Analysis of Loan Default Risk

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Objectives

- Understanding Factors Influencing Loan Default

- Exploratory Data Analysis (EDA) on Banking Data

- Impact on Lending Practices

Introduction

The analysis delves into loan default risk factors via Exploratory Data Analysis (EDA) on banking data. With a focus on demographic, financial, and occupational attributes, this study aims to unearth patterns influencing loan defaults, providing crucial insights for risk assessment and tailored lending strategies.
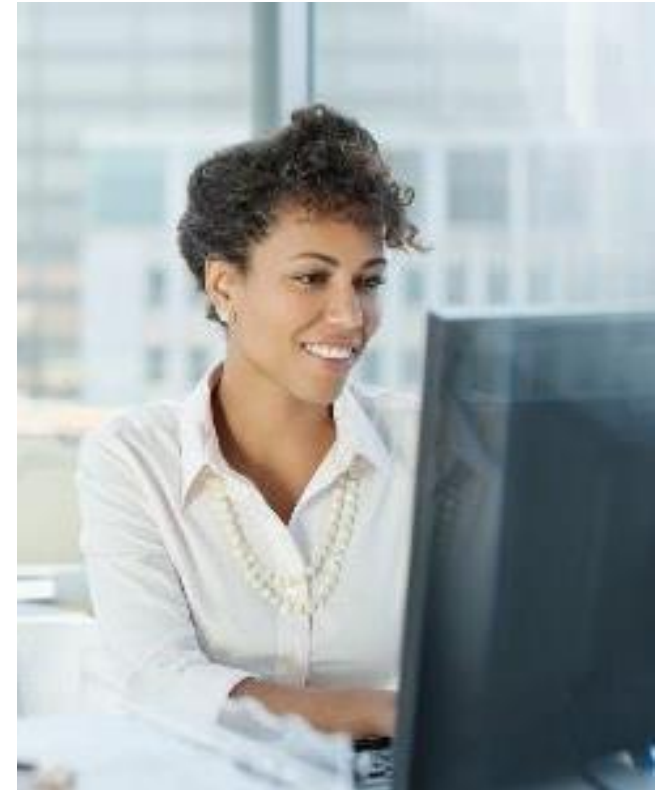
Data Processes

Handling Missing Values: Addressing missing data in columns.

Removing Irrelevant Data: Dropping unnecessary columns for analysis.

Dealing with Outliers: Detecting and managing outlier values.

Feature Engineering: Creating new variables or modifying existing ones to enhance analysis.

Exploratory Analysis: Univariate, bivariate analyses to find payment risk indicators.

Variable Analysis: Assessing credit, income, education, and contract impacts.

Correlation Study: Examining relationships between variables.

Visualization: Pie, scatter, and correlation plots for insights.

Target Analysis: Identifying demographics more prone to payment issues.

Recommendation & Conclusion: Actionable insights and suggestions based on findings.

