

LENDING CLUB CASE STUDY

SUBMISSION

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What is Lending club?

Lending Club is a marketplace for personal loans that matches borrowers who are seeking a loan with investors looking to lend money and make returns.

Business Objective :

Lending Club wants to identify the risky loan applicants, so that such loans Can be reduced thereby cutting down the amount of credit loss.

Our aim is to understand the **driving factors (or driver variables)** behind loan default, i.e. the variables which are strong indicators of default. The company can utilise this knowledge for its portfolio and risk assessment.

Problem Statement:

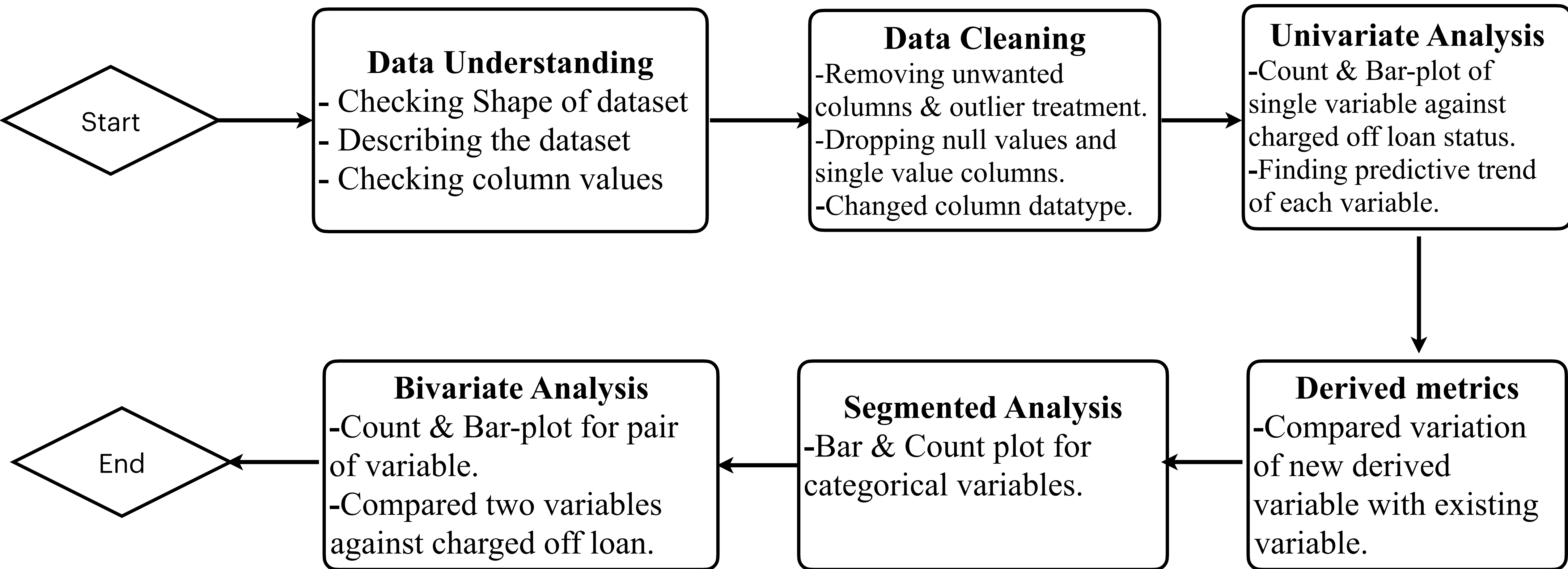
When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company.
- If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company.

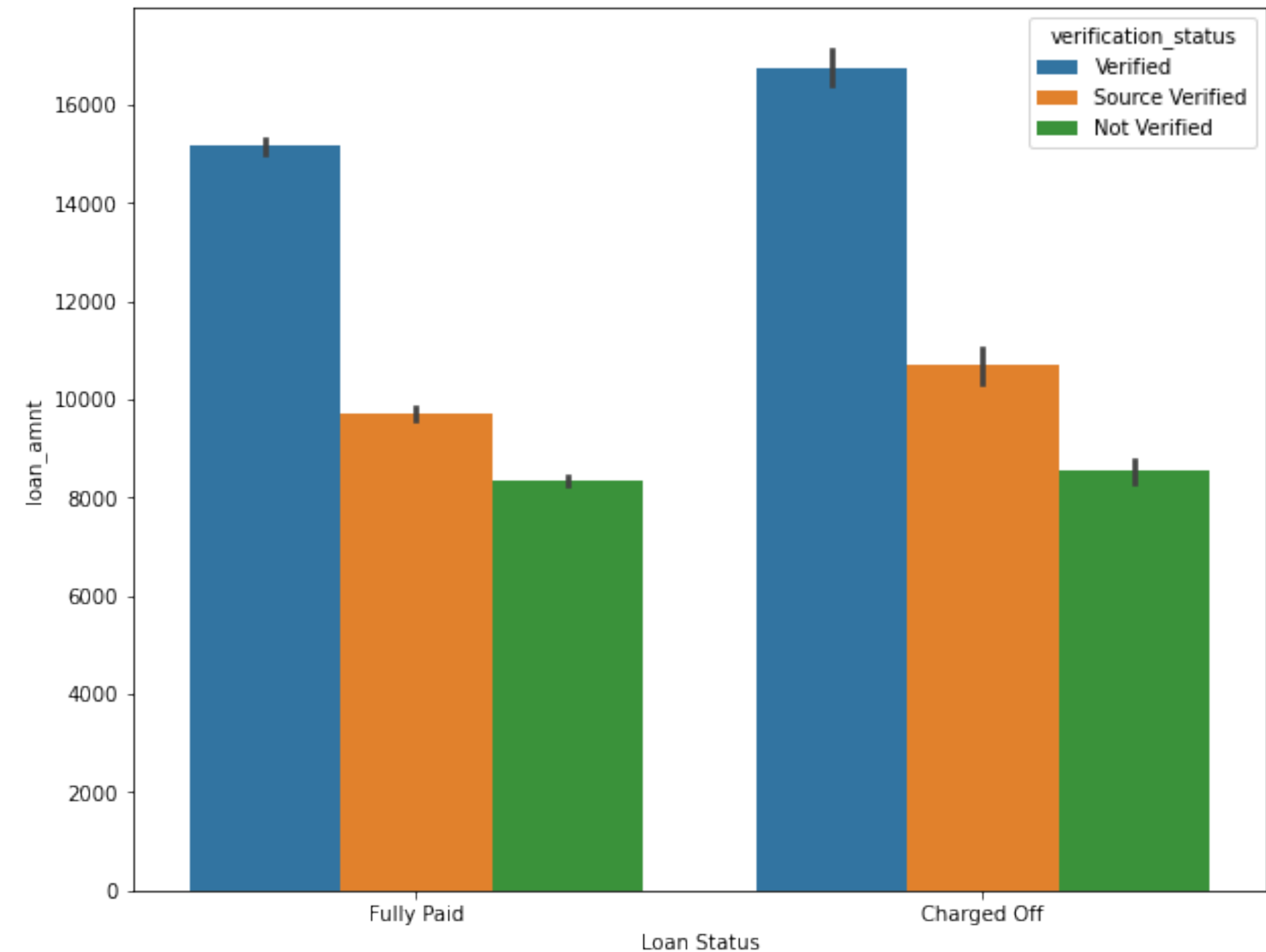
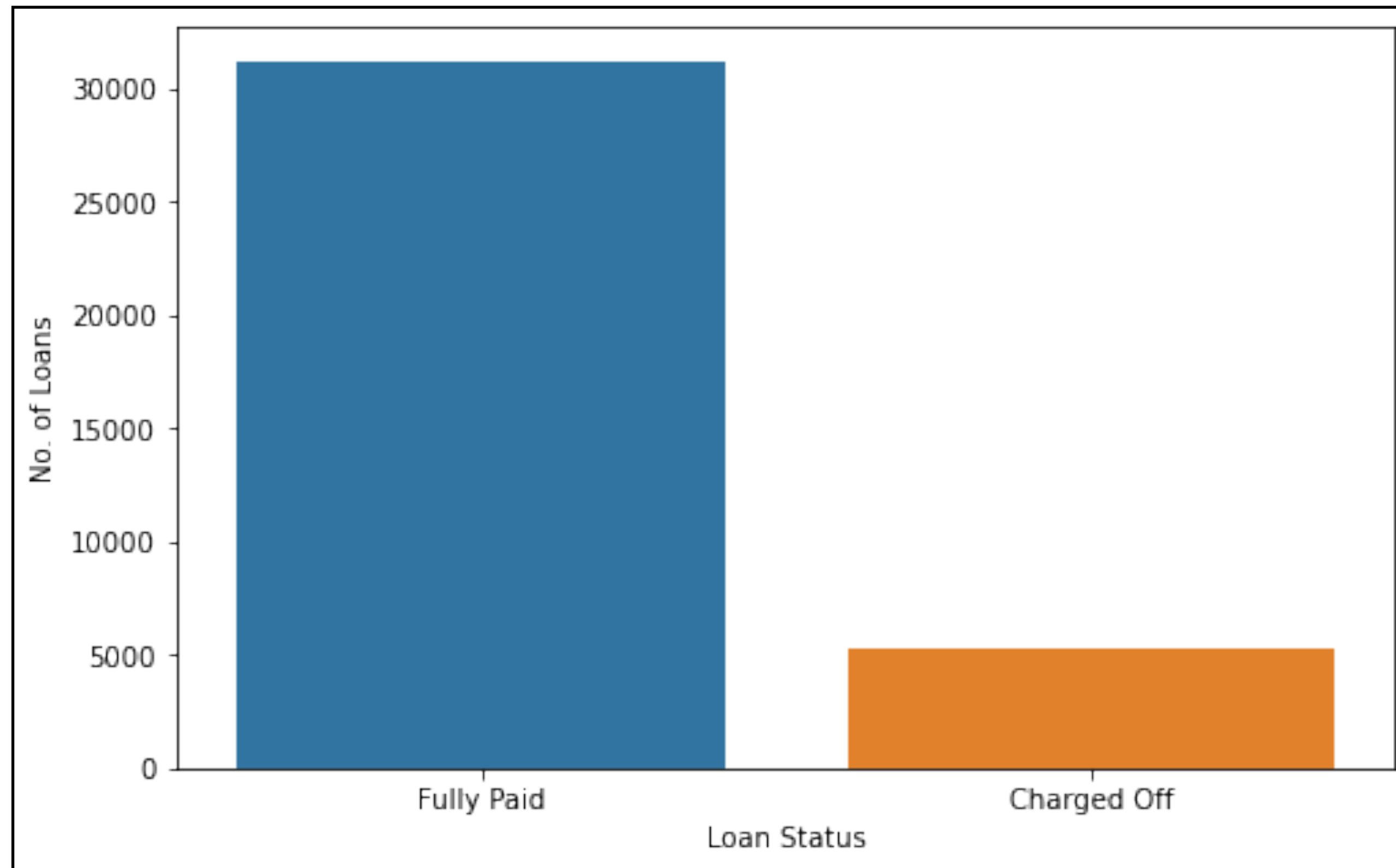
The data given contains the information about past loan applicants and whether they 'defaulted' or not. The aim is to identify patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc.

