



Lending Club Case Study



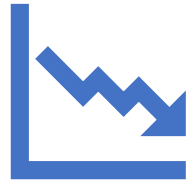
Understanding Loan Default Risk Through Exploratory Data Analysis (EDA)

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Introduction



Overview of the consumer finance company specializing in lending loans to urban customer



Two types of risks associated with the loan decision

Loss of Business

Financial Loss



Utilize Exploratory Data Analysis (EDA) to understand factors influencing loan default

Problem Statement



**UNDERSTANDING FACTORS INFLUENCING
LOAN DEFAULT THROUGH EDA.**



**IDENTIFICATION OF RISK ASSOCIATED WITH
LOAN DECISIONS: LOSS OF BUSINESS AND
FINANCIAL LOSS**



**OBJECTIVE: ANALYZE PAST LOAN APPLICANT
DATA TO IDENTIFY DRIVER VARIABLES
CORRELATED WITH LOAN DEFAULT.**

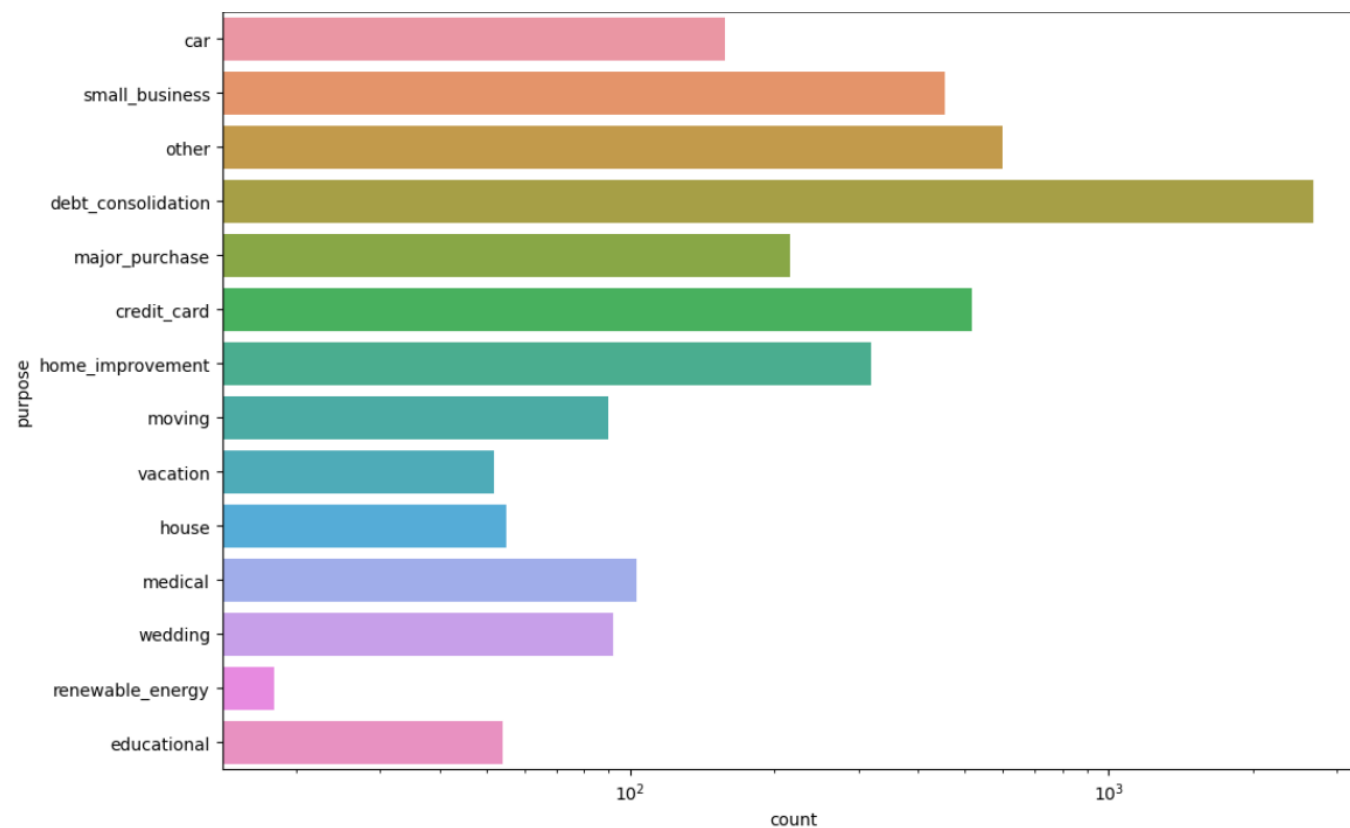
Home Ownership Analysis

- Around 90% of the defaulter already mortgage loan taken or out or live on rent

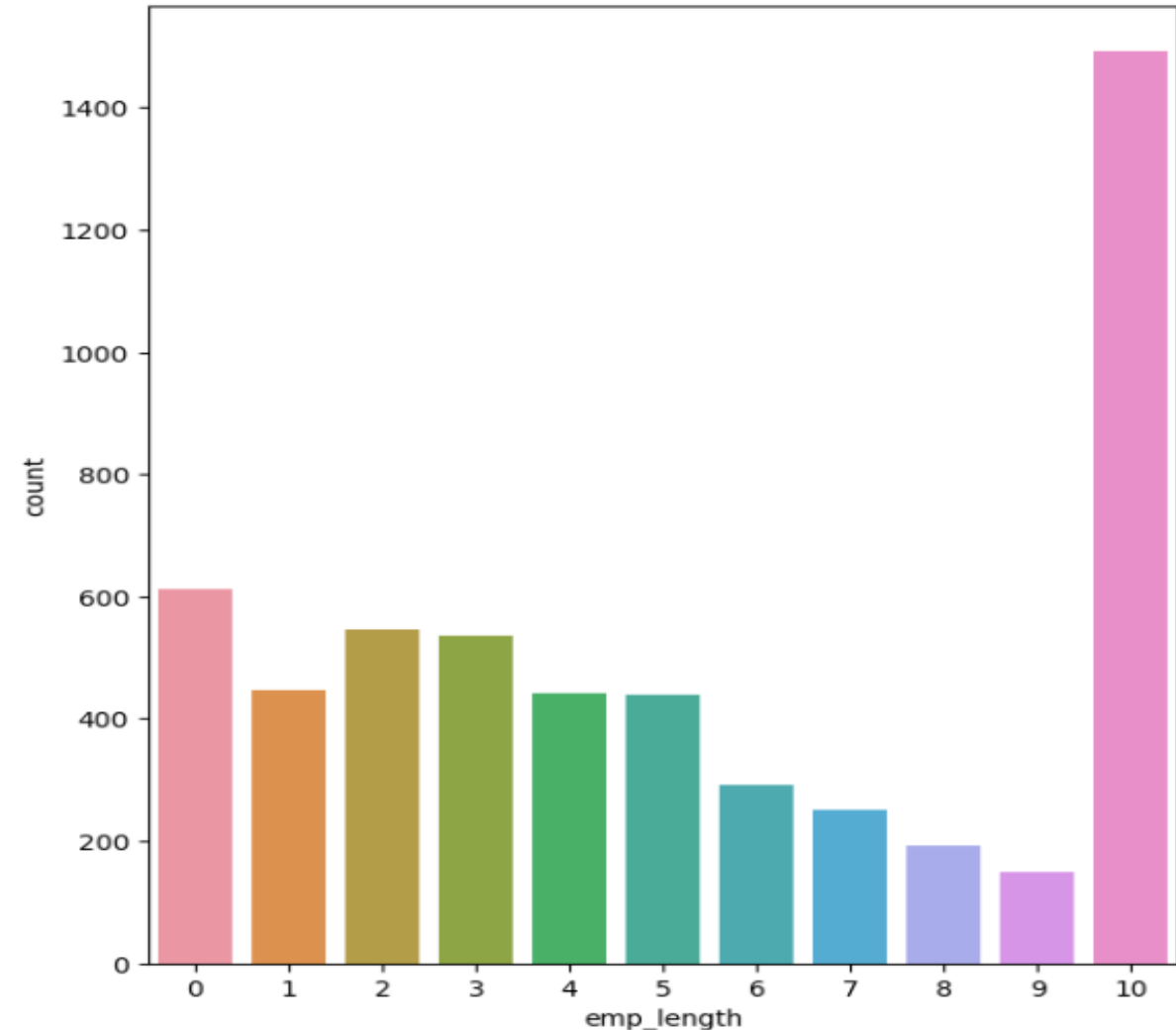
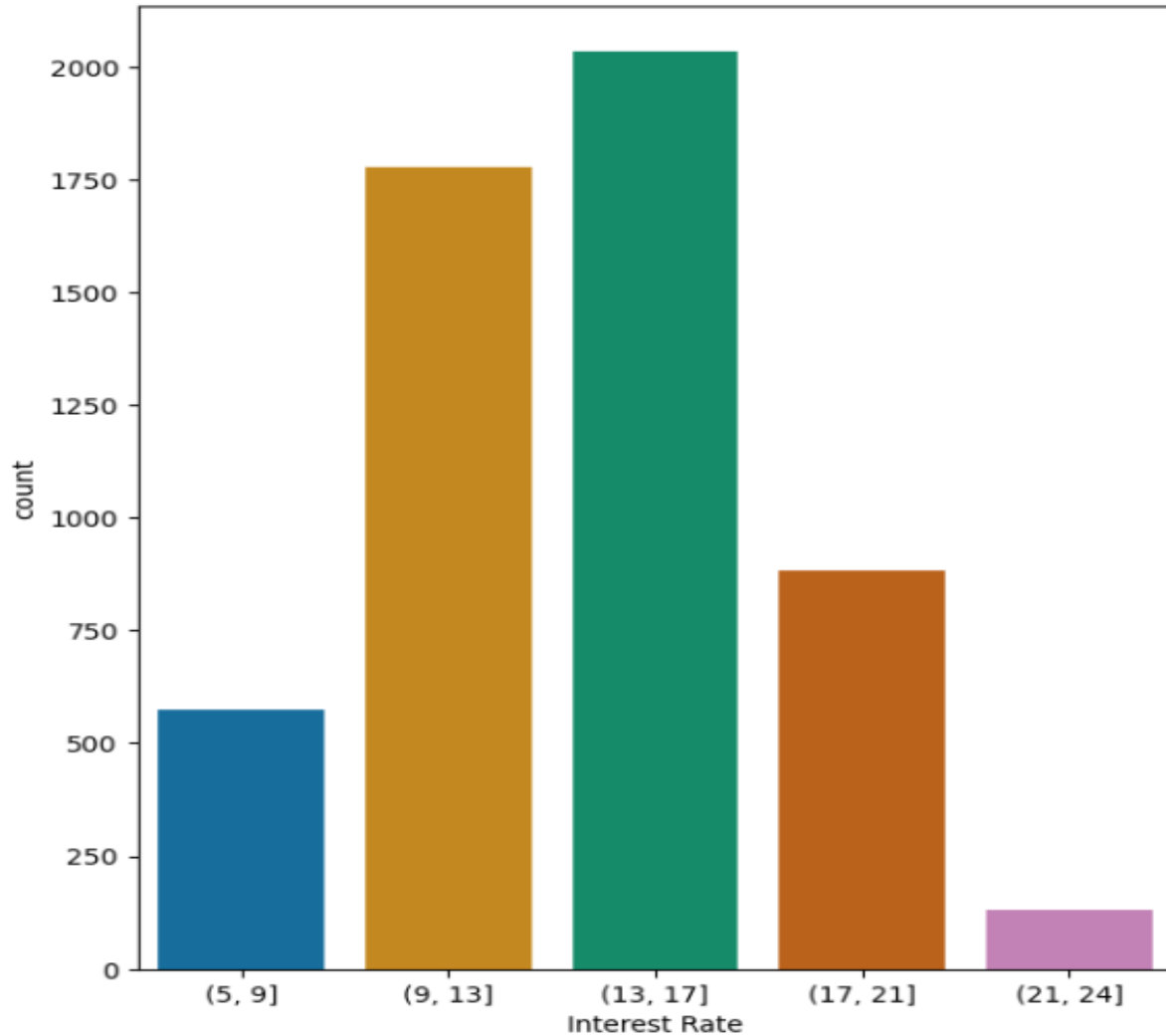


