Lending Club Case Study

By,

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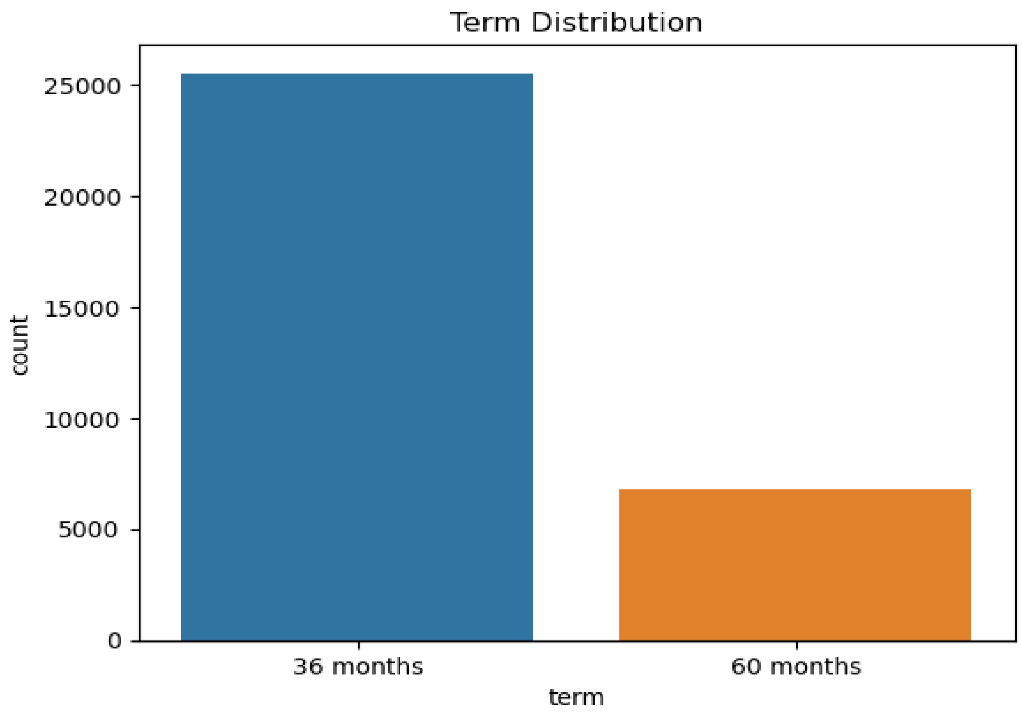
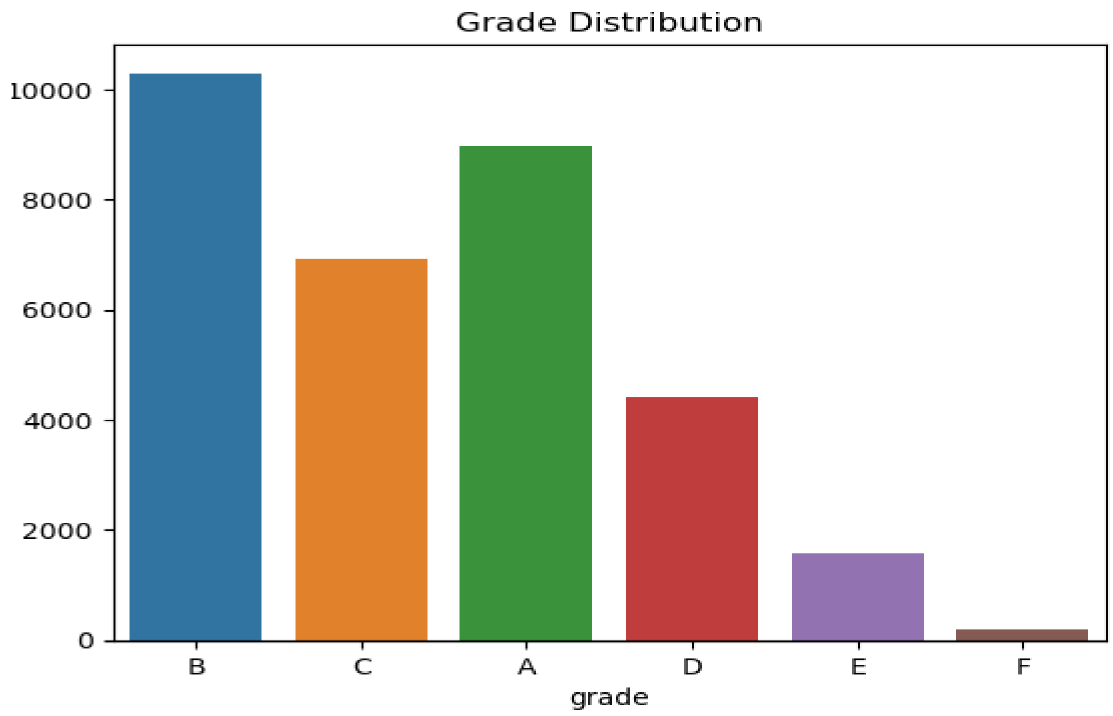
Business Understanding

- Lending Club is a **consumer finance company** which specializes in lending various types of loans to urban customers.
- Borrowers can easily access lower interest rate loans through a fast online interface.
- When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile.
- Objective of this case study is to identify the risky loan applicants from experience, so that one can cut down the amount of credit loss.
- Decisions can be made based on the loan status of the applicants which are "Fully paid", "Current", and "Charged-off" (Defaulted).