In this case study, we used EDA to understand how applicants attributes and loan attributes influence the tendency of default.

Analysis Approach:



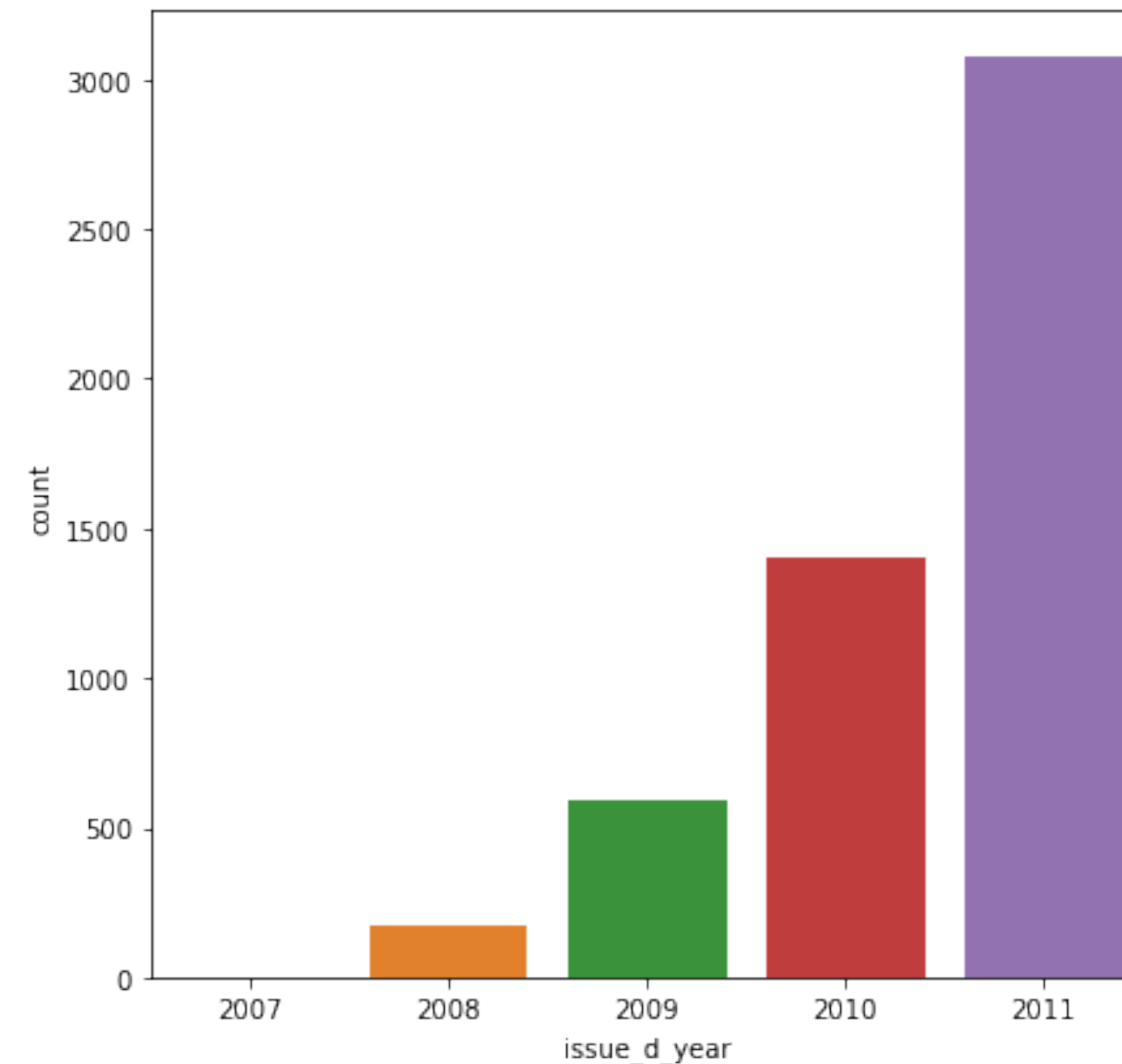
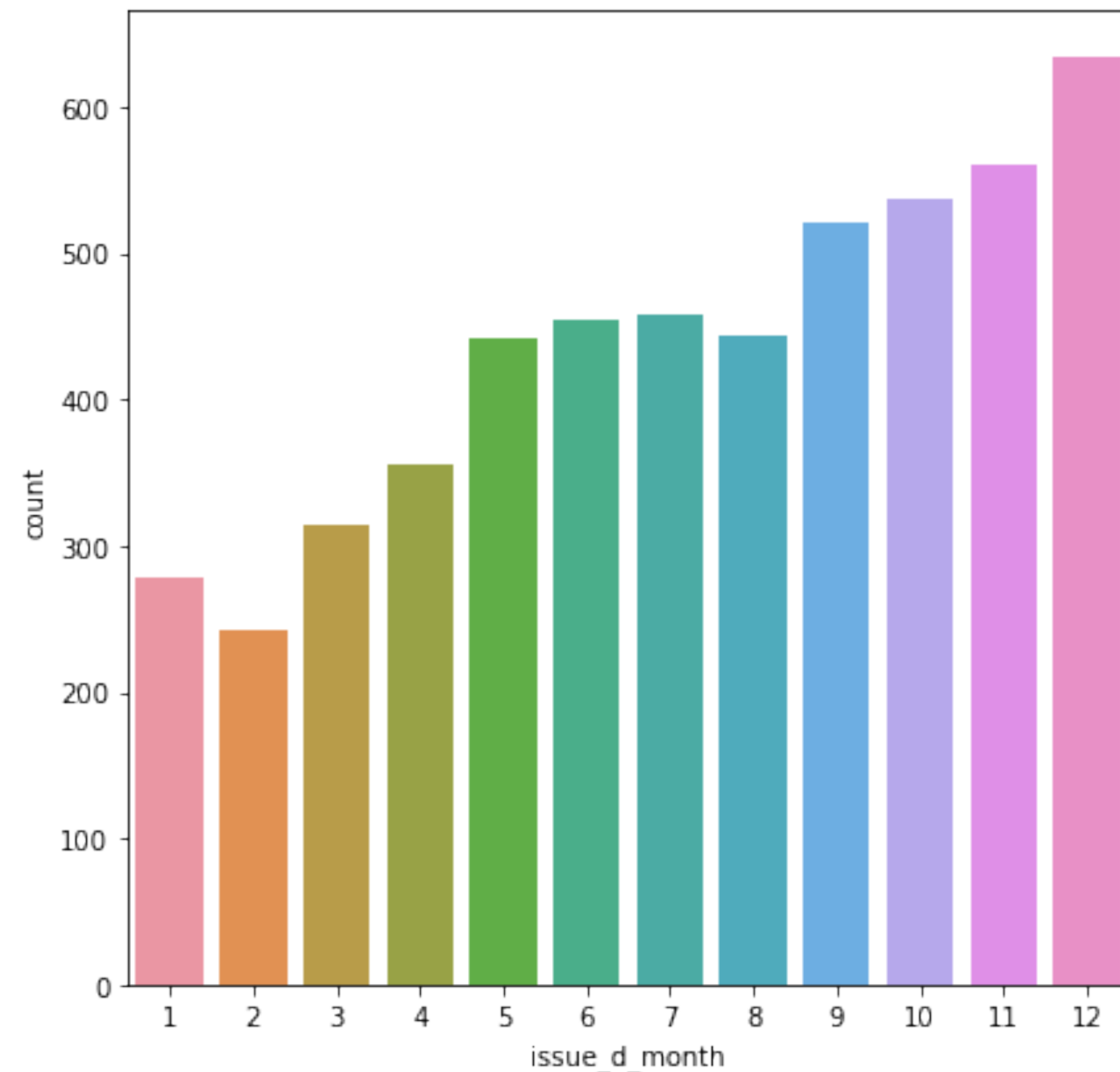
Loan status Analysis



