

Lending Club Case Study

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The Problem Statement

Company

A consumer finance company is specialised in lending various types of loans to customers.

Whenever a loan application is received, the company has to make appropriate decision for approving the loan basis on applicant's profile.

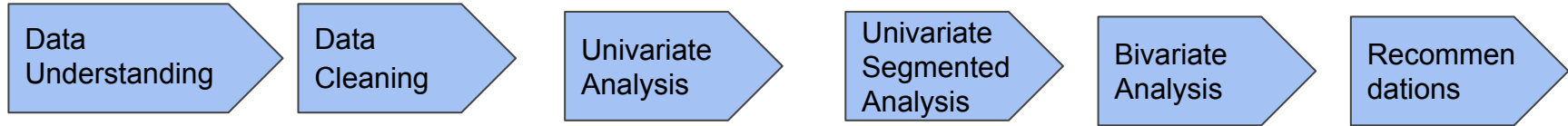
Risks Involved

- If the applicant is **likely to repay the loan**, then not approving the loan may result in **loss of business** to company.
- If the applicant is **not likely to repay the loan**, then approving the loan may result in **financial loss** to the company.

Decision Made

1. Loan Accepted: If the company approves the loan:
 - Fully Paid
 - Current
 - Charged-Off
2. Loan Rejected: If the company has rejected the loan.

Solution Approach



Data Understanding

The loan data for the period 2007 to 2011 is stored in the loan.csv file, which is the primary file containing complete loan information.

Additionally, the Data_Dictionary.xlsx file provides the meaning of the variables used in the loan.csv file. The dataset comprises 39717 rows and 111 columns, making it a comprehensive source of loan data for analysis.

Data Cleaning

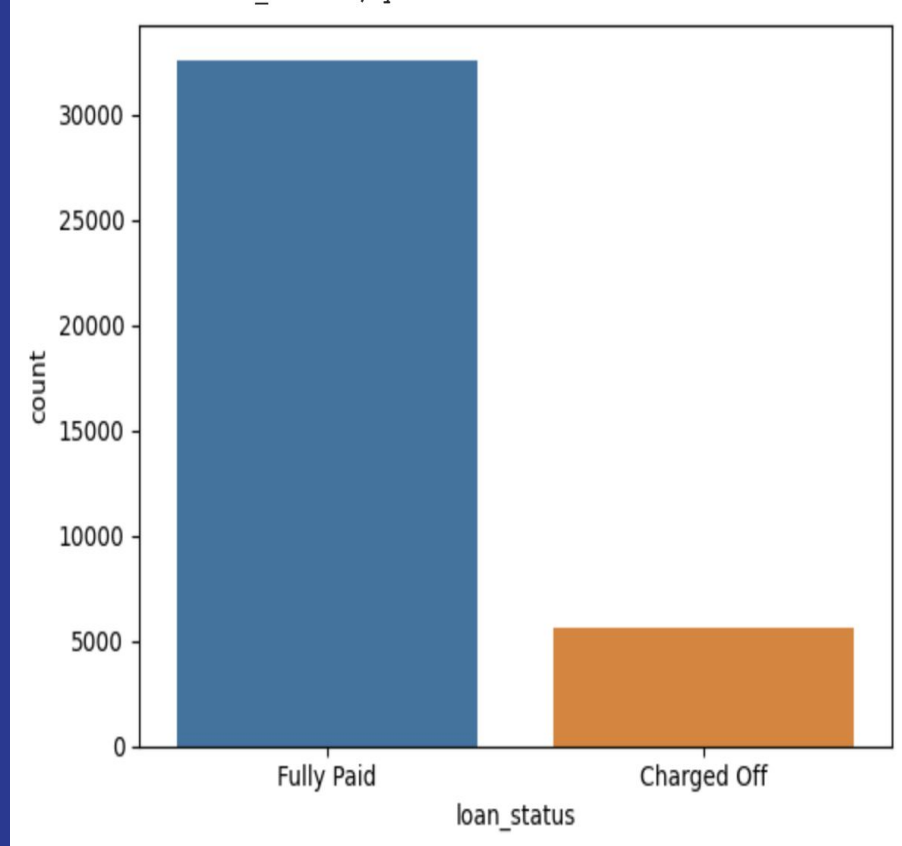
In data cleaning we have followed these steps:

- Fix rows and columns
- Fix missing values
- Standardise values
- Fix invalid values
- Filter data

