

Lending Club Case Study

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Introduction

A finance service company called The Lending Club offers customers to lend various types of loans on an online interface.

Some of the types of loans are business loans, personal loans, educational loans, home loans etc.

When an applicant applies for a loan, the company has to take a decision for a loan approval based on the applicant's information.

Business Objective

The aim is to identify patterns which indicate if a person is likely to default.

This will help in taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate.

Problem Statement

As a data scientist working for Lending Club analyse the dataset containing information about past loan applicants using EDA to understand how consumer attributes and loan attributes influence the tendency of default

Analysis Approach



Removing the null valued columns, unnecessary variables and checking the null value percentage and removing the respective rows

Working with the Data Dictionary and getting knowledge of all the columns and their domain specific uses

Analyzing each column, plotting the distributions of each column.

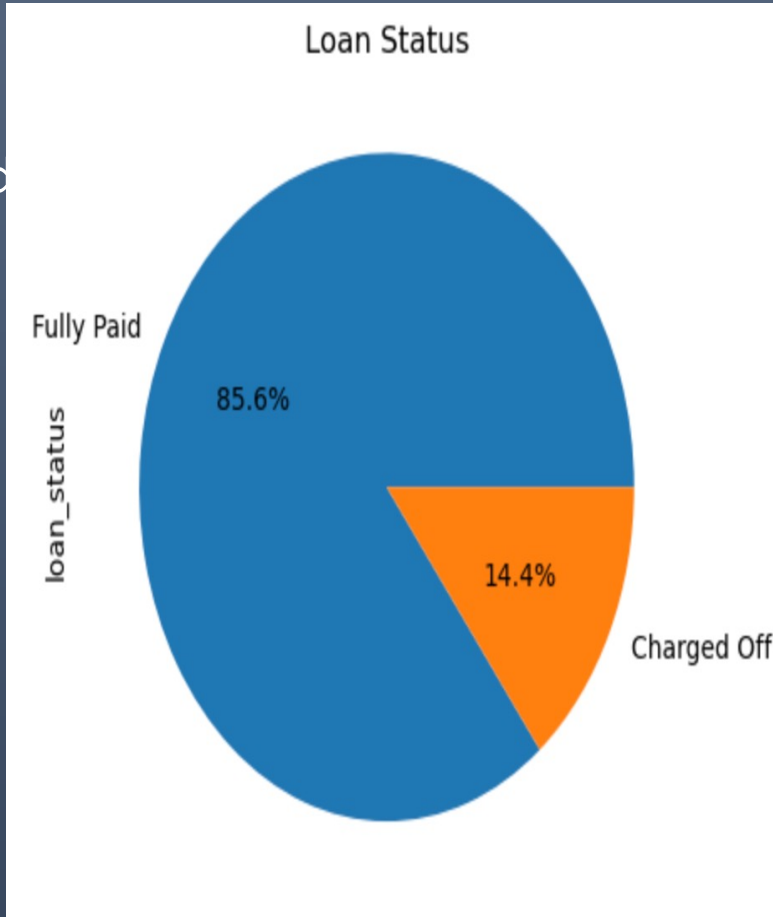
Analysing the continuous data columns with respect to the categorical column

Analysing the two variable behaviour like term and loan status with respect to loan amount.

