2,500	10,000
3	4,000	8,000
Total	**7,500**	**23,000**

Therefore, the credit utilization ratio is $7,500 divided by $23,000, 0.326.

Many financial experts **recommend keeping credit utilization ratio below 30%(0.30).** While the 30% guideline is commonly suggested, individual circumstances may vary.

Average Utilization Ratio (AUR) , Revolving Balance for Attrited Customers

| Attrited Customer 0 | Attrited Customer >0.30 | Attrited Customer <0.10 |
| Attrited Customer <0.20 | Attrited Customer <0.30 | |
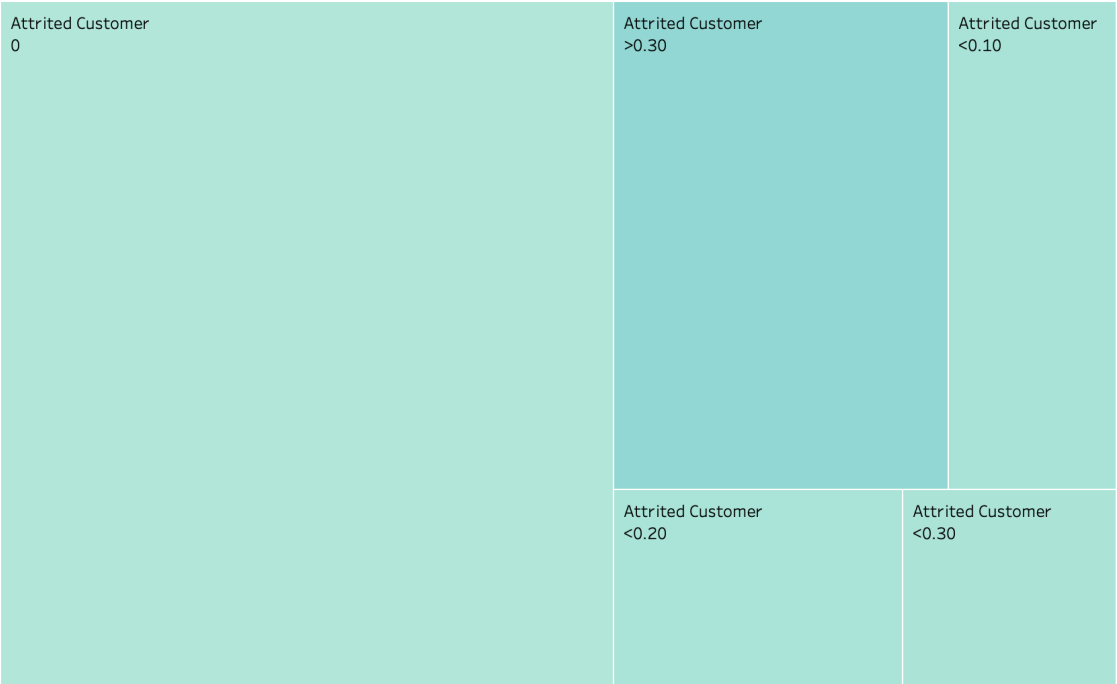
Avg Utlization Ratio Range		Attrition Flag	
		Attrited Custom..	Existing Custom..
0	Number of Customers	893	1,577
	Avg. Total Revolving Bal	0	0
<0.10	Number of Customers	175	1,385
	Avg. Total Revolving Bal	942	1,347
<0.20	Number of Customers	121	1,183
	Avg. Total Revolving Bal	1,313	1,482
<0.30	Number of Customers	89	823
	Avg. Total Revolving Bal	1,471	1,528
>0.30	Number of Customers	349	3,525
	Avg. Total Revolving Bal	1,834	1,643

Observation
At the time of account closure, most of the attrited customer, 893, has an AUR of 0 with no revolving balance.
Customers with AUR of >0.30, has the highest average total revolving balance.

Assumption
- AUR = 0
The absence of debt and credit utilization indicates positive credit behavior by the customer. It may be seen as favorable aspect from a risk management standpoint, as the customer is not contributing to potential credit risk for the bank.

- AUR > 0.30, highest average total revolving balance
The presence of a revolving balance and high credit utilization ratio at the time of closure may indicate financial challenges that led to the decision to close the account. There might be possible issues with collection and potential default risk.