Univariate Analysis

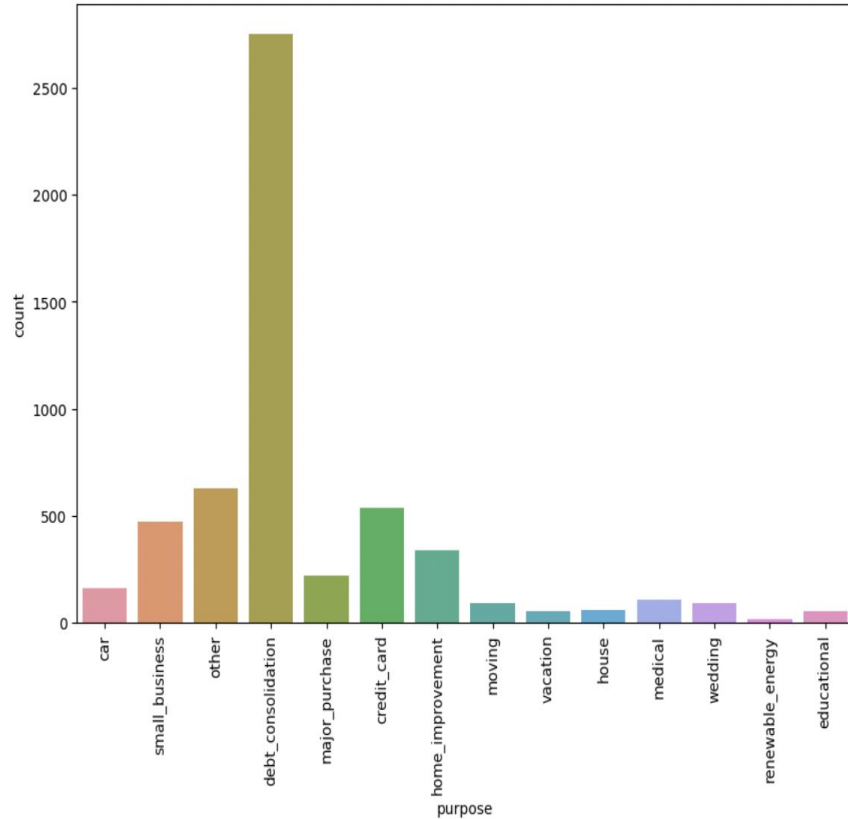
Loan Status

Fully Paid 32607
Charged Off 5584



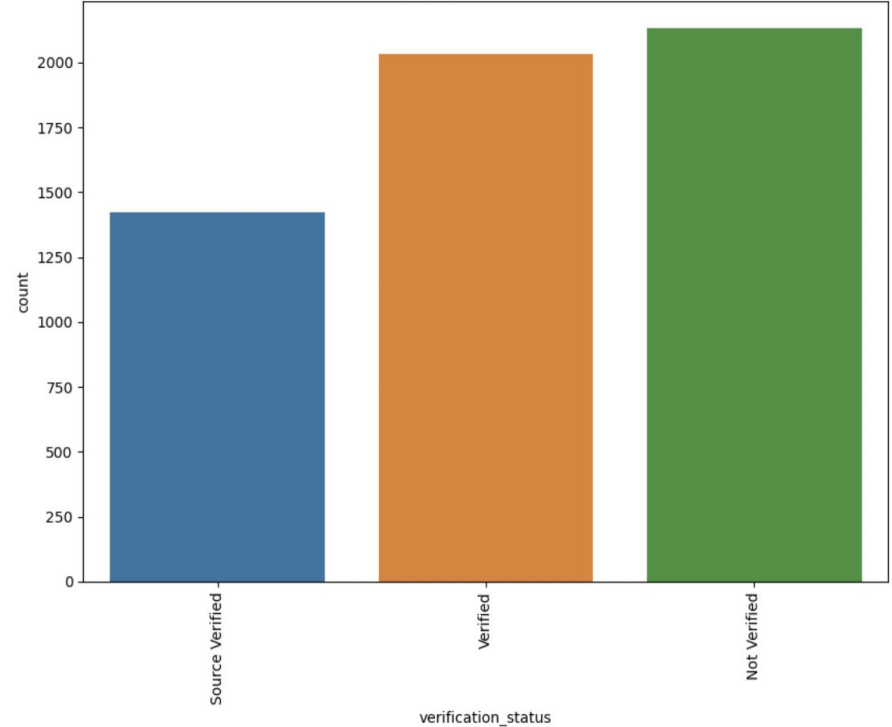
Purpose

debt_consolidation, credit_card and small_business has the highest number for which loan has been defaulted