Observations:

1. Most of the loans (more than 30000) are Fully paid.
2. Around 5000 loans are charged off.
3. About 14% of loan are having status as defaulters.
4. Max no. of loans are charged off where verification status is 'Verified'.

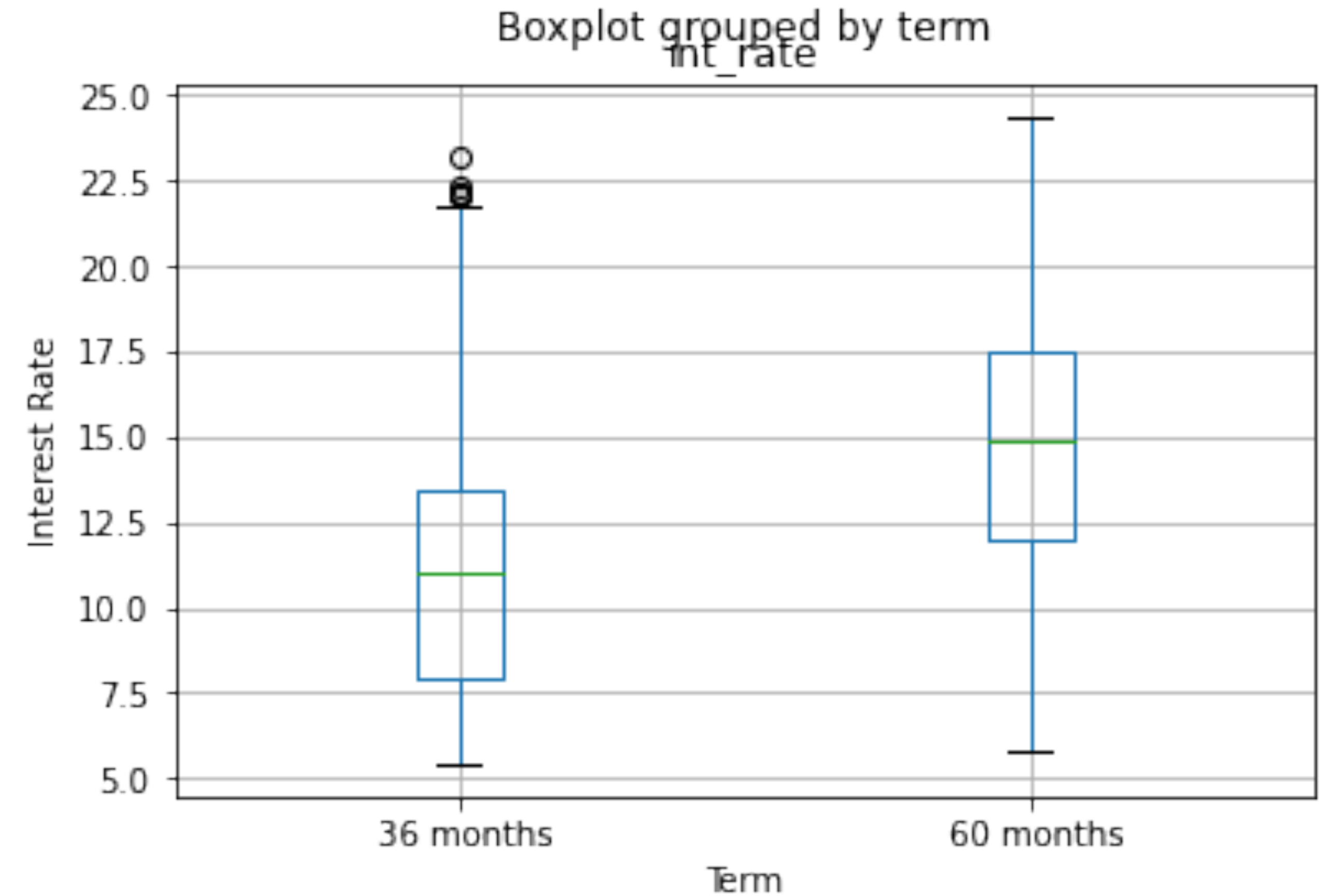
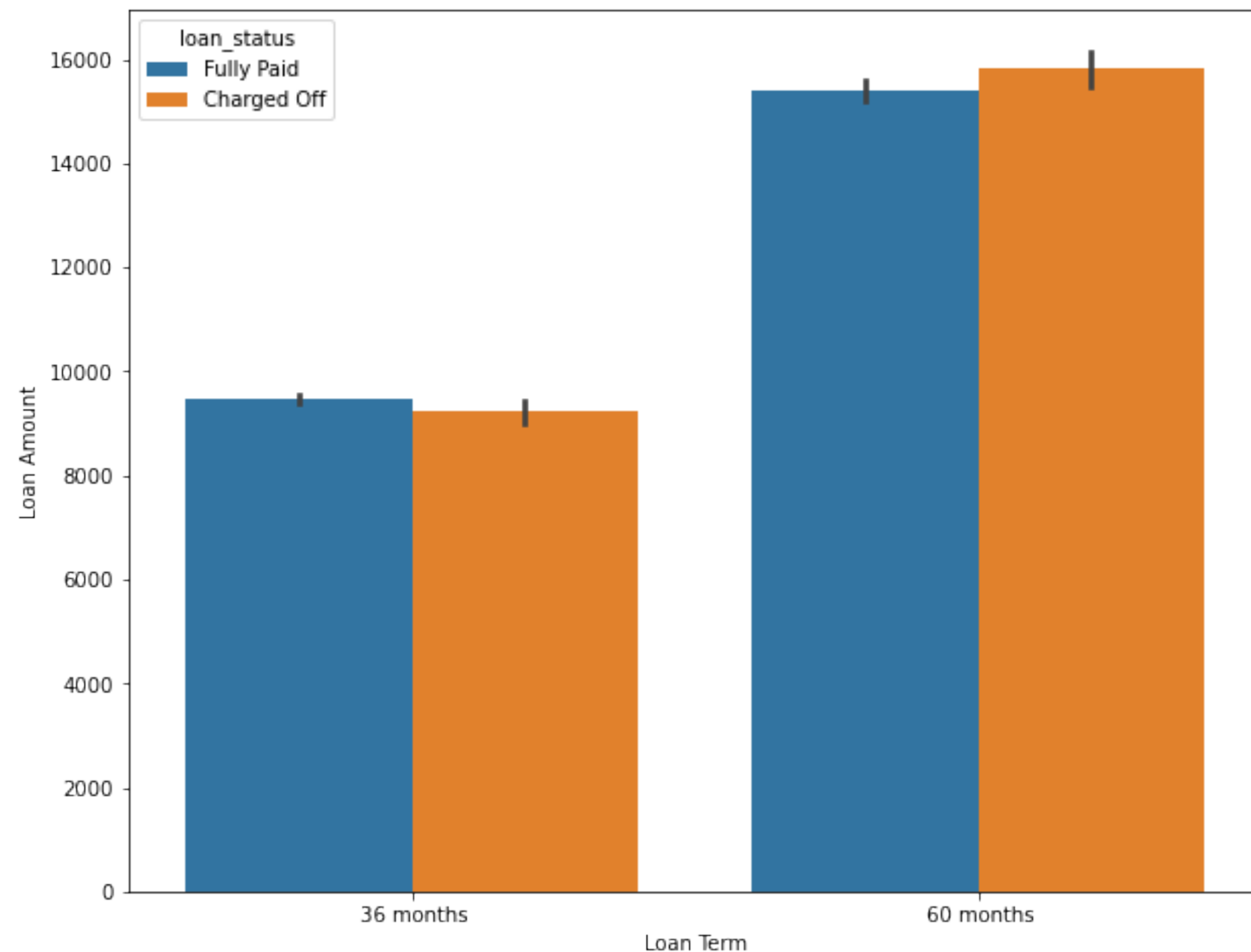
Loan status analysis month & year wise



