

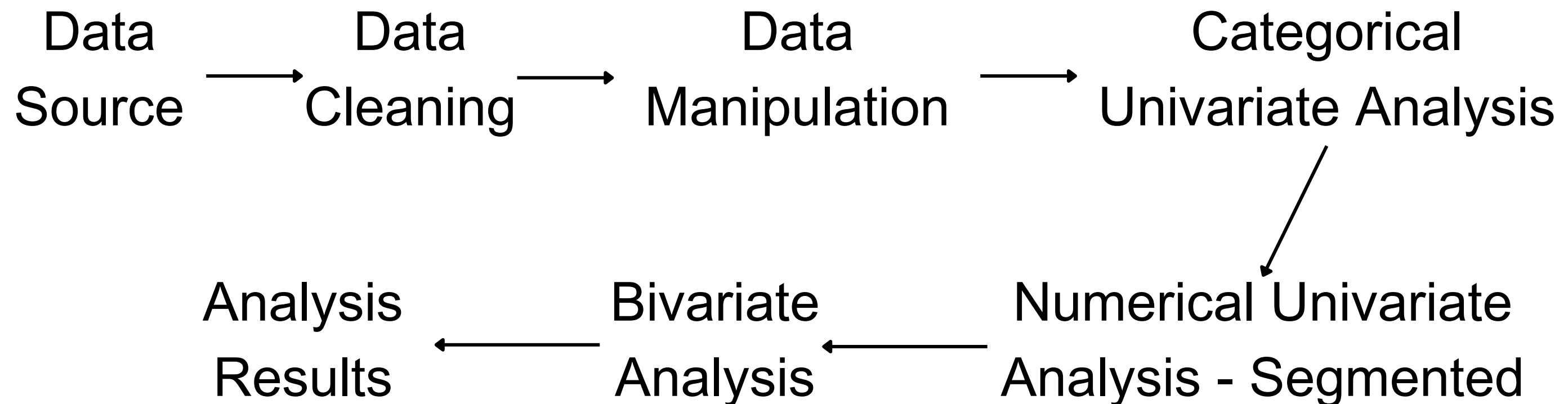
Lending Club Case Study

Exploratory Data Analysis on Loan Default Data

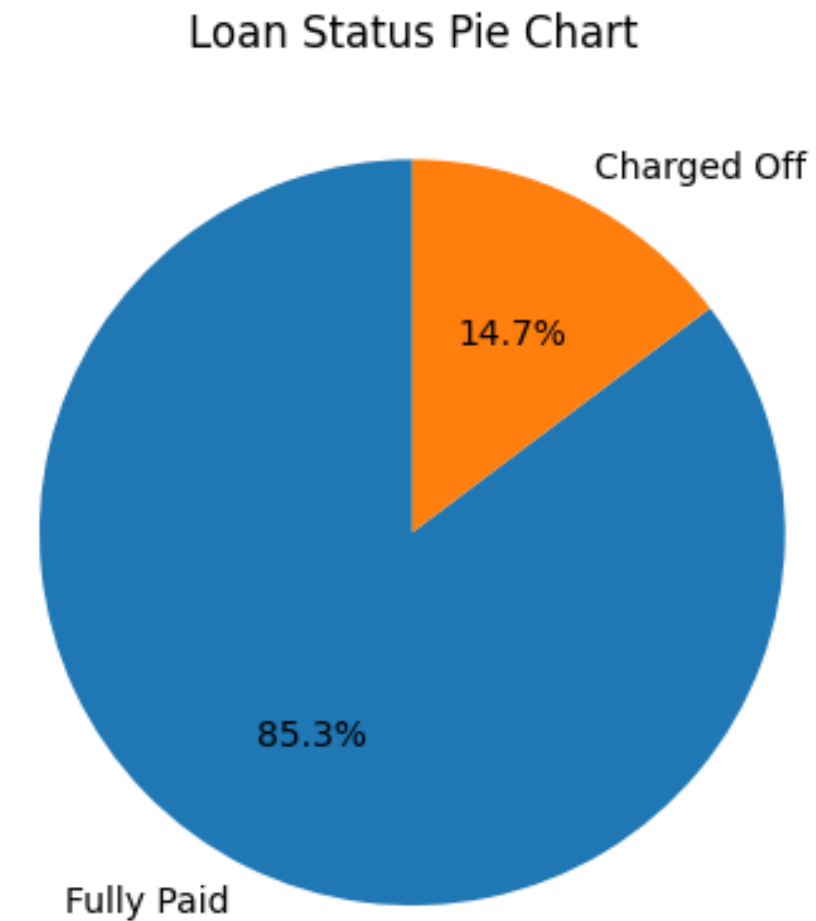
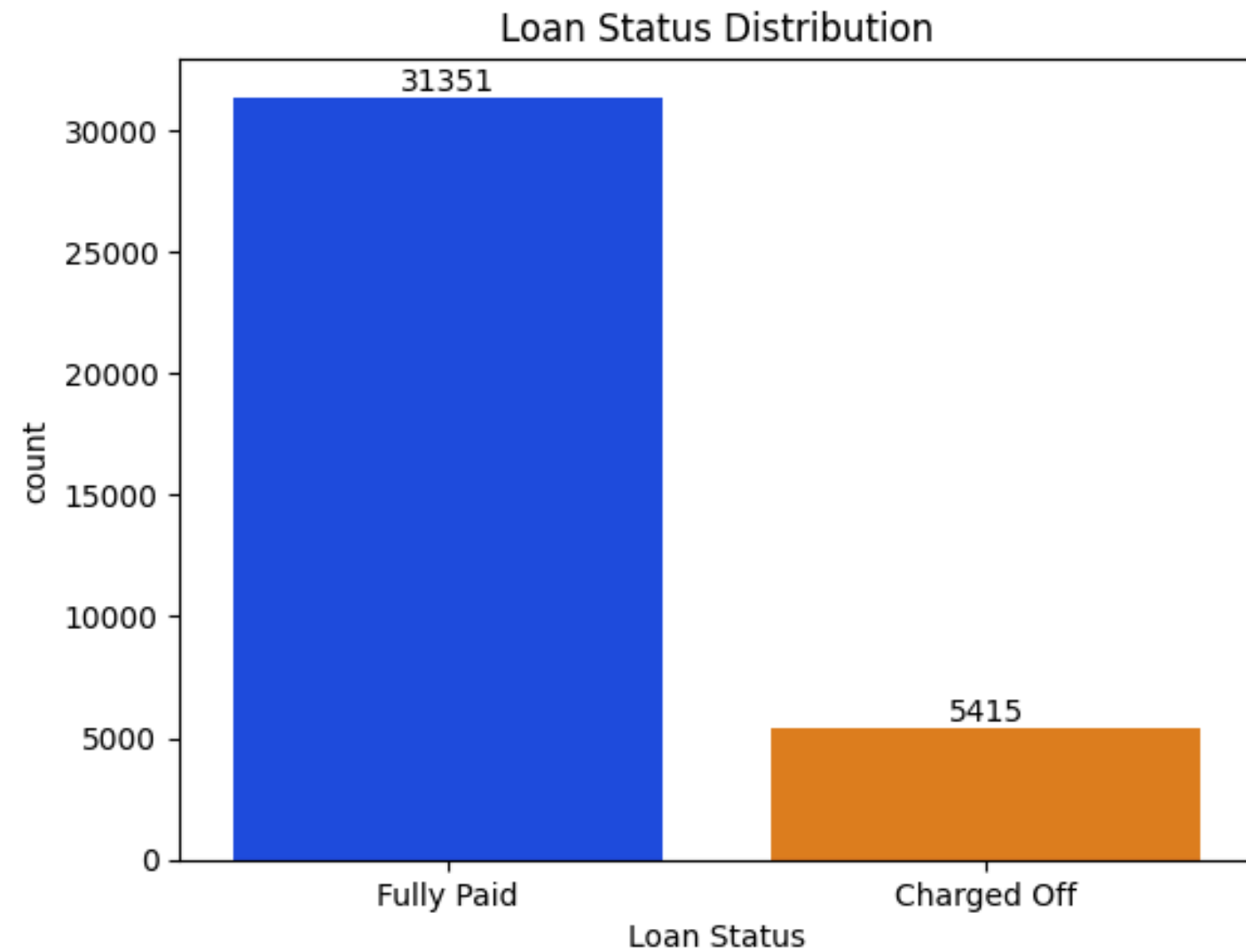
Problem Statement

- Lending club is the largest online loan marketplace, facilitating personal loans, home loans, business loans. Borrowers can easily access lower interest rate loans through a fast online process.
- The objective of analysis is to use the information about past loan applicants and find out the factors impacting the loans to get 'Defaulted' so as to reduce the company losses incurred.

