

Lending Club Case Study

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Problem Statement

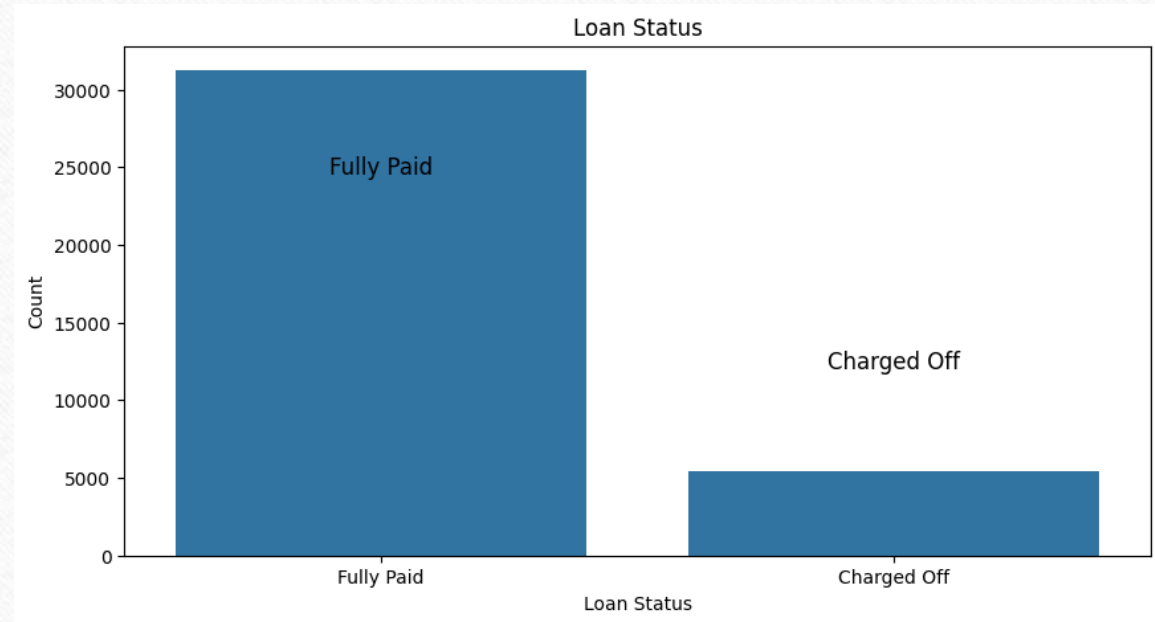
- **Business Objective:** The company needs to assess loan applications to minimize the risk of financial loss while maximizing business opportunities.
- **Risks Involved:**
 - ❖ Type 1 Error: Not approving a loan to an applicant who is likely to repay, resulting in a loss of business.
 - ❖ Type 2 Error: Approving a loan to an applicant who is likely to default, leading to a financial loss.
- **Data Analysis Goal:** Analyze past loan data to identify patterns that indicate a higher likelihood of default.

Problem Statement cont..

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- **Outcome:** Use the insights to make informed decisions on loan approval, such as rejecting high-risk applicants, adjusting loan amounts, or offering loans at higher interest rates to compensate for risk.
 - **EDA Focus:**
 - ❖ Explore relationships between consumer attributes (e.g., age, income, employment status) and loan attributes (e.g., loan amount, interest rate) with the likelihood of default.
 - ❖ Identify key predictors of loan default.
 - **Application:** The insights derived from EDA will guide the company's loan approval process and risk management strategies.