Analysis Purpose of loan

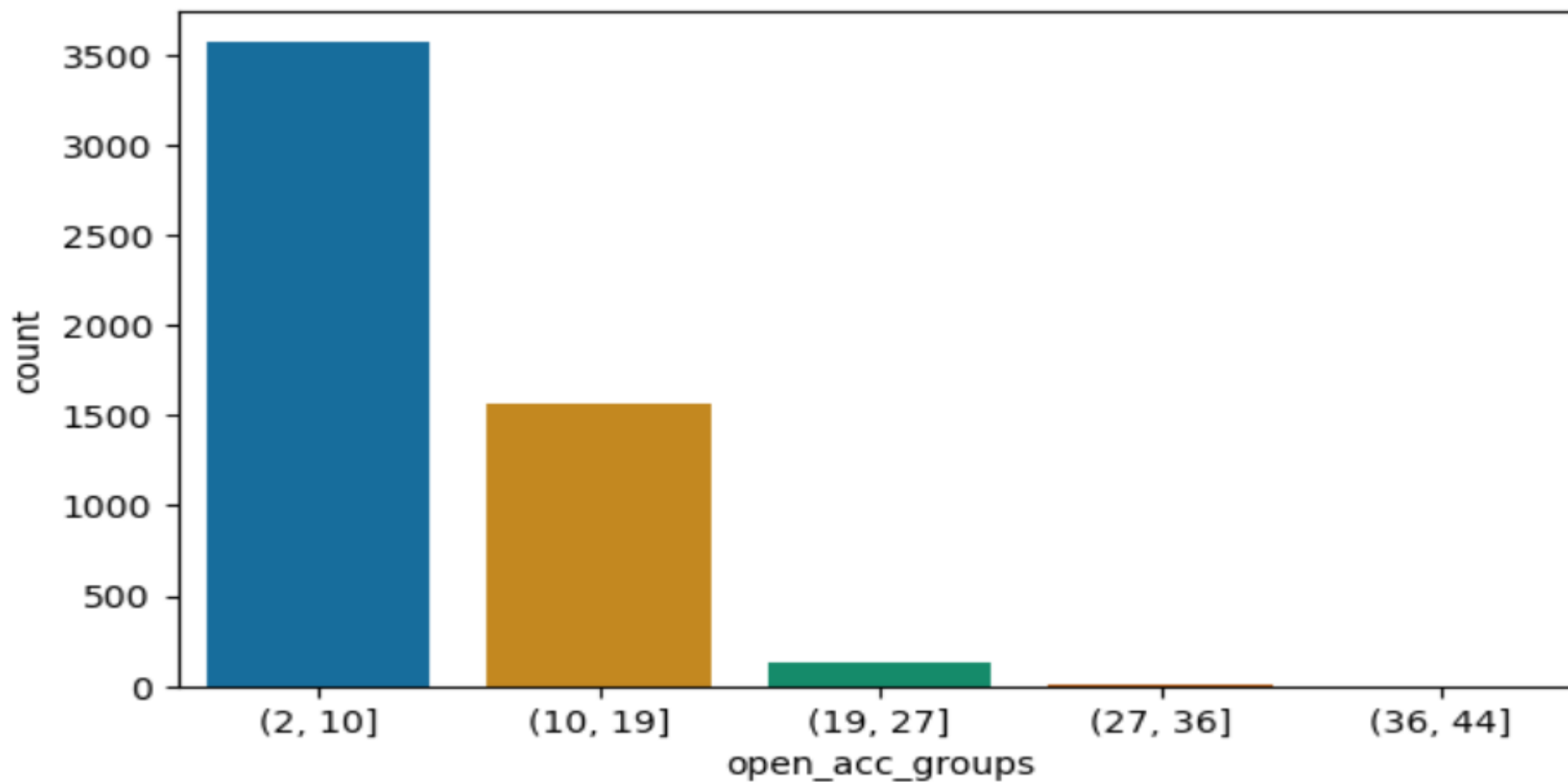
- Borrowers who took loan the loan for **debt_consolidation** purpose have defaulted more