Observations:

1. Maximum no. of defaults occurred when the loan was sanctioned/issued in December month i.e Late months of of a year indicated the high possibility of defaulting.
2. Loan issued & No. of defaulters are highest for year 2011 as compared to other years.
3. Requirement of loans are increasing by each year.

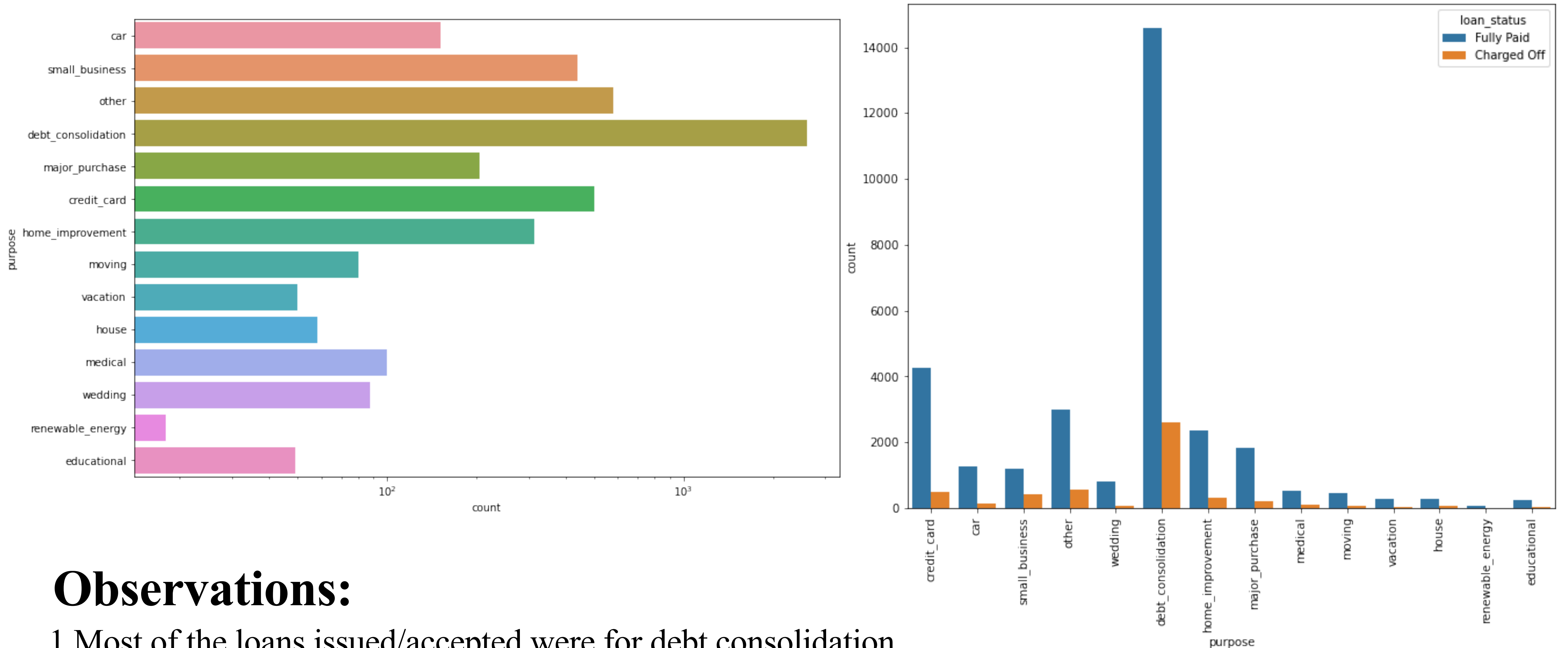
Loan Term Analysis



Observations:

1. Loan amount is similar for both the terms for both loan status.
2. Loan amount is higher for the 60 month term.
3. The interest rates are higher for 60 month term.