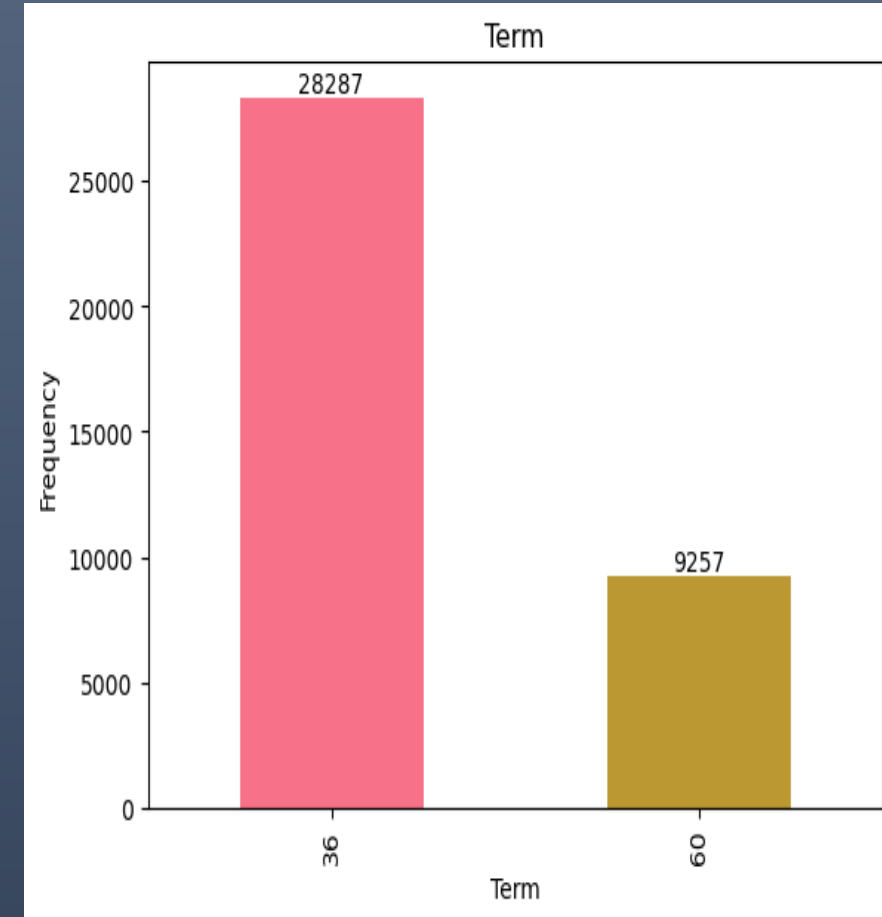
Analysing all plots and recommendations for reducing the loss of business by detecting columns best which contribute to loan defaulters.

Analysis on overall loan status

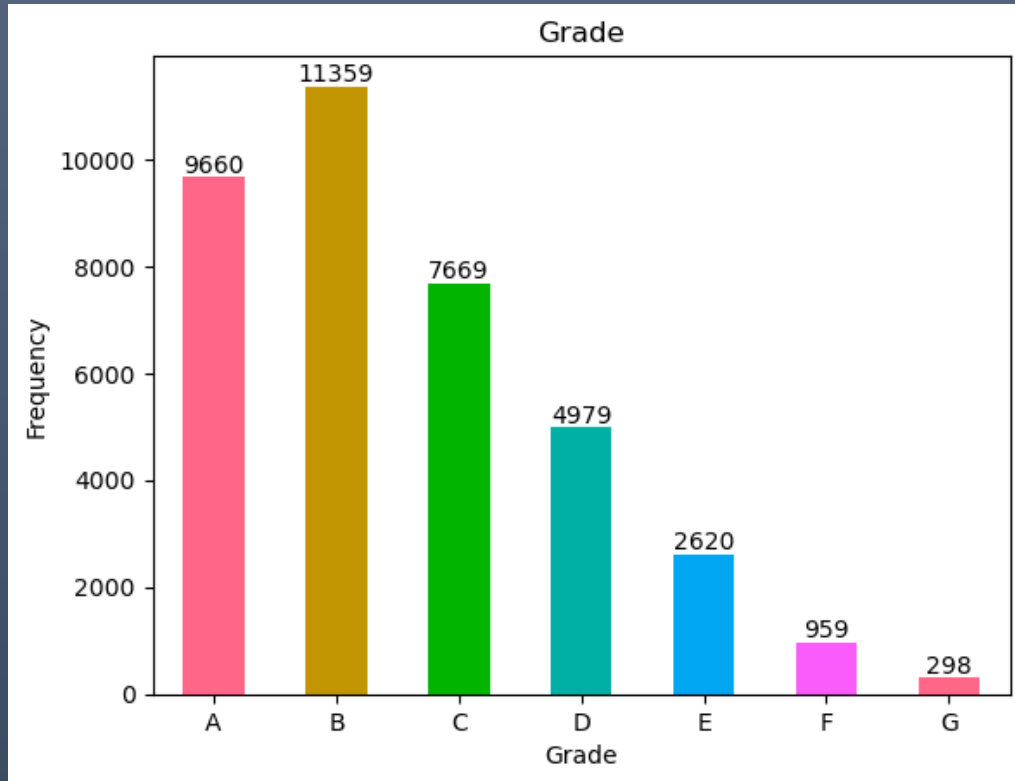
Approximately 85.6% of loans are fully paid and 14% of loans have been defaulted



Borrowers have taken 36 months tenure loan more than 60 months.