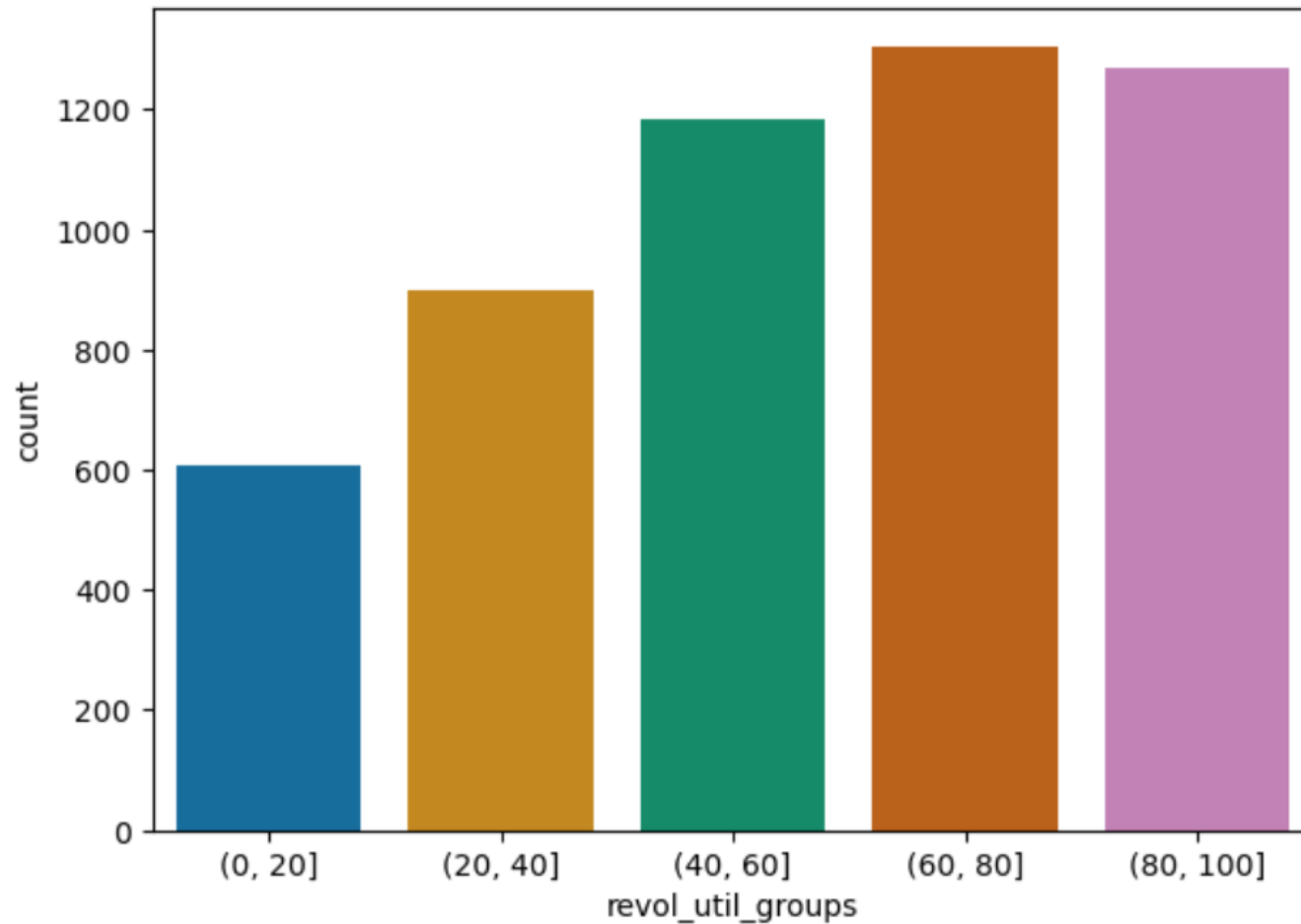
Interest rate and Emp_Length



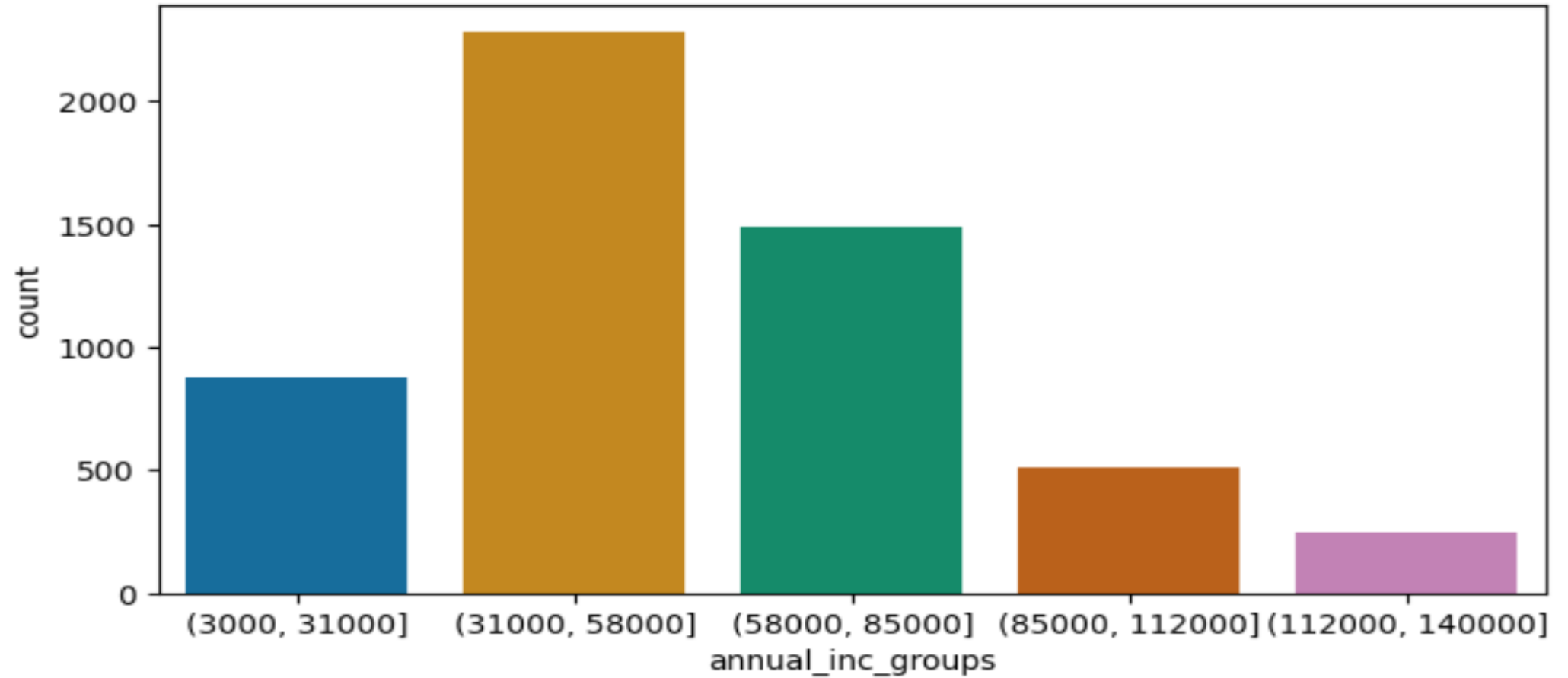
Open Account Group



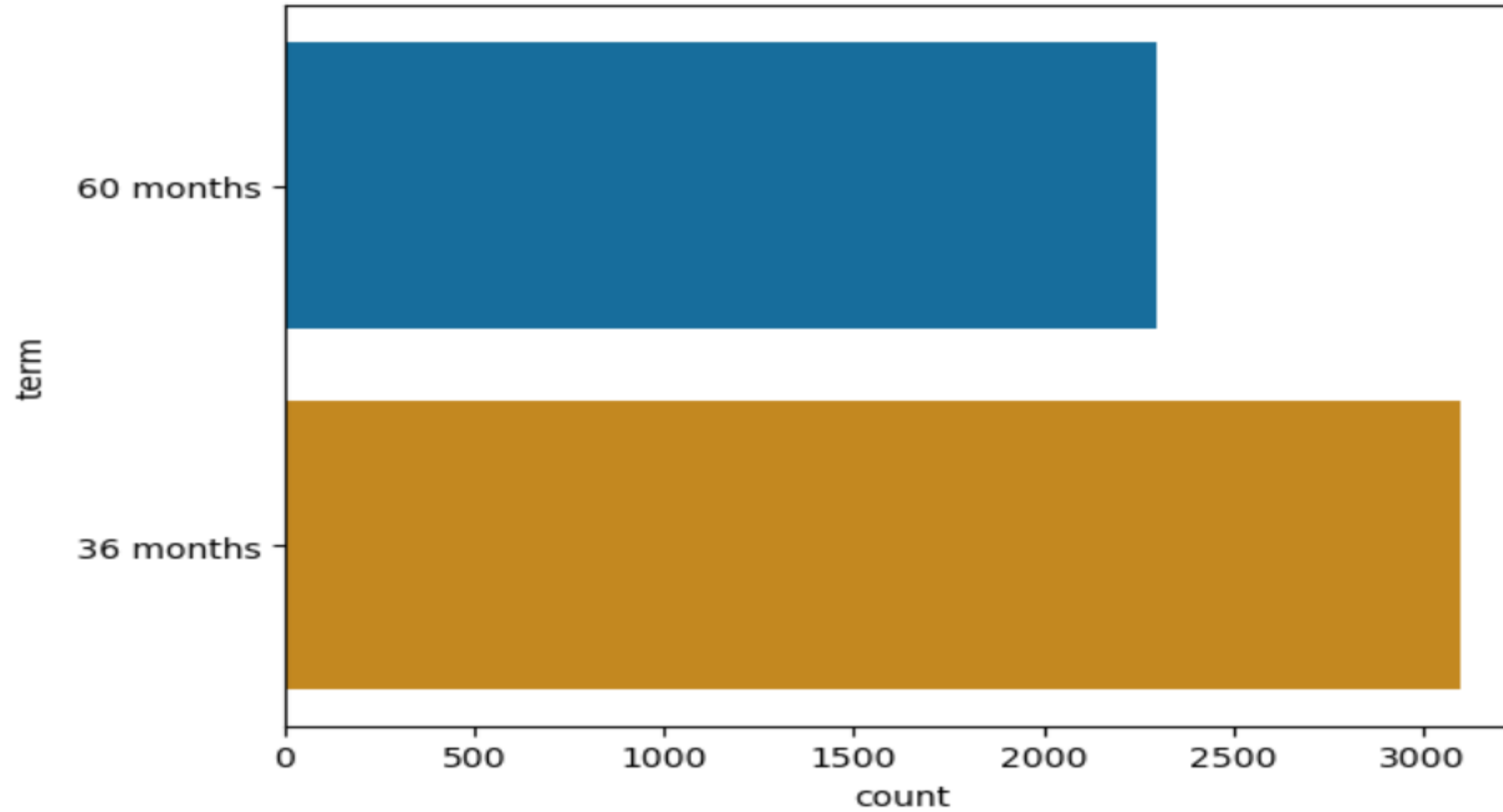
Revolving line utilization rate



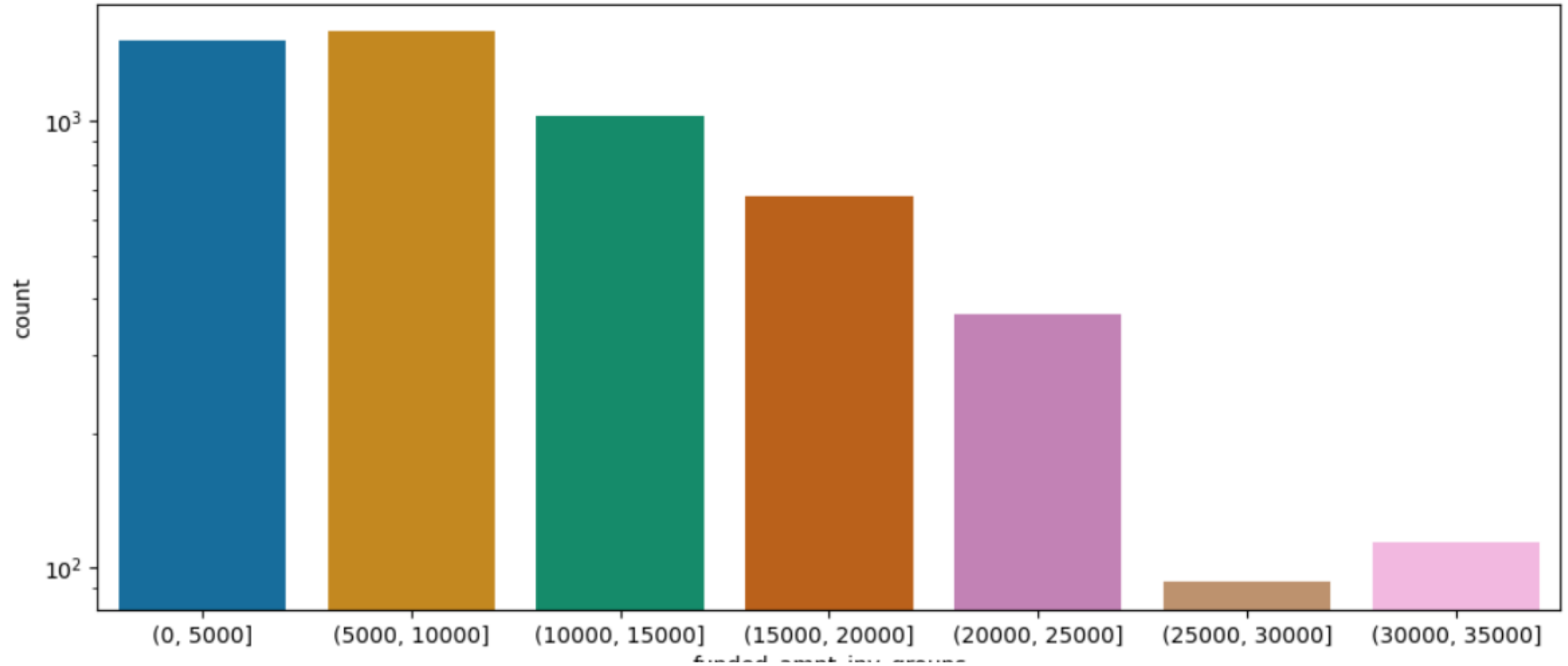