Methodology Followed

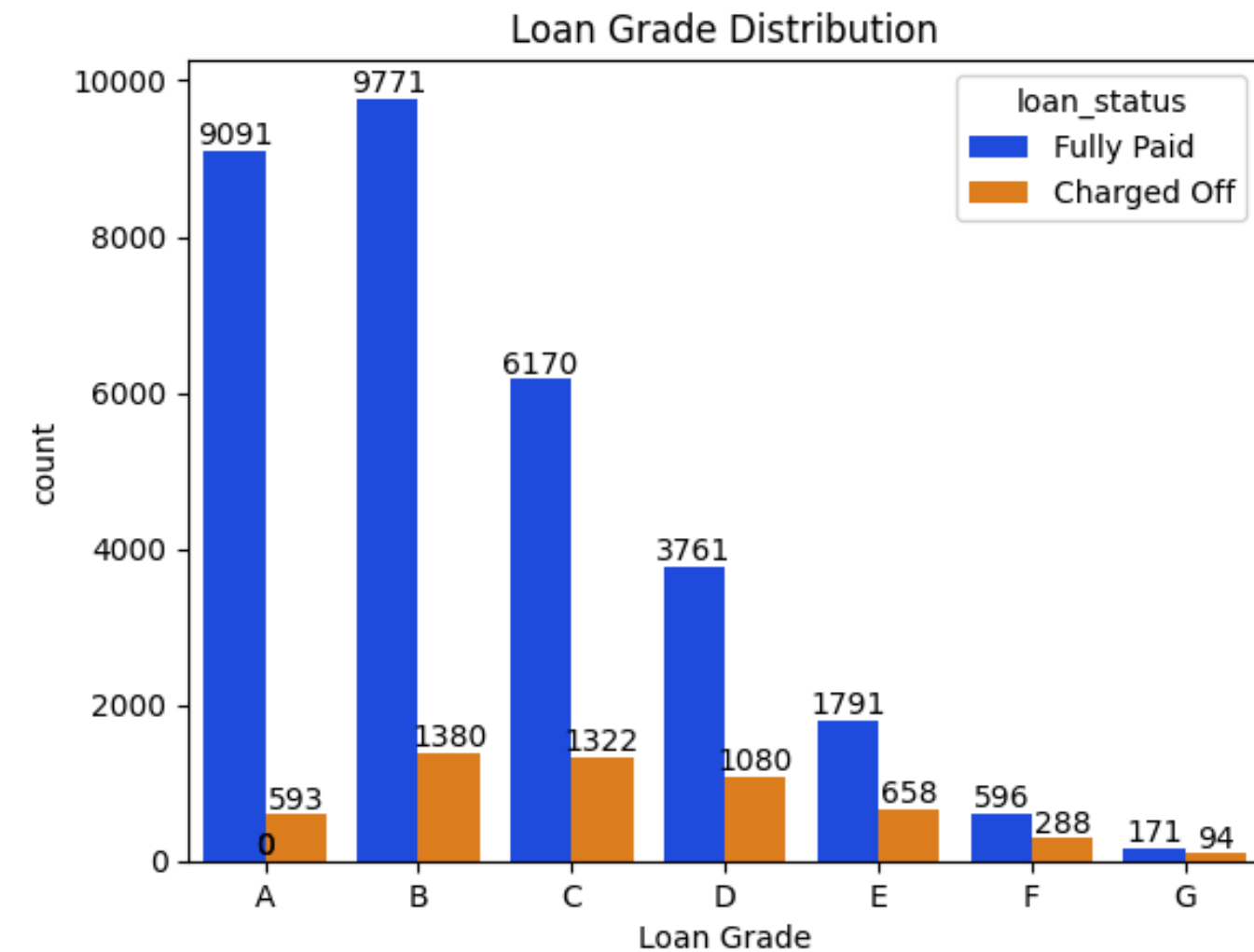
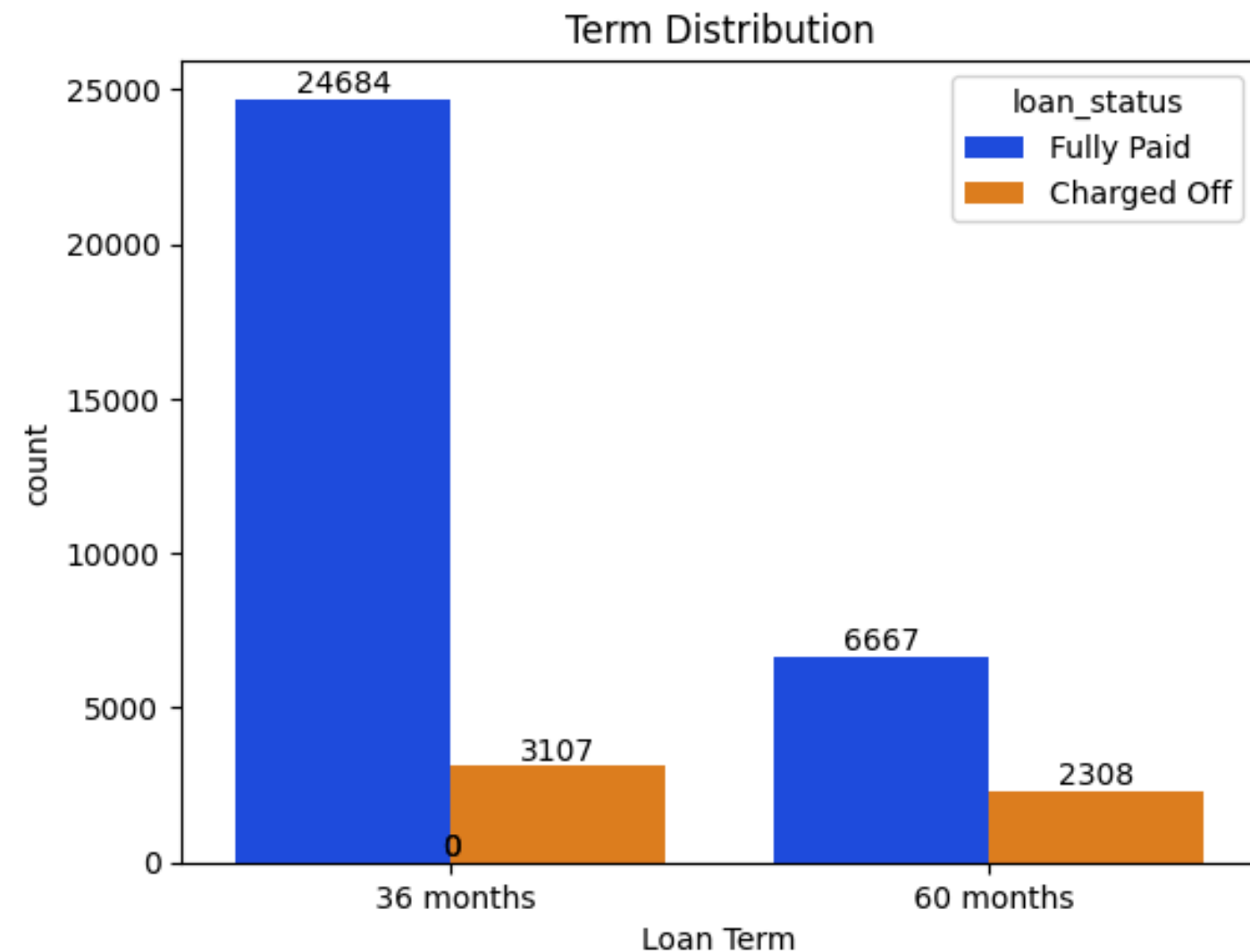


Target Variable - Loan Status



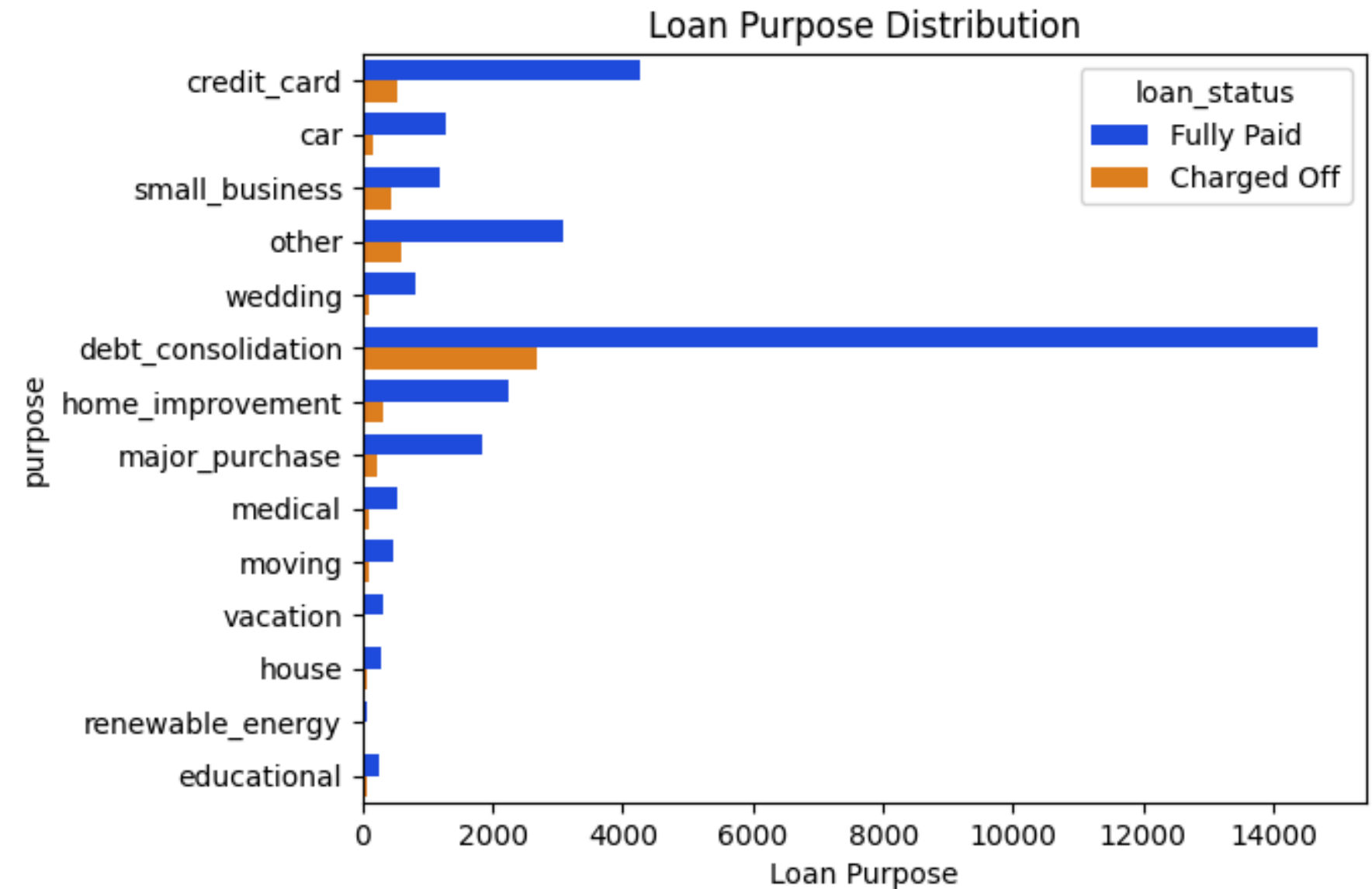
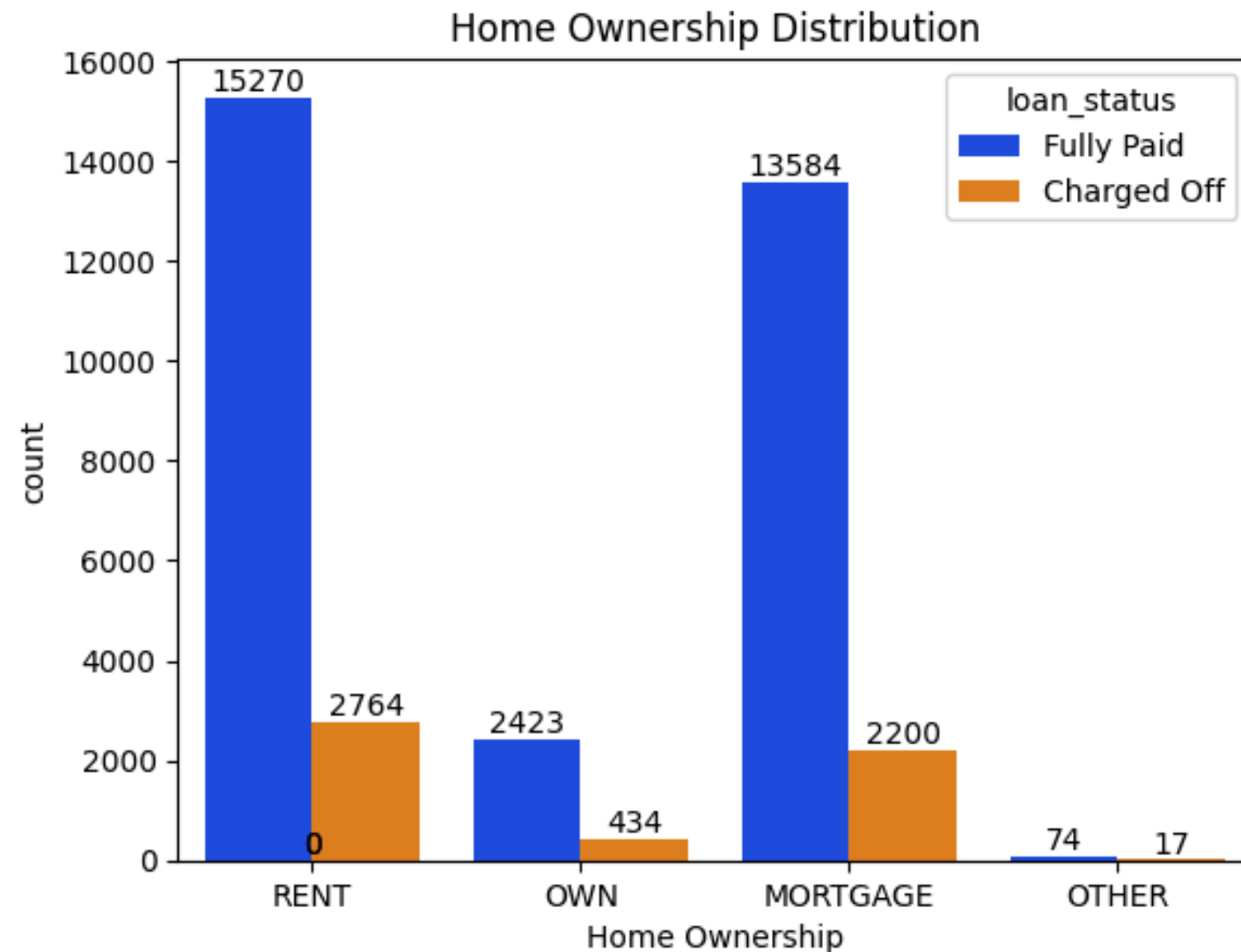
- Out of filtered 36766 loan records, 5415 loan records were charged off. It is approximately 14.7% of the loan applicants who have defaulted their loan.