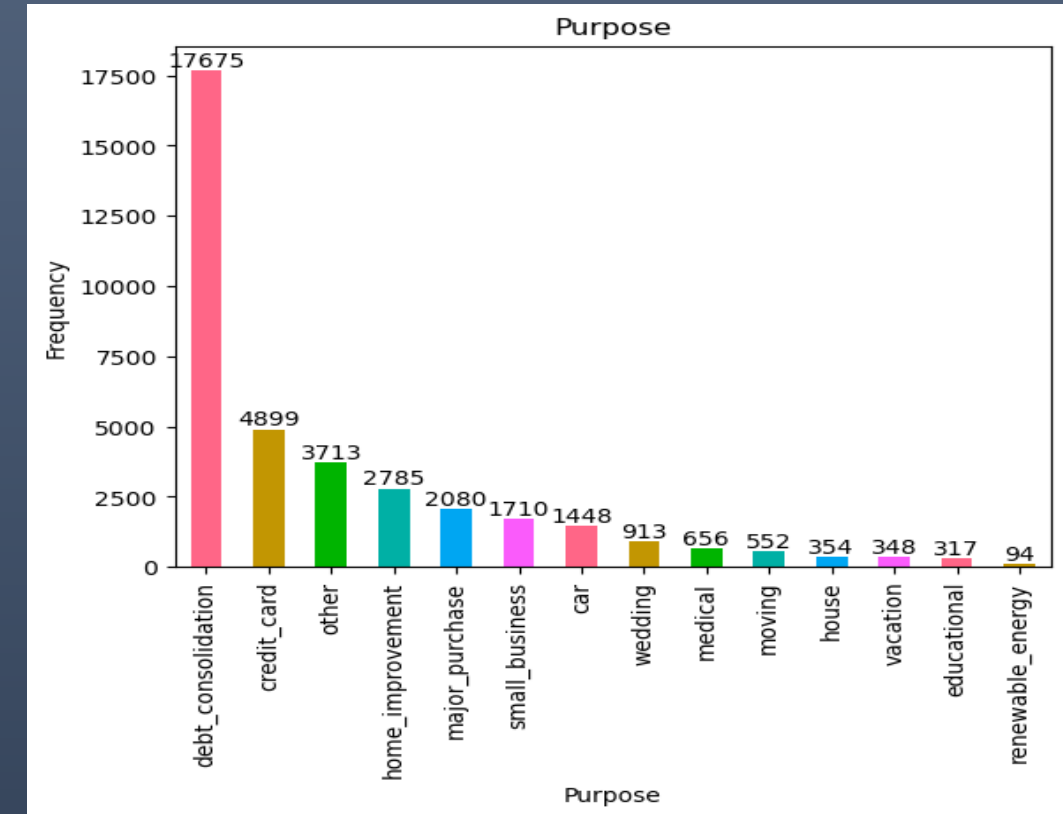


Analysis on loans

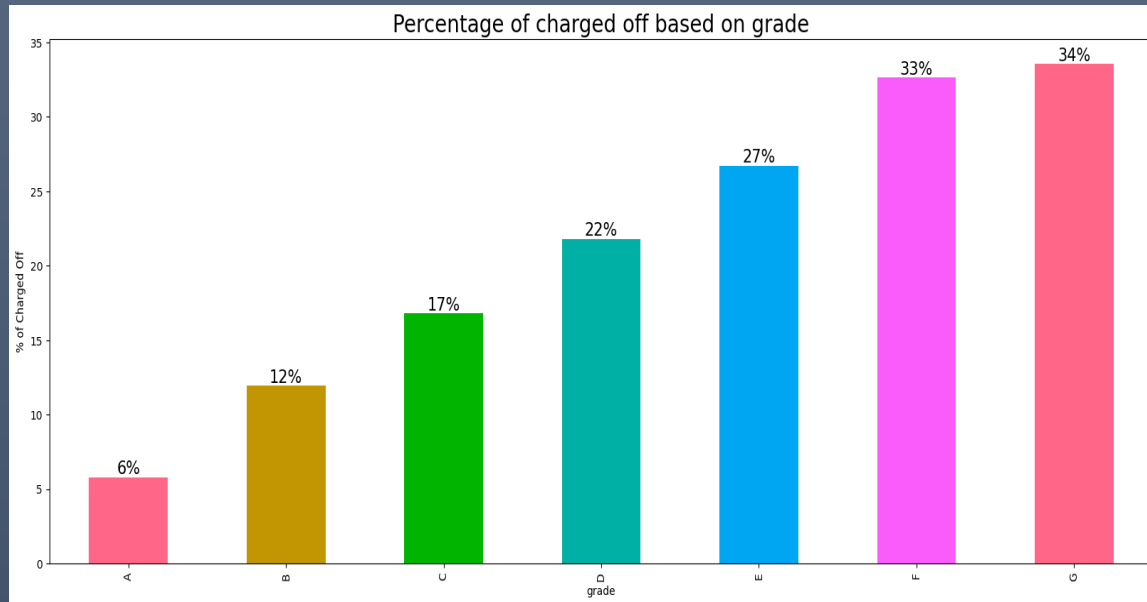


Most Borrowers comes under A and B grade.

Most of borrowers have taken loan for Debt Consolidation.