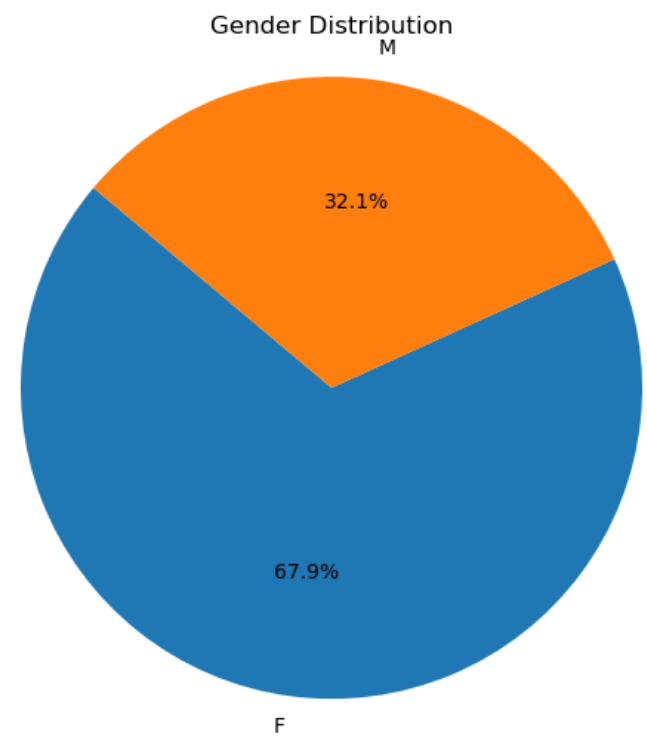# SECTION 1: Demographic Insights

Chart
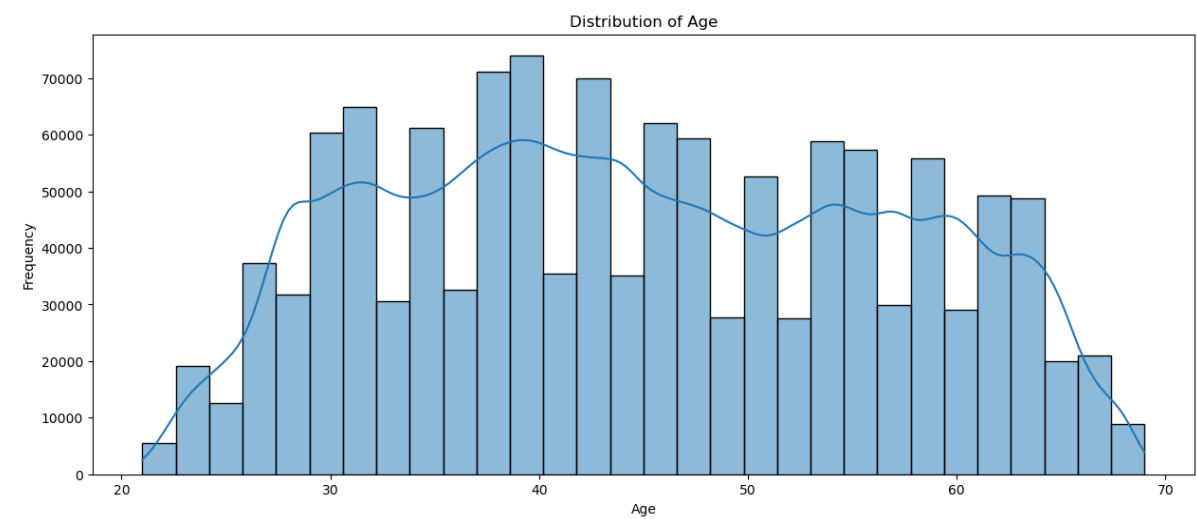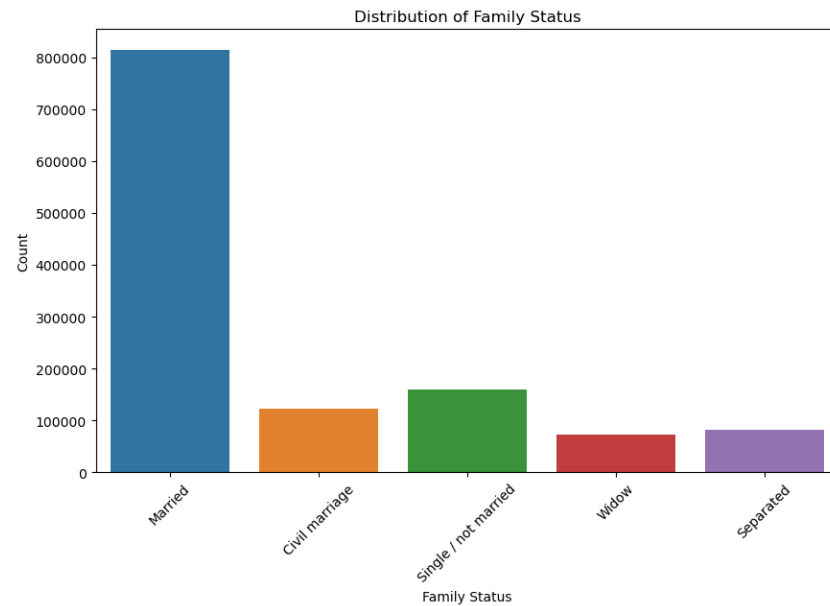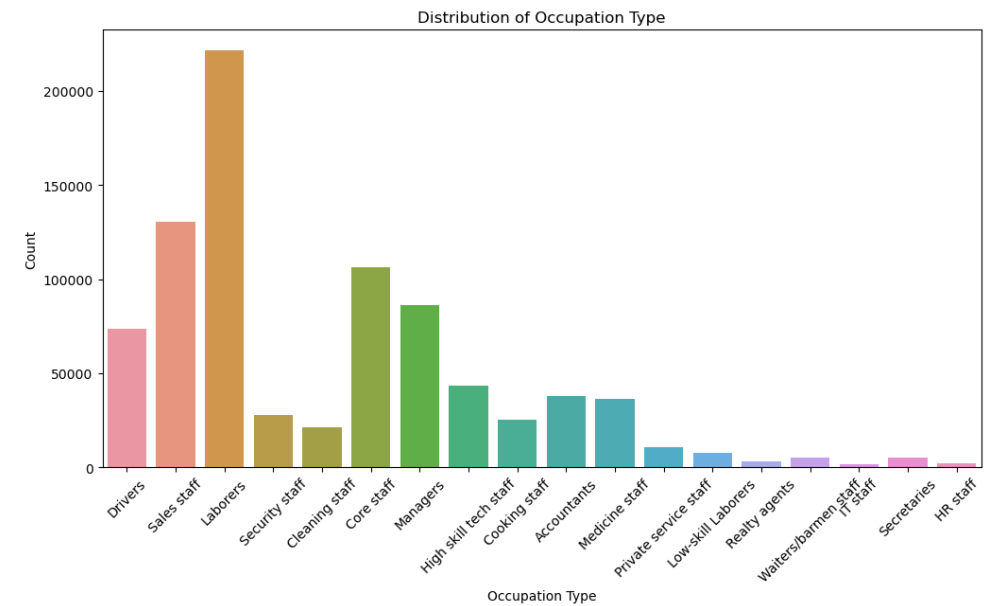
GENDER DISTRIBUTION