Univariate Analysis



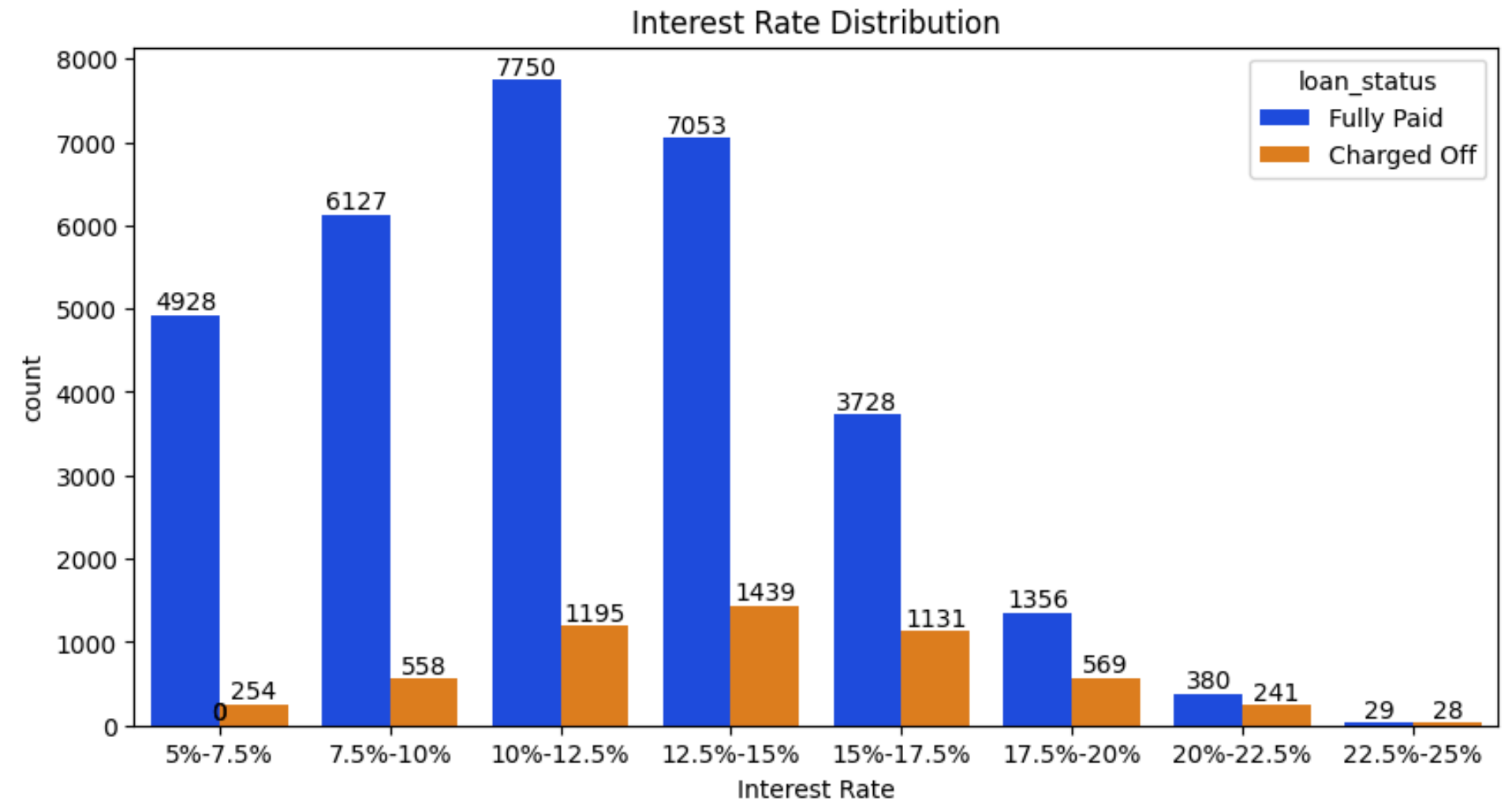
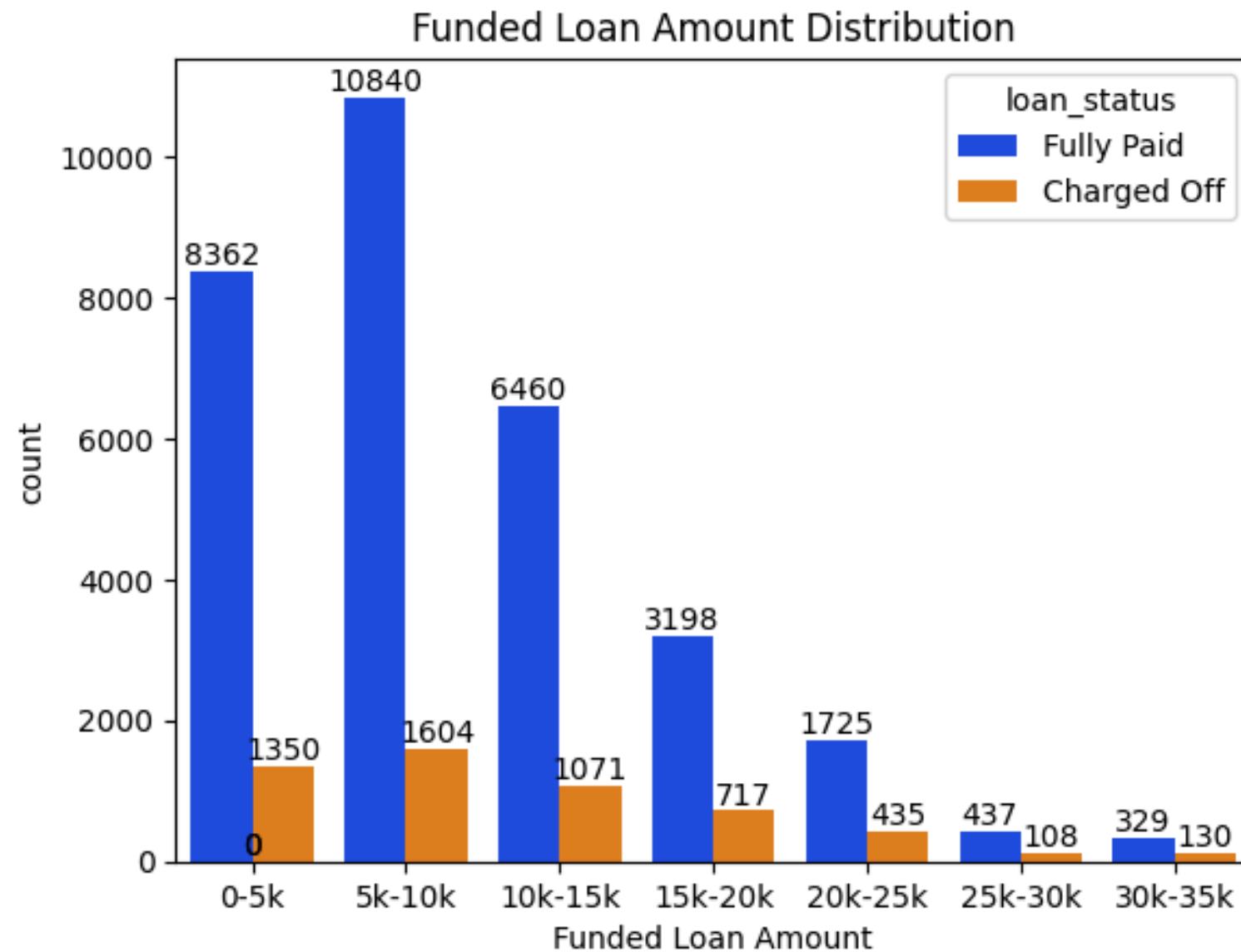
- Defaulting is more for 60 month Loan Term than 36 month relatively with Paid off loans
- Loan Grade types 'B','C' and 'D' are highly probable for defaulting

Univariate Analysis



- 'RENT' and 'MORTGAGE' home type applicants likely default
- Loan Purpose applied for pay off debts is highly defaulting