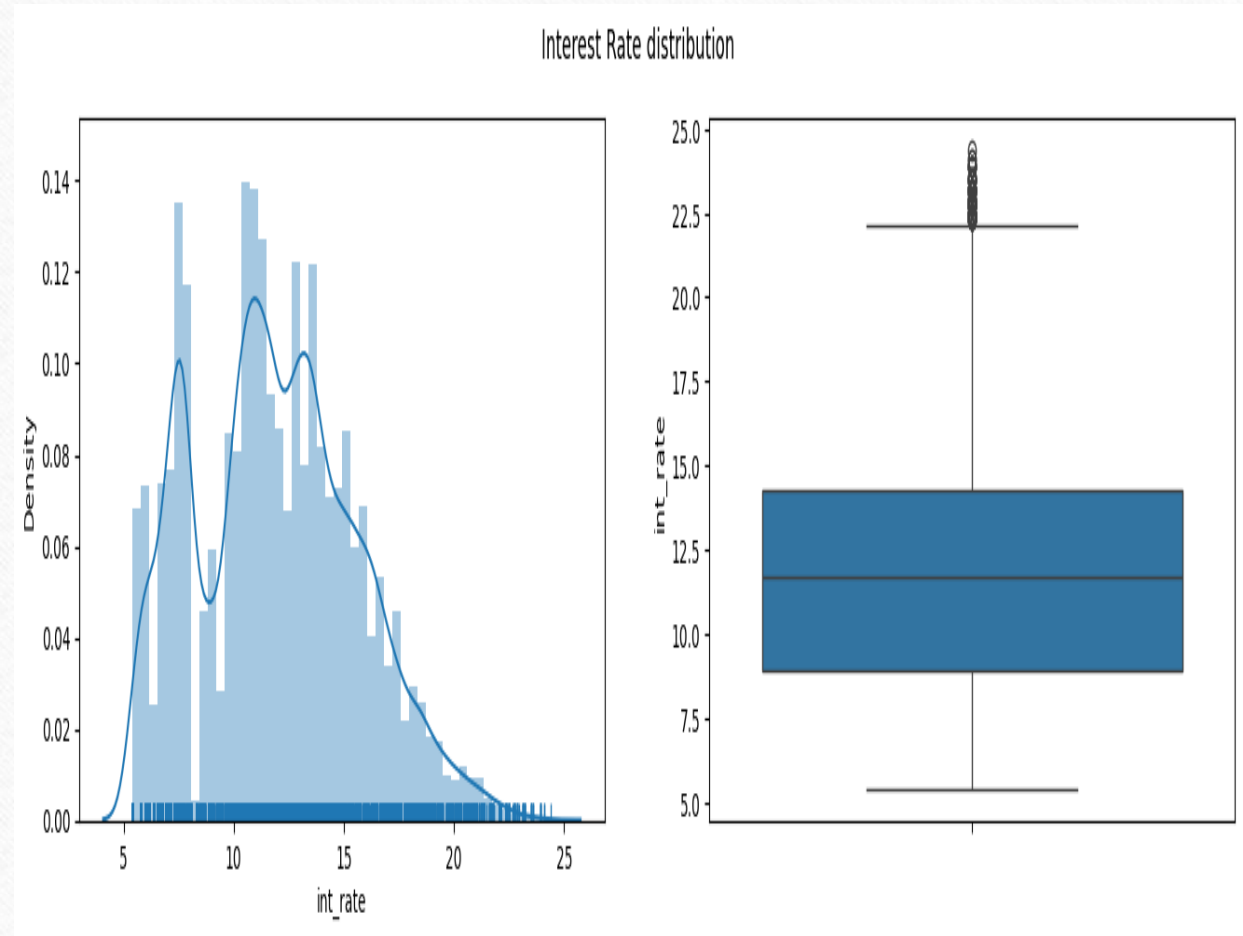
LOAN STATUS

Default loan are low in numbers compared to fully paid.