AGE DISTRIBUTION

Univariate Analysis

FAMILY STATUS DISTRIBUTION

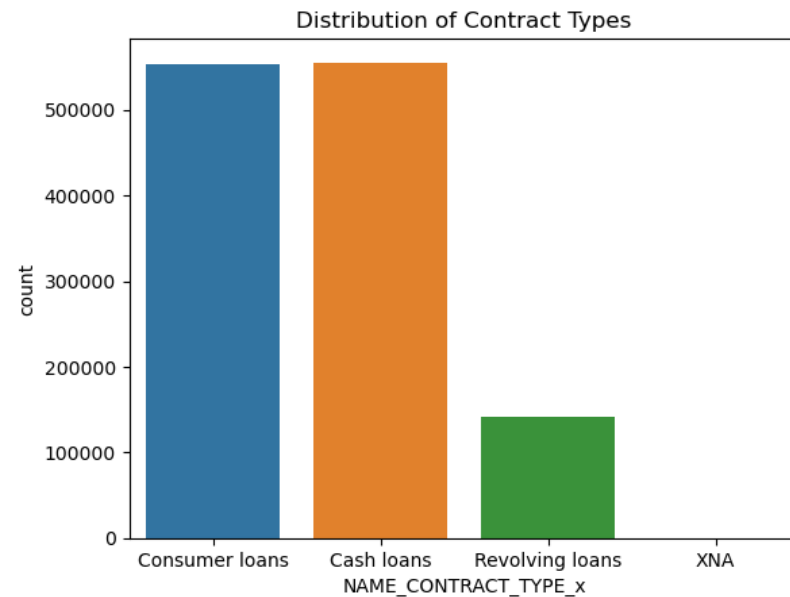

OCCUPATION DISTRIBUTION

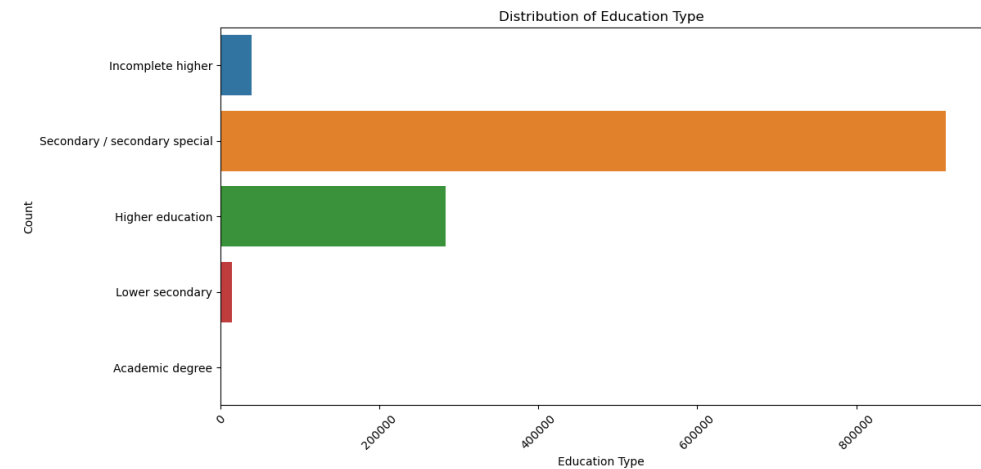# Univariate Analysis

CONTRACT DISTRIBUTION

EDUCATION DISTRIBUTION

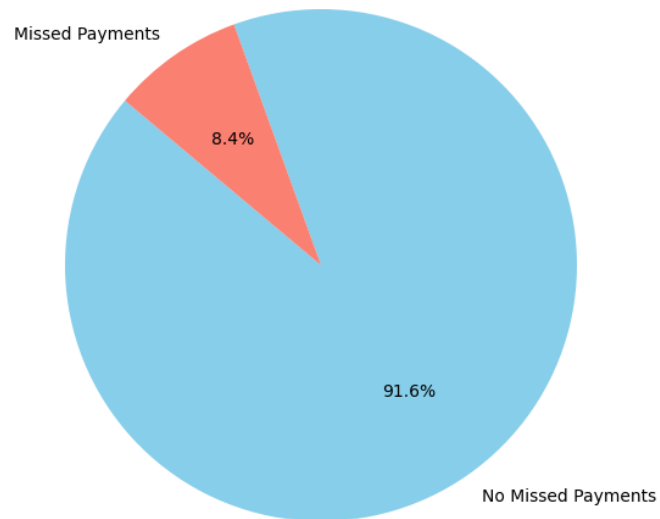# SECTION 2: Missed payments VS No Missed Payment
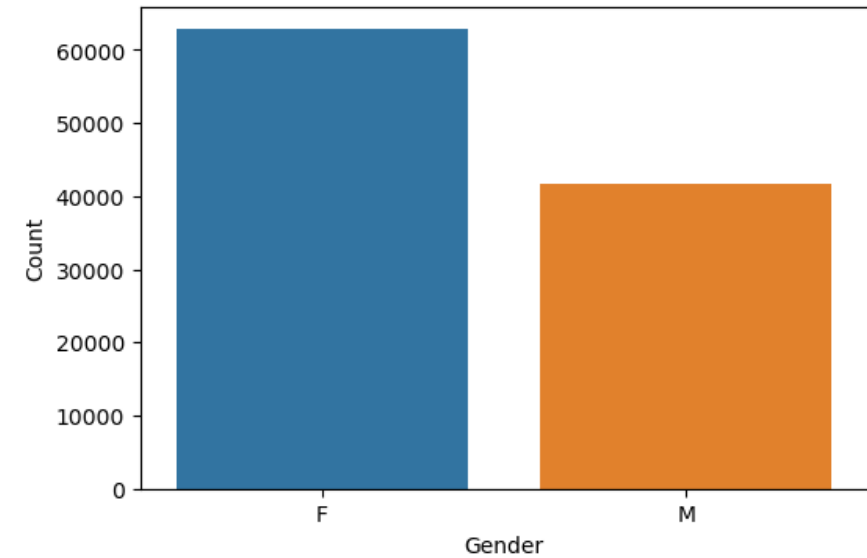
Bivariate Analysis

TARGET DISTRIBUTION

Target Distribution (Missed Payments vs. No Missed Payments)