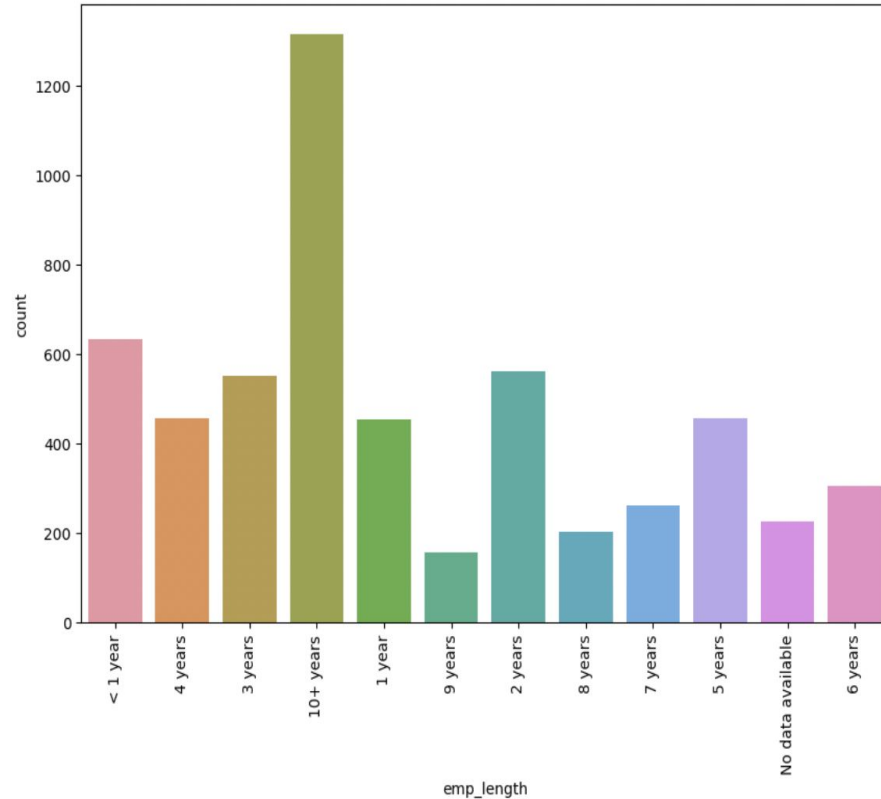
Verification Status

Not verified is likely to default as has highest value : 2130



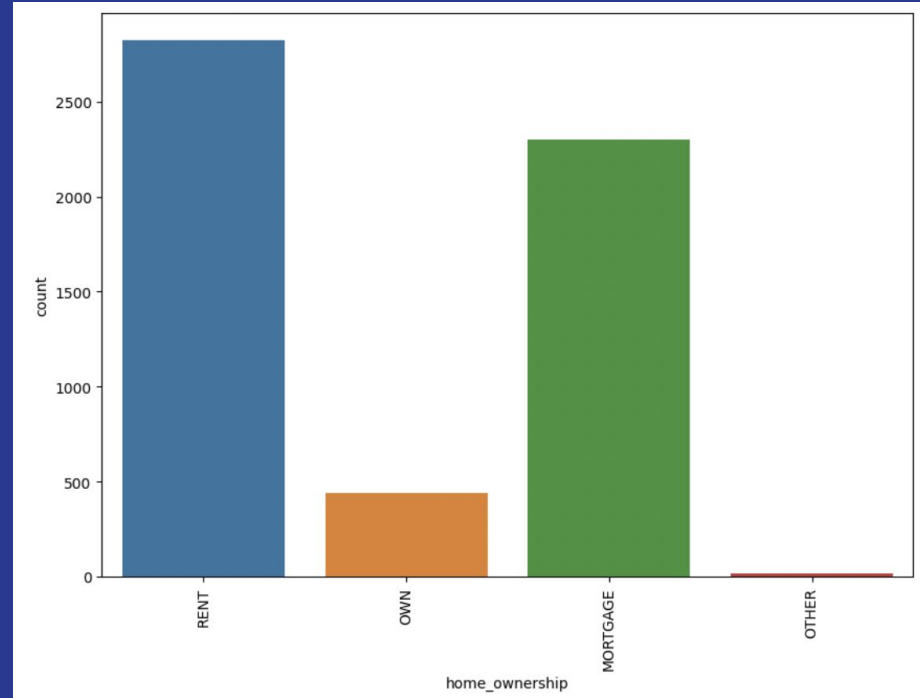
Employee length

10+ years has the highest number for which loan has been defaulted : 1316



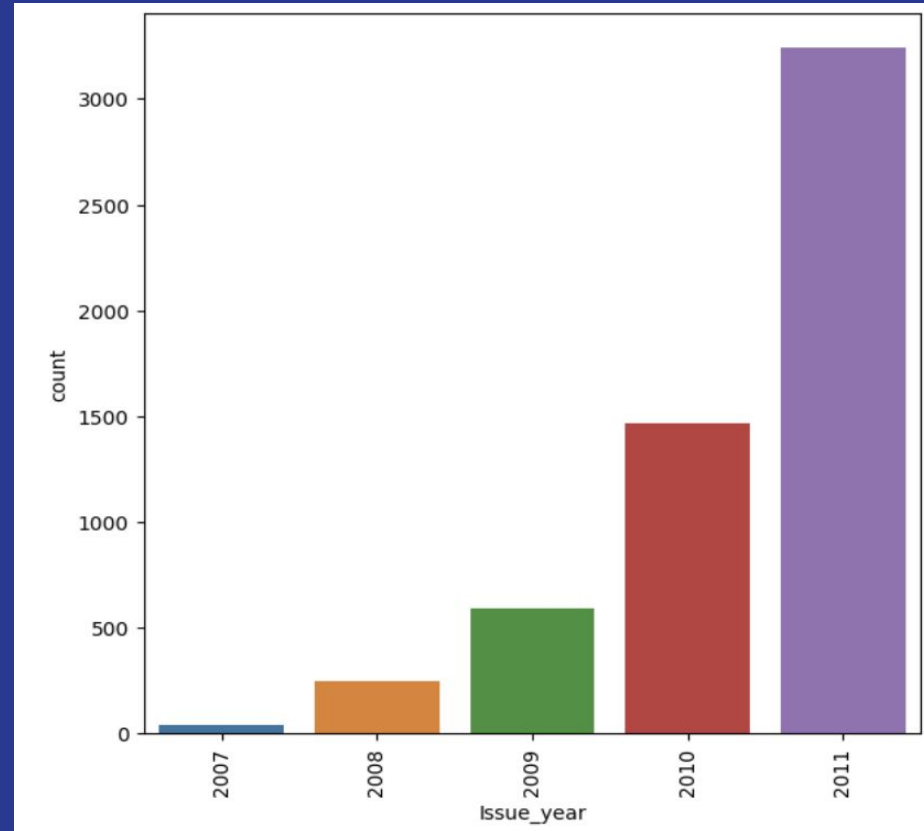
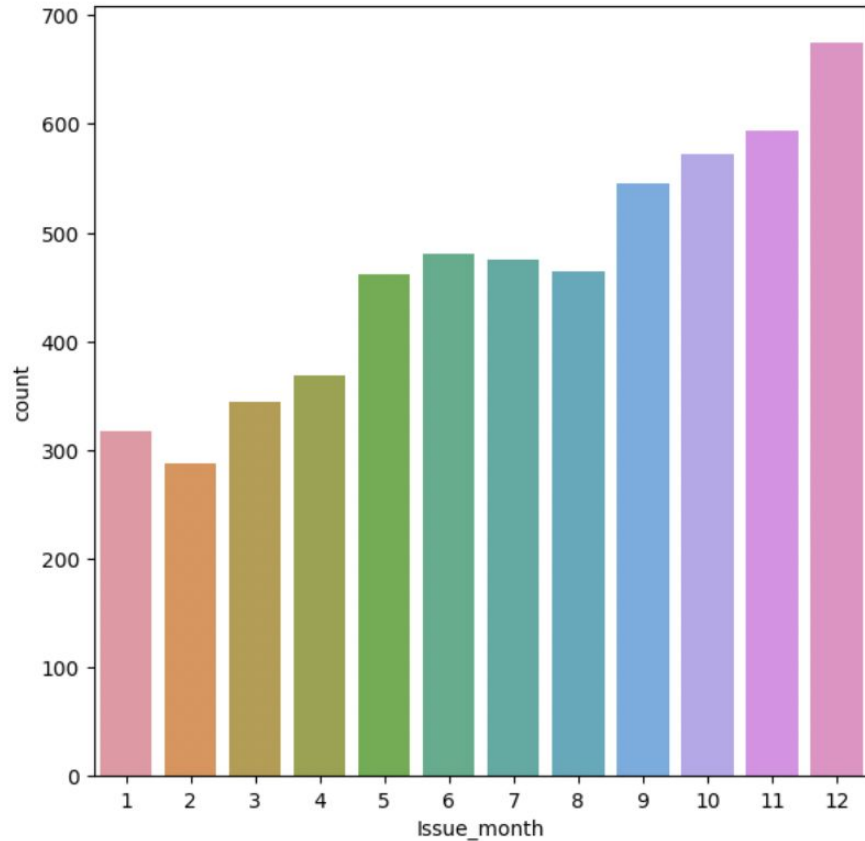
Home Ownership

Rent has the highest number for which loan has been defaulted : 2824