Univariate Analysis

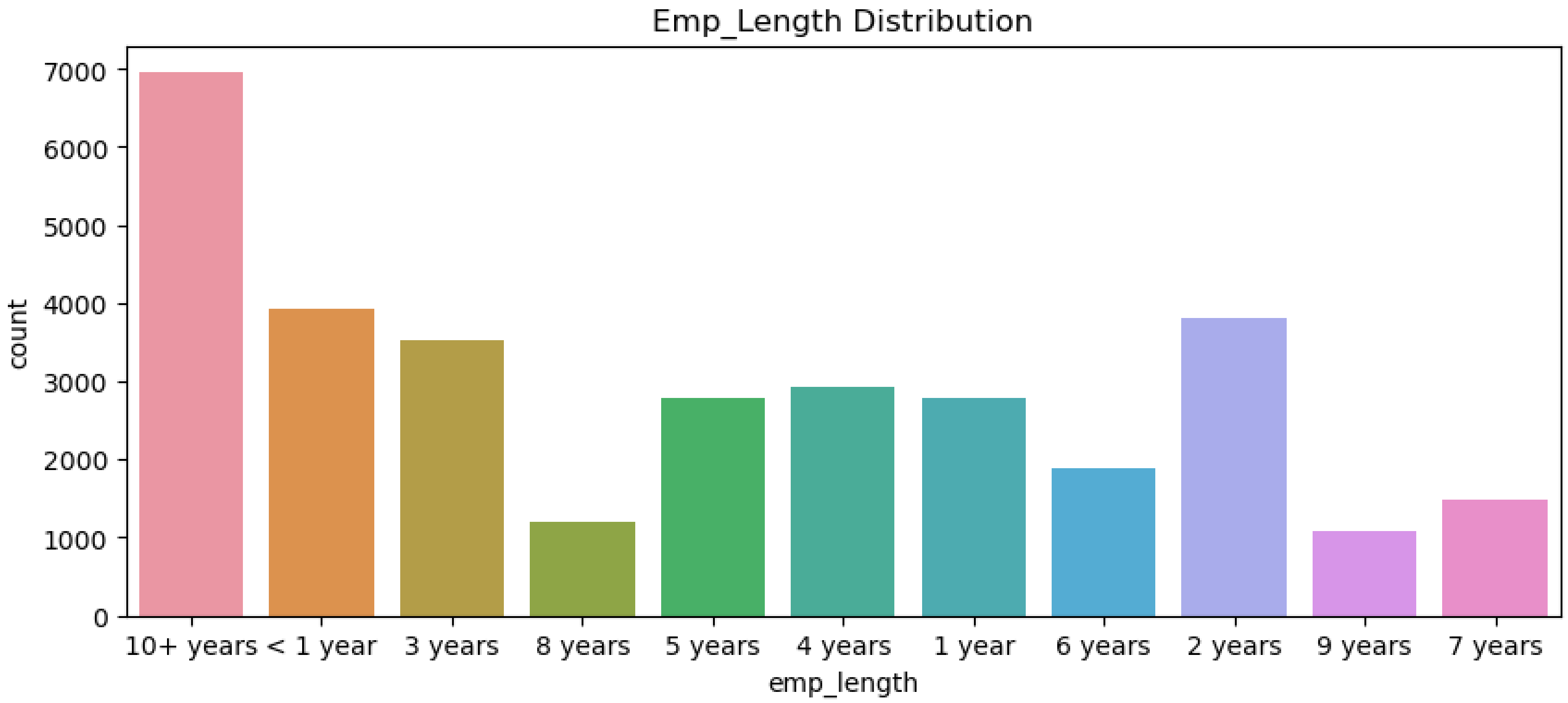


Borrowers has taken loan for 36 months tenure more than 60 months.

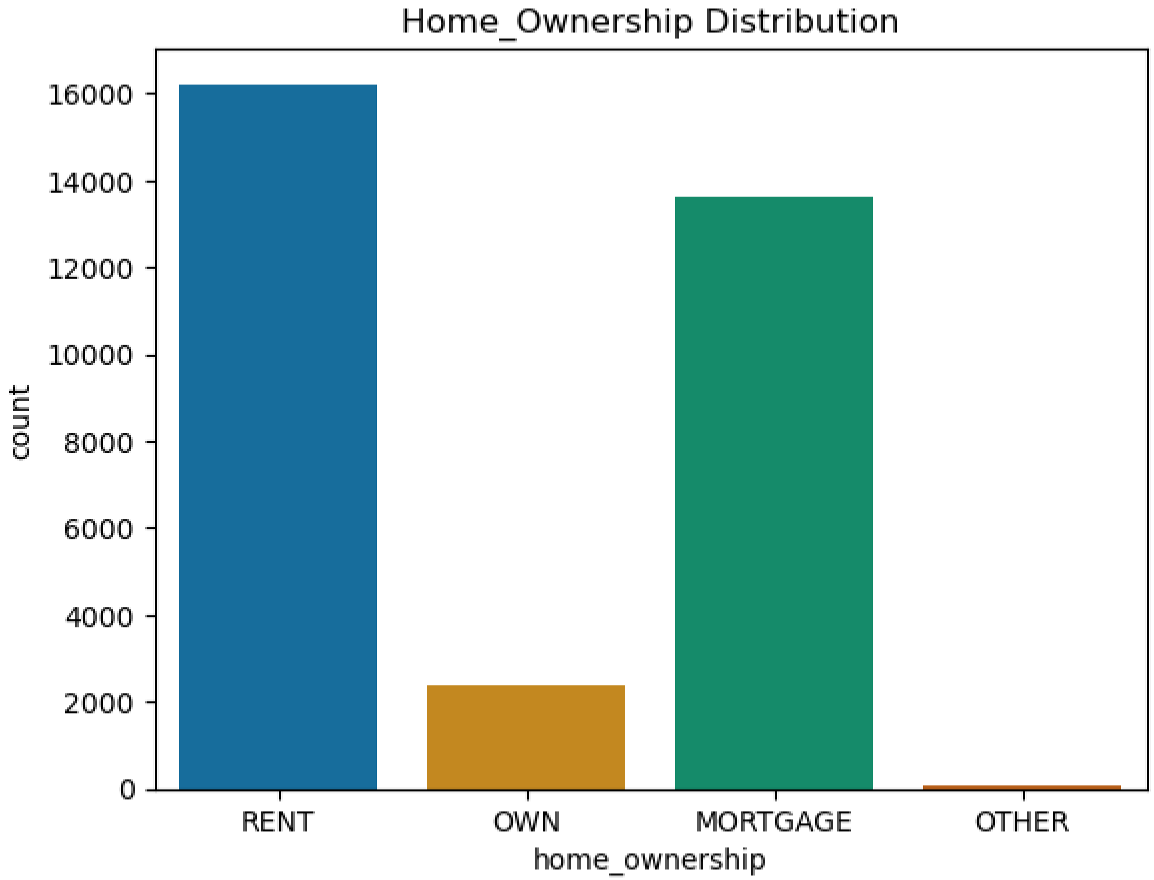


Most borrowers fall under A and B grades

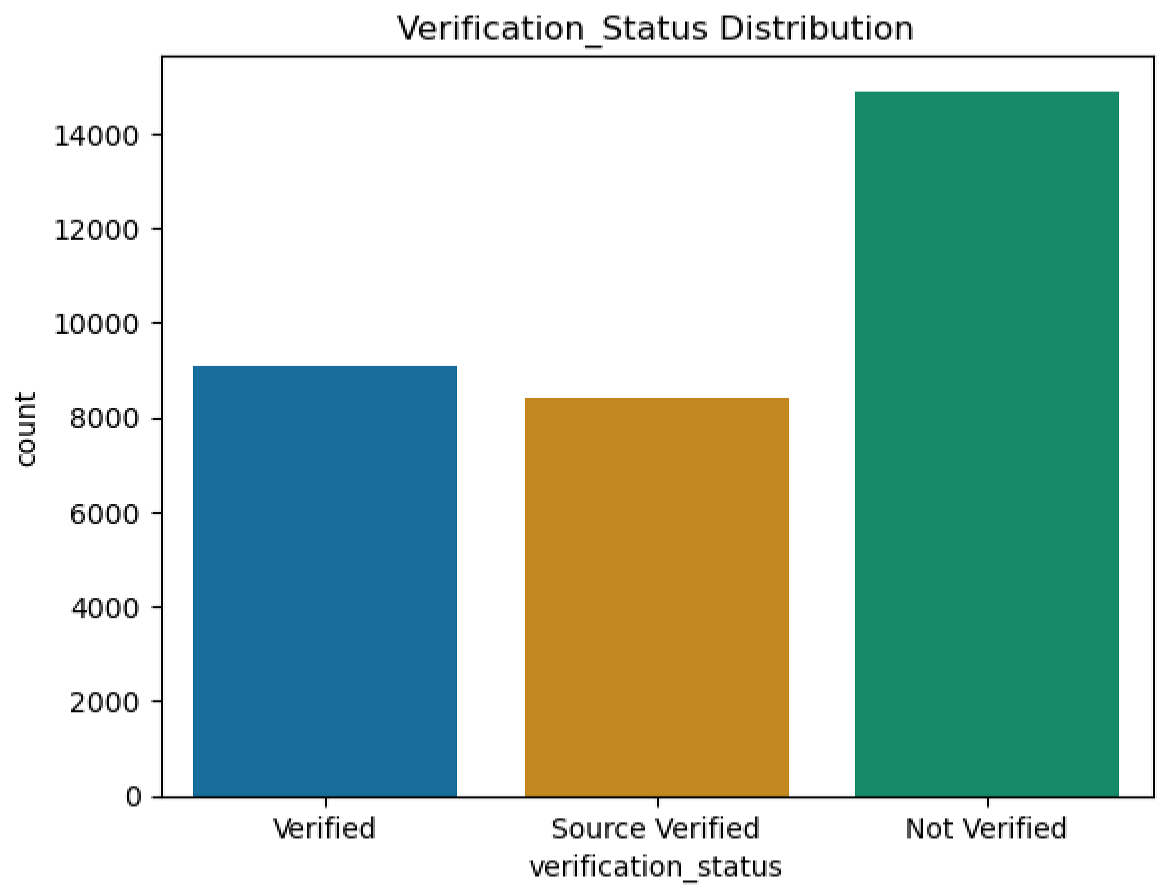
- There are only two loan terms 36 and 60 months. Around 75% borrowers took loans with 36 months term.
- The charged off borrowers are around 15% and fully paid is around 85% in the given data set.