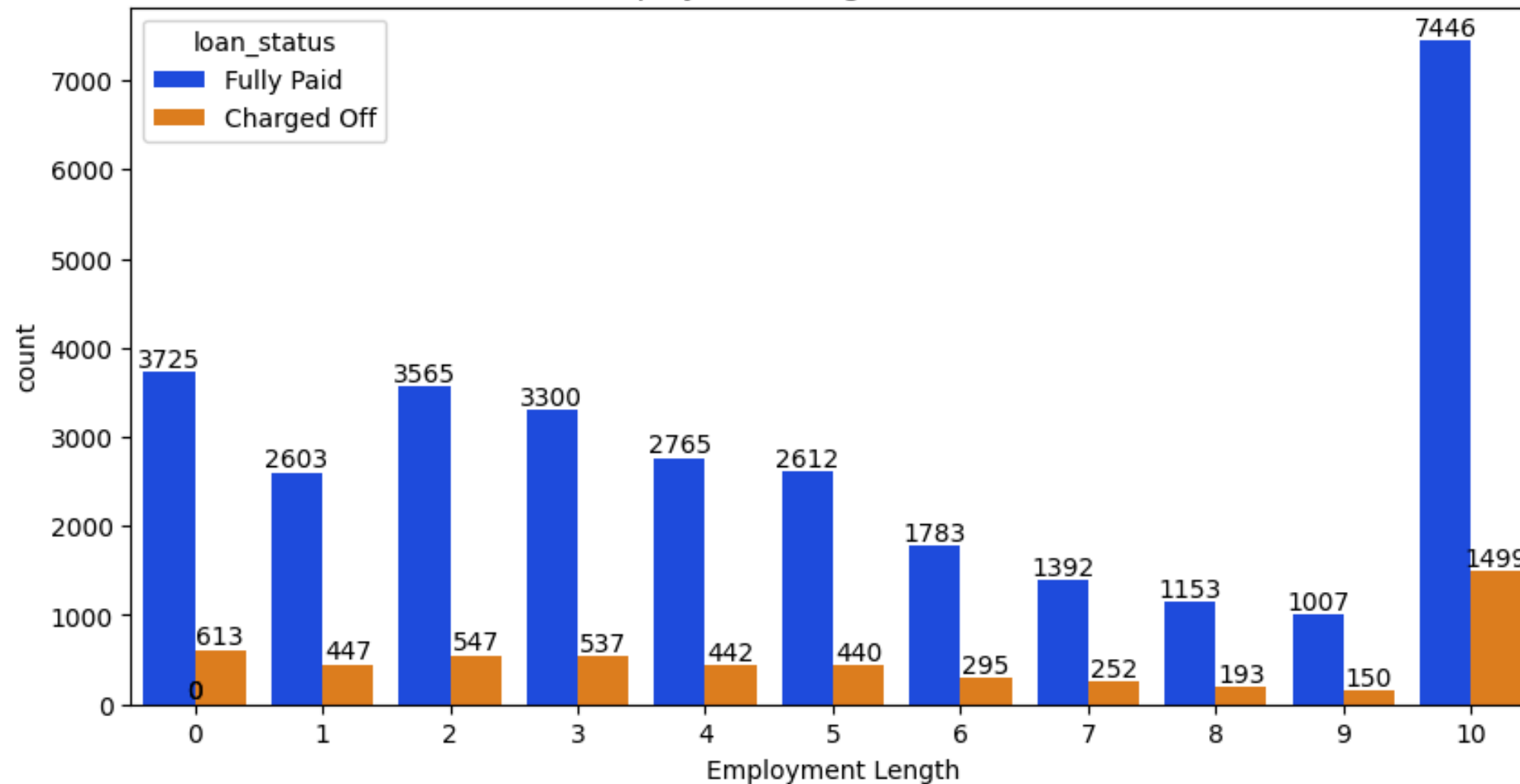
Univariate Analysis



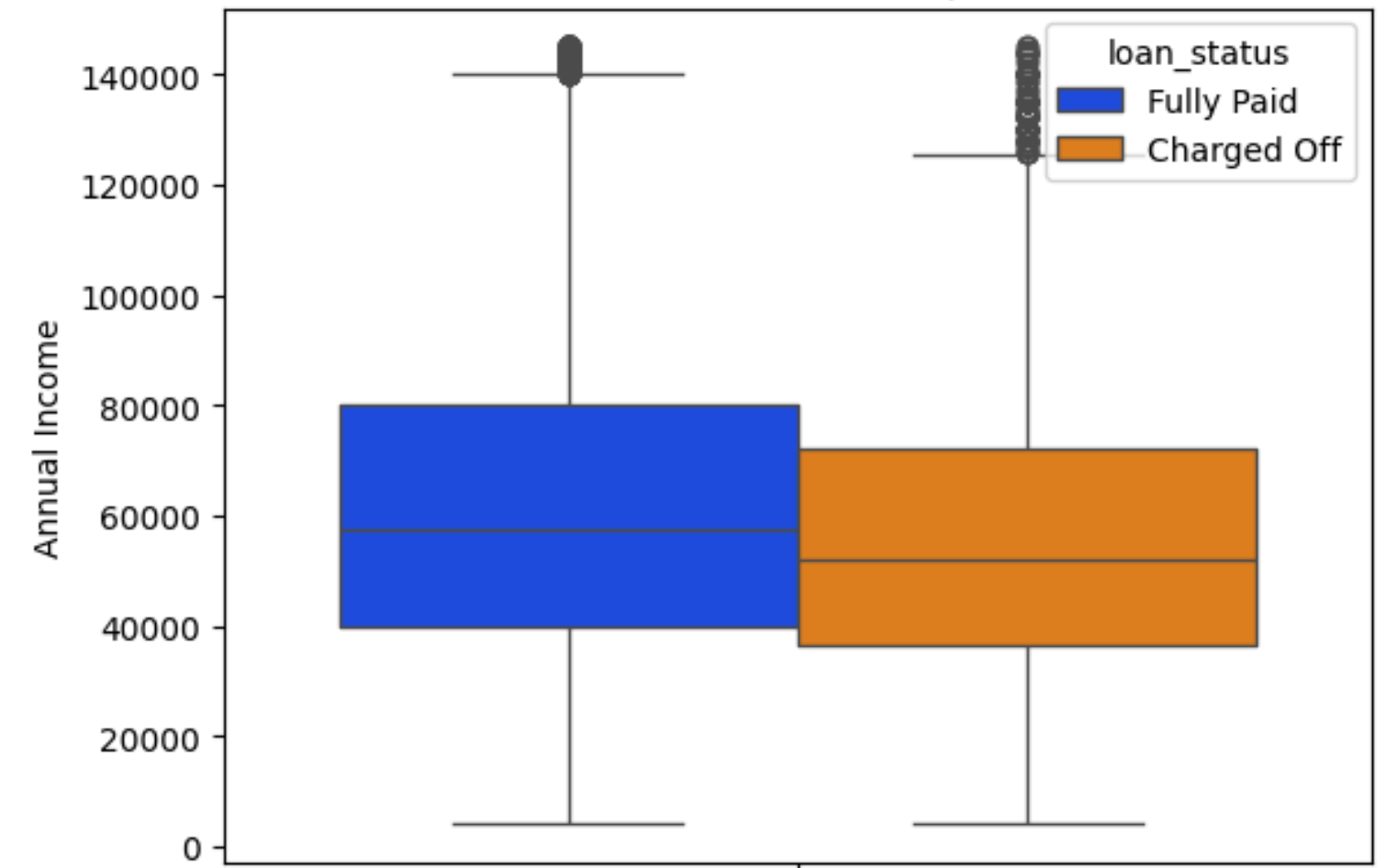
- Funded Loan Amount between 5000-15000 is likely to default
- Interest rates between 12.5% - 17.5% is high enough for applicants to default on their loan

Univariate Analysis

Employment Length Distribution

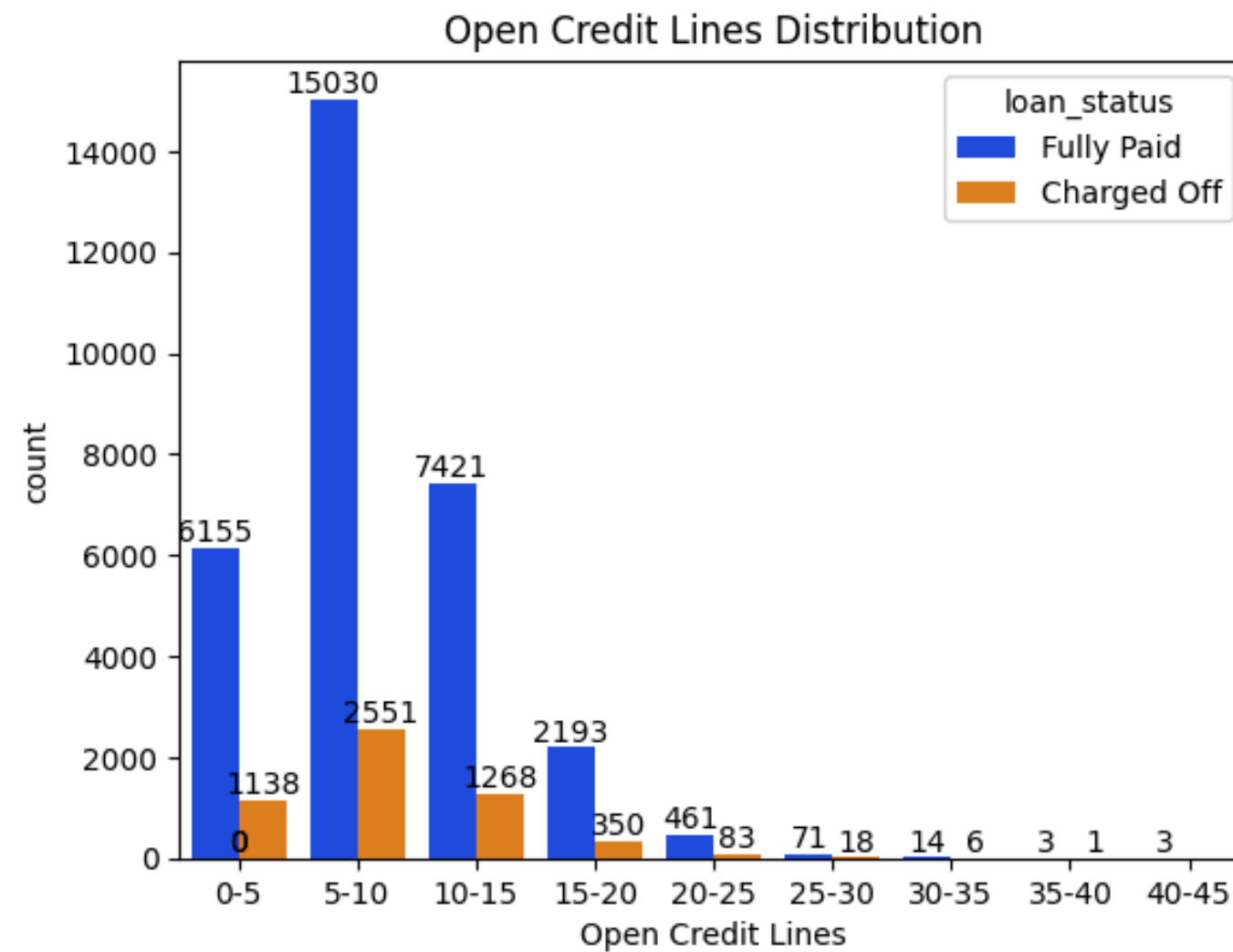
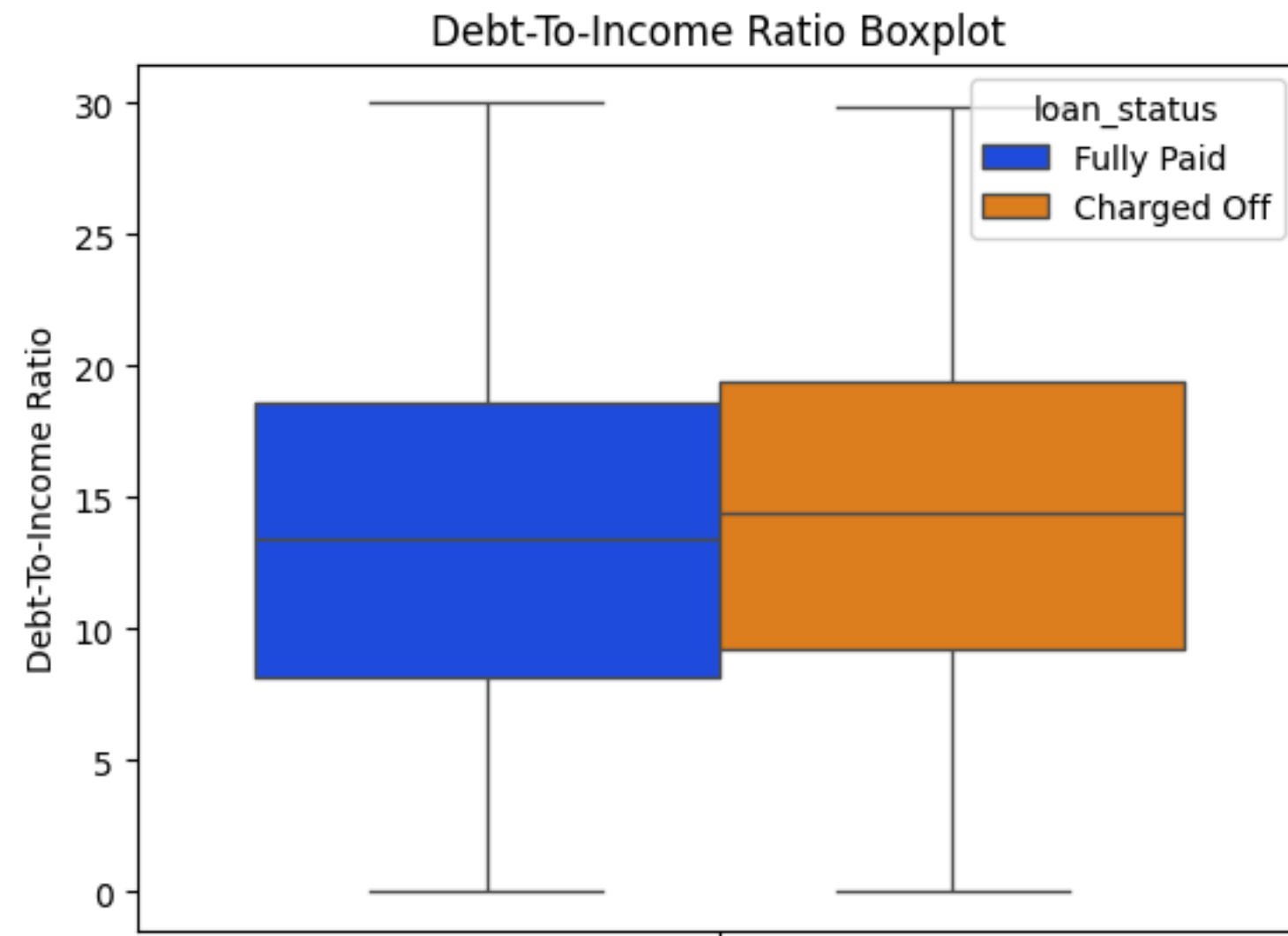