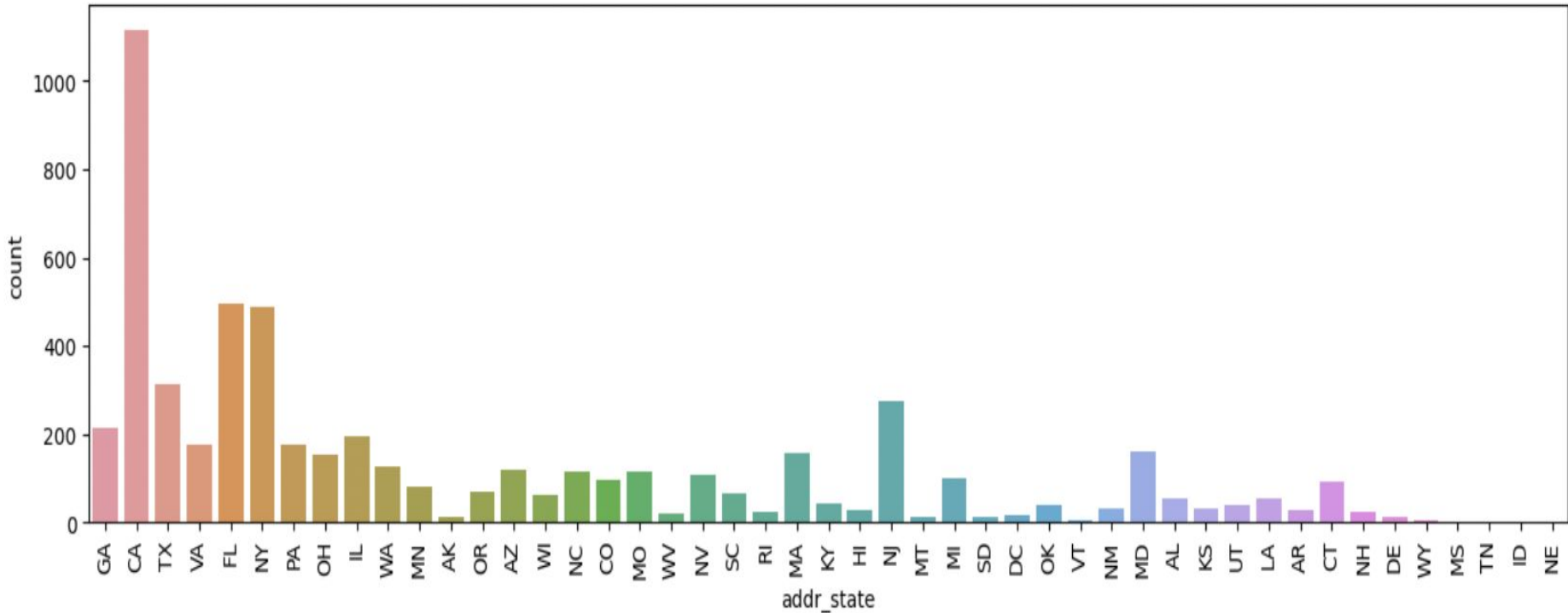
Issue Date

For the Month of Dec and year 2011, the highest number for which loan has been defaulted :
Month (Dec)- 674 ; Year(2011) - 3239 and this could be possible because of financial crisis during the tenure 2011



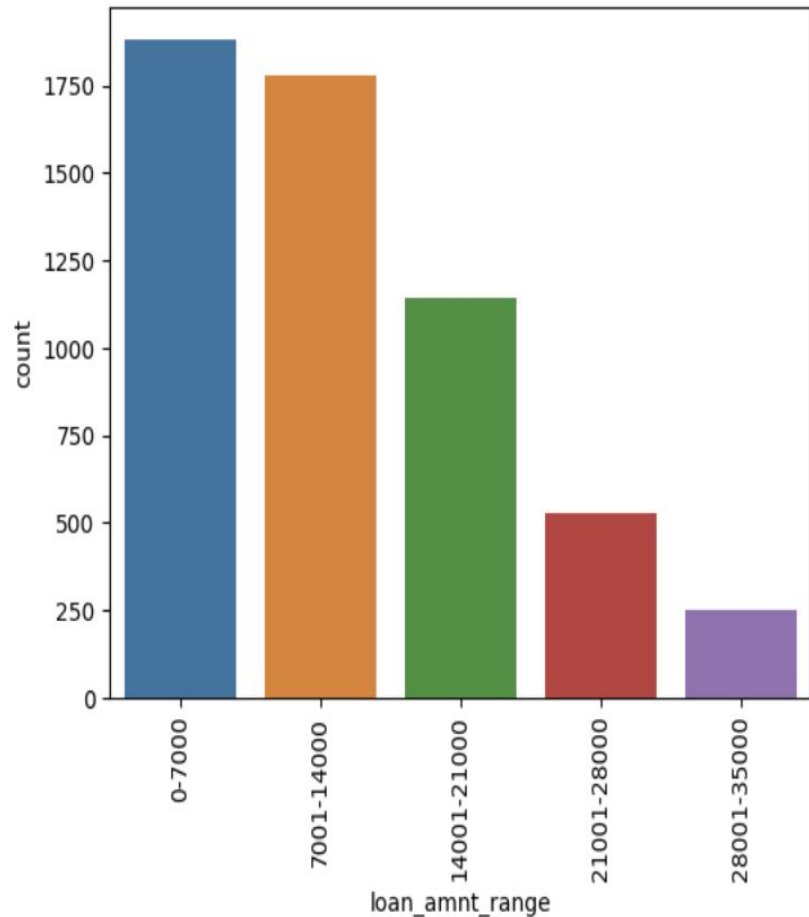
Address State

CA(1116), FL(497), NY(488) has the highest number for which loan has been defaulted respectively by these number