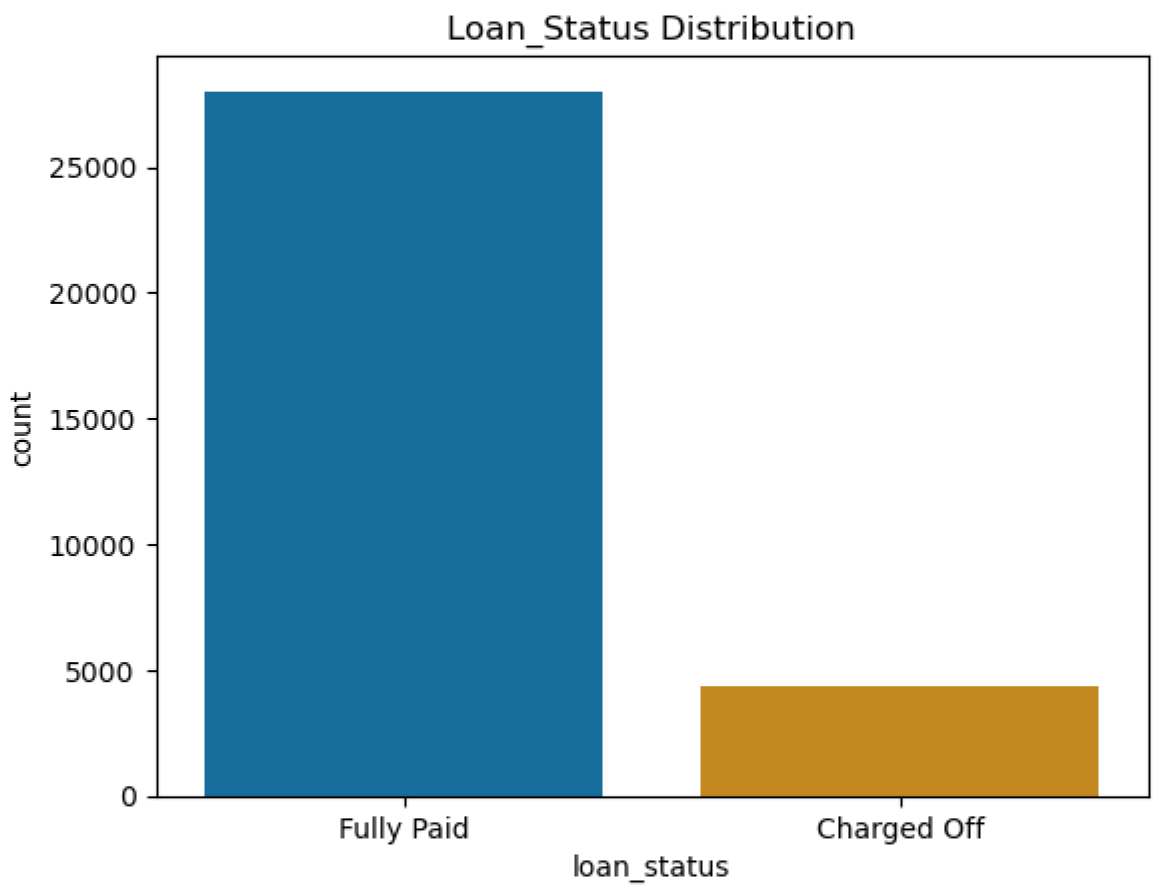


Borrowers are mostly 10+ years of employment length.



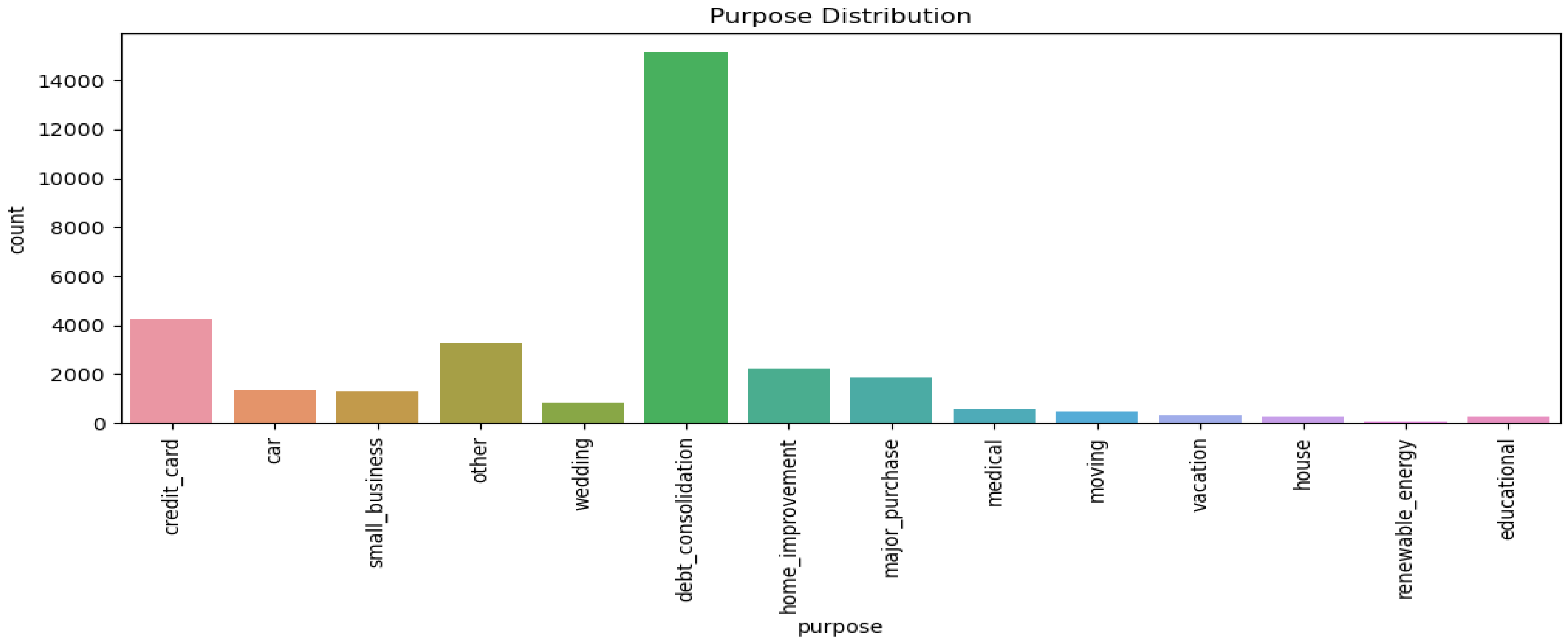
The loan borrowers are mostly having rented or mortgage houses.



