

# Customer Churn Analysis Report: Unveiling Insights for Retention Strategies

## Introduction:

The following report presents a comprehensive analysis of customer churn based on a provided dataset. The dataset includes various customer attributes such as age, gender, education level, income category, and transaction behavior. The analysis aims to identify patterns, trends, and potential factors influencing customer attrition.

## 1. Age Distribution Analysis:

The age distribution analysis reveals that the majority of customers, both attrited and existing, fall within the range of 30 to 60 years.

Notably, there is a slightly higher concentration of attrited customers in the age group of 40 to 50 years, suggesting a potential susceptibility to churn in this age range.

## 2. Income Distribution Analysis:

The income distribution analysis focuses on understanding how customers are distributed across different income categories concerning customer attrition.

Cleaning and mapping the 'Income\_Category' column allows for a visual comparison of attrited and existing customers based on their income categories.

Insights from this analysis can inform strategies related to customer retention and engagement, especially in relation to income levels.

### a) Higher Income Categories and Churn:

- There is a noticeable trend indicating that customers in higher income categories, such as '\$120K+', have a lower likelihood of churn.
- The attrition rate appears to be lower in the higher-income segments, suggesting that customers with greater financial capacity are more likely to remain with the bank.

### b) Churn in Lower Income Segments:

- Conversely, there seems to be a higher attrition rate in lower income categories, especially in the 'Less than \$40K' segment.
- This trend suggests that customers with lower incomes may be more susceptible to churn, potentially due to changing financial circumstances or seeking better banking options.

### c) Stability in Middle Income Ranges:

- Income categories in the middle range, such as '\$60K - \$80K' and '\$40K - \$60K', show a relatively stable distribution between attrited and existing customers.
- This stability may indicate that customers in these income ranges are less prone to churn, possibly due to a balance between financial stability and banking satisfaction.

### d) Targeted Retention Strategies:

- Given the observed trends, implementing targeted retention strategies for customers in lower income categories could be crucial.
- Providing tailored financial solutions, personalized customer support, or special incentives may help retain customers facing financial challenges.

**e) Enhanced Services for High-Income Customers:**

- Recognizing the stability and lower attrition in higher income segments, the bank may consider introducing premium services or benefits for customers with higher incomes to enhance satisfaction and loyalty.

**Future Considerations:**

**I. Dynamic Monitoring:**

Continuous monitoring of income distribution trends is essential to adapt strategies in response to changing customer behaviors and economic conditions.

**3. High-Value Customers Analysis**

- This analysis delves deeper into the relationship between income categories and customer attrition, specifically targeting high-value customers.
- The count plot visually represents the distribution of customers across income categories, distinguishing between attrited and existing customers.
- Churn rates calculated for each income category offer a quantitative measure of attrition within different income groups.

**4. Education Level vs. Income Category**

**i. High School Education:**

- A significant portion of customers with a High School education falls into the "Less than \$40K" income category.
- There is a moderate presence in the "\$40K - \$60K" income range.
- A smaller but noticeable fraction is in the "\$60K - \$80K" range.

**ii. Graduate Education:**

- Graduates exhibit a more diversified income distribution.
- A considerable number falls into the "\$40K - \$60K" and "\$80K - \$120K" income categories.
- There's also representation in the "Less than \$40K" and "\$120K +" categories.

**iii. Uneducated Customers:**

- Uneducated customers show a concentration in the "Less than \$40K" income range.
- The "\$40K - \$60K" category is also noticeable but to a lesser extent.

**iv. Unknown Education:**

- Customers with unknown education levels predominantly fall into the "Less than \$40K" income category.
- There's a smaller representation in the "\$60K - \$80K" income range.

**v. College Education:**

- College-educated customers are distributed across various income categories.
- The "\$40K - \$60K" and "\$80K - \$120K" categories have a notable presence.
- There's also representation in the "Less than \$40K" and "\$120K +" categories.

**vi. Doctorate Education:**

- Customers with a Doctorate exhibit a broader distribution across income categories.
- There's a significant presence in the "\$60K - \$80K" and "\$80K - \$120K" ranges.
- The "\$120K +" category also has representation, suggesting a higher income level.

**Trends Noticed**

**Income Diversity:**

- ❖ Across all education levels, there is a concentration of customers in the "Less than \$40K" income category, suggesting a significant portion of the customer base with lower incomes.
- ❖ Customers with Graduate and Doctorate education levels tend to have a more varied income distribution, including a substantial presence in higher income categories.
- ❖ Customers with unknown education levels predominantly fall into the lower-income category, indicating a potential area for further investigation.

**5. Correlation Heatmap Analysis:**

- The correlation heatmap reveals relationships between various factors in the dataset.
- Key correlations include a positive relationship between total relationship count and months on book, total relationship count and customer age, and a weak correlation between total relationship count and income.

**6. Scatter Plot: Customer Age vs. Monthly Transactions:**

The scatter plot visualizes the relationship between customer age and monthly transactions, color-coded by attrition status.

Further analysis of trends, outliers, and differences in the distribution of points between existing and attrited customers provides insights into the impact of age on transaction behavior.

**Conclusion**

The analyses conducted on the dataset offer valuable insights into customer behavior and factors influencing churn. Strategies to address potential churn risks, particularly among customers in their 40s and those with specific income categories, can be formulated based on these findings. Continuous monitoring of customer demographics and transaction patterns will be essential for adapting retention strategies and ensuring customer satisfaction.