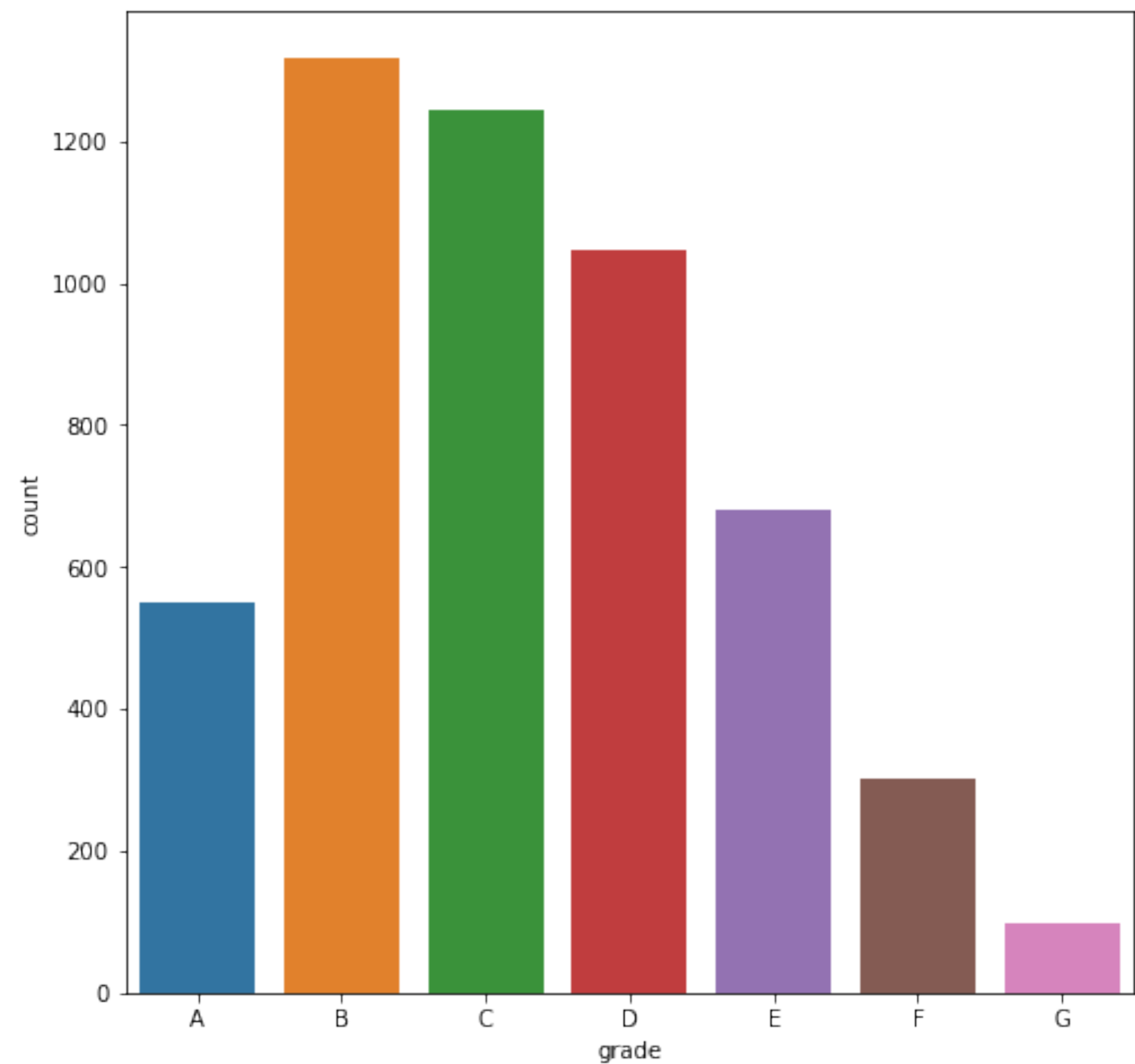
Loan Purpose Analysis



Observations:

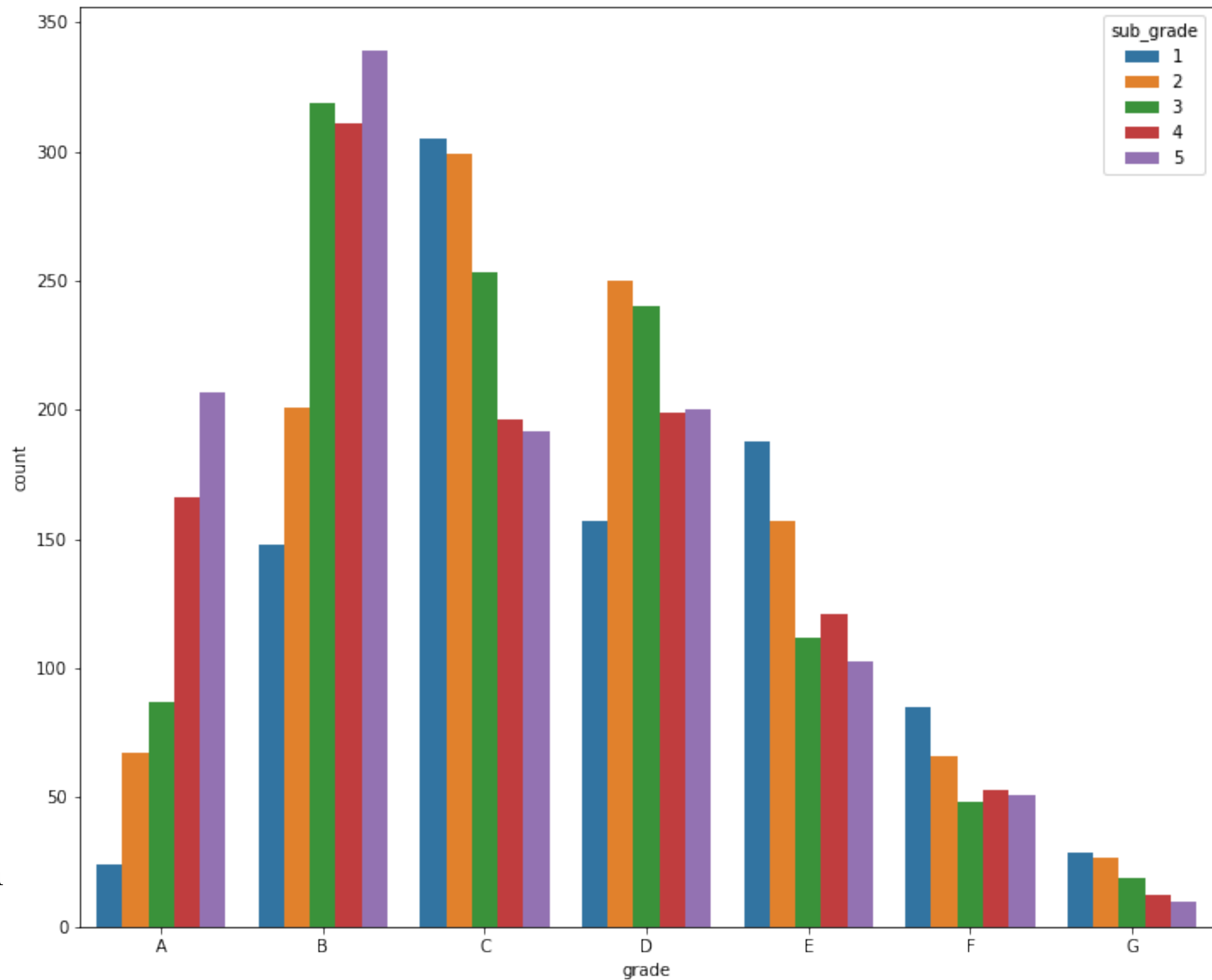
1. Most of the loans issued/accepted were for debt consolidation.
2. Less loans were issued for the purpose of Weddings, major purchase, car and credit card.