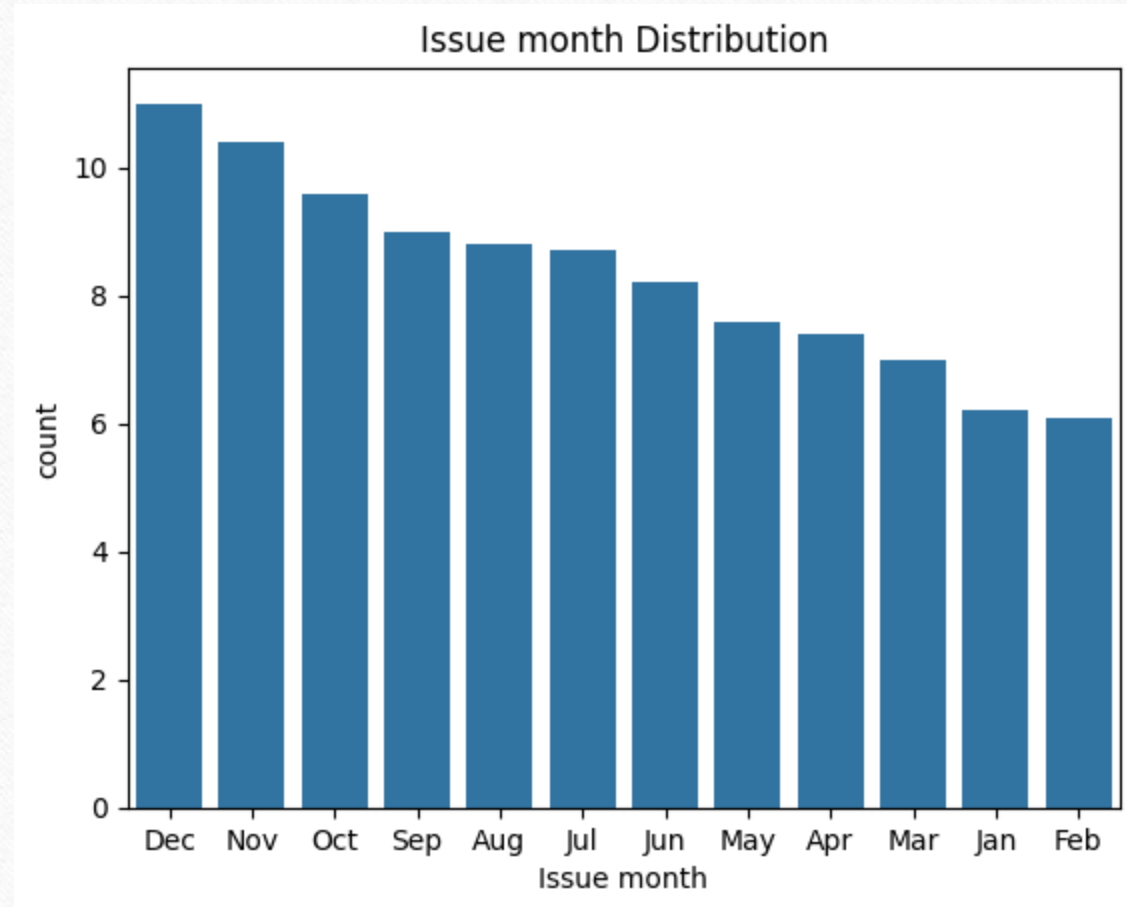
INTEREST RATE DISTRIBUTION

From interest rate data, we can say
that most of the interest rate lies
between 8% to 14.5%.



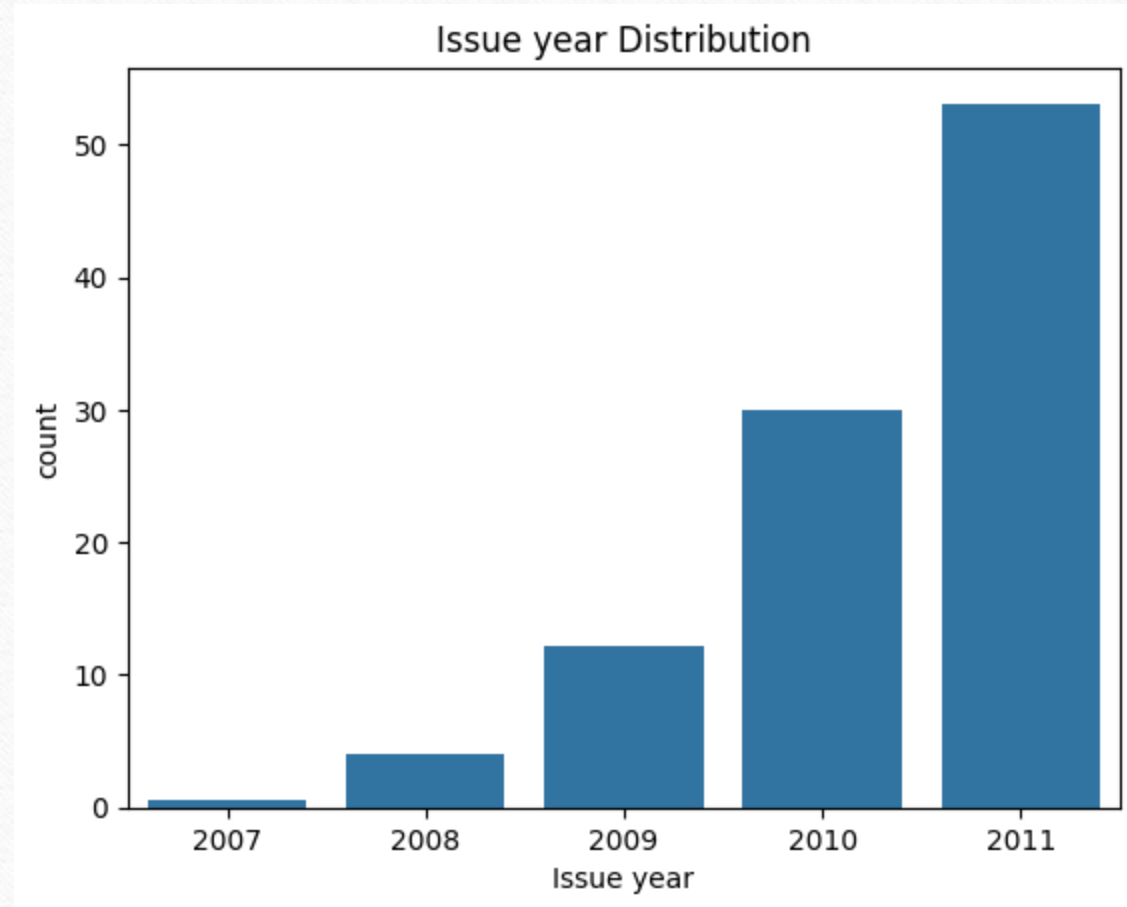
ISSUE MONTH DISTRIBUTION

From Issue month data, we can say that issue of loan is increasing every month from January to December and in the final quarter of year there are more loan issued due to vacation.