Default rate vs Annual Income



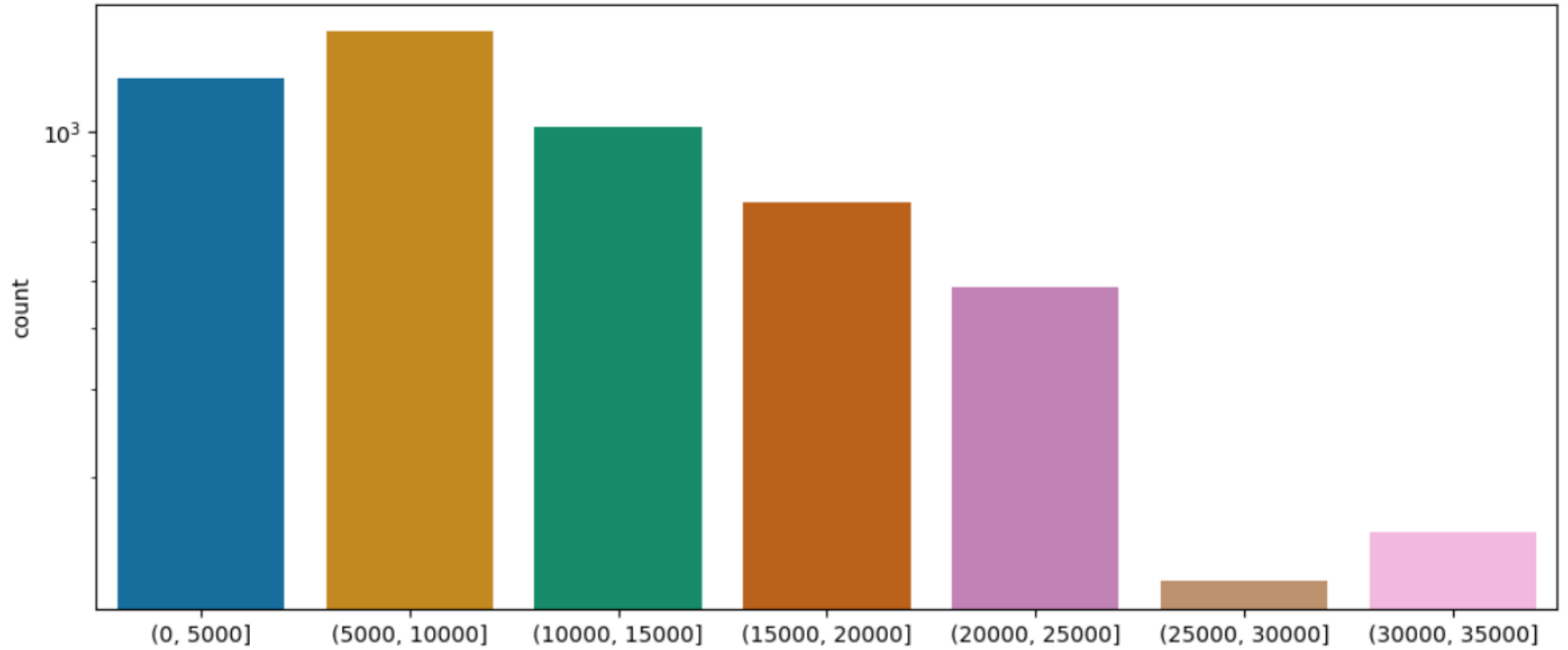
Default Rate Vs Term



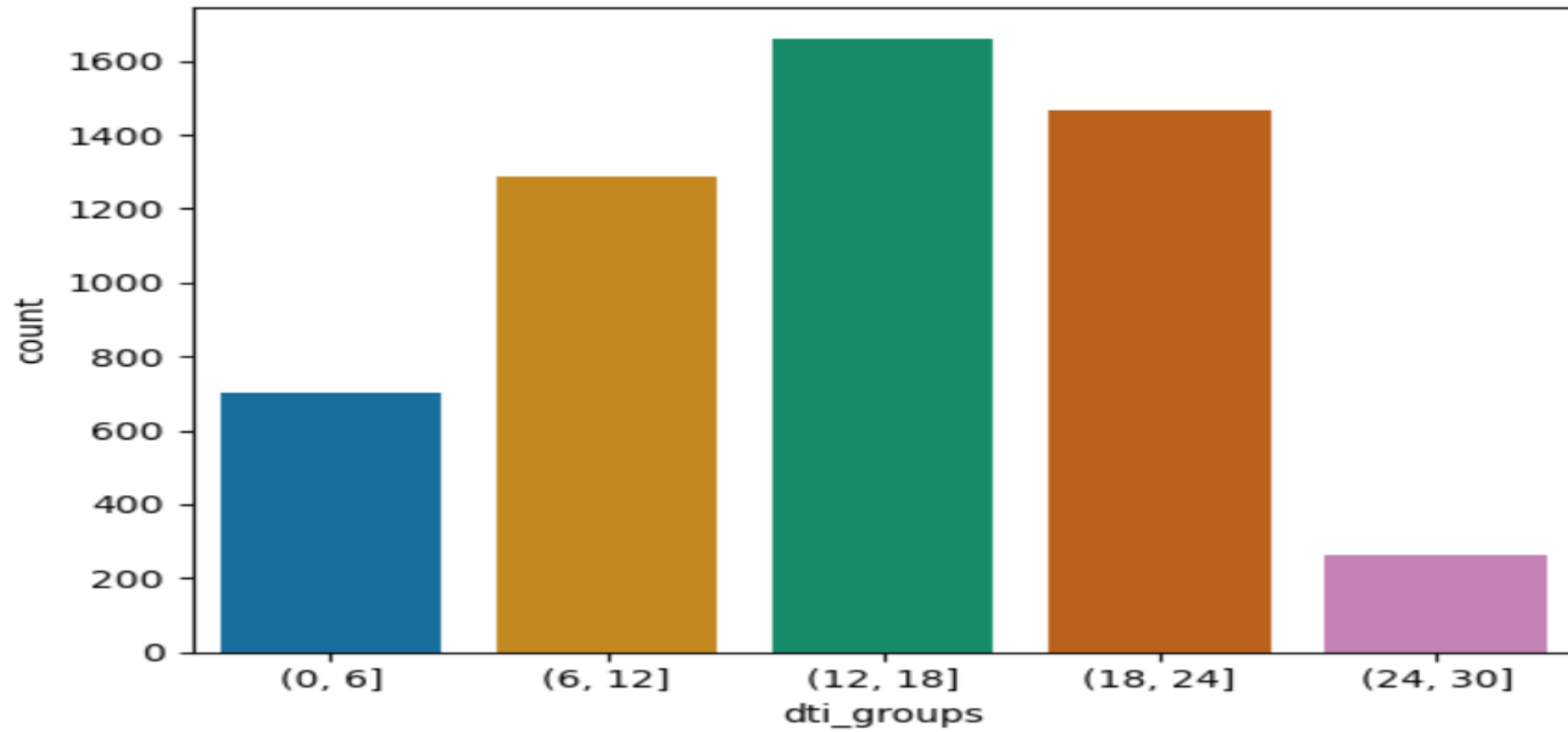
Default rate vs funded amount by investor



Default rate vs loan amount



Default rate vs Dti