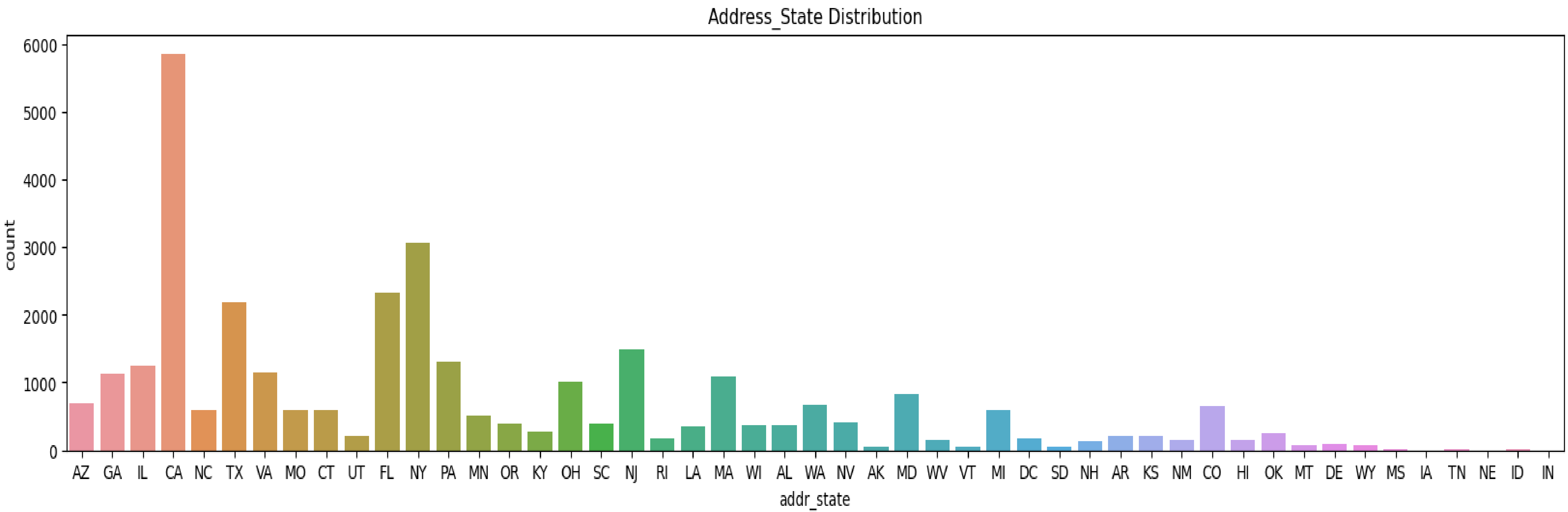


Most of the loans were given to the borrowers without verification.

The defaulters or charged off applicants are less than the ones who fully paid the loan

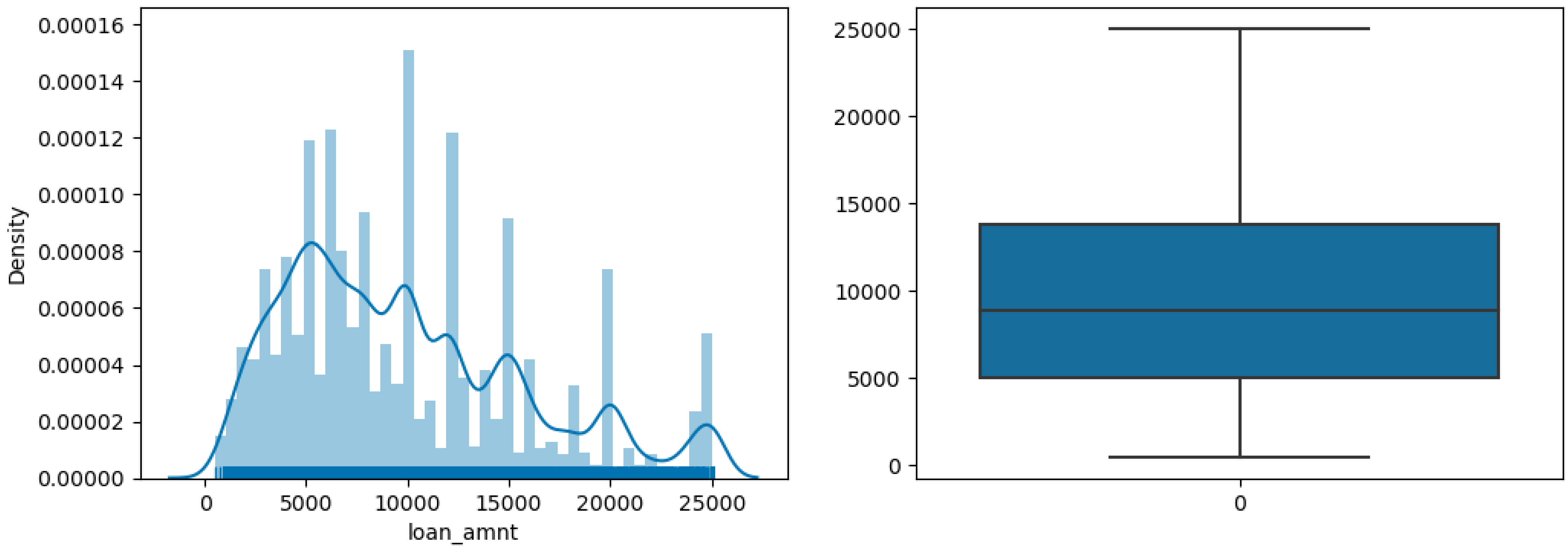


Most of the applicants took loan for debt consolidation.