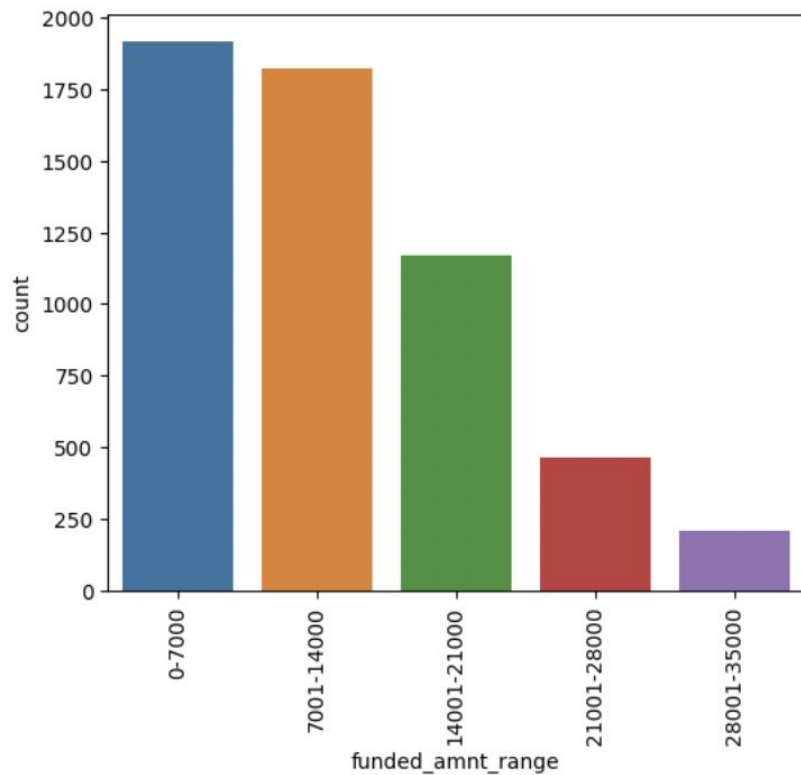


Univariate Segmented Analysis

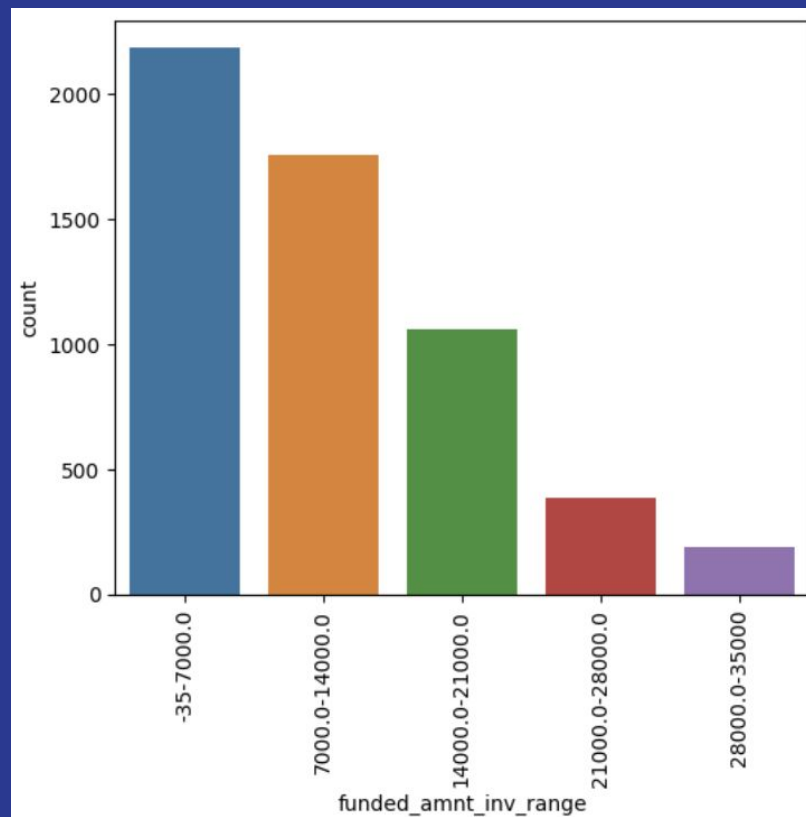
Loan Amount



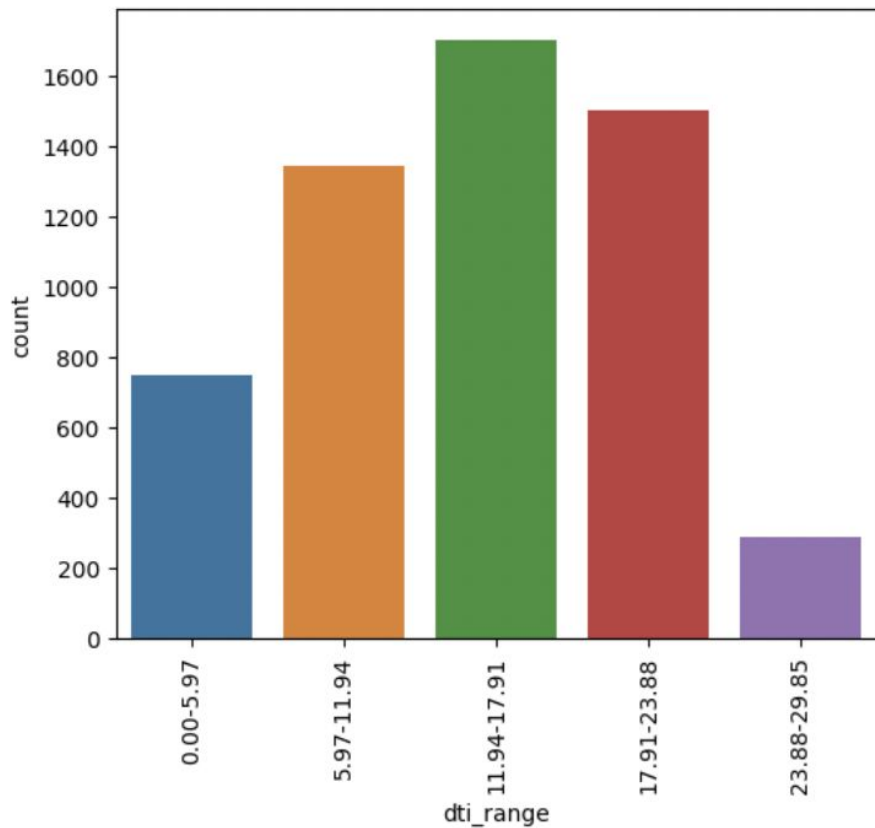
Funded Amount



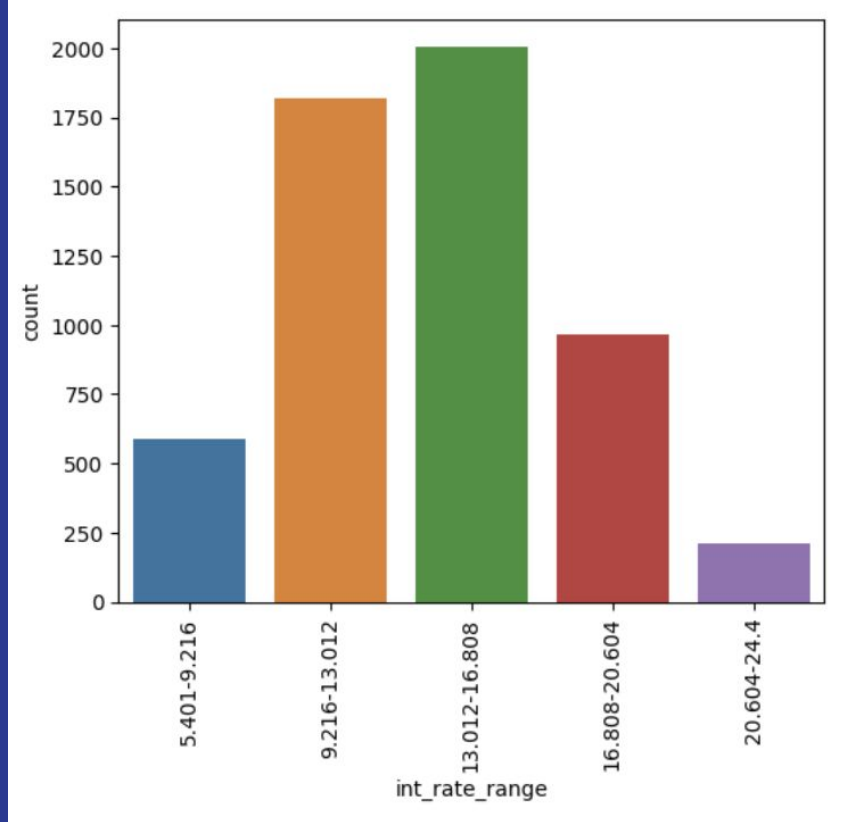
Funded Amount Invested



Debt to Income

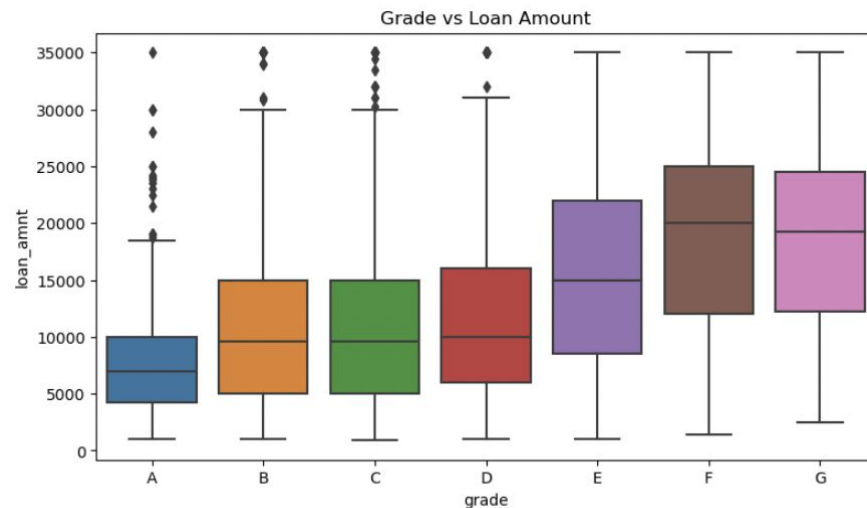
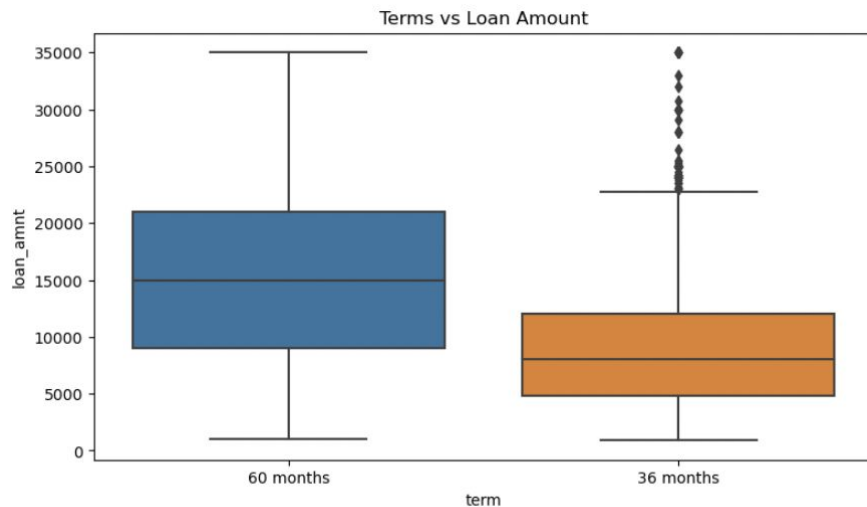


Interest Rate



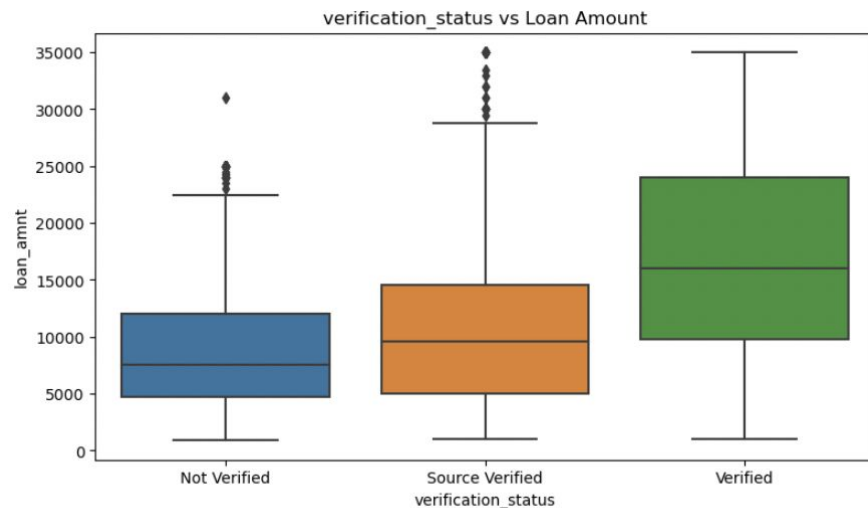
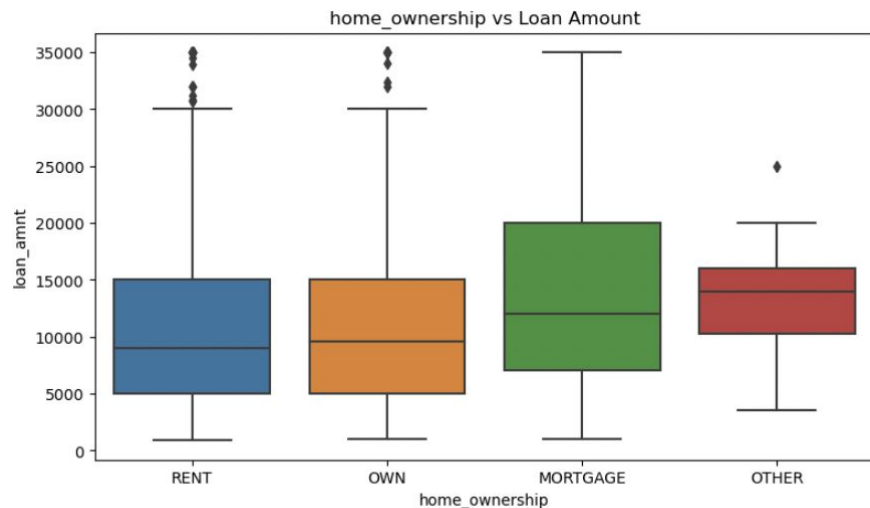
Observation:

- more borrowers are from MORTGAGE and also the median loan amount also high for MORTGAGE owned borrowers.
- And most of borrowers are verified for borrowing loan >9k



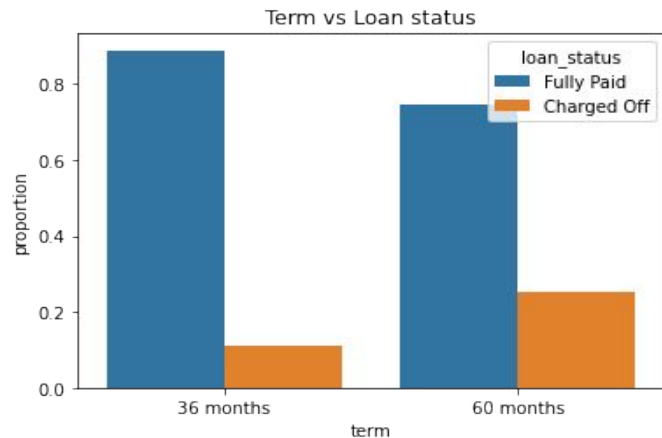
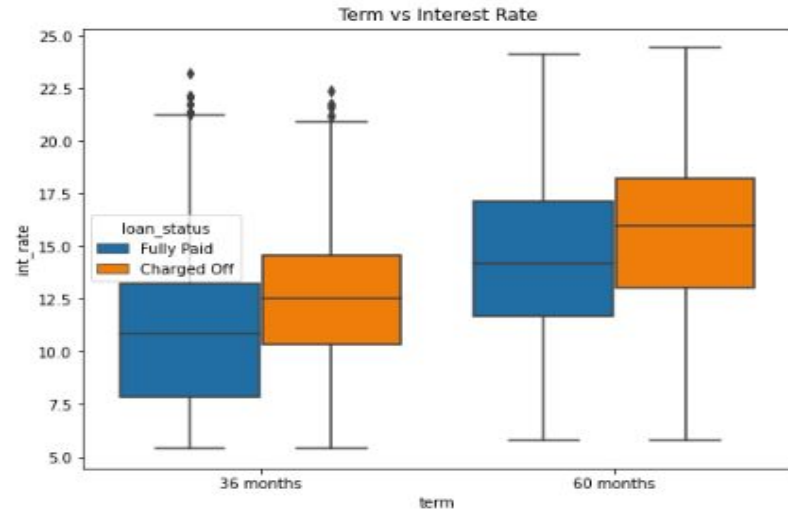
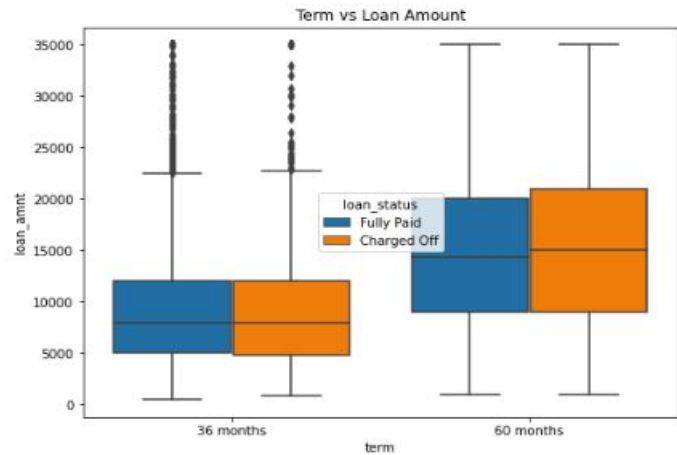
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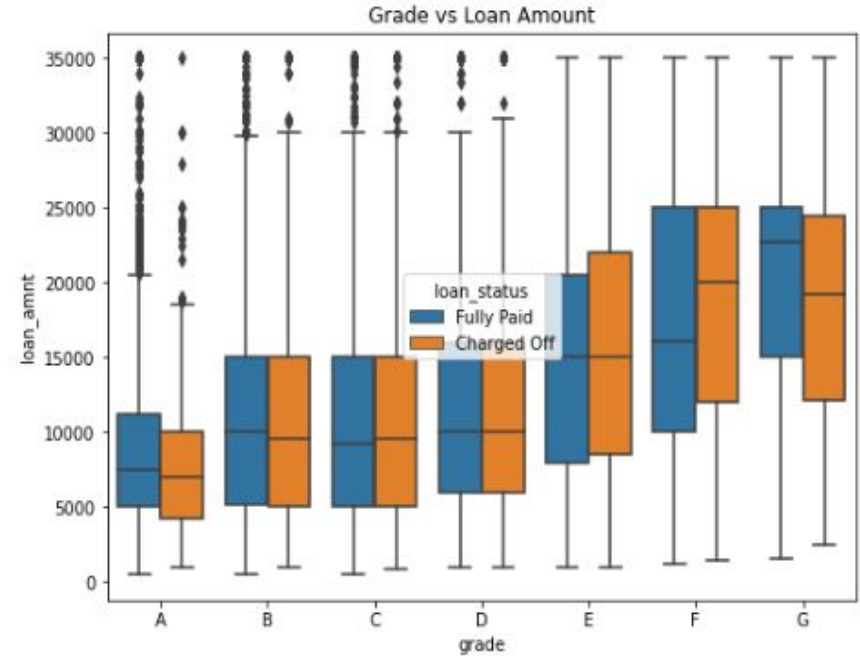
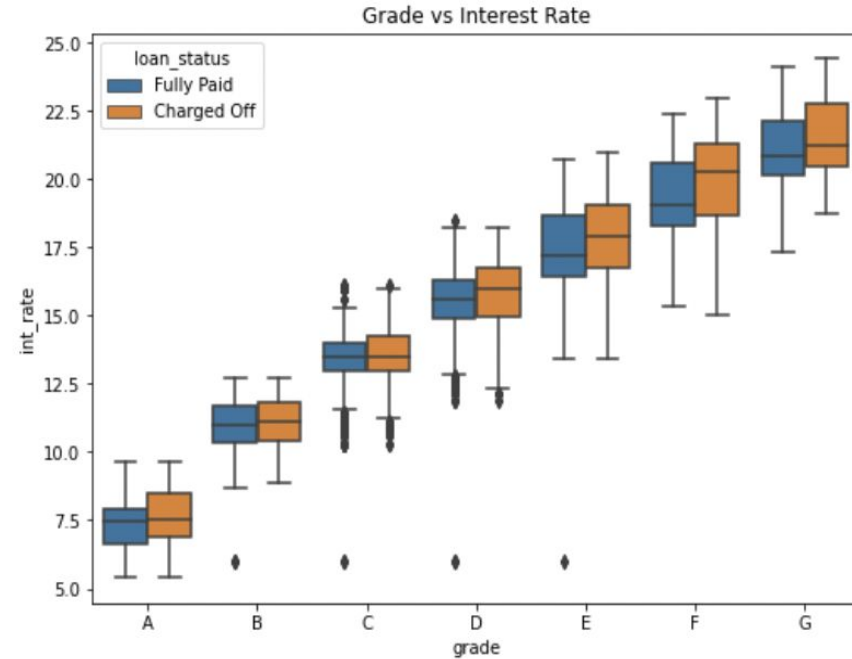
Bivariate Analysis