Annual Income Boxplot



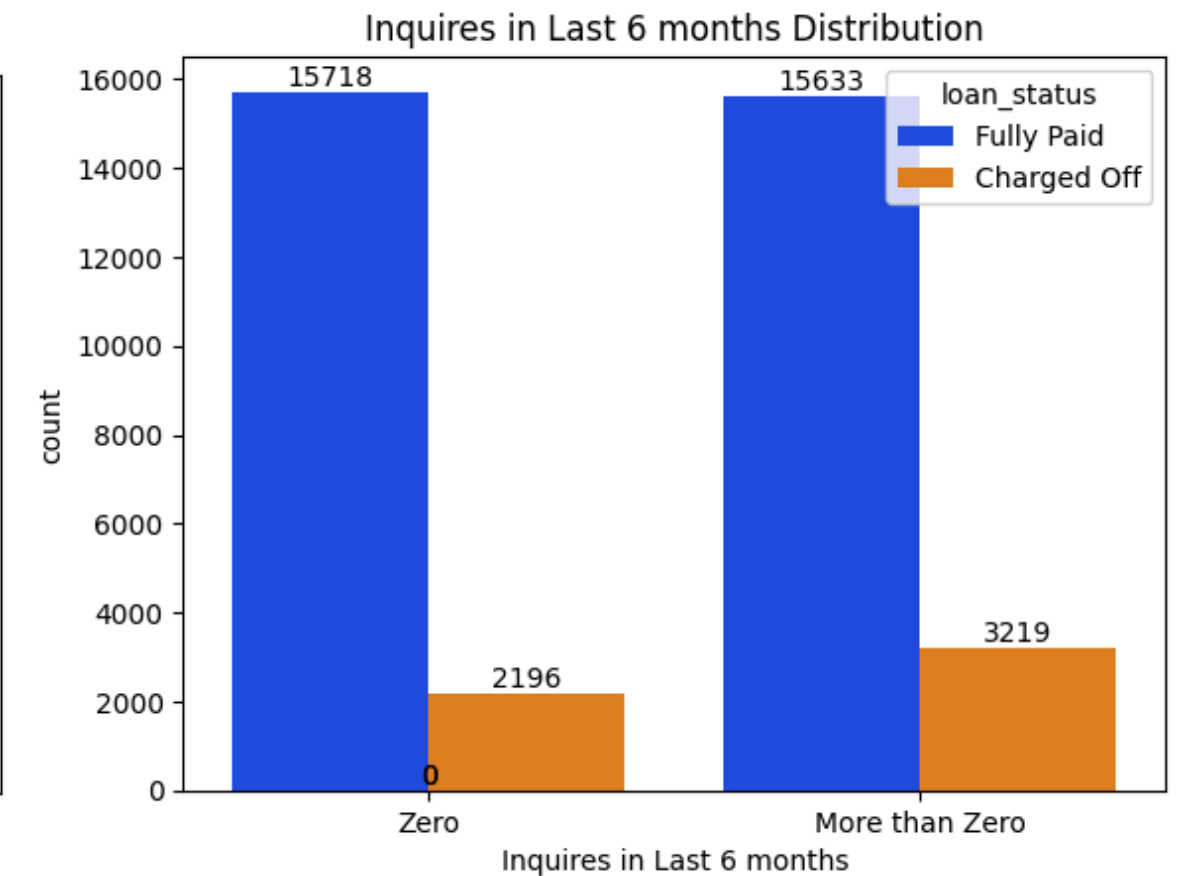
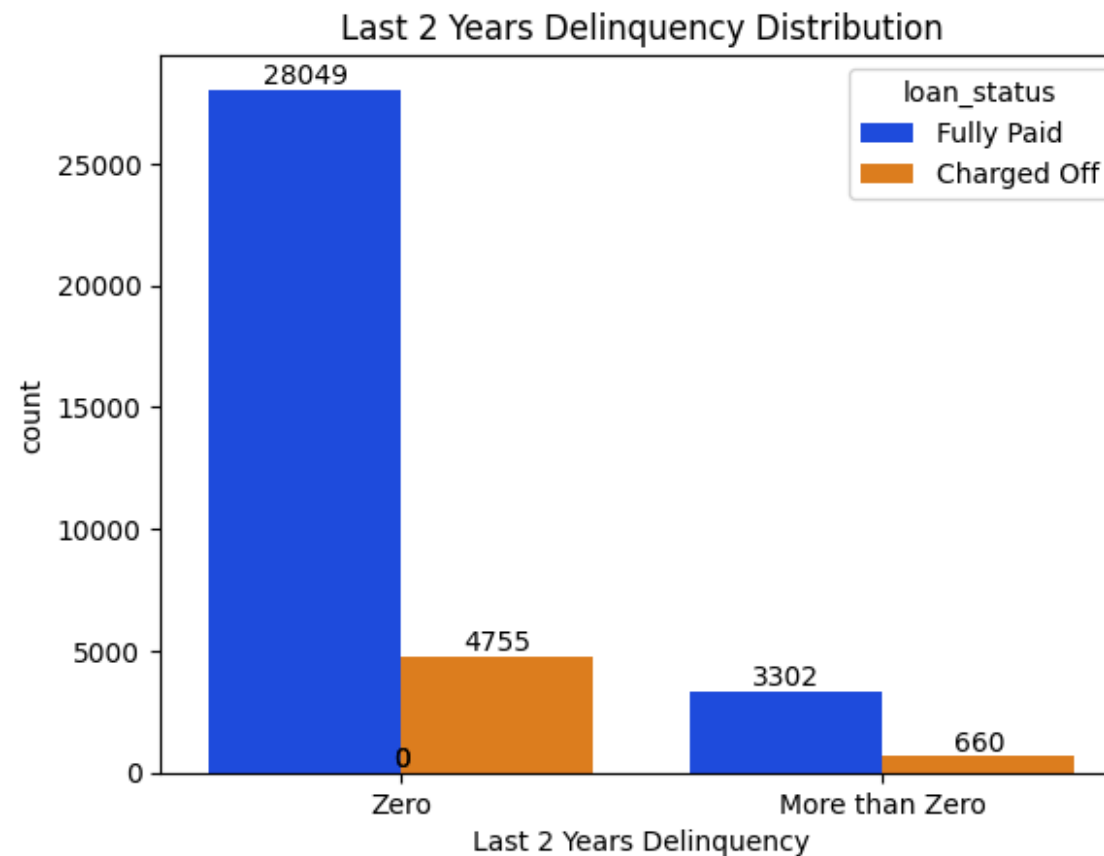
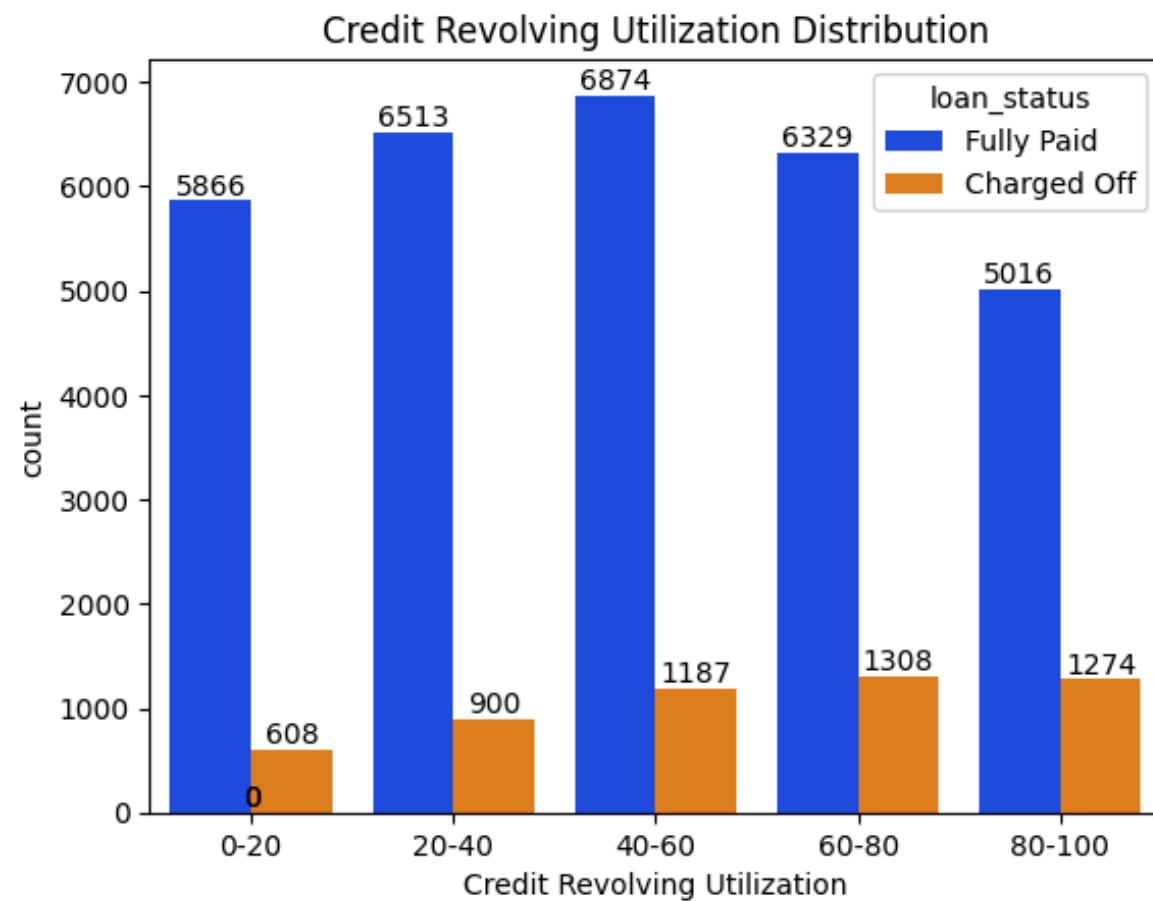
- Since more than 10 years is accumulated value for employment length, they're most likely to default along with new freshers applying loan with experience less than an year.
- Lower annual income has high chance for defaulting