Grade & Sub-grade Analysis

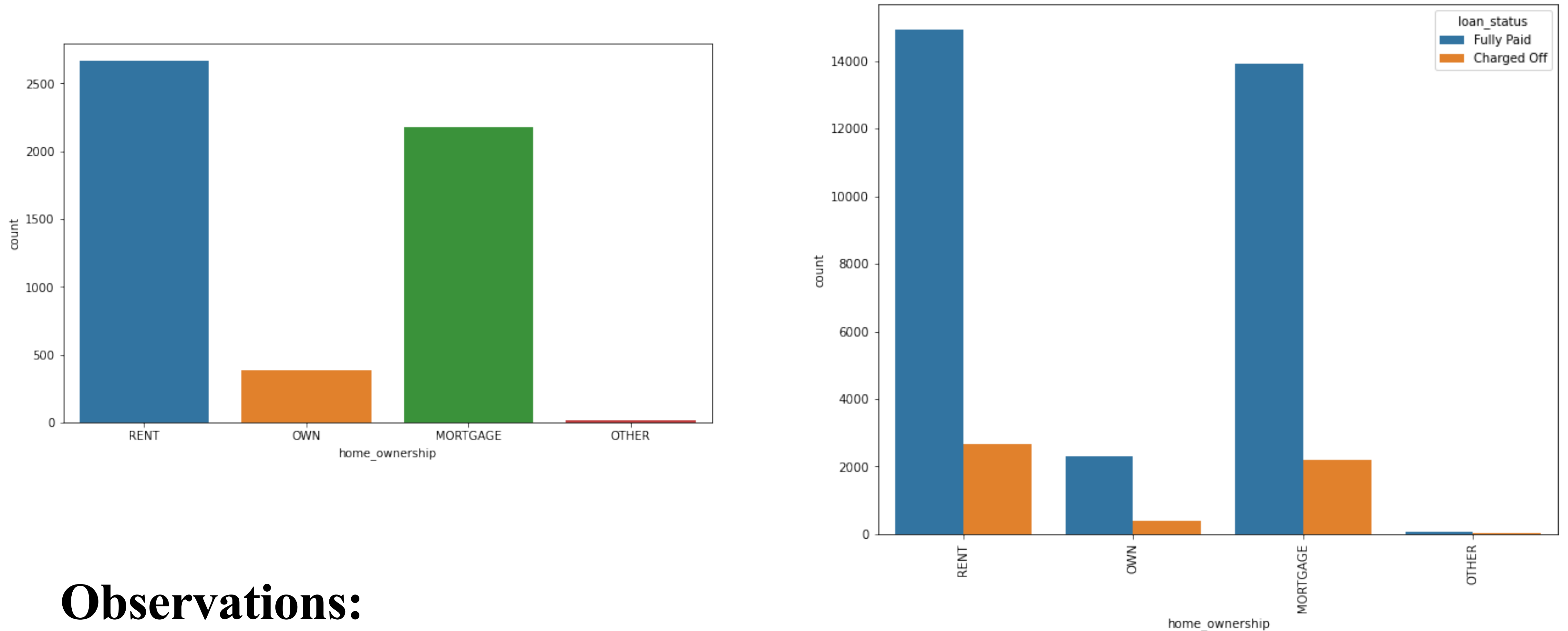


Observations:

1. Most of the loans are of type B, C & D.
2. For Sub-grade 'B5' level chances of loan defaulting is high.



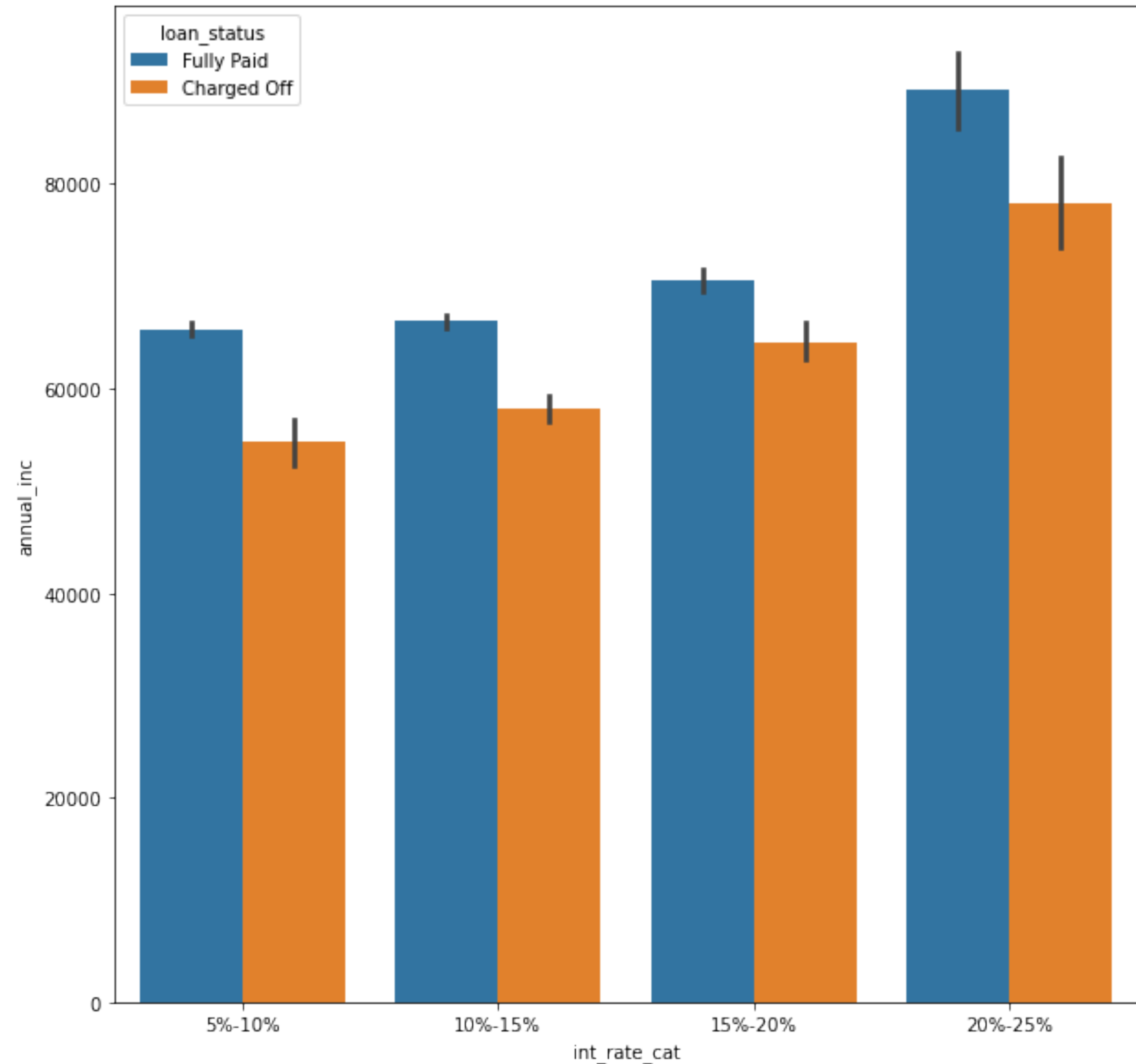
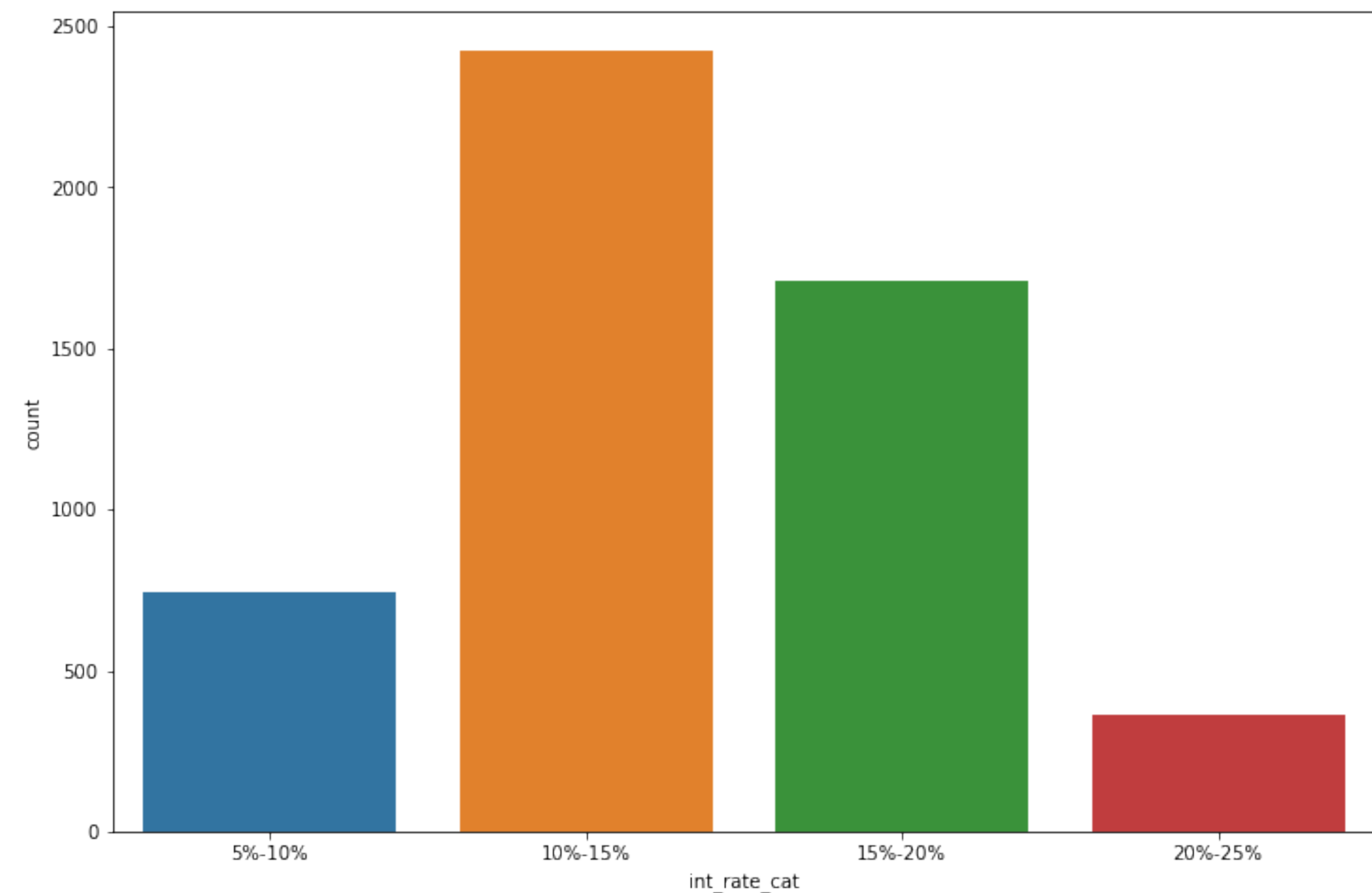
Home ownership Analysis