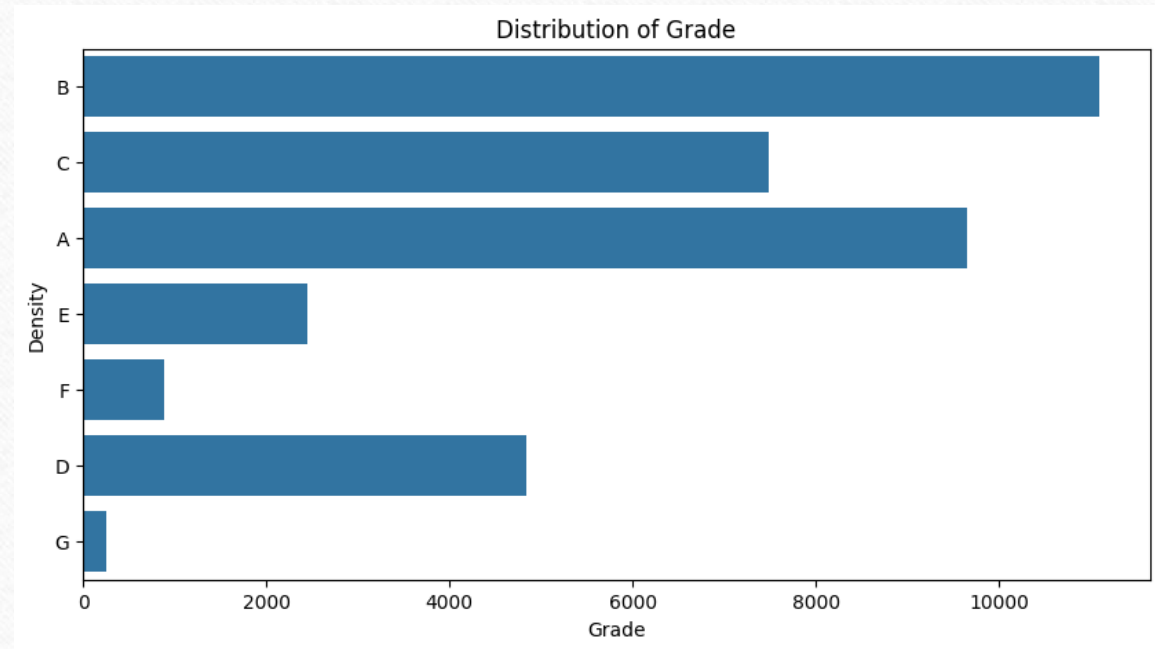
ISSUE YEAR DISTRIBUTION

From Issue year data, we can say that lending club has really expanded year by year, every year the number of loans are doubled.



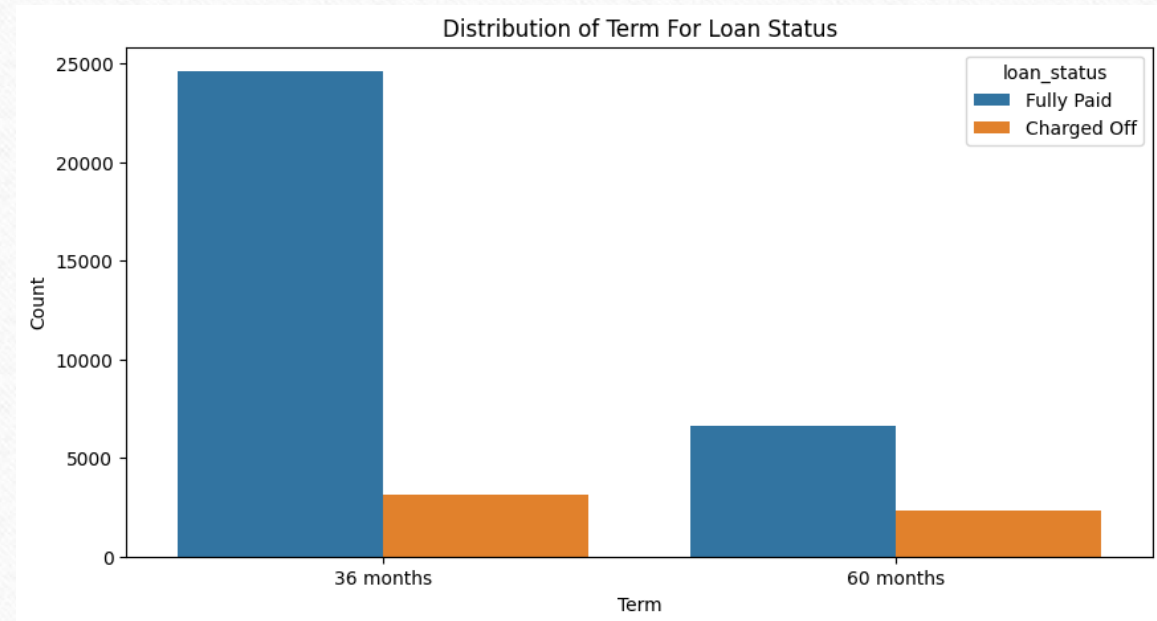
DISTRIBUTION OF GRADE

A large amount of loans are with grade A and B compared to rest showing most loans are high grade loans.