Suggestion for Bank Manager:
For attrited customers with AUR > 30, Bank Manager can introduce promotional balance transfer offers with lower interest rates for attrited customers. This can incentivize customers to consolidate their high-interest debt onto a single credit card, making it more manageable for them to pay off balances over time to decrease default risk.

Attrition vs Months on Book, Avg Utlization Ratio
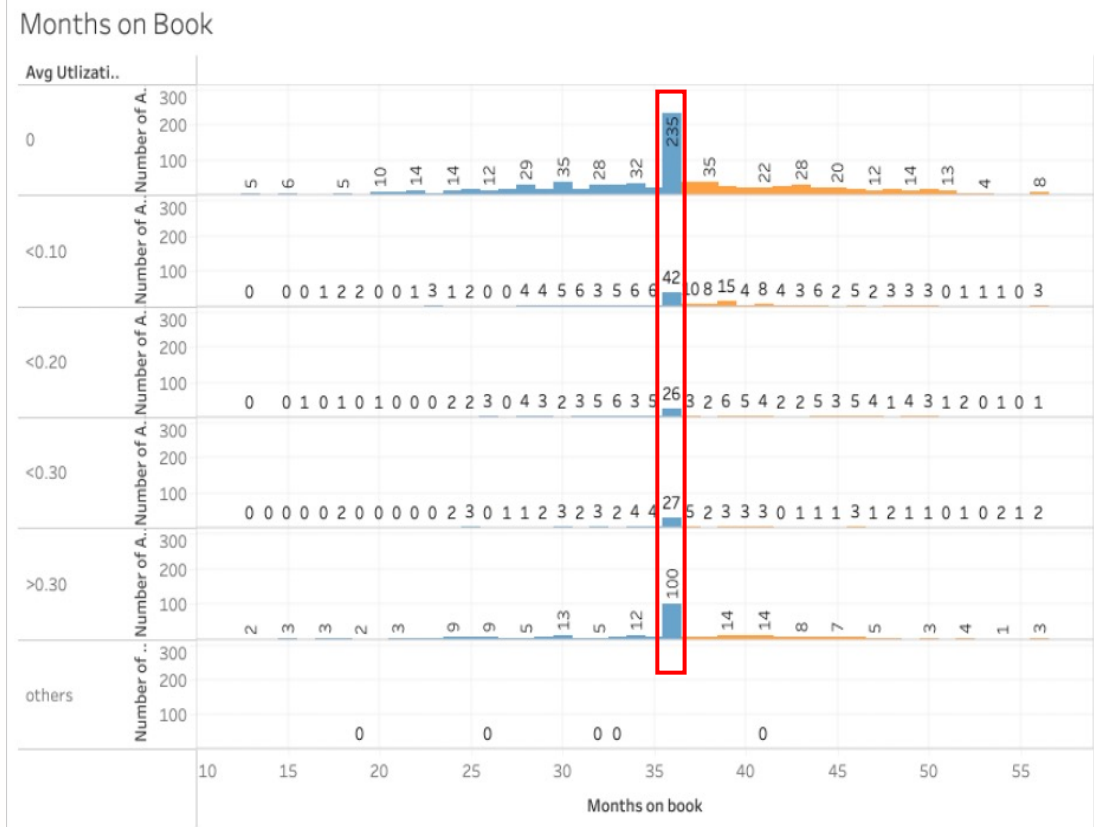
Observation
At 36 months on book, the number of customer attrition is the highest, at 436 customers. Of the 436 customers, 235 customers have an AUR of 0.

The customers are segmented as follow: Blue = Established Customers with 12-36 months on book, Orange = Long-Term Customers with > 37 months on book. Customers < 12 months are not categorized as no customer has month on book value of < 12.

Assumption
235 customers with an AUR of 0 implies that customers have not used the credit card and therefore card inactivity. If a credit card isn't used for a year or more, the bank may decide to close the account.

Suggestion for Bank Manager:
Bank Manager can actively engage customers with card benefits and special promotions to stimulate card utilisation.

END

Special thanks to Vertical Institute, Instructor Zane Lim and Teaching Assistant Min Li.