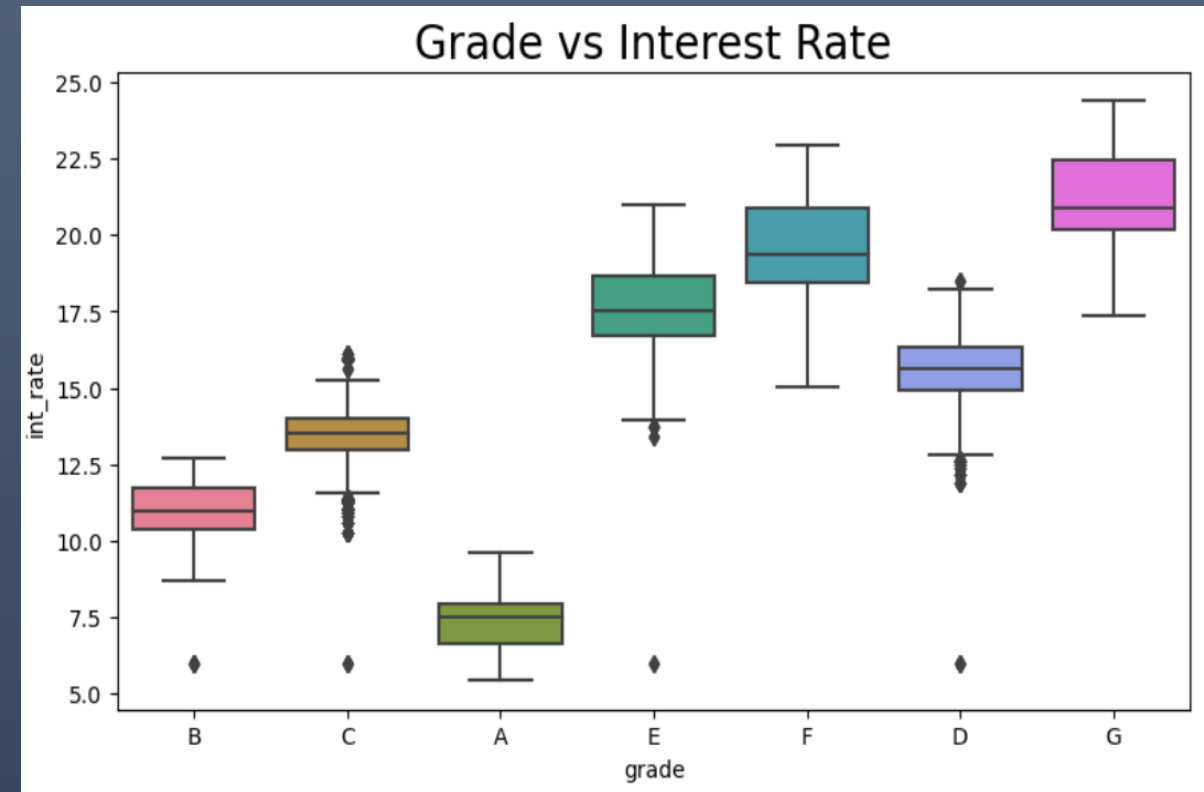


Analysis on loans

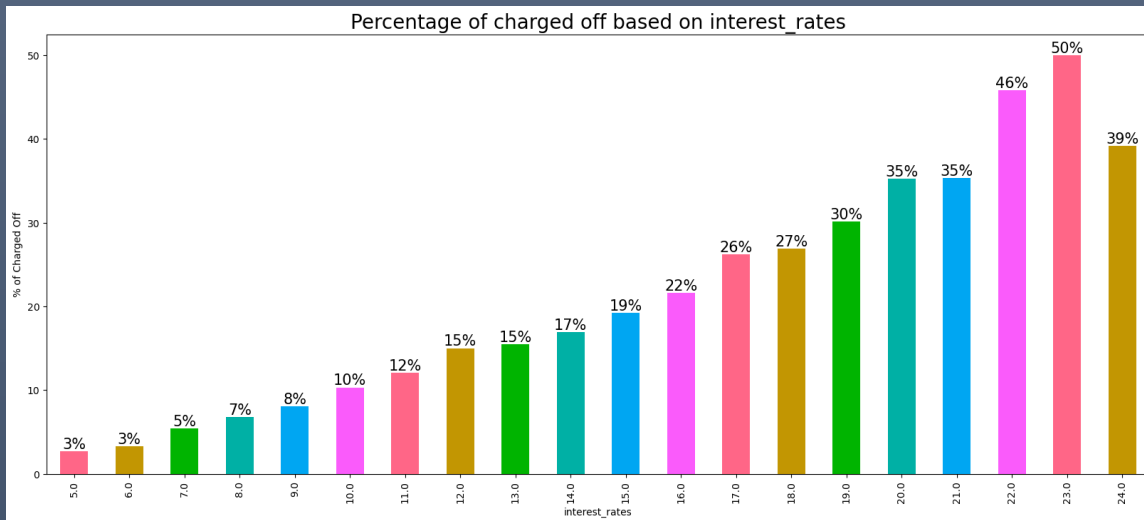


34% of Charged off borrowers come under the grade G and 34% under F grade.

Interest Rates increases with grades in the alphabetical order minimum being A and maximum being G.