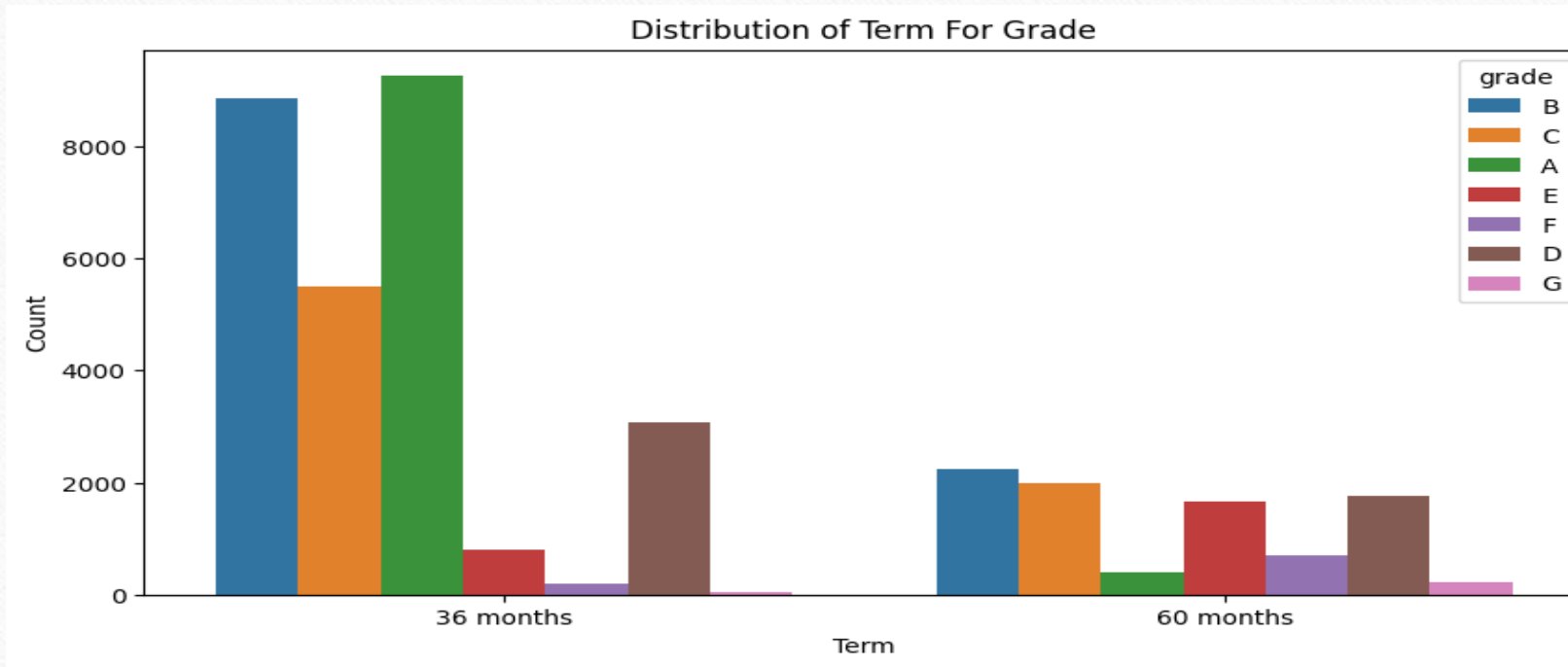


Distribution of term

The 60-month term has higher chance of defaulting than 36-month term whereas the 36-month term has higher chance of fully paid loan.