Univariate Analysis



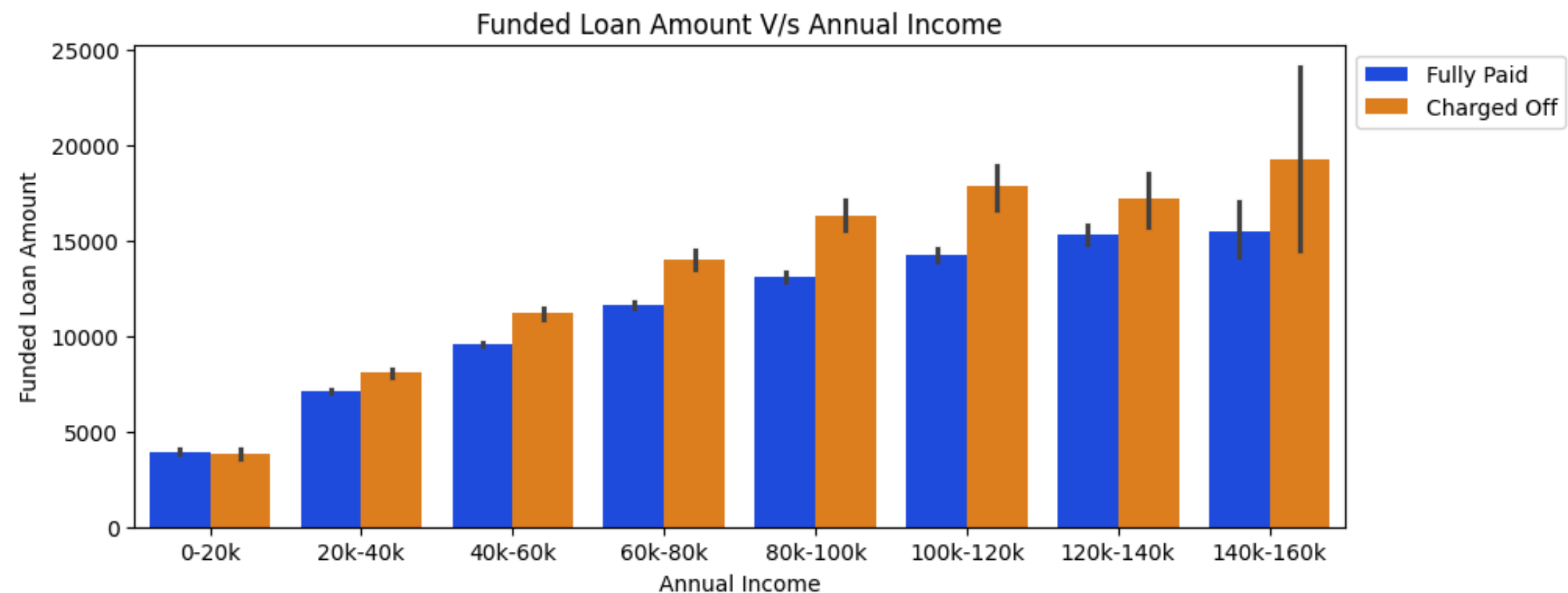
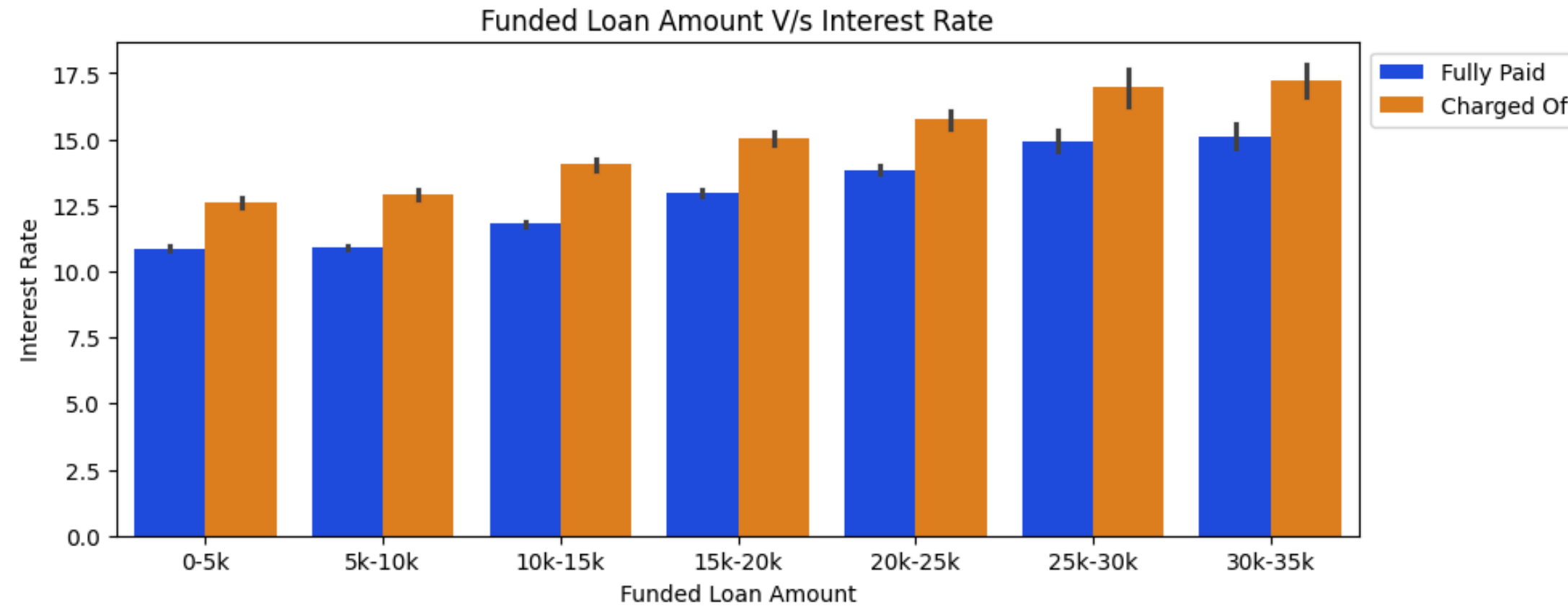
- Higher Debt-to-Income ratio will have higher risk of defaulting loan
- More than 5-15 open credit lines are likely to default

Univariate Analysis



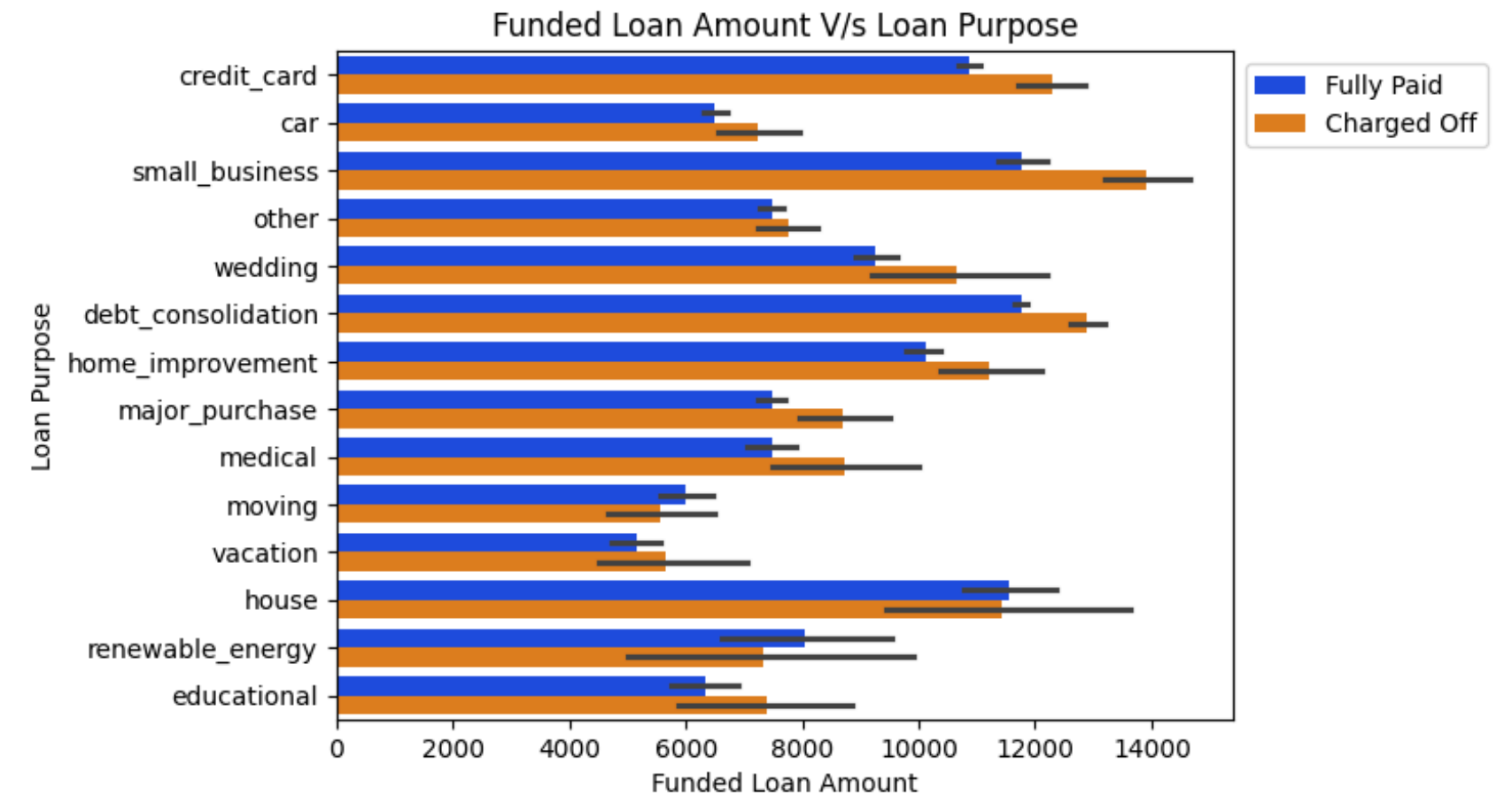
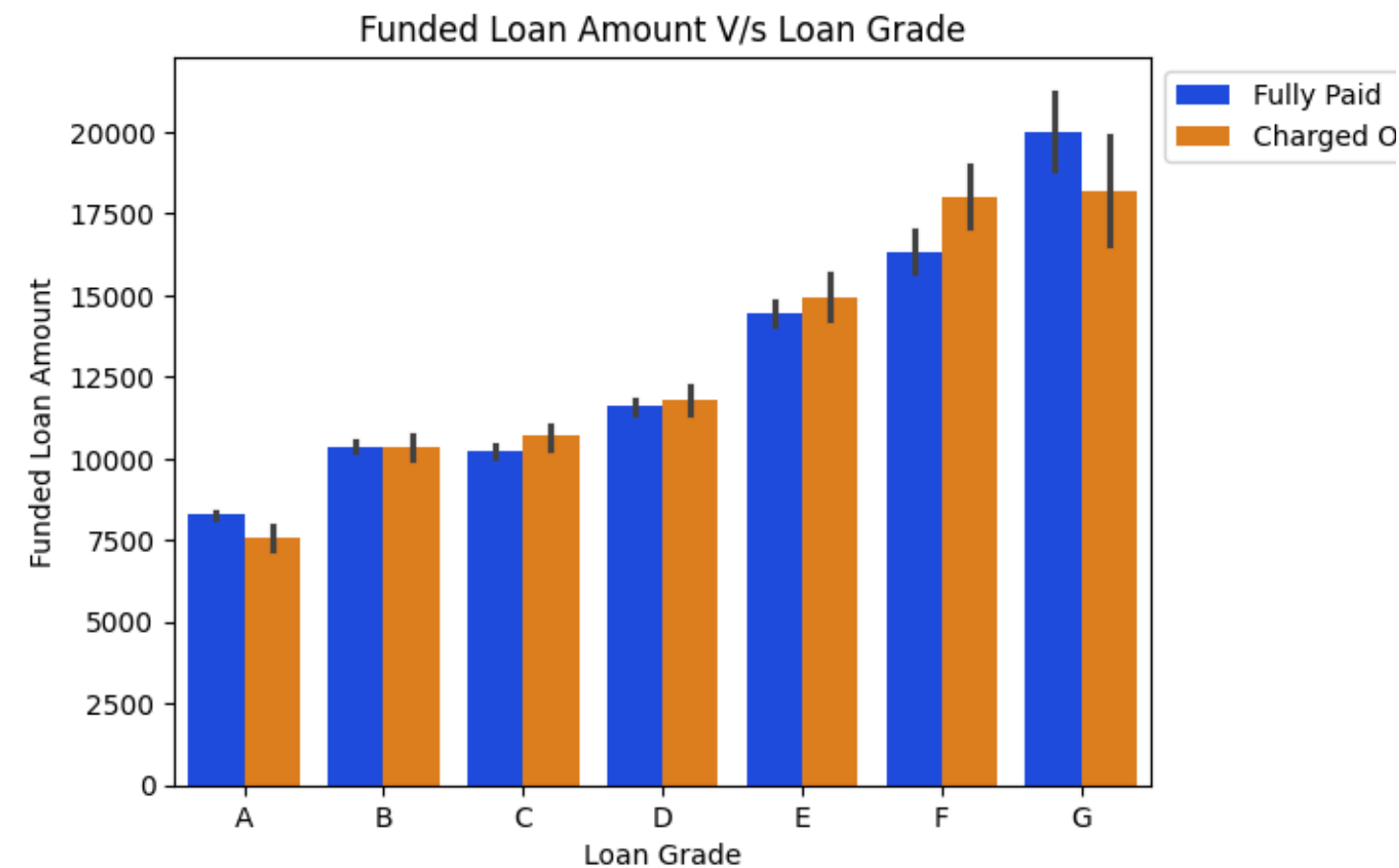
- Credit Revolving Utilization more than 40% will start defaulting more
- Last 2 Years Delinquency count and Number of inquiries over last 6 months will increase the risk of defaulting