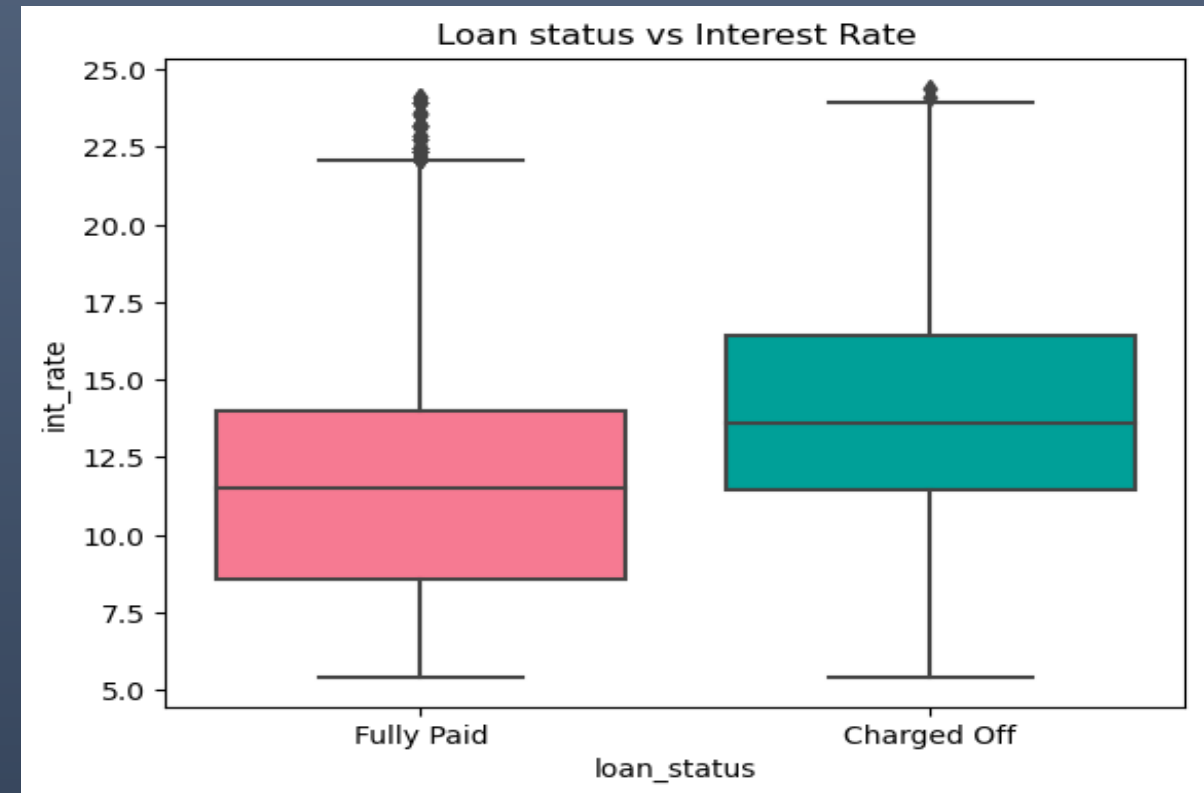


Analysis on interest rates

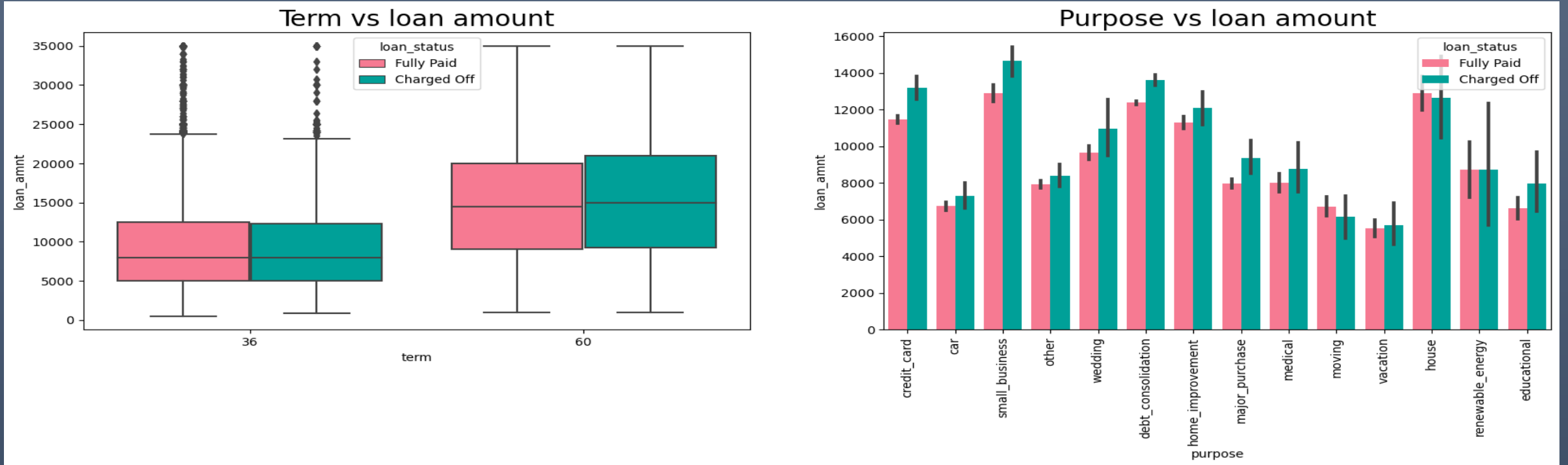


Percentage of charged off borrowers increases with higher interest rates. At the interest rates of 20 and above, percentage of charged off loans significantly increases.

The Average Interest Rate is higher for Charged off customer at approximately 13 than the Fully paid loans which is 11.