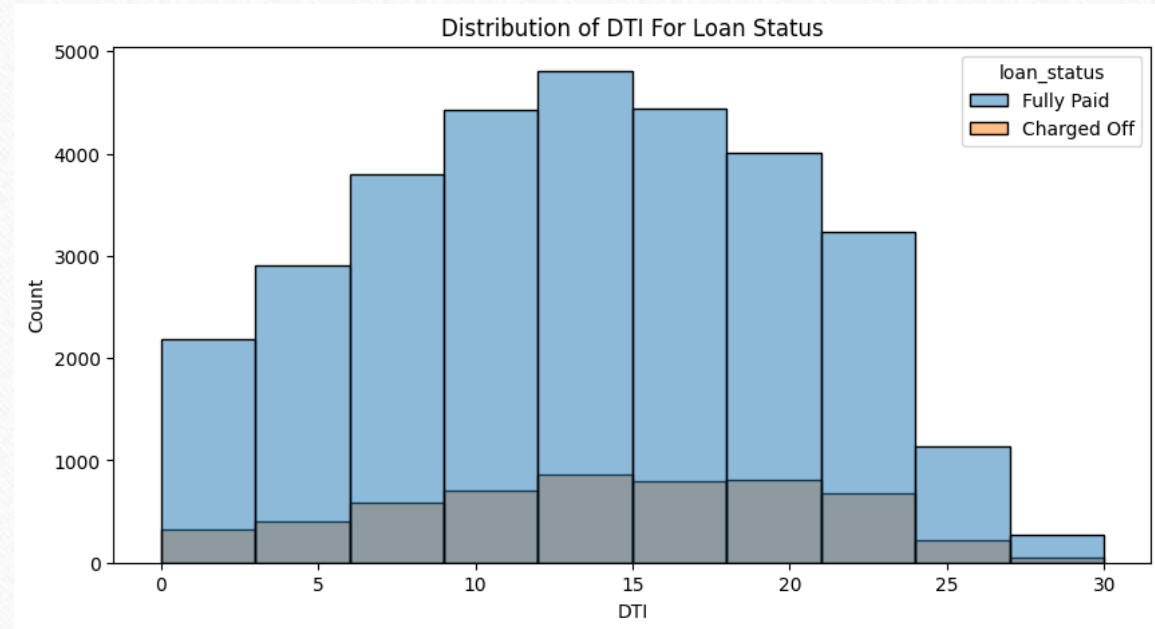
Distribution of Term For Grade



The loans in 36-month term majorly consist of grade A and B loans whereas the loans in 60-month term mostly consist of grade B, C and D loans.

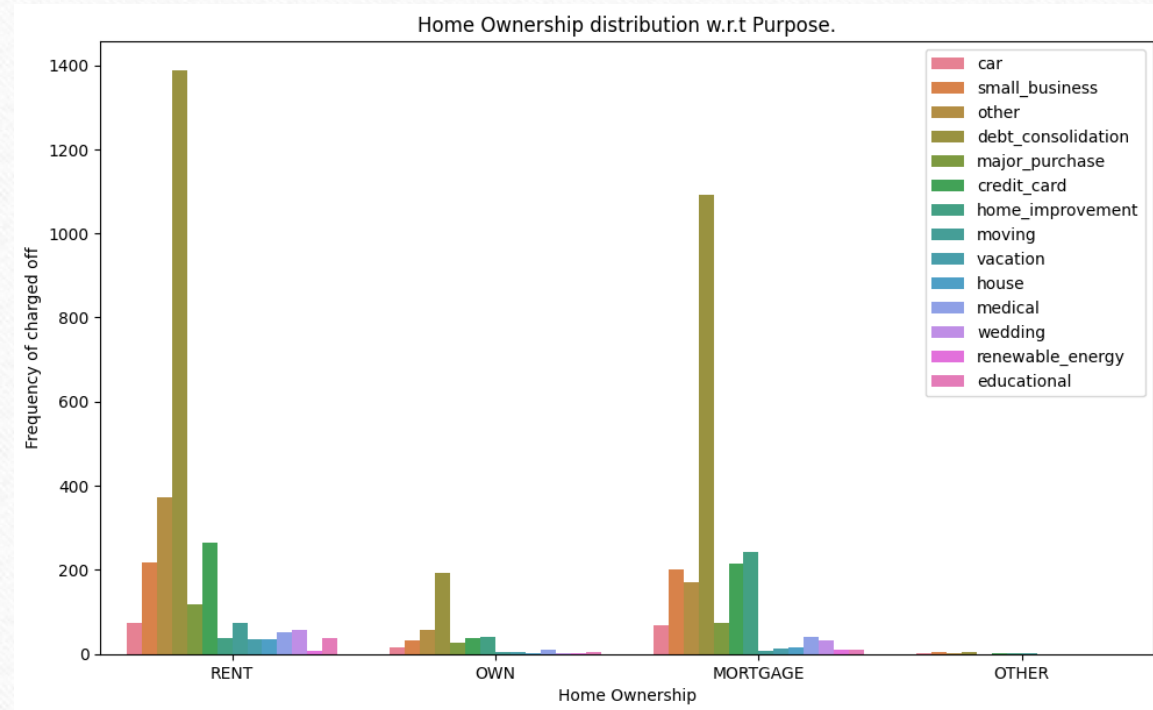
Distribution of DTI For Loan Status

The Loan Status varies with DTI ratio, we can see that the loans in DTI ratio 10-15 have higher number of defaulted loan but higher DTI has higher chance of defaulting.



Home Ownership distribution vs purpose

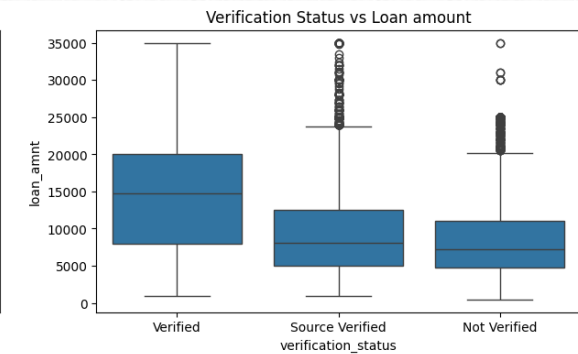
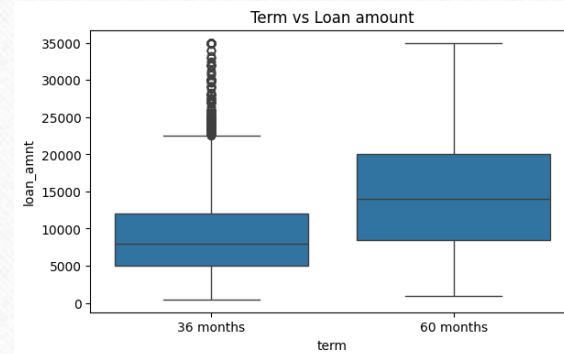
From above chart we can say that most of the borrowers who took loan for the purpose of debt consolidation has highest number of Charged off status and those who are in rent as the most.