Term Analysis with Loan Status , Loan Amount and Interest Rate



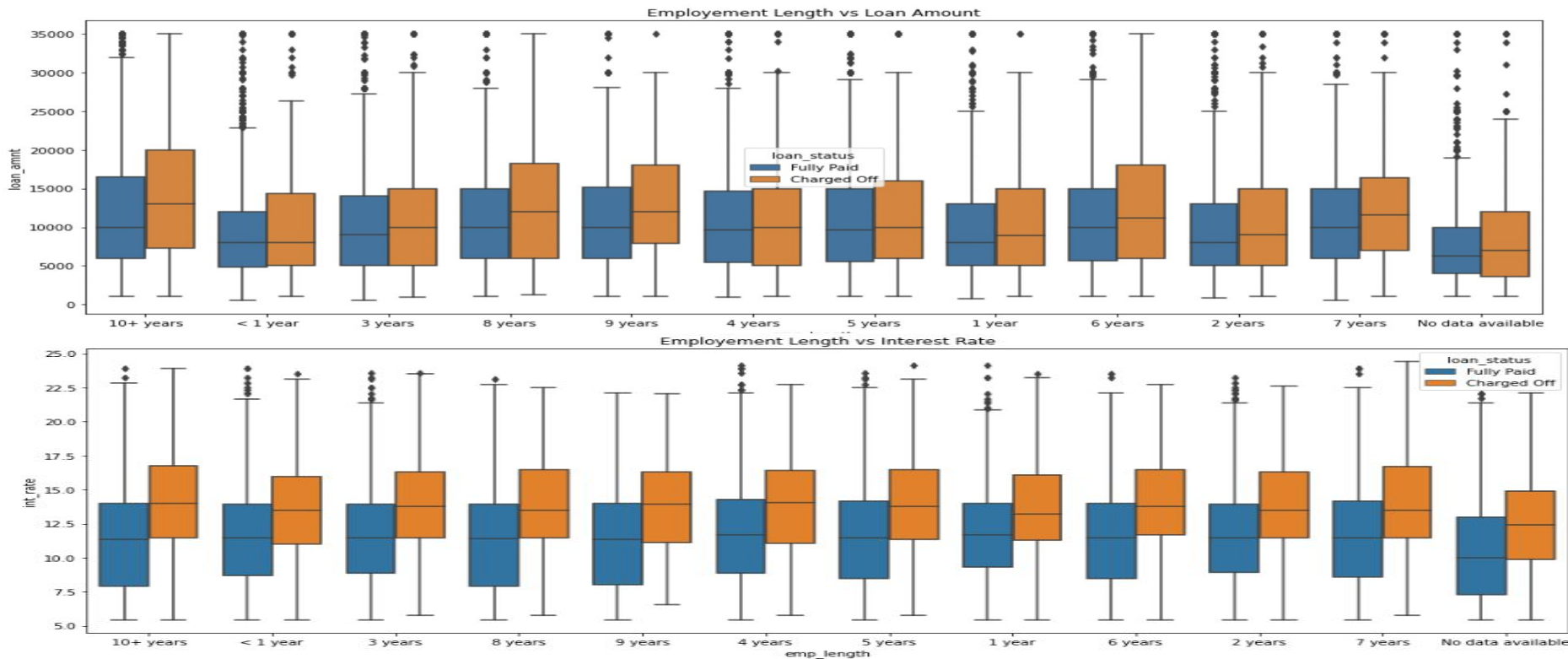
The Charged off rate higher when peoples take loan on 60 Months Tenure. Most Peoples have taken high loan amounts with high interest rate in 60 Months tenure and after that they defaulted the Loan.

Grade Analysis with Loan Status , Loan Amount and Interest Rate



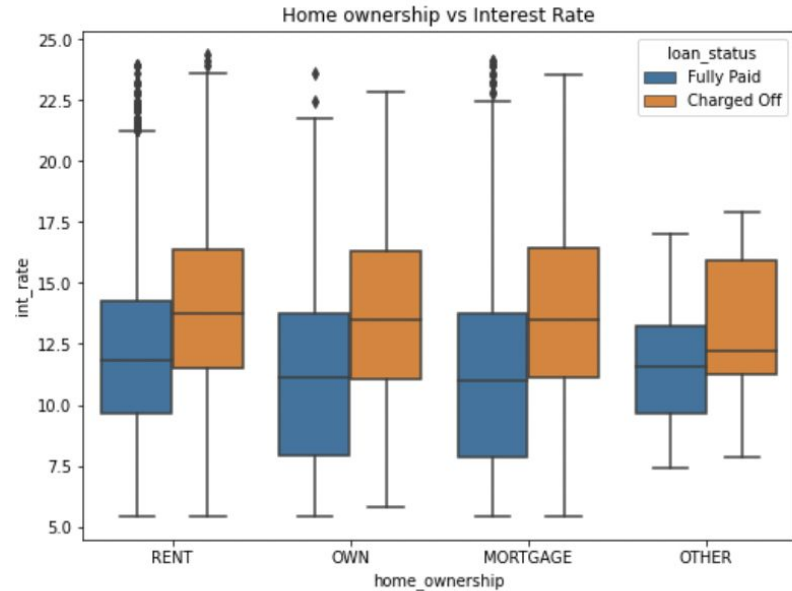
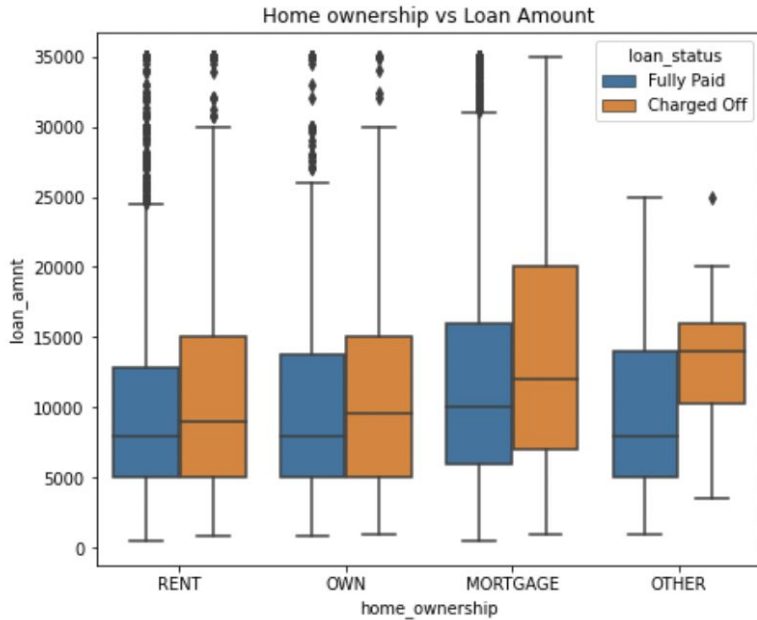
Borrowers with lower grades apply higher loan amount and are charged with higher interest rates, which is not possible for them to repay making them more likely to default on their loan.