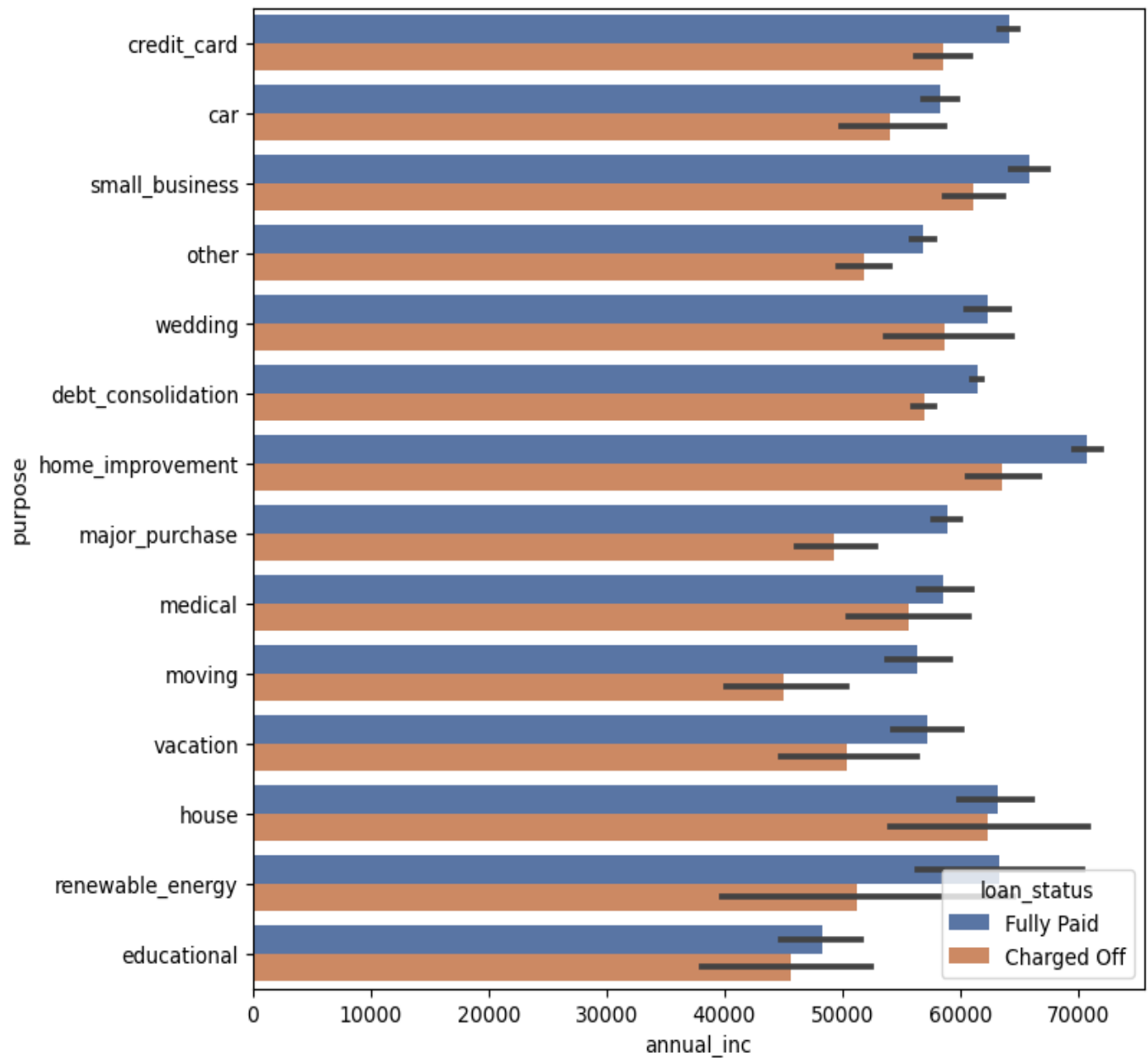


Observations

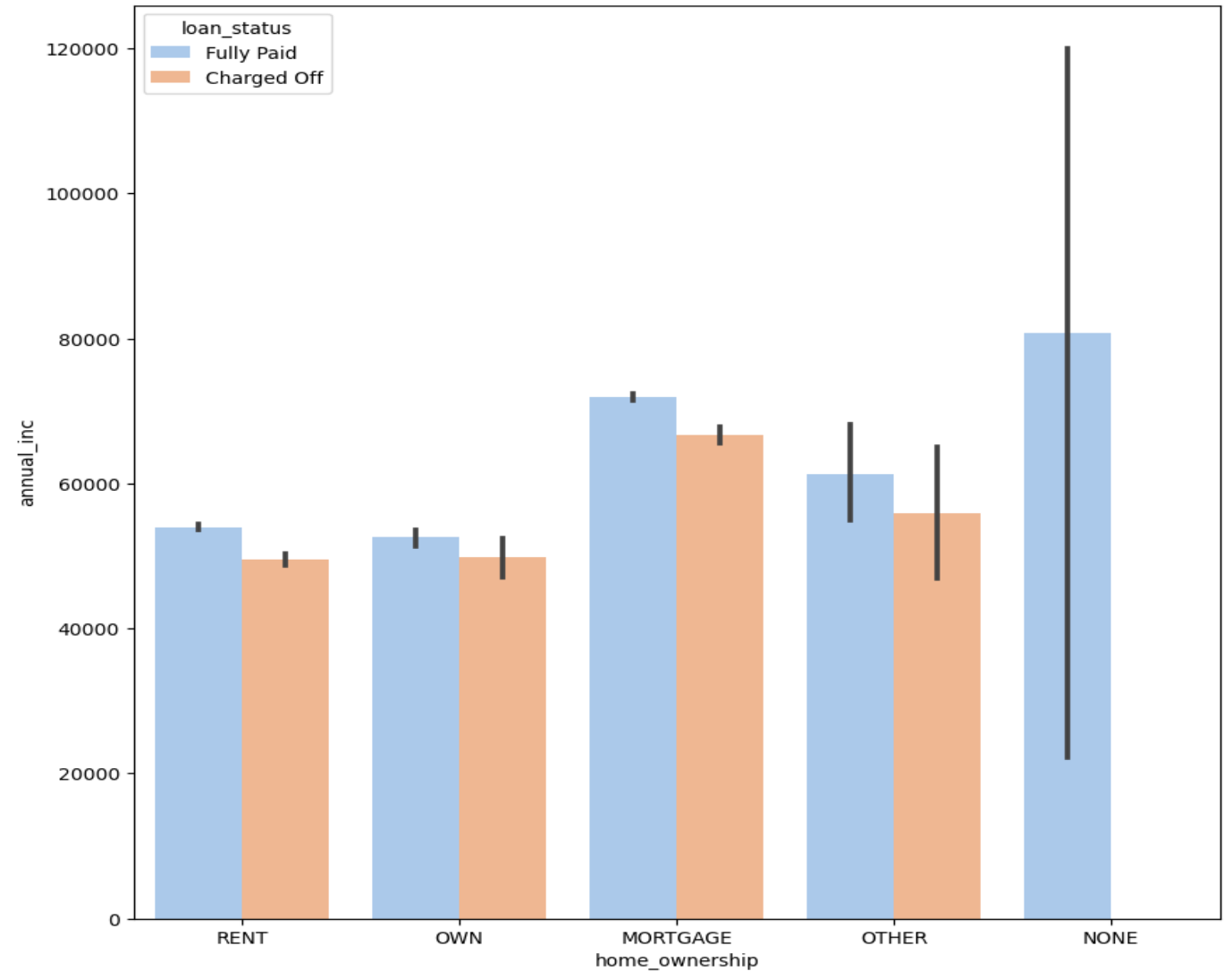
The above analysis concerning the charged-off loans for each variable suggests the following. There is a higher probability of defaulting when :