MISSED PAYMENT: GENDER DISTRIBUTION

Gender Distribution of Those Who Missed Payments

Income Type/ Age Against Target
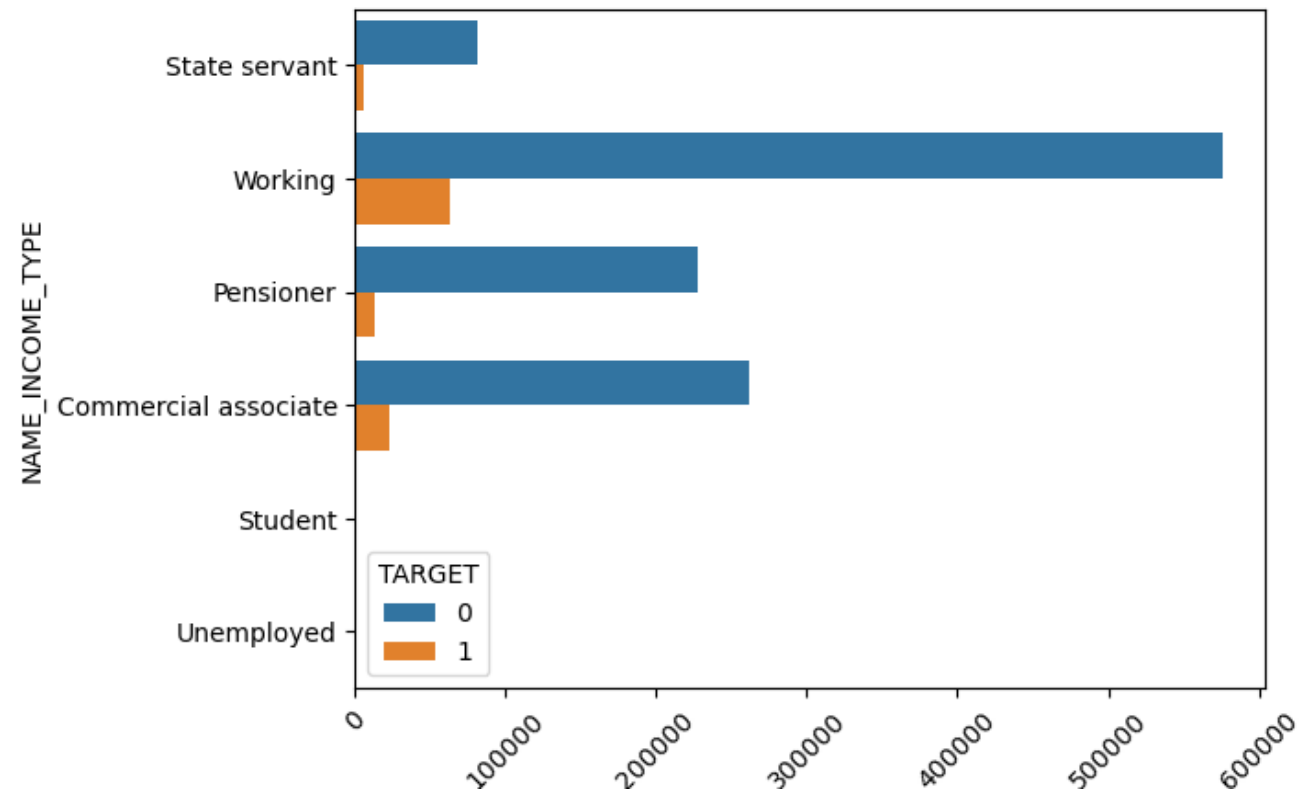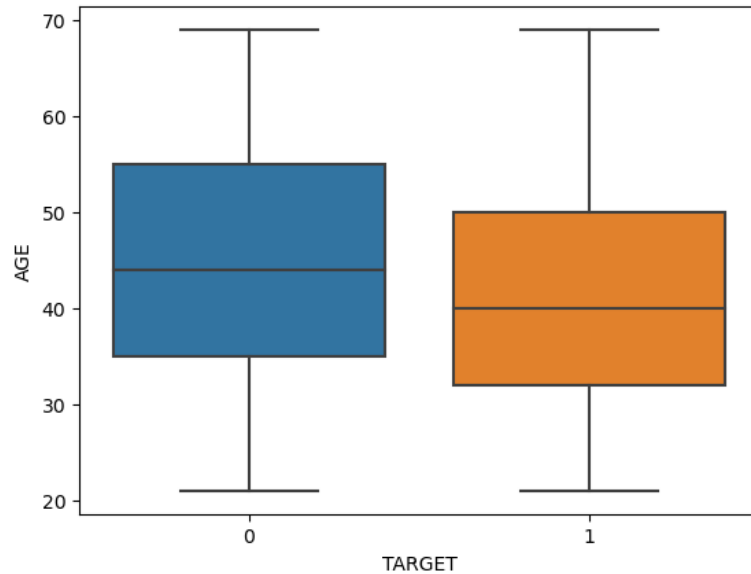
Education Type/Family Status Against Target