Employment Length Analysis with Loan Status, Loan Amount and Interest Rate



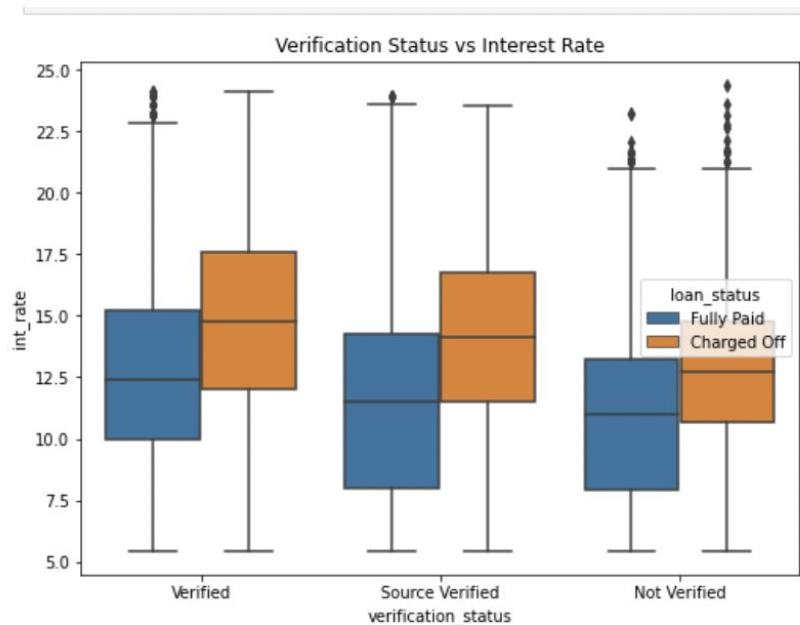
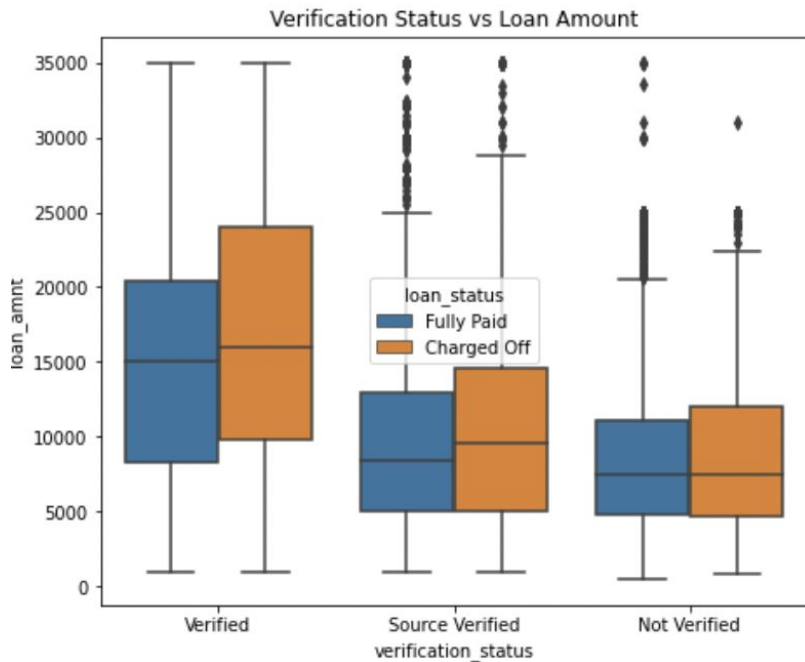
Borrowers with longer employment length took out larger loan amounts with higher rate of interest making them more likely to default their loans.

Home Ownership Analysis with Loan Status, Loan Amount and Interest Rate



Borrowers who took larger loan amount with higher rate of interest are defaulting the loans more.

Verification Status Analysis with Loan Status, Loan Amount and Interest Rate

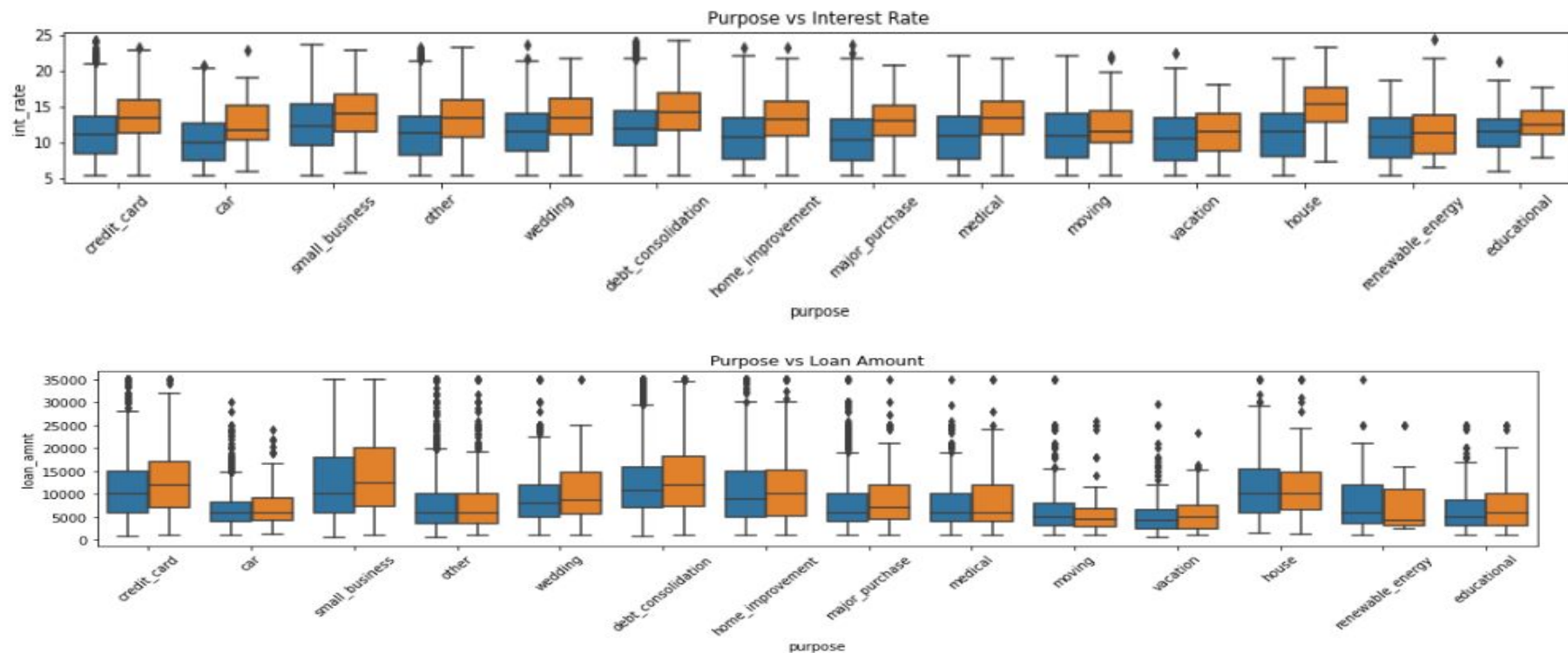


Borrowers who are verified are given higher loan amount.

Borrowers with higher interest rates are more likely to default on their loans, Which means there is a strong correlation between higher interest rates and higher loan default rates(irrespective of Verification Status).



Purpose Analysis with Loan Status ,Loan Amount and Interest Rate



Borrowers with high interest rates have a higher tendency to default on **home loans**, **small business** loans, and **debt consolidation** loans.

Recommendations

1. Lending Club should reduce high-interest or high- amount loans for 60 months tenure. There is high chances of loan default.
2. Loan for high amount and with high rate of interest should not be sanctioned to the borrowers having low grades (i.e. - E, F, G).
3. Loan sanctioned to smaller businesses with high loan amount or high interest rate is defaulted more likely. Therefore The loan amount should be reduced or the loan should not be sanctioned.
4. Borrowers having mortgage are more likely to default when the interest rate is high. So lending club should reduced the asked loan amount.
5. High loan amount and high rate of interest is the key factor in defaulting the loan. Therefore the loan should be sanctioned for less loan amount and low rate of interest.

Thank You