Bivariate Analysis



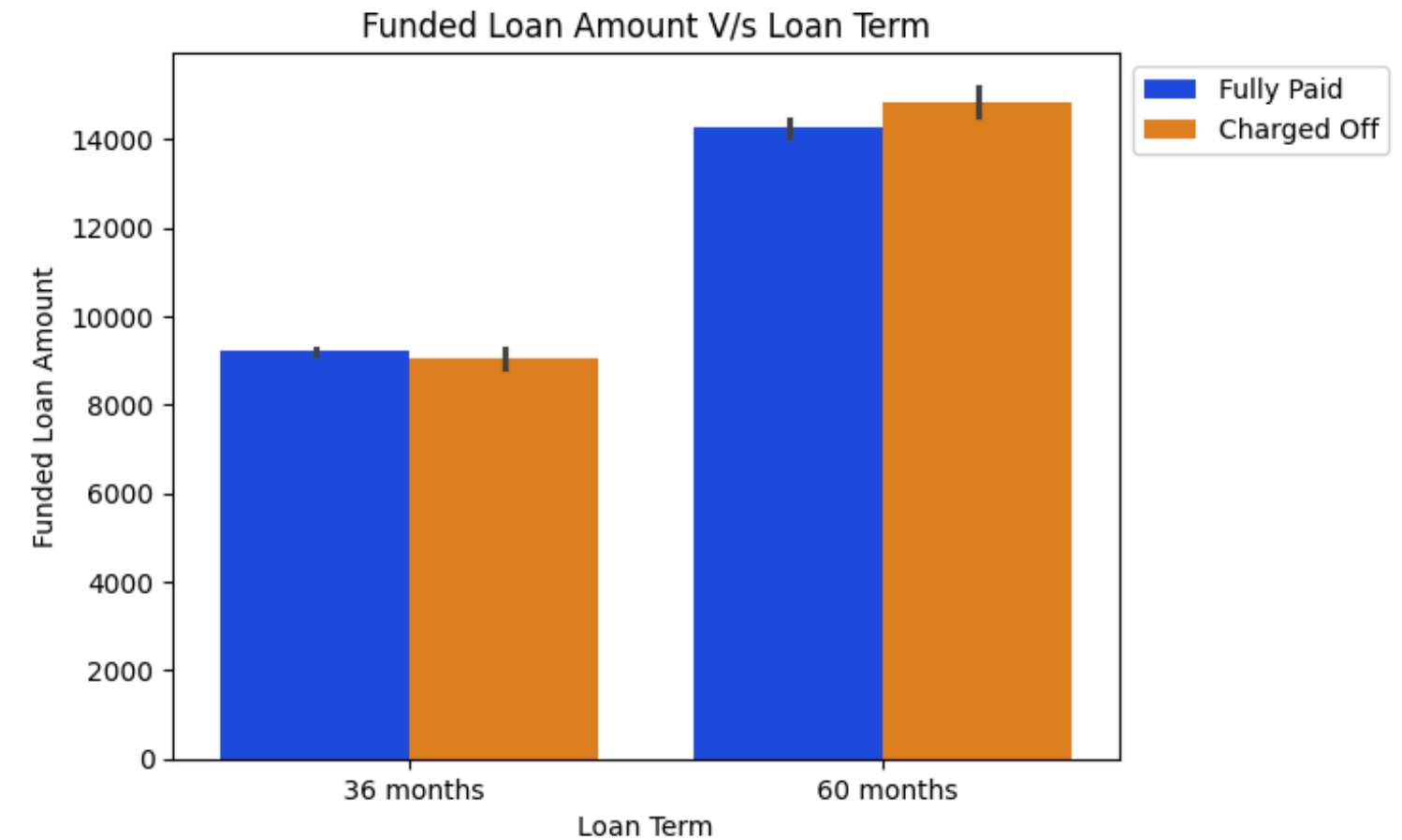
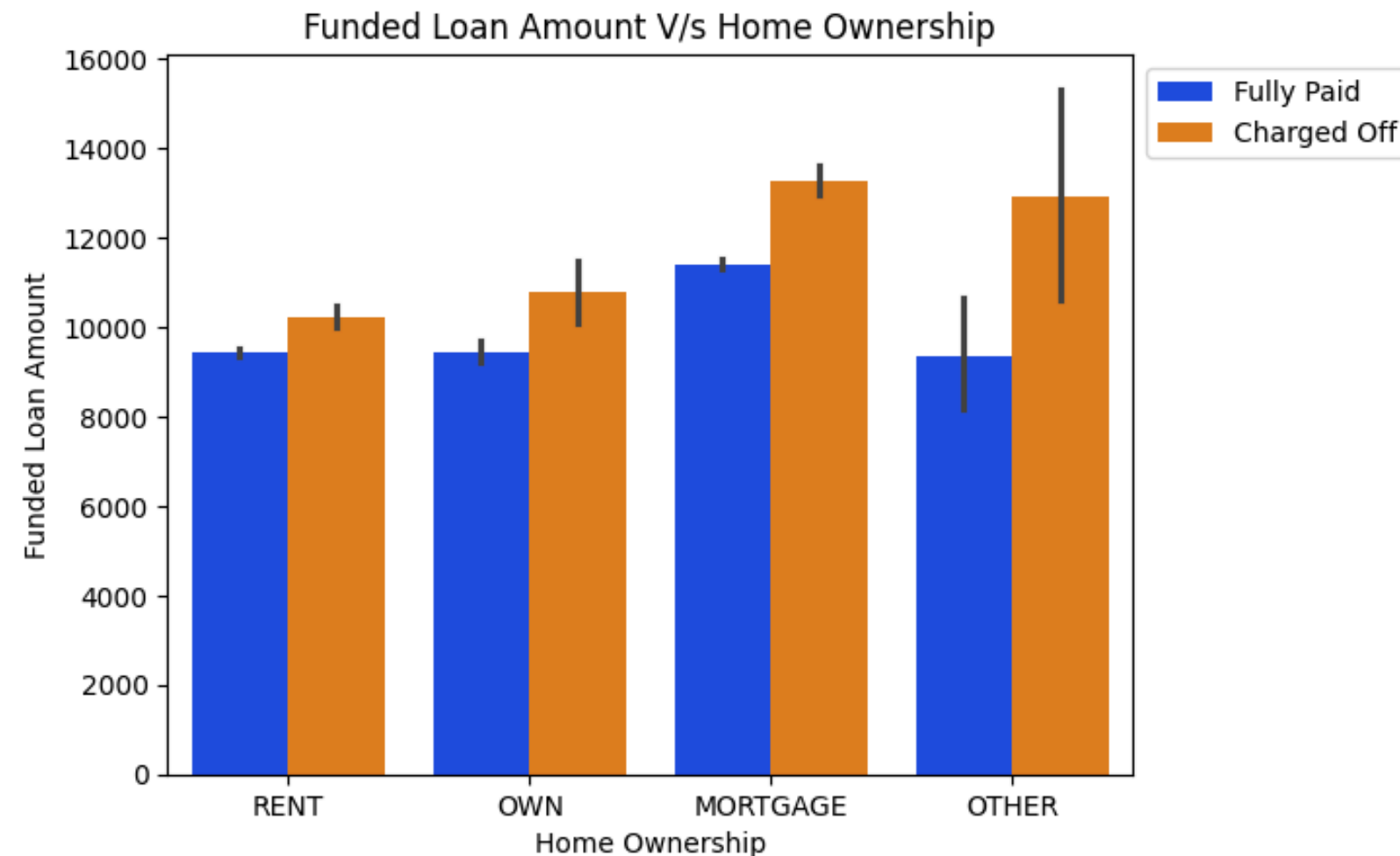
- The funded loan amount between 25000-35000 with Interest rate between 15%-17.5% is risky zone for defaulting.
- Loan should not exceed 15000 for annual income more than 80000