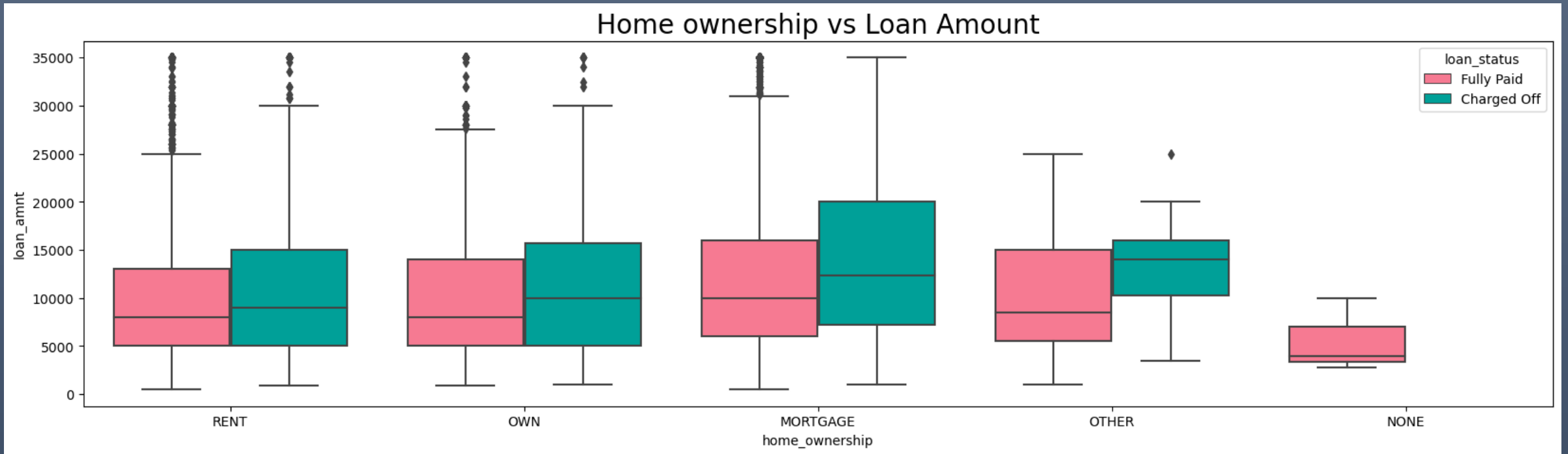
Analysis on Purpose and Terms



Higher amount loans have 60 months and higher duration loans have more charged off borrowers when compared to shorter duration.