- Applicants having house_ownership as 'RENT'
- Applicants who use the loan to clear other debts
- Applicants who receive interest at the rate of 13-17%
- Applicants who have an income of range 31201 – 58402
- Applicants who have 20-37 open_acc
- Applicants with employment length of 10
- When funded amount by the investor is between 5000-10000
- Loan amount is between 5429 - 10357
- Dti is between 12-18

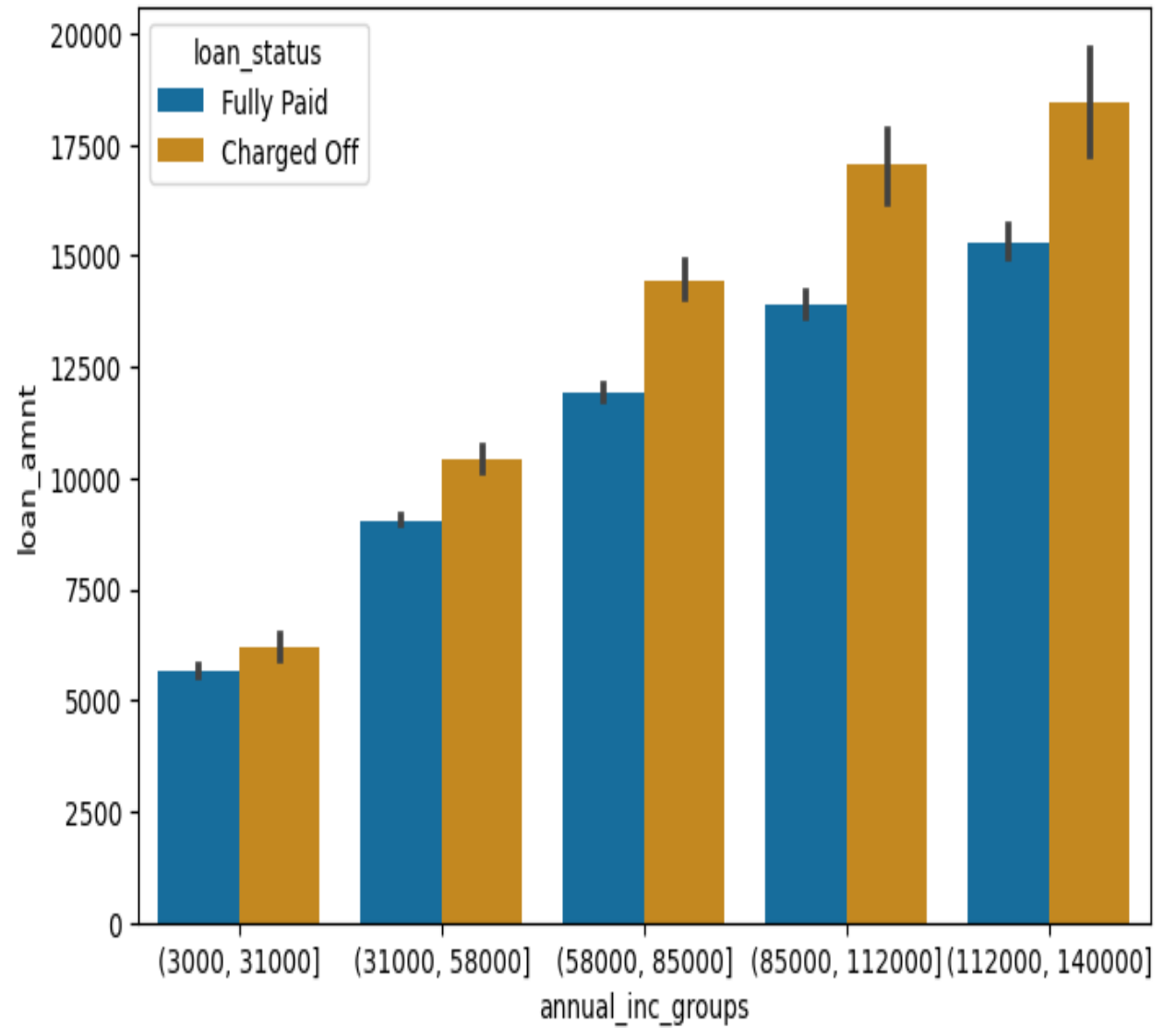
Purpose vs annual income



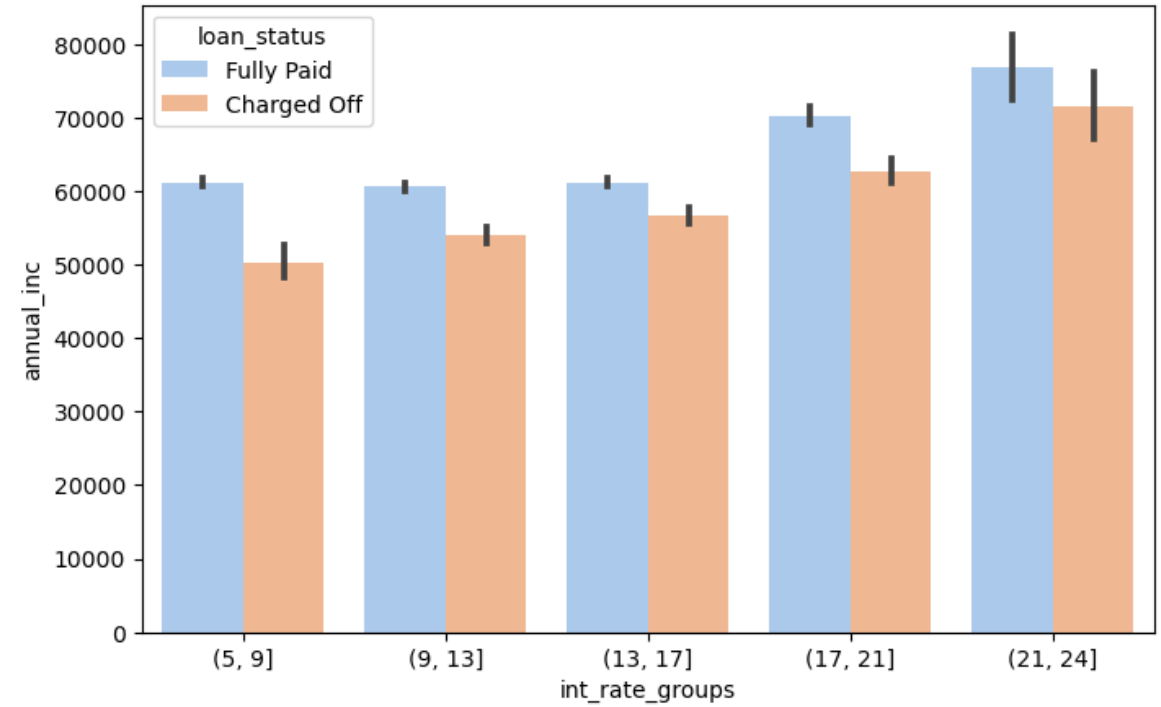
Annual Income Vs Home ownership



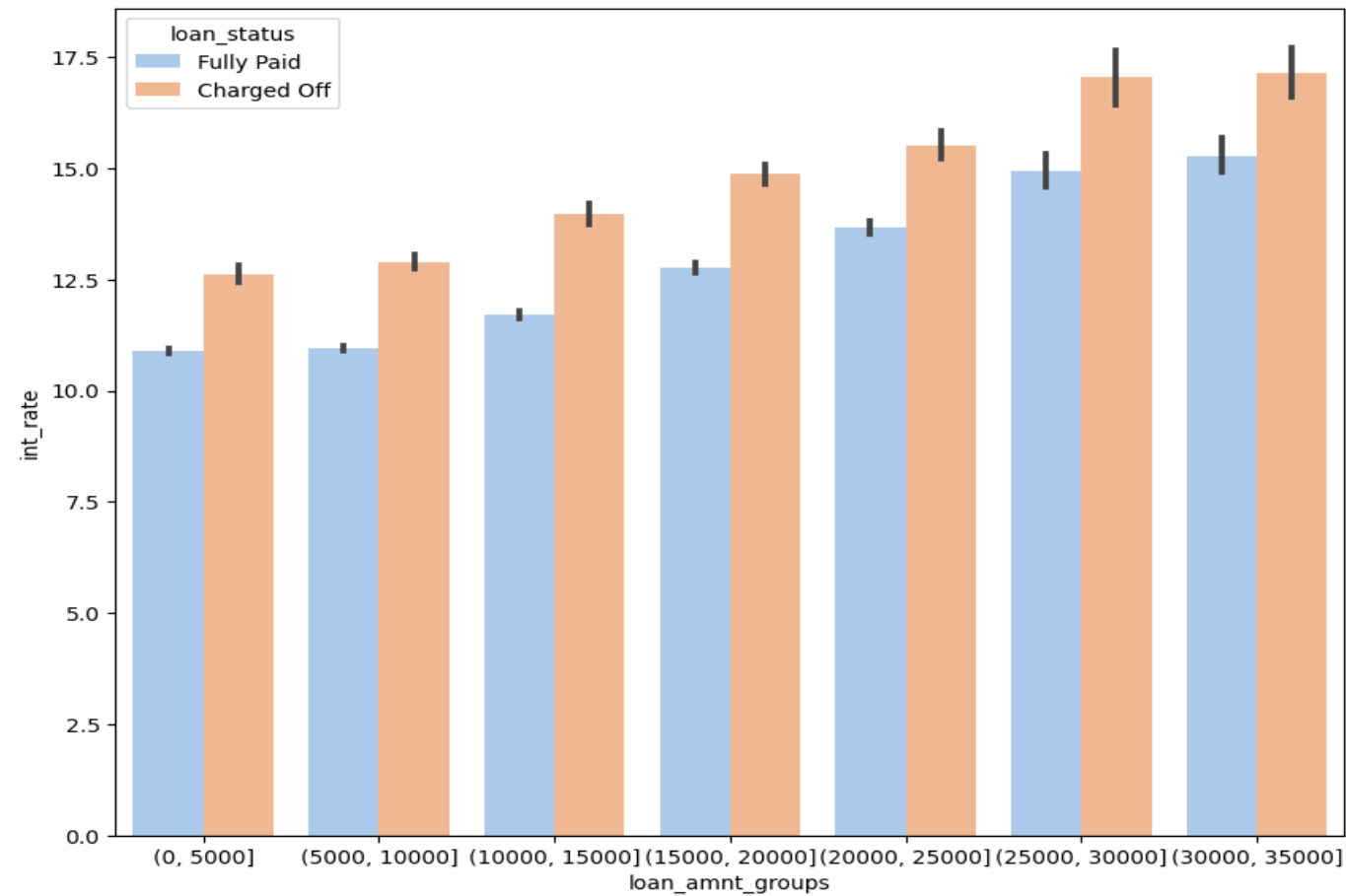