Bivariate Analysis



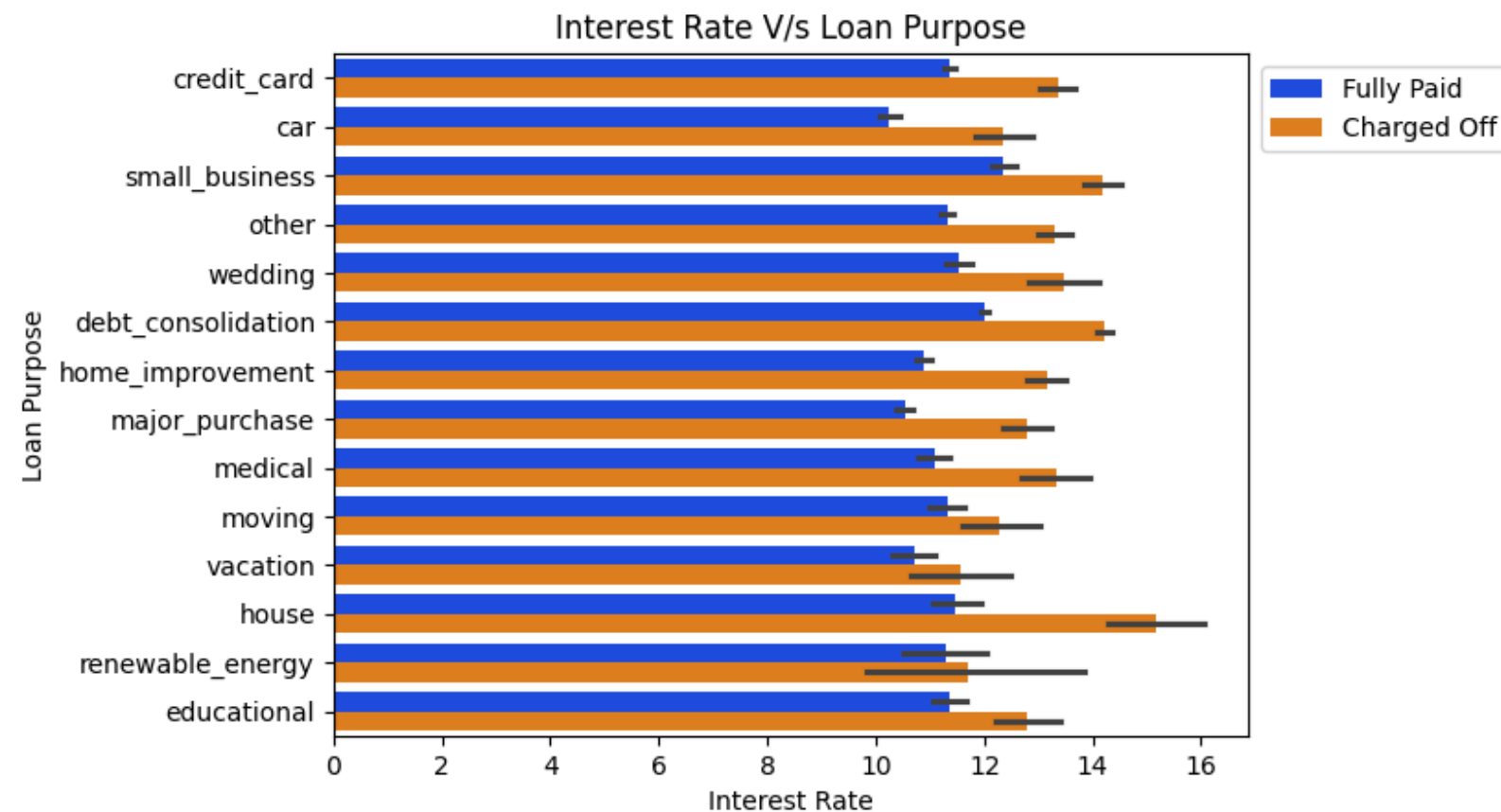
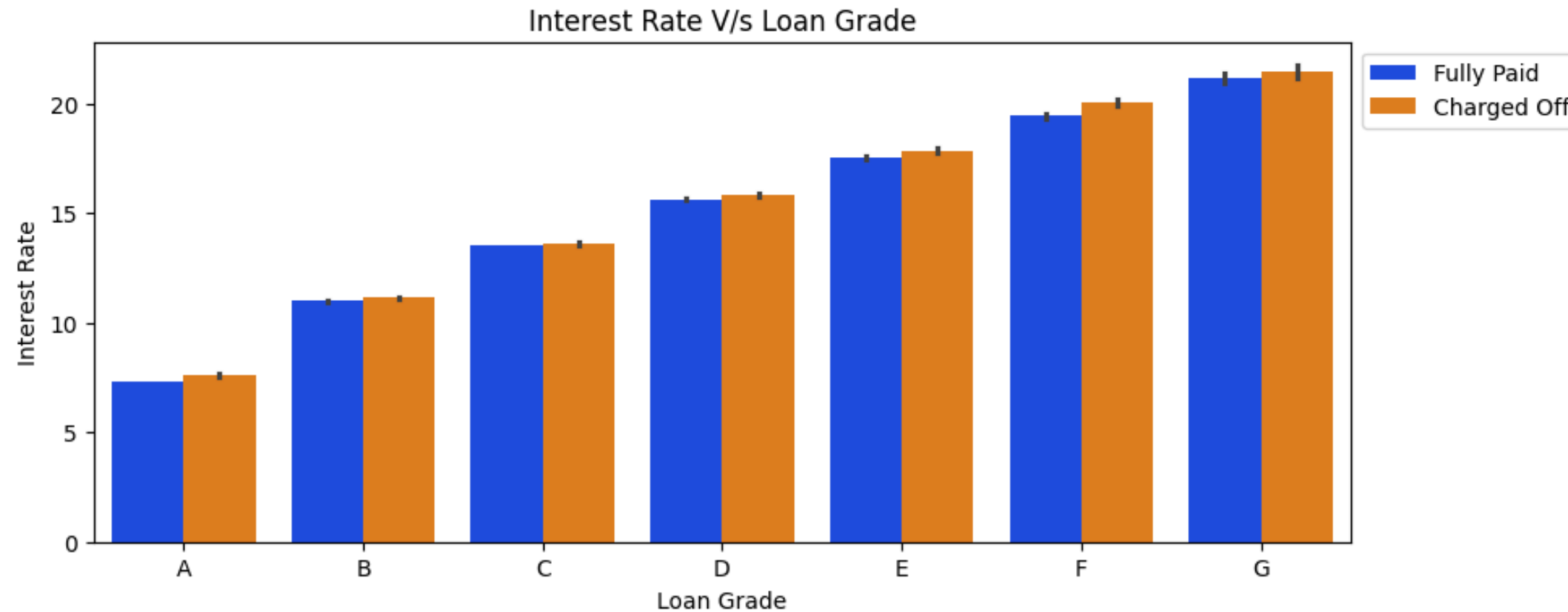
- The funded loan amount should be kept below 15000 for 'F' and 'G' sub-grades of loan.
- Loan amount above 12000 for investing in Small businesses, repaying Credit card bills and clearing Personal Debts is not advisable due to high risk.

Bivariate Analysis



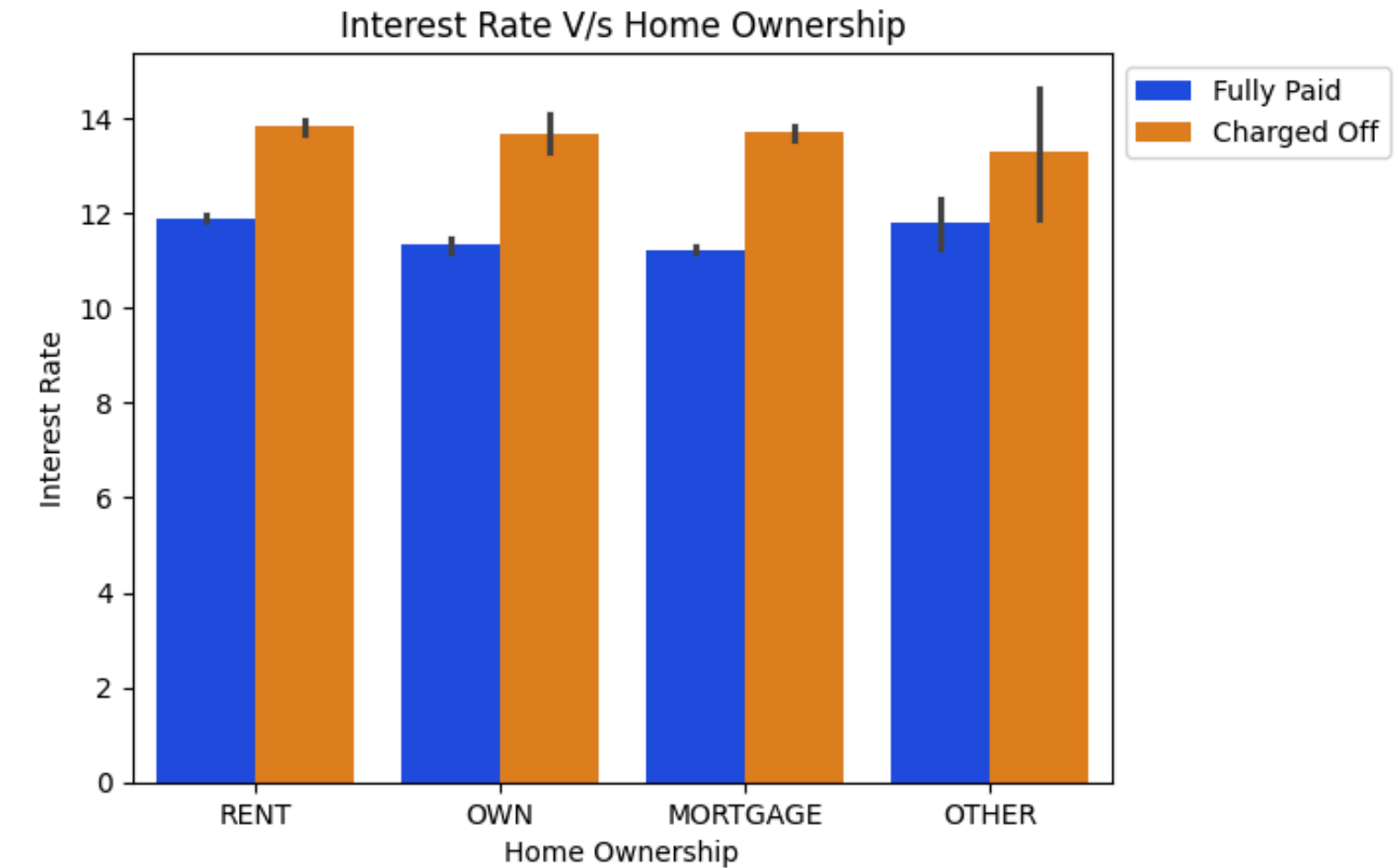
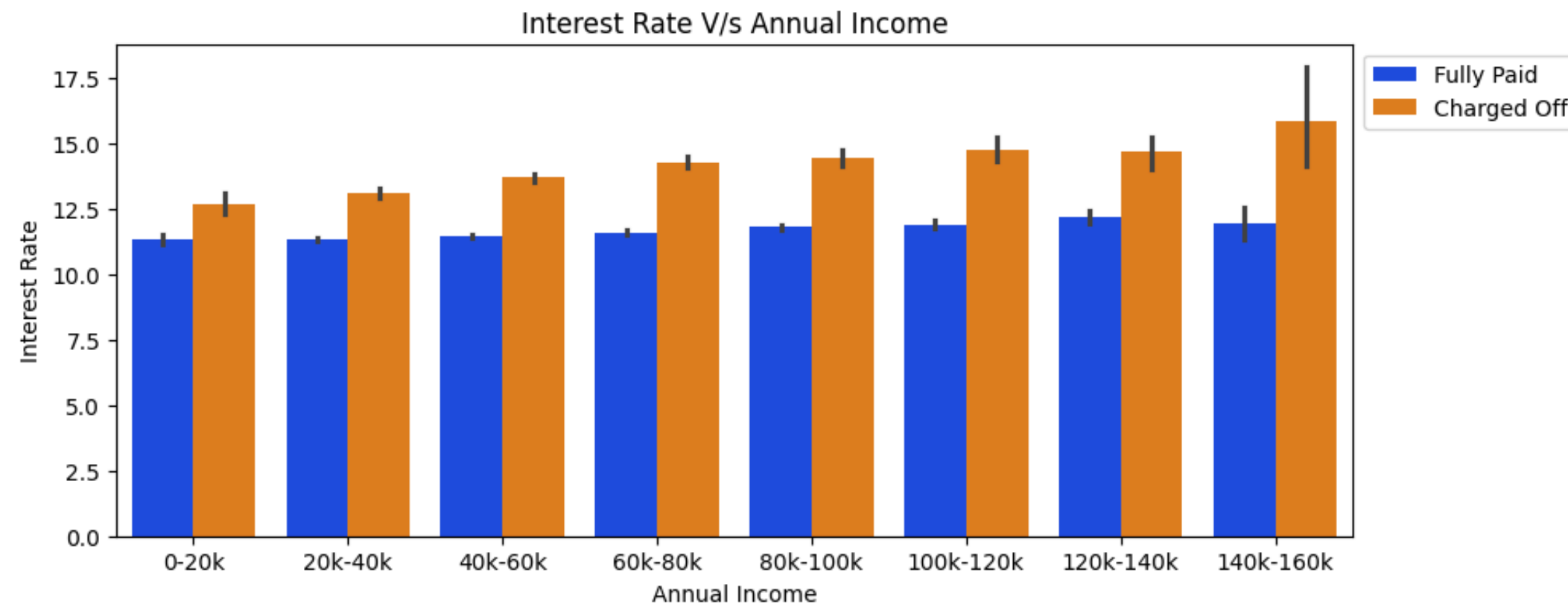
- Loan amount above 12000 with 'Mortgage' and 'Other' home types lead to high risk of defaulting
- People default more in 60 months term than 36 months term and loan amount shouldn't exceed 14000

Bivariate Analysis



- Interest rate more than around 17% for 'F' and 'G' sub-grades of loan leads to more defaulting.
- Interest rate of more than 14% is not advisable supporting loan for investing in Small businesses, repaying Credit card bills and clearing Personal Debts is not advisable due to high risk.

Bivariate Analysis



- More than 15% Interest rate is not profitable even though annual income is more than 140000.
- Interest rate should be below 12% for applicants having 'RENT' and 'MORTGAGE' home ownership

Conclusions

- Lending club should reduce the high interest loans for 60 months tenure, they are prone to loan default.
- Grades are good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to Low grade (G to A).
- Debt Consolidation loans are defaulted more. Lending club should stop/reduce issuing the loans to them.
- Borrowers with mortgage home ownership are taking higher loans and defaulting the approved loans. Lending club should stop giving loans to this category when loan amount requested is more than 12000.
- People with more number of public derogatory records are having more chance of filing a bankruptcy. Lending club should make sure there are no public derogatory records for borrower.