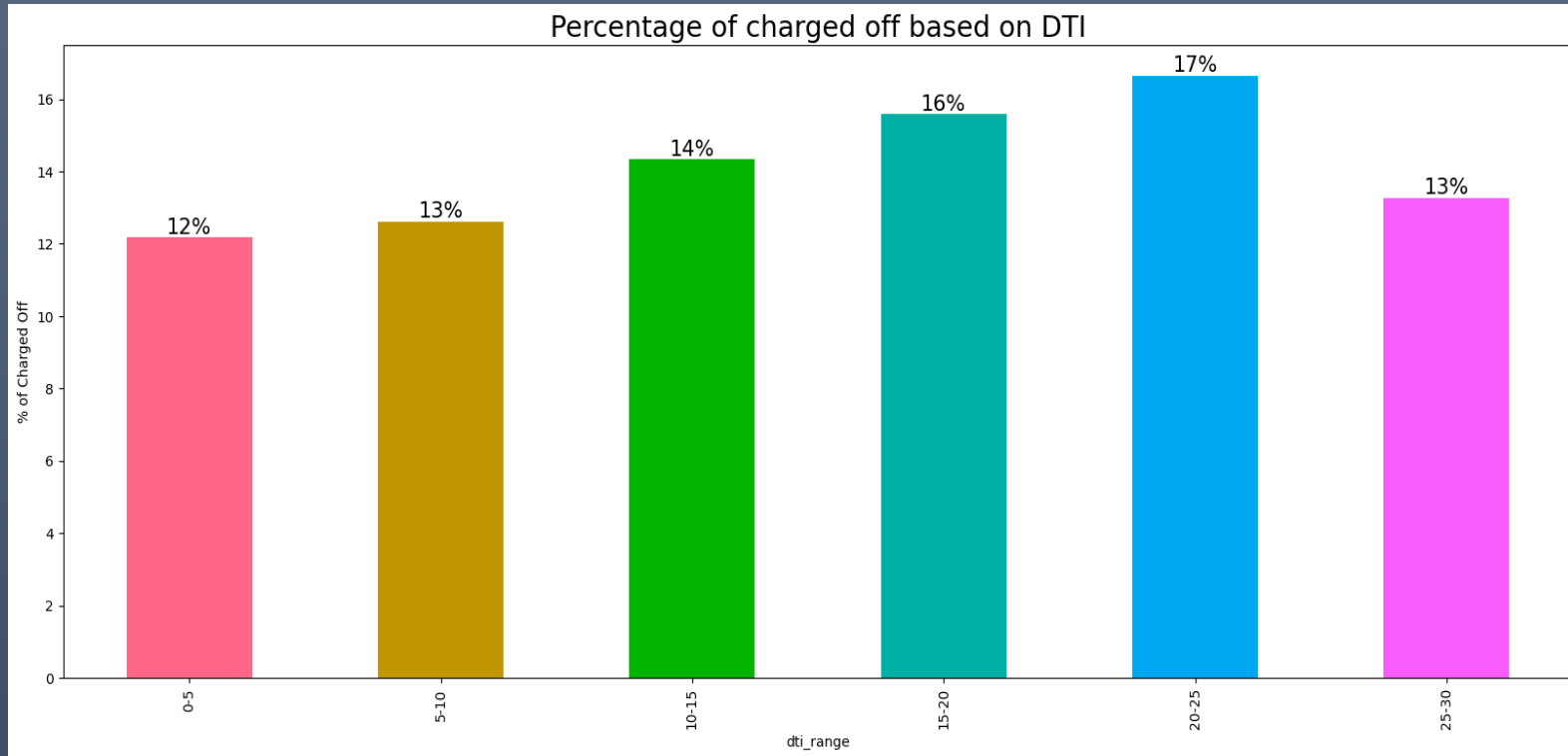
Small Business have higher chances of charged off and house loan have maximum number of Fully paid borrowers