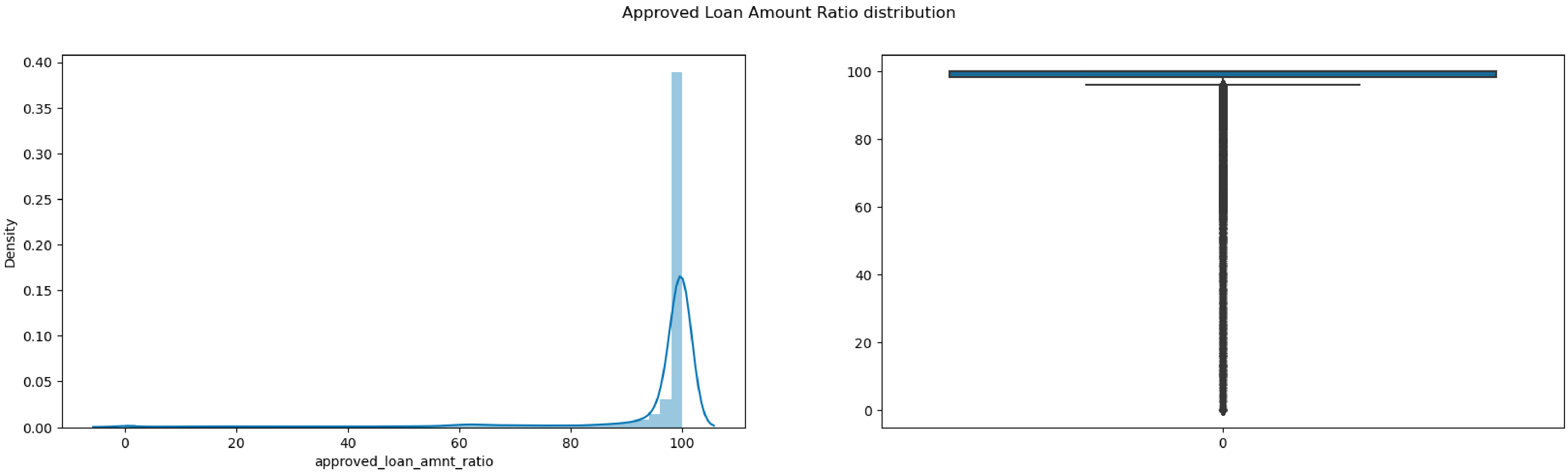


Most of the borrowers are from CA, NY and FL states

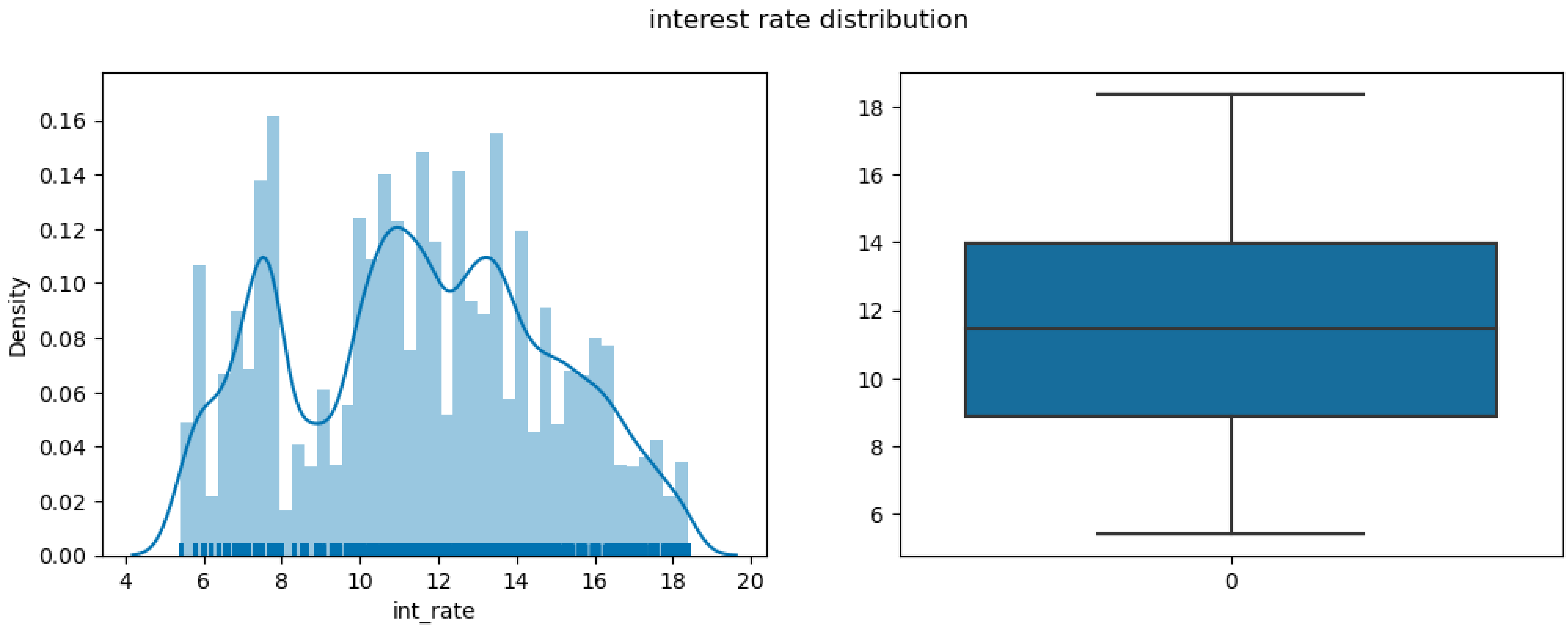
Loan Amount distribution



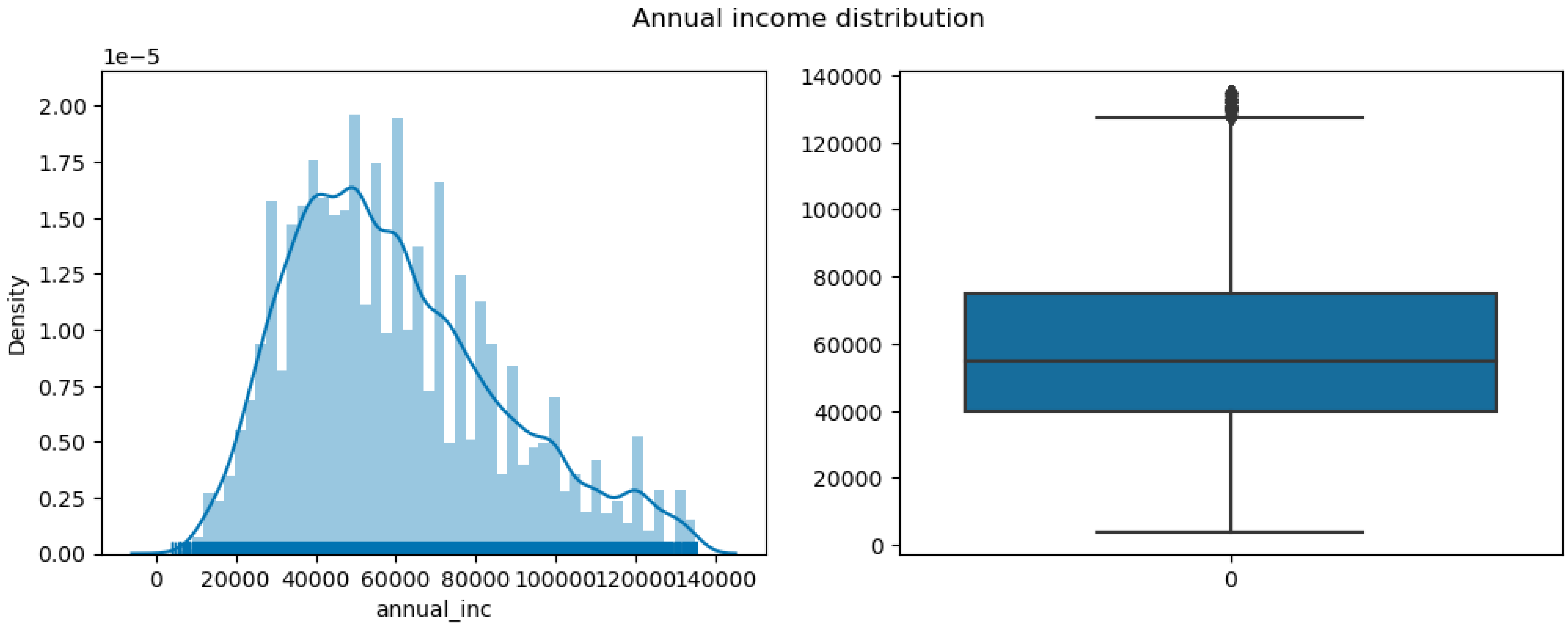
From the above plots, more number of people took loan amount of 10000, and also mean of distribution is almost 10000. And very few people took more than 30000 loan amount.