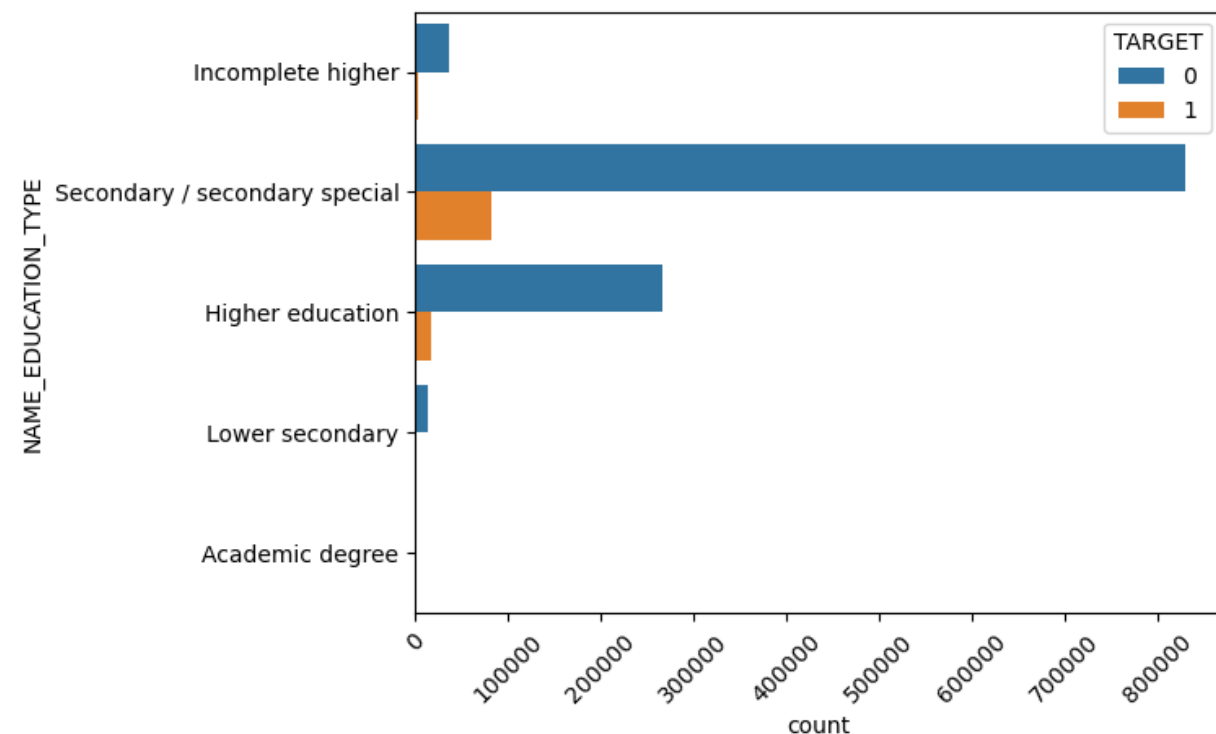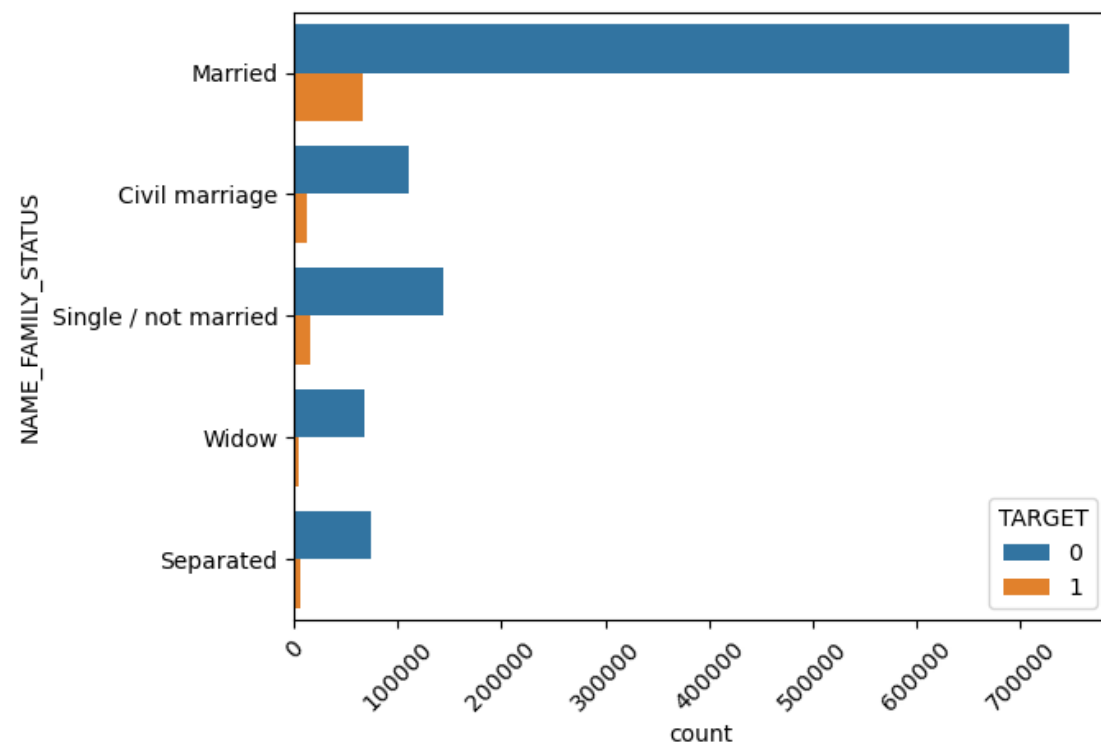
Occupation Type Against Target
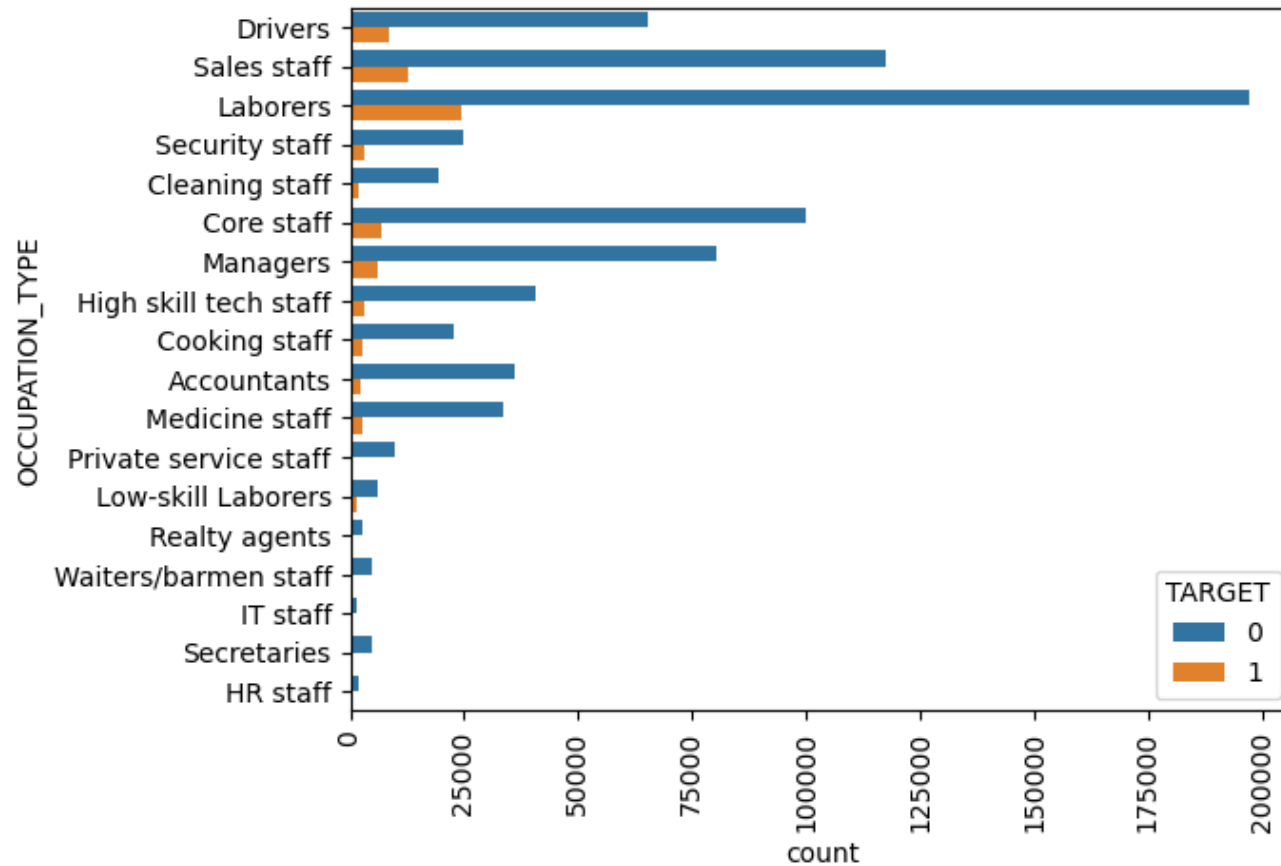
Housing Type Against Target
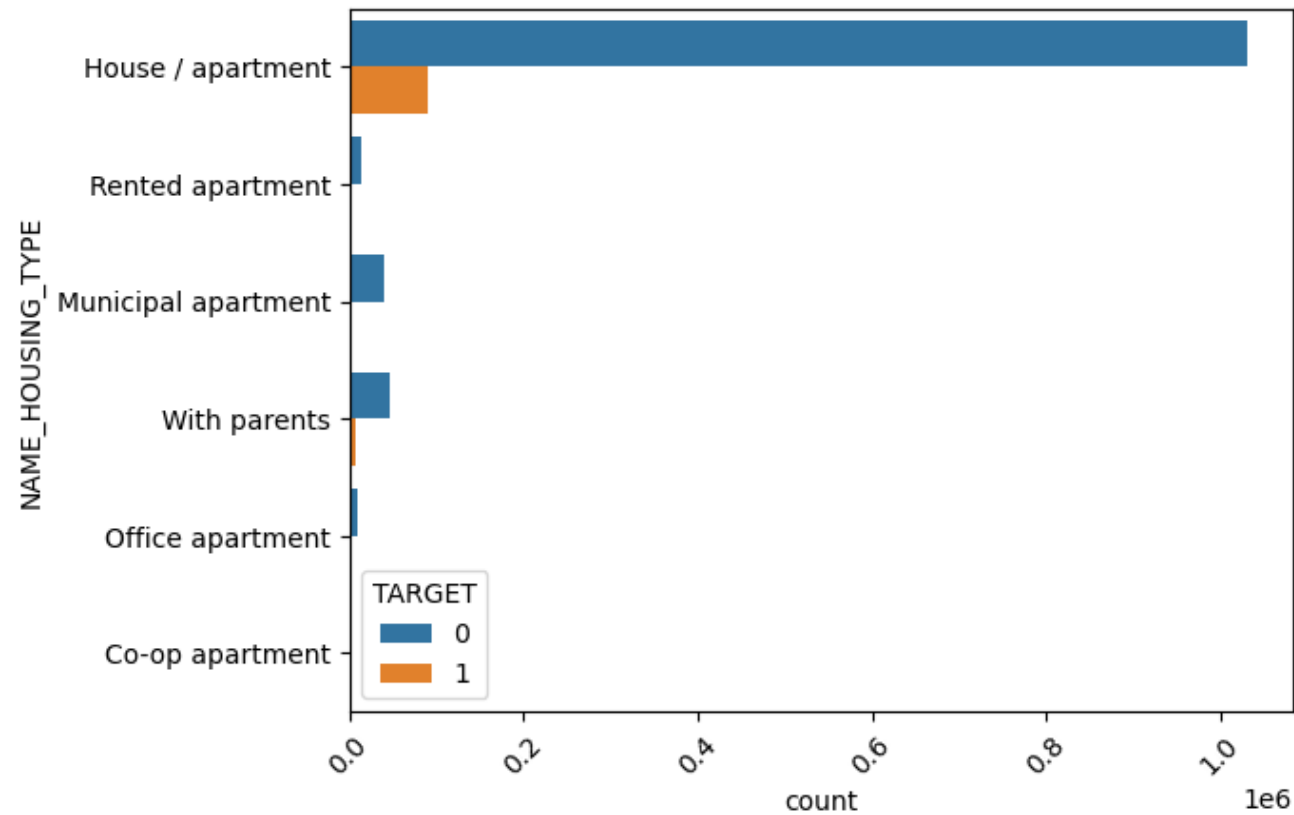
SECTION 3: The Relationship