Verification Status vs Loan amount

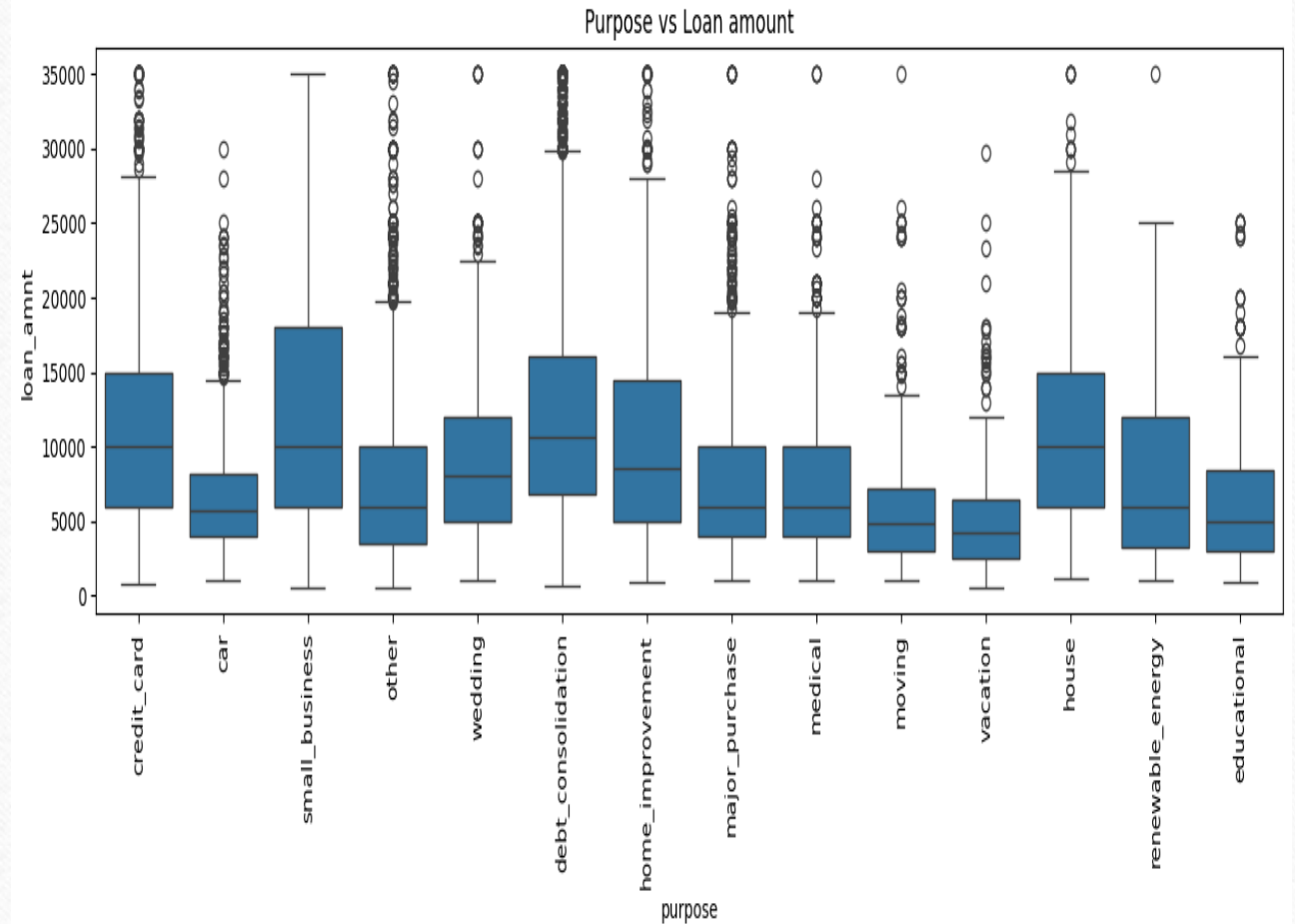
In loan amount vs term variable, we can say that, more the loan amount higher is the tenure ie 60 months. Its median is only 15k whereas the median of 36 month is 8k.

In Verification status vs loan amount, we can say that, Verified borrower gets more loan amount than Non-verified and Source Verified ie above 10k loan amount everyone are verified.