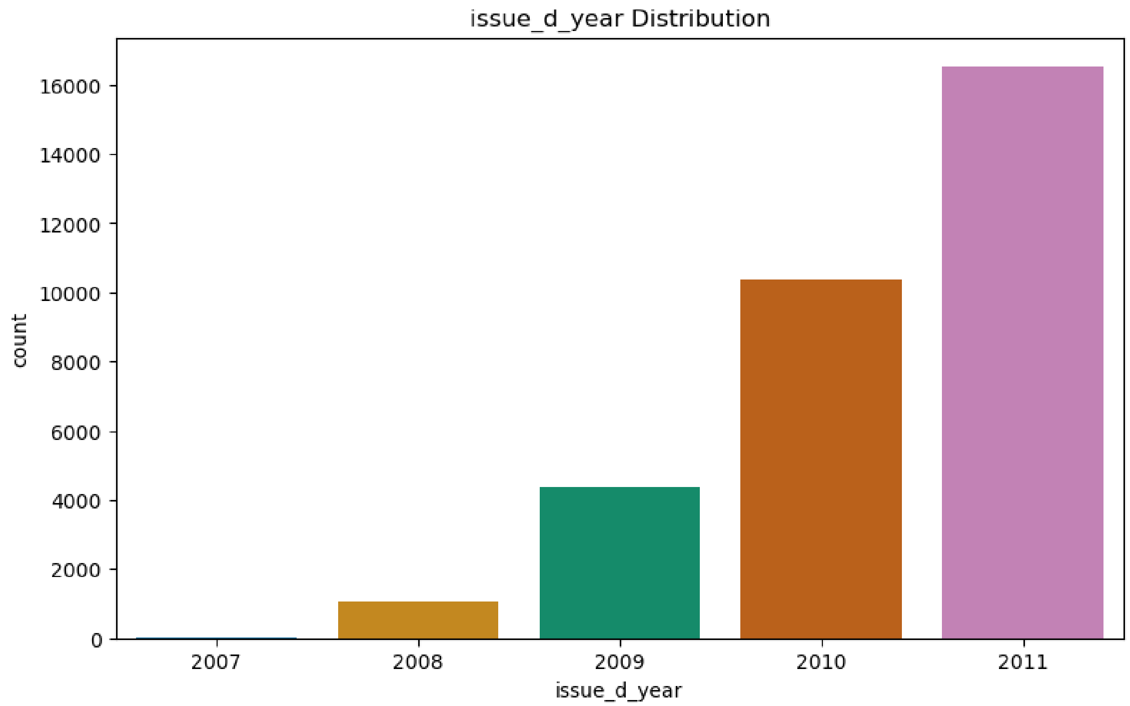
70% of Borrowers got 100% loan amount from investors, which means, almost all the loans were funded by the investors