Credit Amount vs. Annuity Amount

CREDIT VS ANUITY

The credit amount and annuity exhibit a strong positive correlation of 0.82, implying a robust relationship where higher loan amounts are associated with larger installment payments.

Good Price VS APP Amount
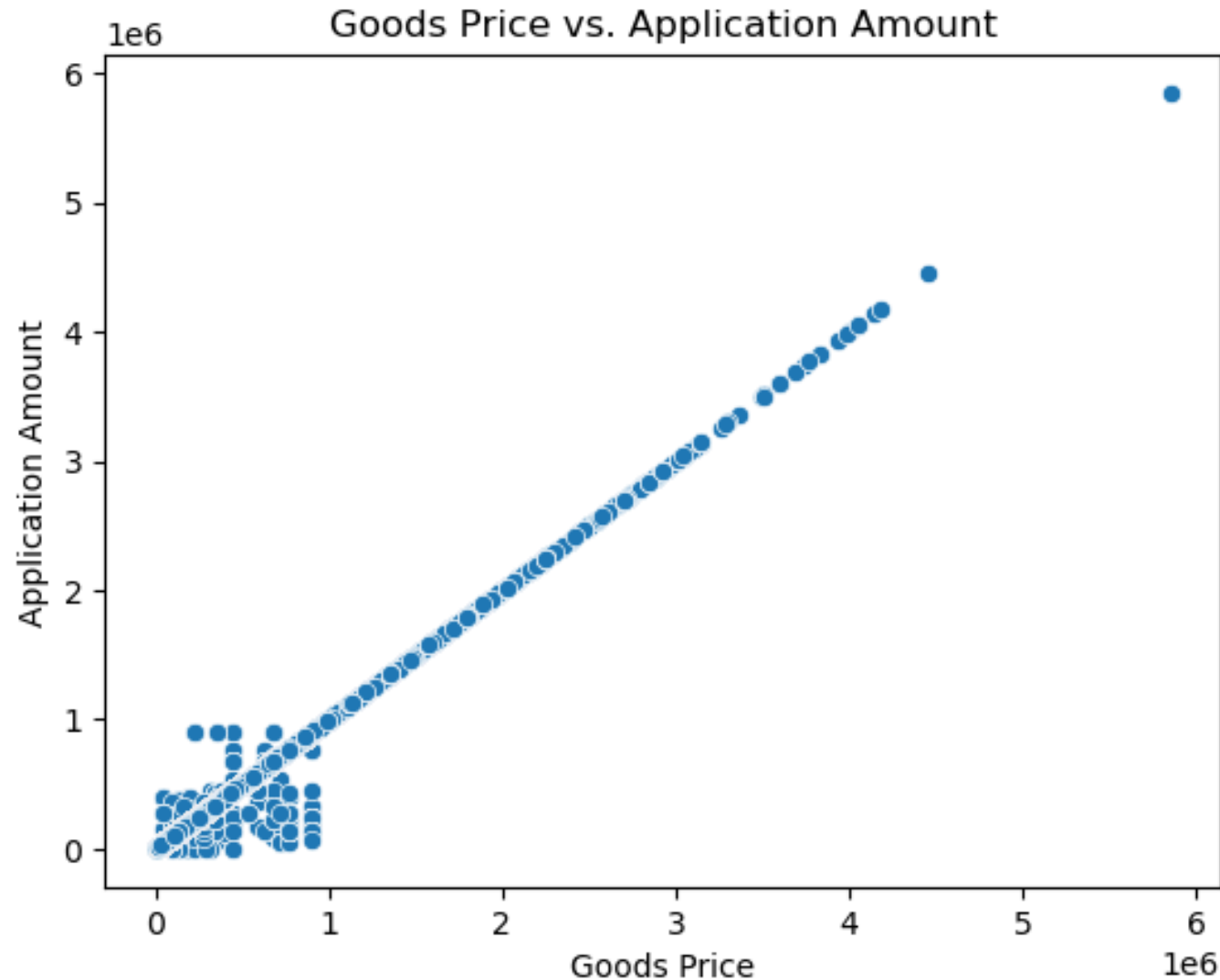
A correlation of 0.99 between the goods price and application amount signifies an extremely strong positive relationship. It indicates that the requested loan amount closely aligns with the price of the goods being financed

Down Payment VS Credit Amount

A correlation of 0.29 between the down payment and credit amount suggests a moderate positive relationship. While there's some association, it's not as strong as other correlations. This indicates that changes in down payment may somewhat affect the credit amount but not significantly.

Down Payment vs. Credit Amount

Correlation Matrix (Subset 1)
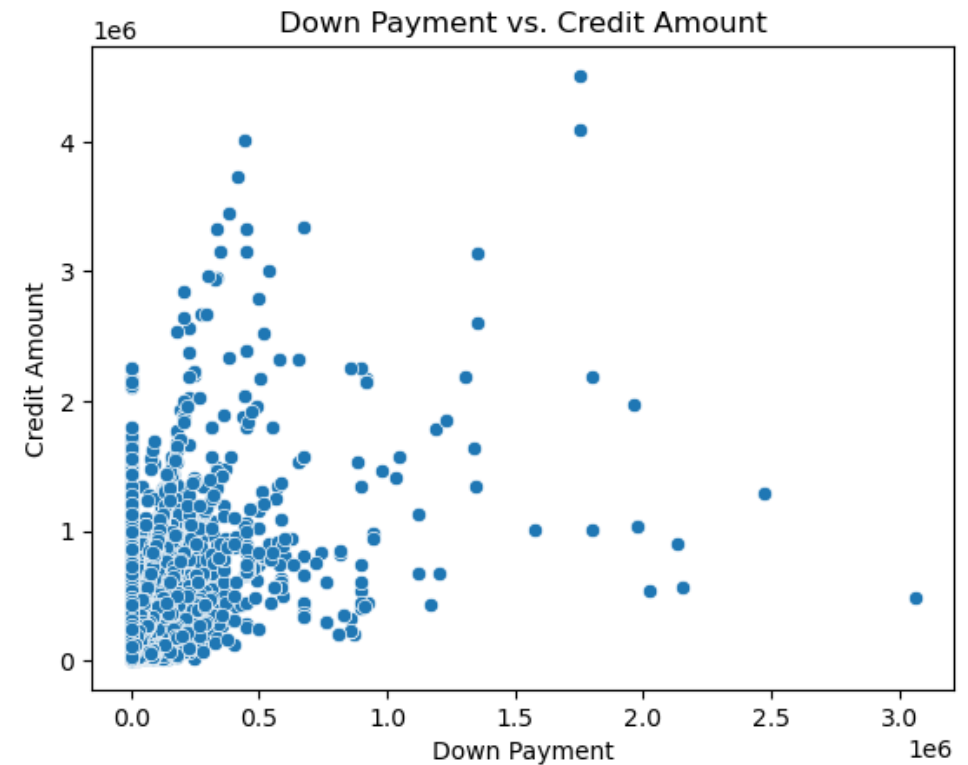
The Correlation Matrix