Loan Amount vs Annual Income



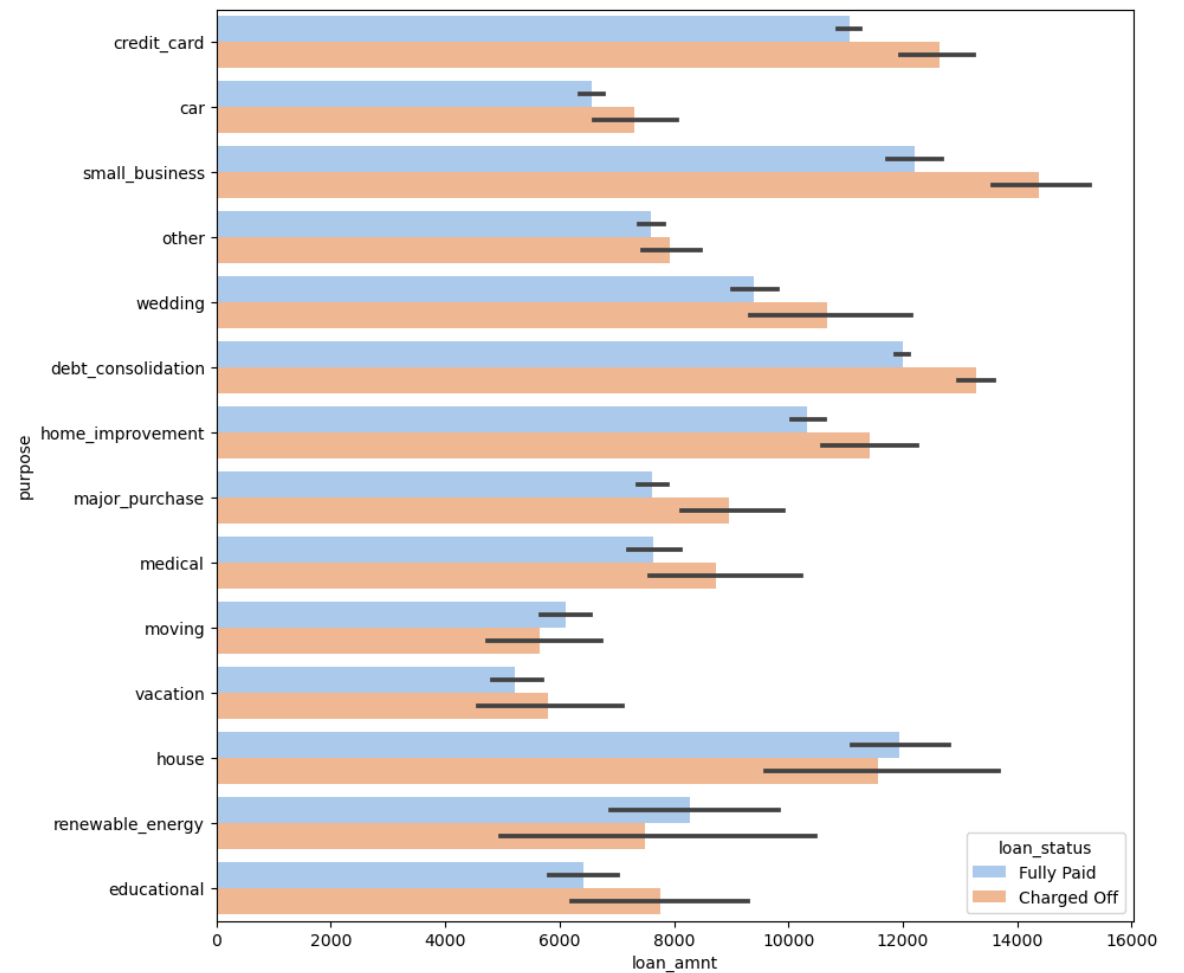
Annual Income Vs Interest Rate



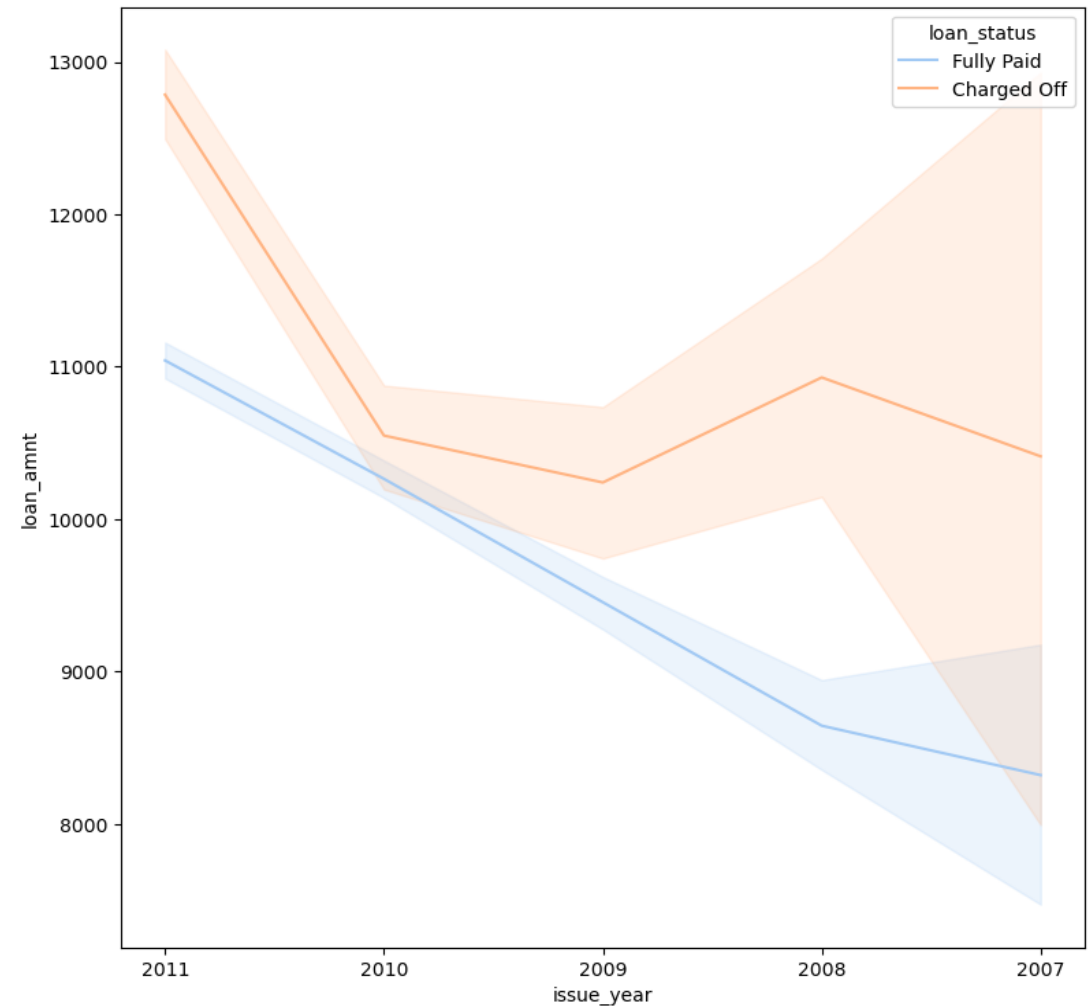
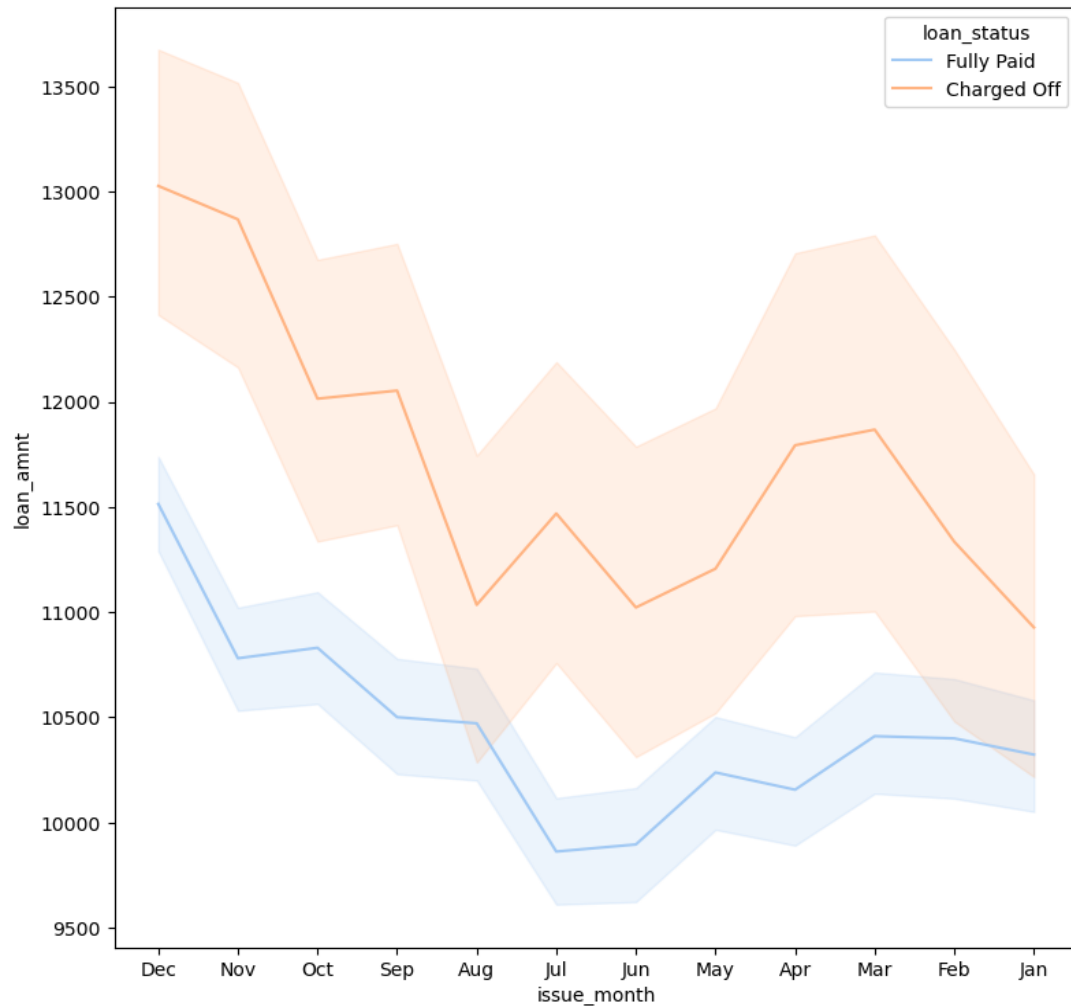
Interest rate vs loan amount



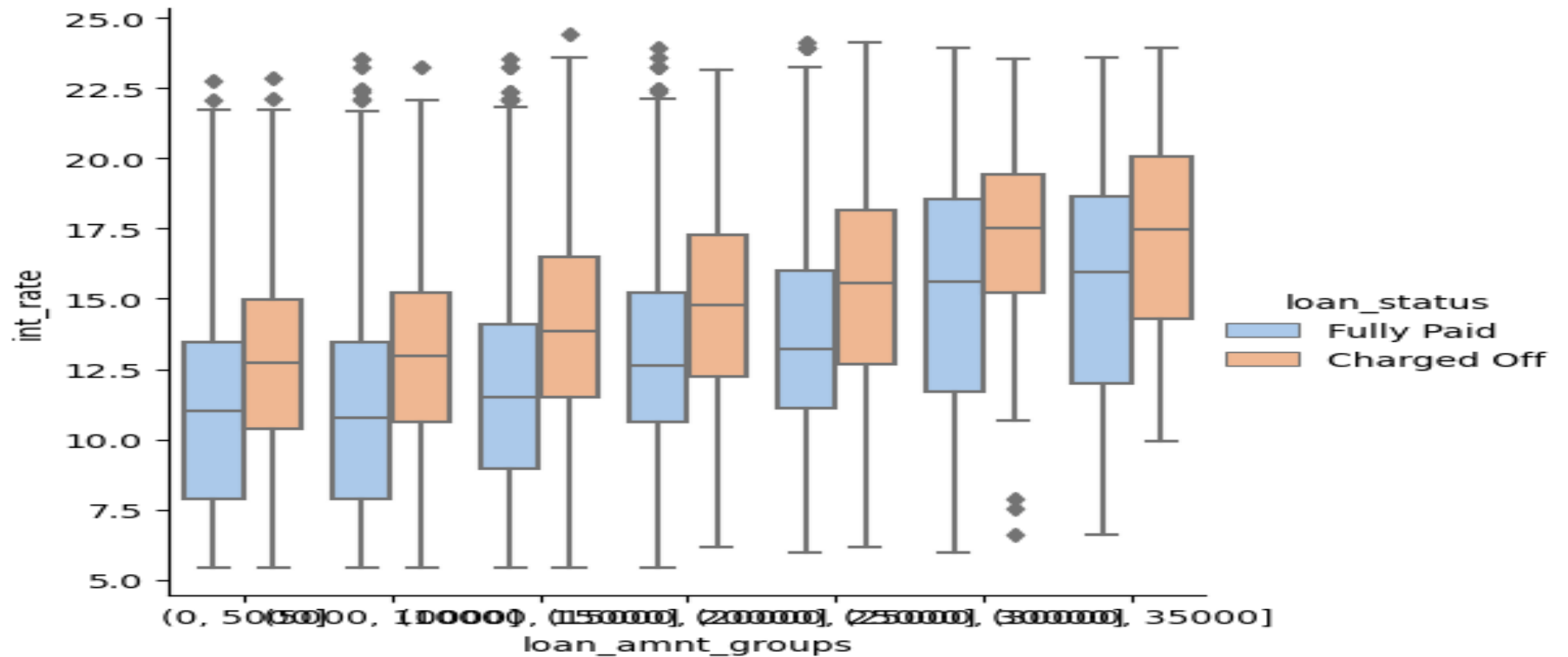
Purpose Vs Loan amount



Loan amount Vs issue months/issue year



Interest rate vs loan amount



Observations

- There is a higher probability of defaulting when :
- Applicants taking loans for 'home improvement' and have an income of 60k -70k
- Applicants whose home ownership is 'MORTGAGE and have an income of 60-70k
- Applicants who receive interest at the rate of 21-24% and have an income of 70k-80k
- Applicants who have taken a loan in the range 30k – 35k and are charged interest rate of 15-17.5 %
- Applicants who have taken a loan for a small business and the loan amount is greater than 14k
- Applicants whose home ownership is 'MORTGAGE and have a loan of 14-16k • When grade is F and loan amount is between 15k-20k
- When employment length is 10yrs and loan amount is 12k-14k
- When the loan is verified and the loan amount is above 16k
- For grade G and interest rate above 20%

Thank You