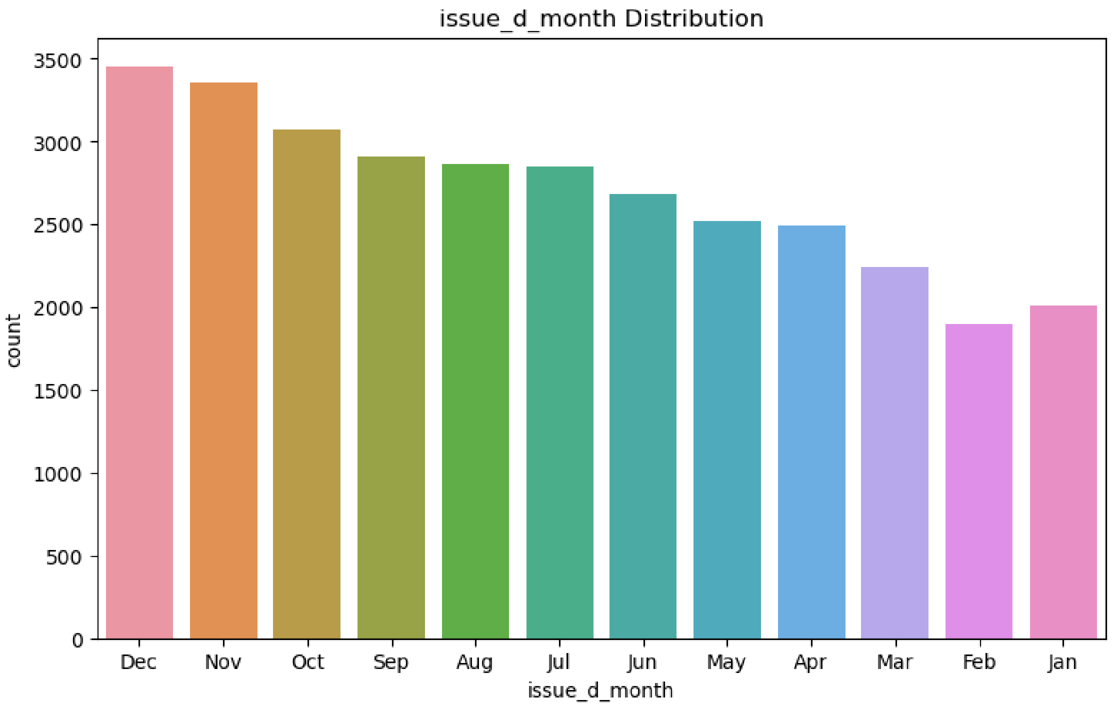


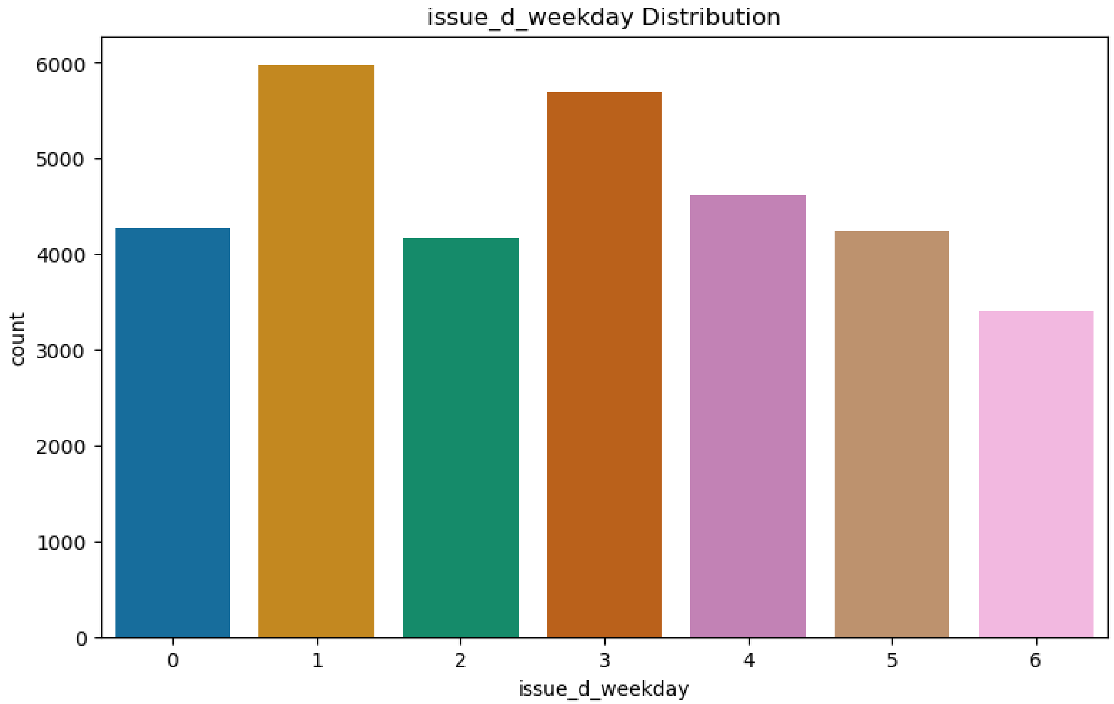
From the above 2 plots, we can conclude that most of the interest rates lies between 9% to 14.5%. The outliers are already removed from this metrics.



Most of the outliers are removed already, but still it appears to have few. However, average income lies around 60000