Showcasing relationship between target, income type, credit amount, good price and annuity amount.
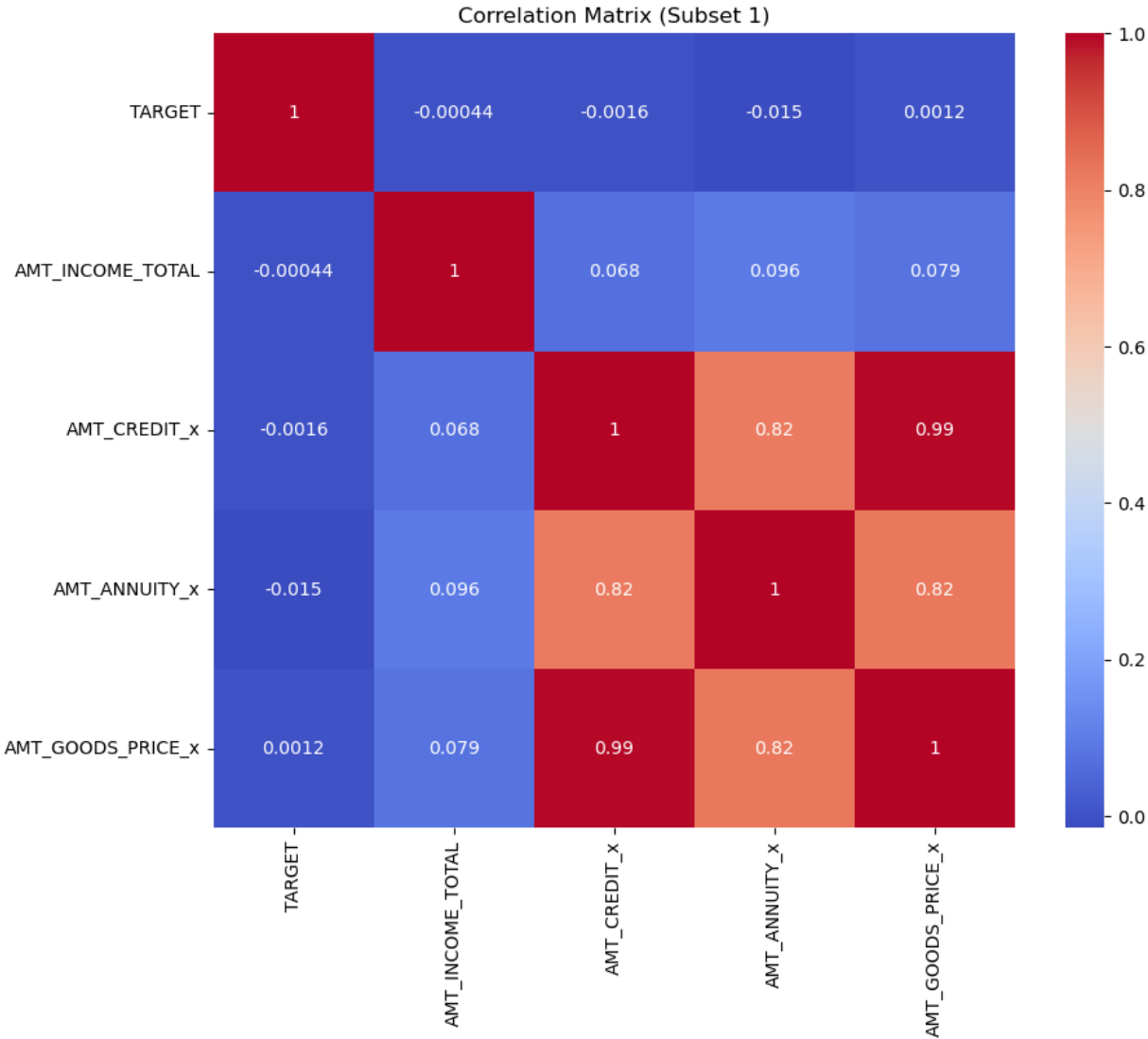
The Correlation Matrix

Showcasing relationship between date of birth, date of car purchase, and ID published date.

Correlation Matrix (Subset 2)
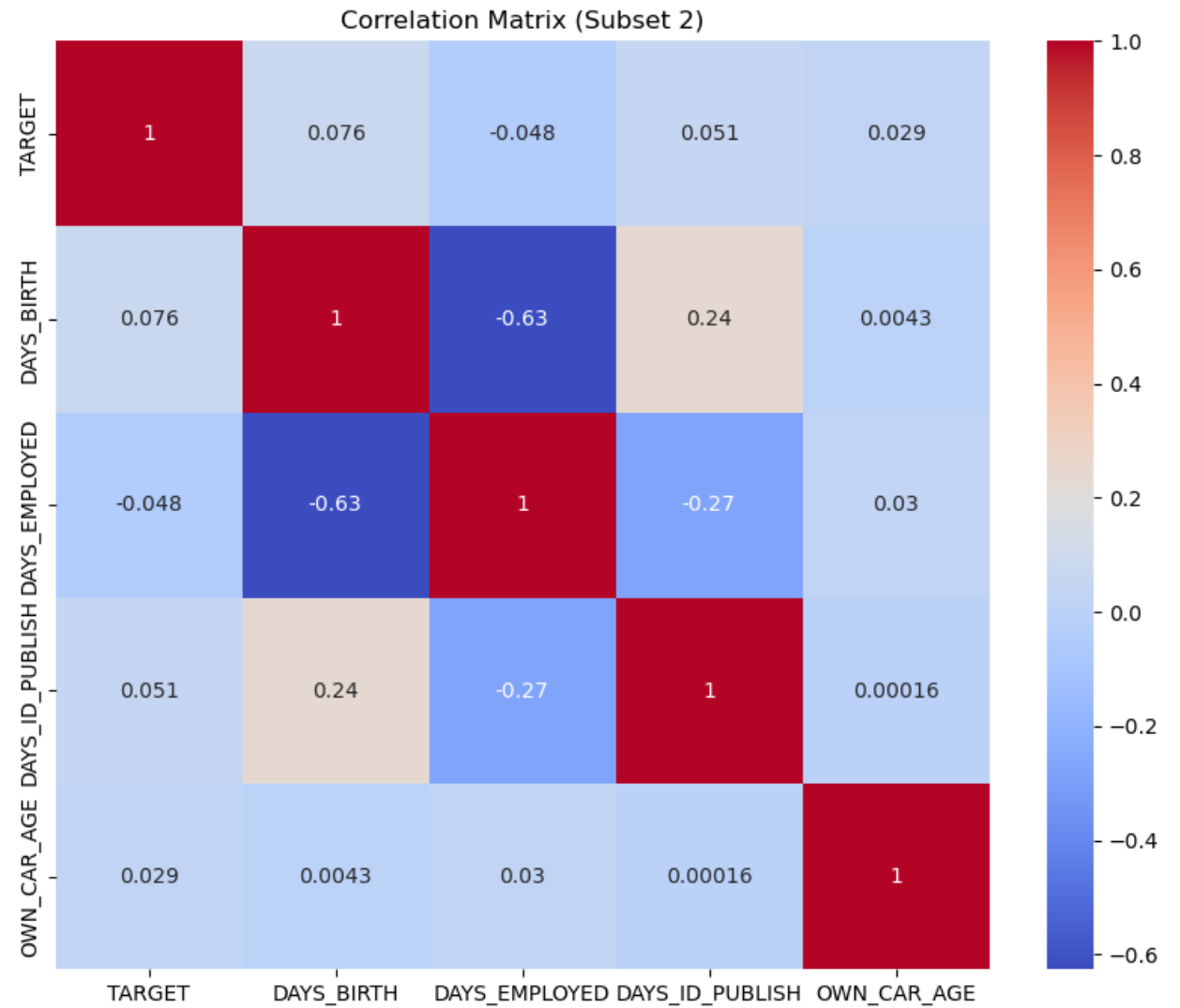
SCATTER PLOT