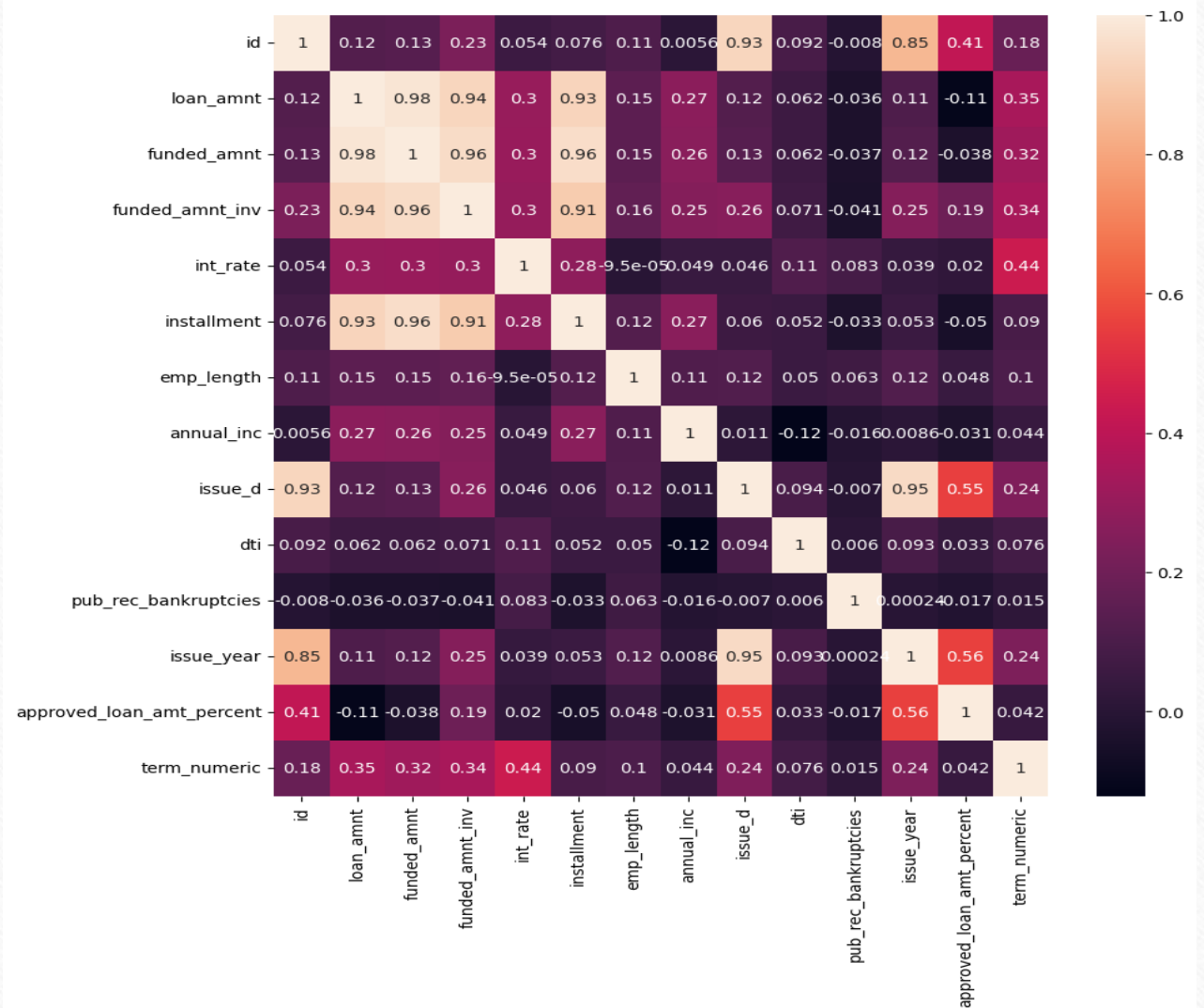
Purpose vs Loan amount

In loan amount vs employee length variable, we can say that the borrower who has 10+ years of experience are taking high amount of loan than others and borrowers with less than 1 year of experience are taking lesser amount of loan compared to others.



Correlation

- loan_amnt , funded_amnt , funded_amnt_inv , installment are strongly correlated.
- annual_inc and dti is negatively correlated.
- Debt income ratio is the percentage of a borrower's monthly gross income that goes toward paying debts.
- Which means when annual_inc is low, debt is high and vice versa.



Recommendations

- Borrowers are taking loan for the term 60 months.
- Borrowers whose loan status is Verified as they taken high amount of loan with 60 months tenure.
- Borrowers who are having home ownership as Rent and they take loan for the purpose of debt consolidation.
- Borrowers whose annual income is low i.e. (0-20000).
- Borrowers who takes loan amount in the range 0 to 14000.
- Borrowers who receive interest at the rate of 15-20%.
- Borrower who takes loan for the purpose of small business.
- Borrowers with least grades like E,F,G which indicates high risk