Observations:

1. Maximum loans are charged off for people who are living on rent.
2. There is a more probability of defaulting when applicants having house_ownership as 'RENT'.
3. Lending club issued less number of loan requests from applicants who own a house.

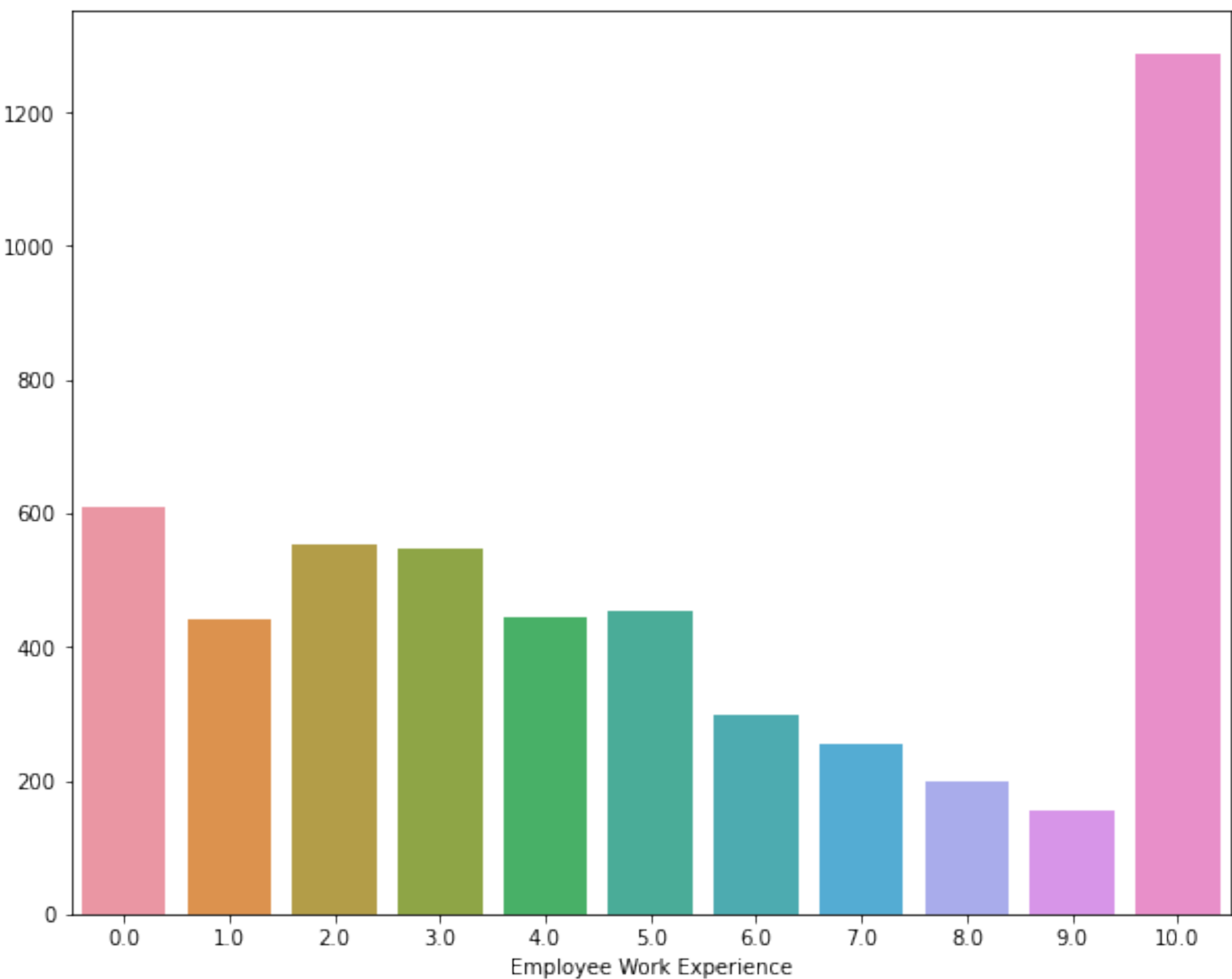
Interest rate Analysis



Observations:

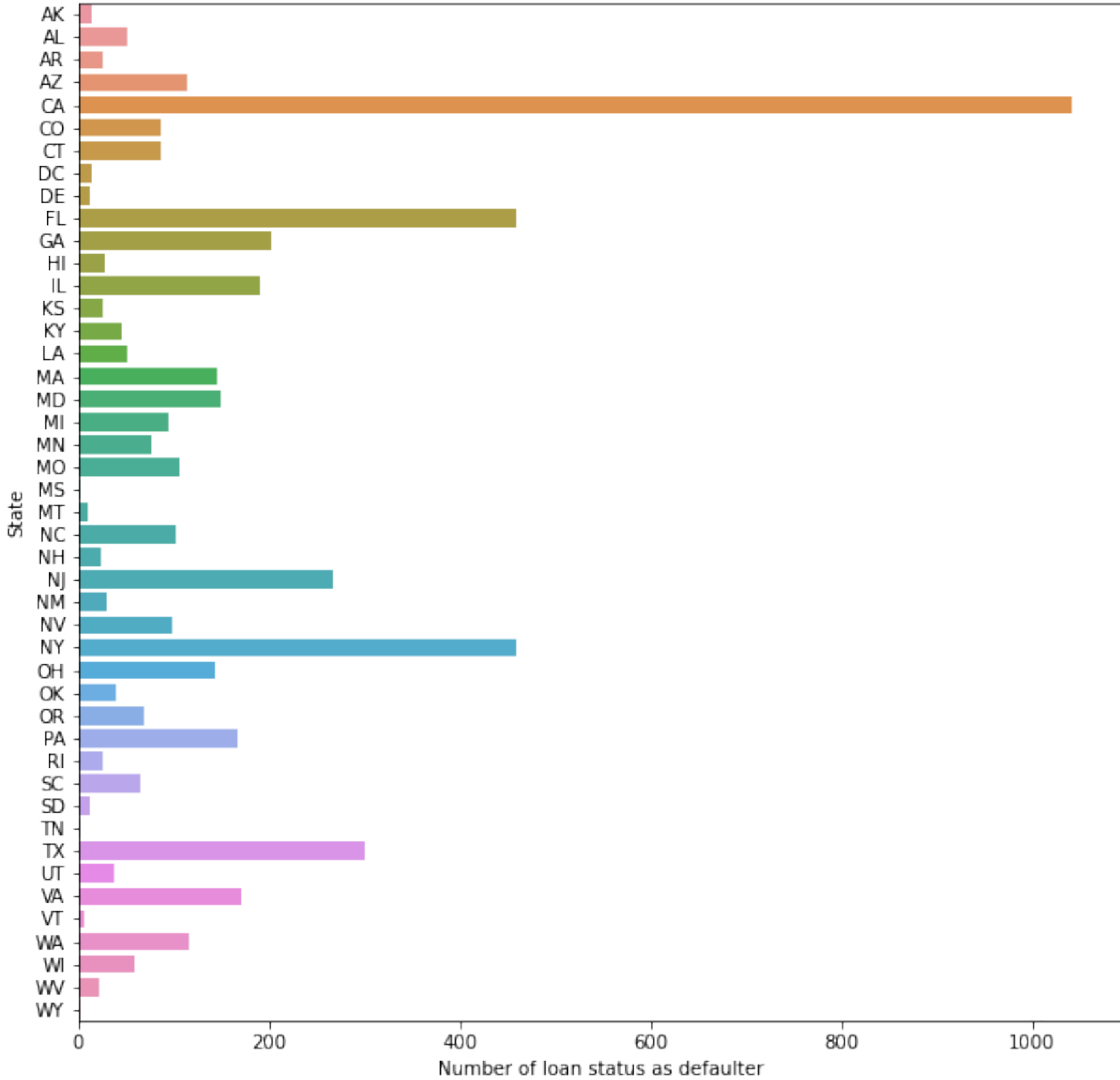
- 1.Chances of defaulting is more when interest rate is between 10-15%.
- 2.Probability of loan defaulting is high for applicants who receive interest at the rate of 20%-25% and have an income more than 75k.

Employee work experience Analysis



Observations:
1. Max no. of loans are charged off for employee having more than 10 years of work experience.

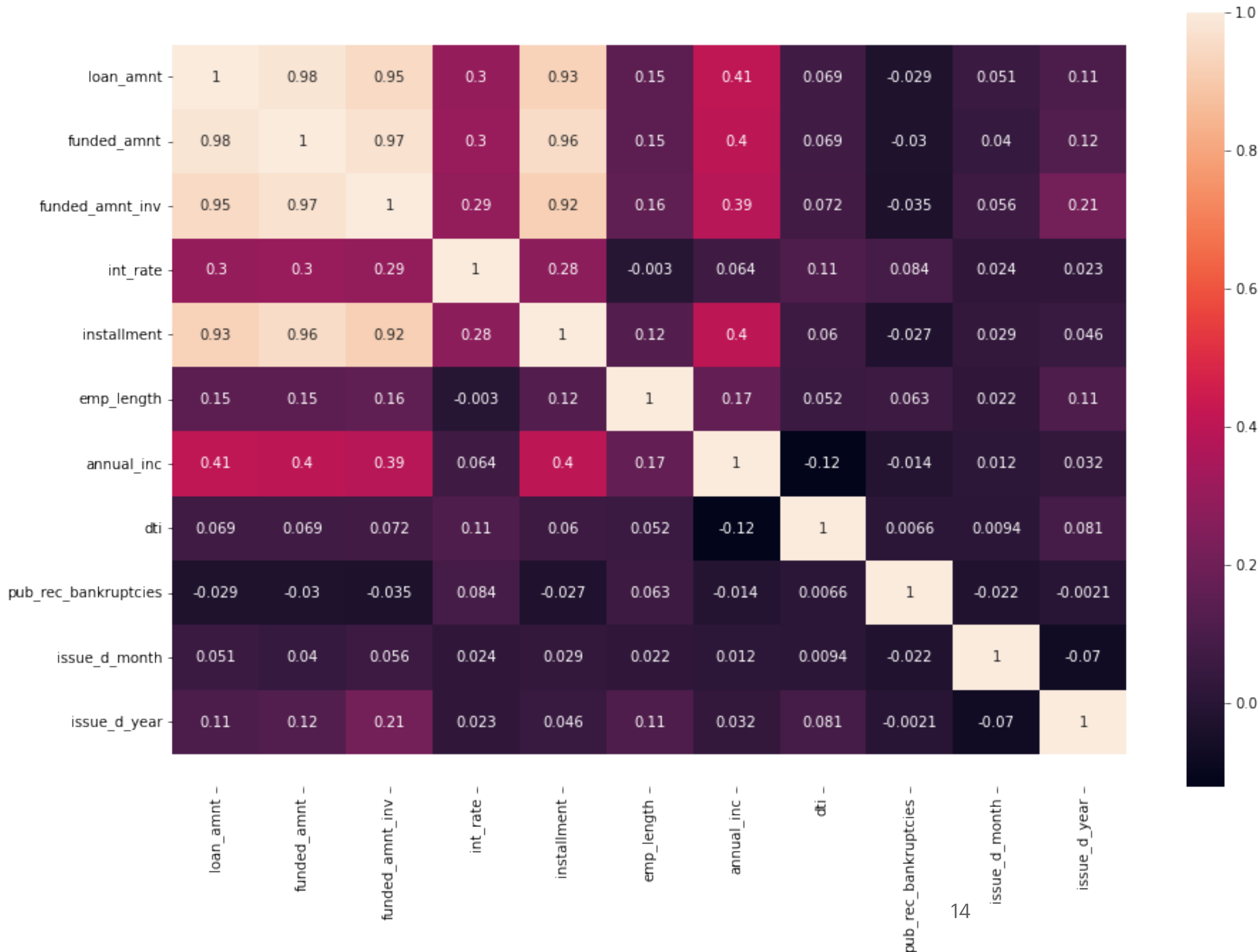
State-wise Analysis



Observations:

1. Applicants from the state CA are having high probability to be default

Correlation Heat-Map



Observations:

1. Annual Income is negatively correlated with DTI.
2. Loan Amount, Funded Amount, funded Amount invested and installment are highly correlated with each other.

Recommendation to Lending Club

1. Chances of loan being charged off is high when loan amount is high therefore Lending club should consider accepting loans of lower amount.
2. Lending Club should accept more loans of grade A and B and should be cautious of loans falling in grades E,F and G.
3. Lending Club should accept more loans from applicants whose annual income is greater than 100k as their probability of charge off is less.
4. Lending Club should accept more loans for term of 36 months as the of charged off loans is less and the number of loan applicants are more for this term.
5. Year end months especially 'December' are quite critical as most of the loans are either fully paid or charged off at that time.
6. Lending Club should consider accepting more loans where interest rate is less than 10% as their probability of charge off is minimum.
7. Lending Club should do extra scrutiny for the applicants belonging to CA state, as tendency to default is high.
8. Lending Club should accept more loans for the purpose of Weddings, major purchase, car and credit card.
9. Lending Club should check thoroughly when purpose is debt consolidation as it has high tendency to default.
9. Lending Club should consider accepting more loans from people who owns a house.
10. Lending Club business is increasing every year as more number of loans are getting accepted as well as more loans are getting charged off therefore they should expand their business more as demand¹⁵ for loans is high.