Assessing Multiple Relationship Between Variables
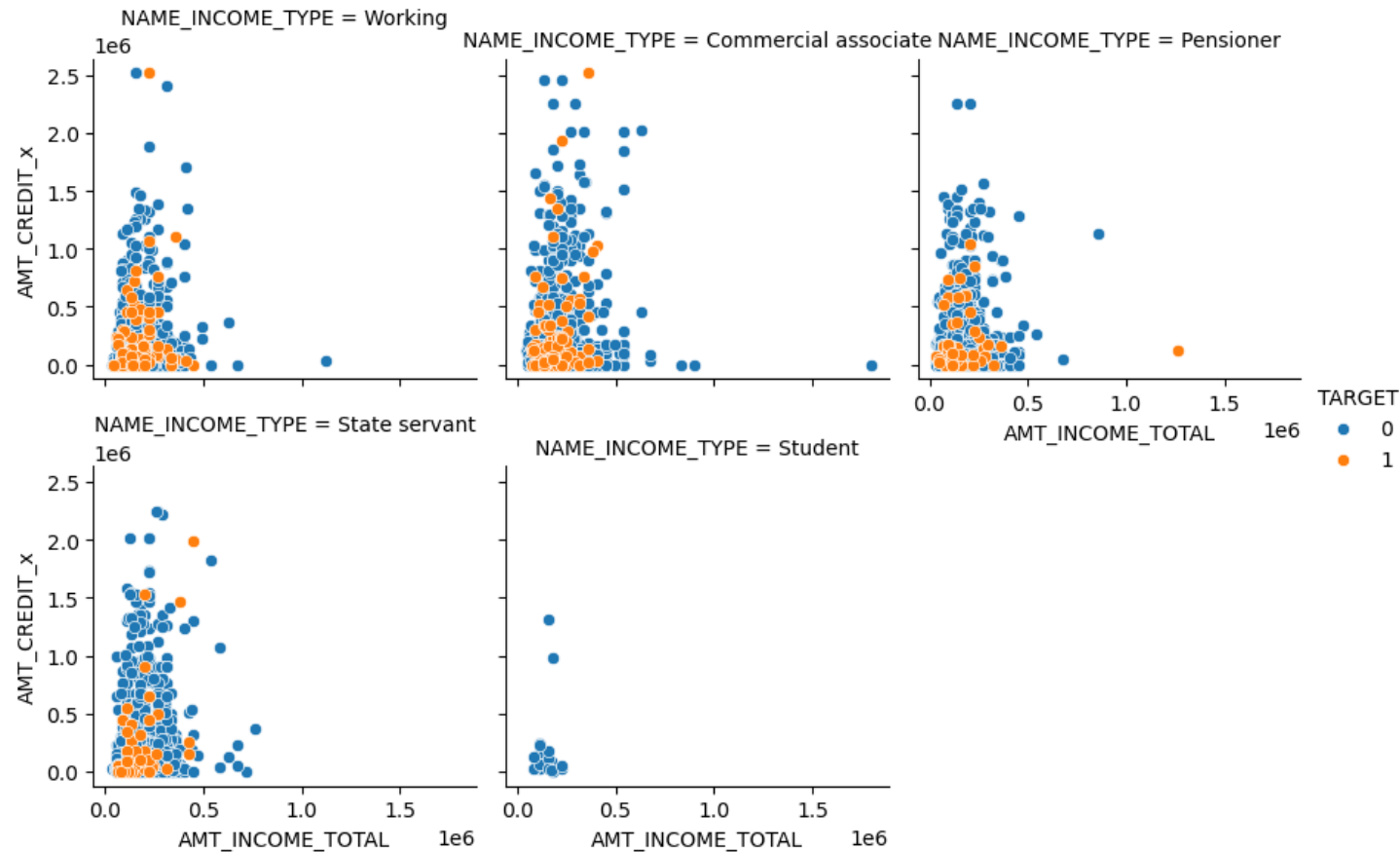
Findings

Payment Status: 8.4% faced payment difficulties.	**Household Composition:** Mostly 1-2 children households.	**Gender Dynamics:** Females slightly more prone to payment issues.	**Age Distribution:** Concentration in 30-60 age range.	**Credit Bureau Activity:** Single inquiry is common.
Occupational Influence: Laborers, sales staff, managers at risk.	**Education's Impact:** Secondary education linked to missed payments.	**Marital Status:** Married clients face payment difficulties.	**Contract Preferences:** Cash, consumer loans are favored.	**Income, Age, Family Impact:** Laborers in 30-49 age group, childless, face payment challenges.

Recommendation

1 — Tailored Risk Assessment: Implement targeted risk assessment models considering demographic factors such as age, gender, family size, and education level to determine individual repayment capacities more accurately.

2 — Client-Specific Products: Develop customized financial products and repayment schemes tailored to specific demographics and occupational categories, considering their propensity for payment delinquency.
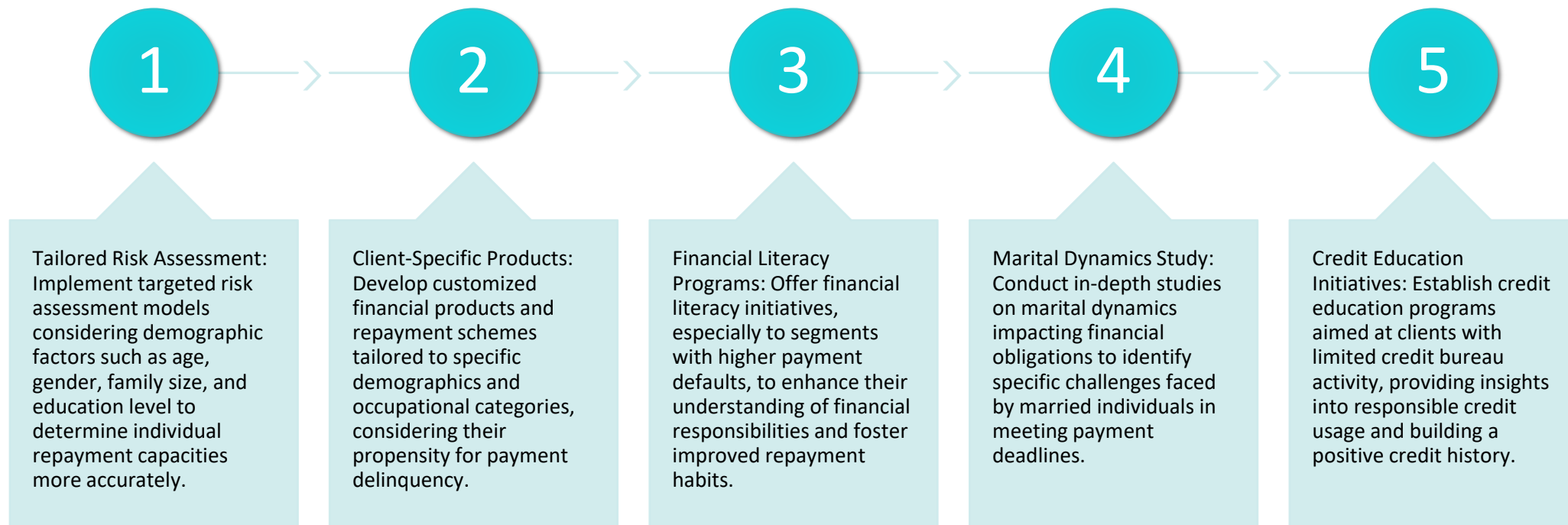
3 — Financial Literacy Programs: Offer financial literacy initiatives, especially to segments with higher payment defaults, to enhance their understanding of financial responsibilities and foster improved repayment habits.

4 — Marital Dynamics Study: Conduct in-depth studies on marital dynamics impacting financial obligations to identify specific challenges faced by married individuals in meeting payment deadlines.

5 — Credit Education Initiatives: Establish credit education programs aimed at clients with limited credit bureau activity, providing insights into responsible credit usage and building a positive credit history.

Conclusion

The analysis provides crucial insights into the diverse factors influencing payment defaults among loan applicants. Understanding demographic, occupational, and educational correlations with payment delinquency facilitates the creation of targeted risk mitigation strategies. By tailoring financial products, enhancing financial literacy, and conducting specialized studies, the bank can proactively mitigate payment default risks and ensure more robust lending practices aligned with diverse client segments' financial behaviors.

Thank you

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