Analysis on Home ownership & Loan amount



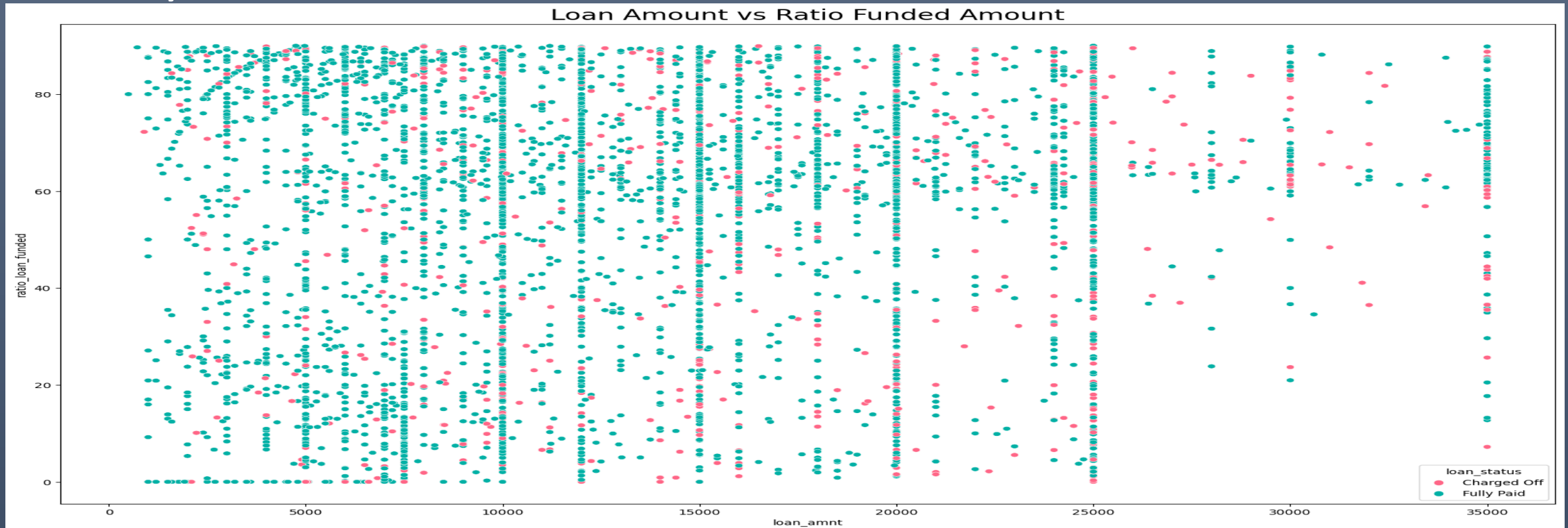
Approximately 18k borrowers who are home owners with Mortgage have charged off.

Analysis on Debt To Income ratio



DTI ratio should be low for having high repayment percentage. 17% of the borrowers have charged off with higher DTI which is 20 and above

Analysis on defaults at loan amount ratio



ratio_loan_funded is a ratio of loan amount reduced by the investors.

Most of borrower have defaulted where ratio_loan_funded is less than 90%. Its risky for lending club to approve loan of these type of borrowers.

Conclusion

1. Reduce the higher interest rate loans with higher tenure
2. Small Business loans are more defaulted, So these loan should be reduced.
3. Grade are good metric for detecting defaulters. Loan applicants categorised under lower grades like G, F and E should be examined more stringently.
4. Borrowers with mortgage home ownership are taking higher loan, and have defaulted, these loan should be reduced.
5. If Ratio of loan amount and funded amount is lesser than 90%, we see most of borrower tend to defaulted. Its risky for lending club to approve loan for these borrowers
6. Reduce the number of loans with dti greater than 20