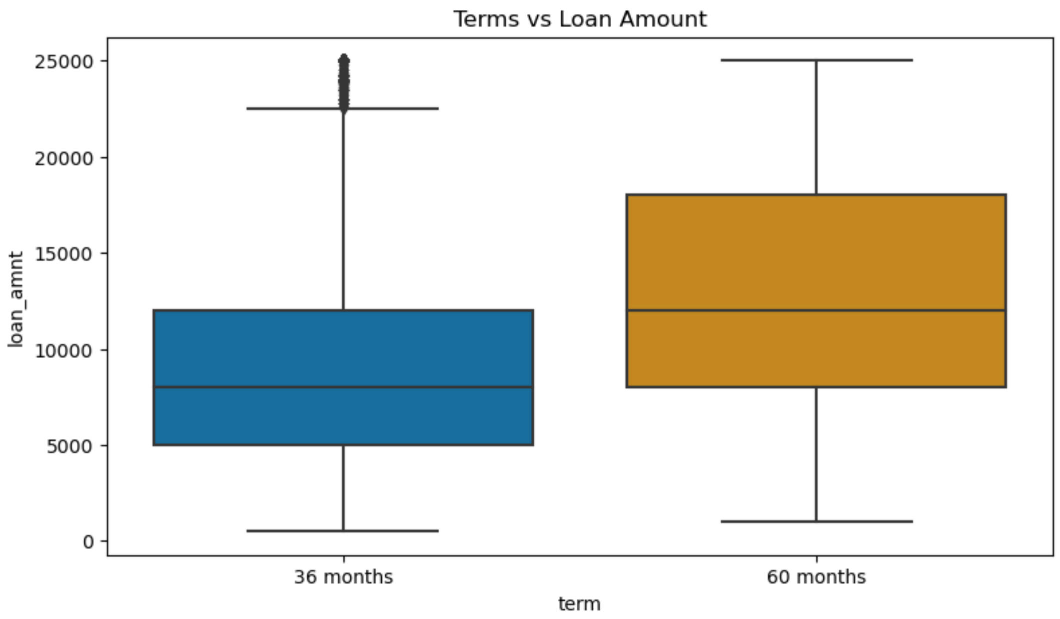


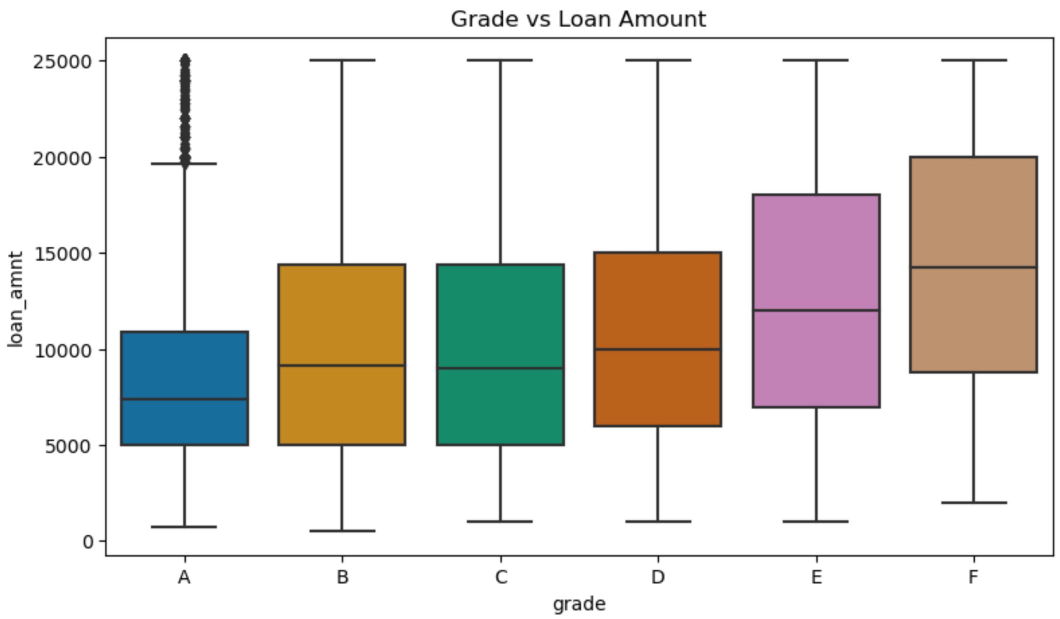




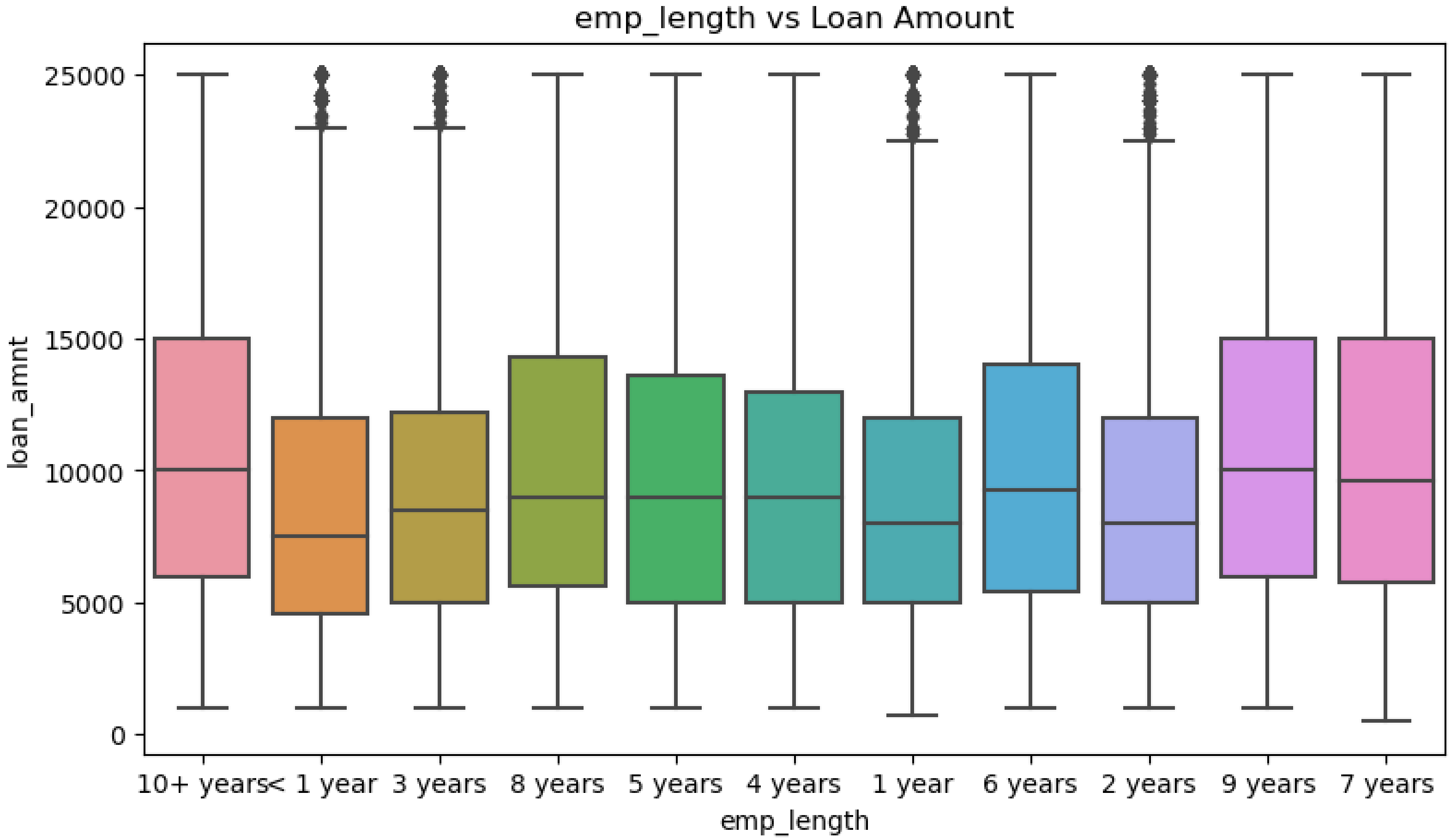
Most of the loans were issue in 2011 year and every year, number of loans issued were doubled.
Most of the loans are issued in last quarter of the year (Oct, Nov, Dec), however, maximum loans were issued in December.
Also, most of the loans were issued on 1st and 3rd day of the week.

Segmented Univariate Analysis

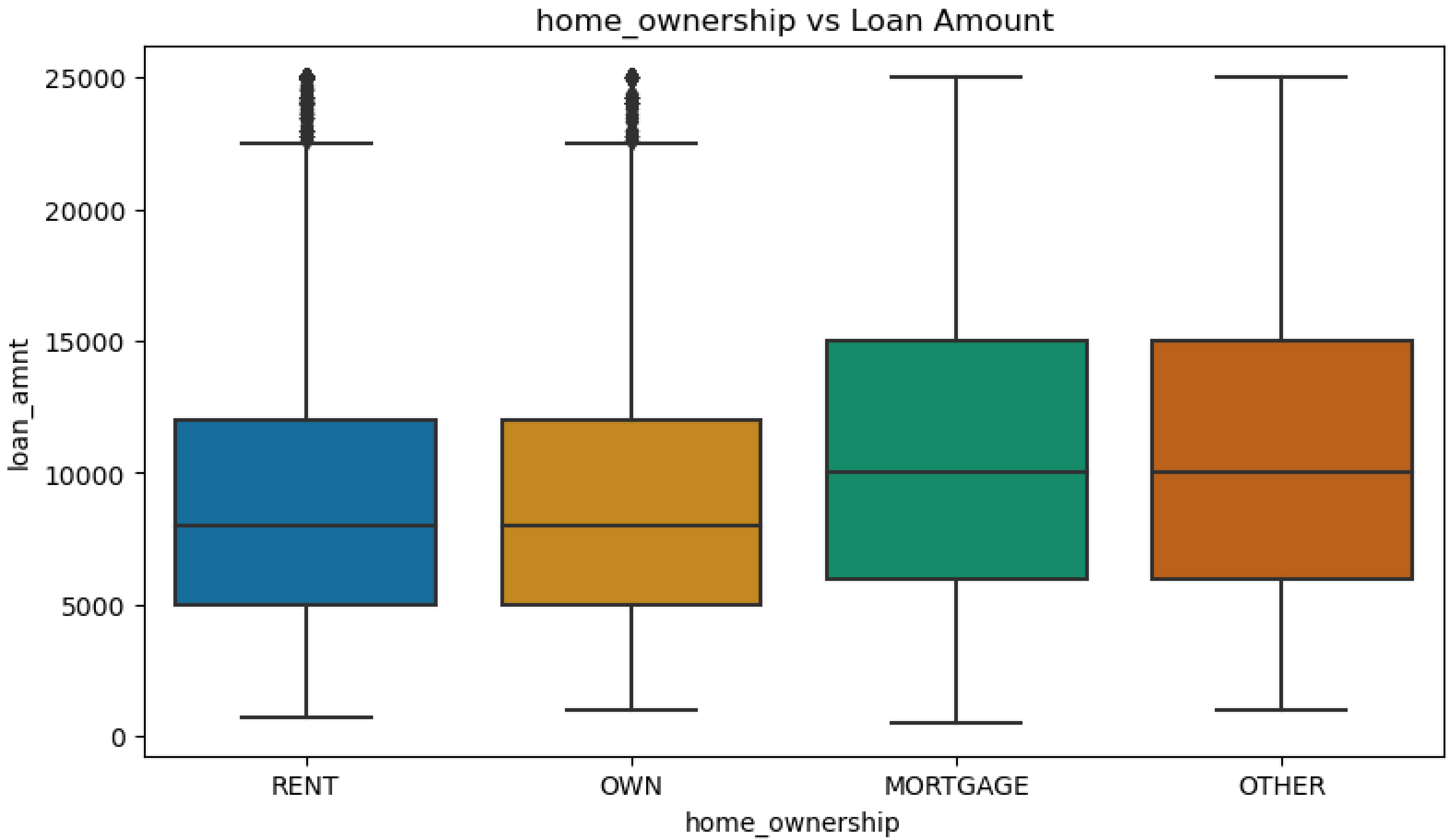




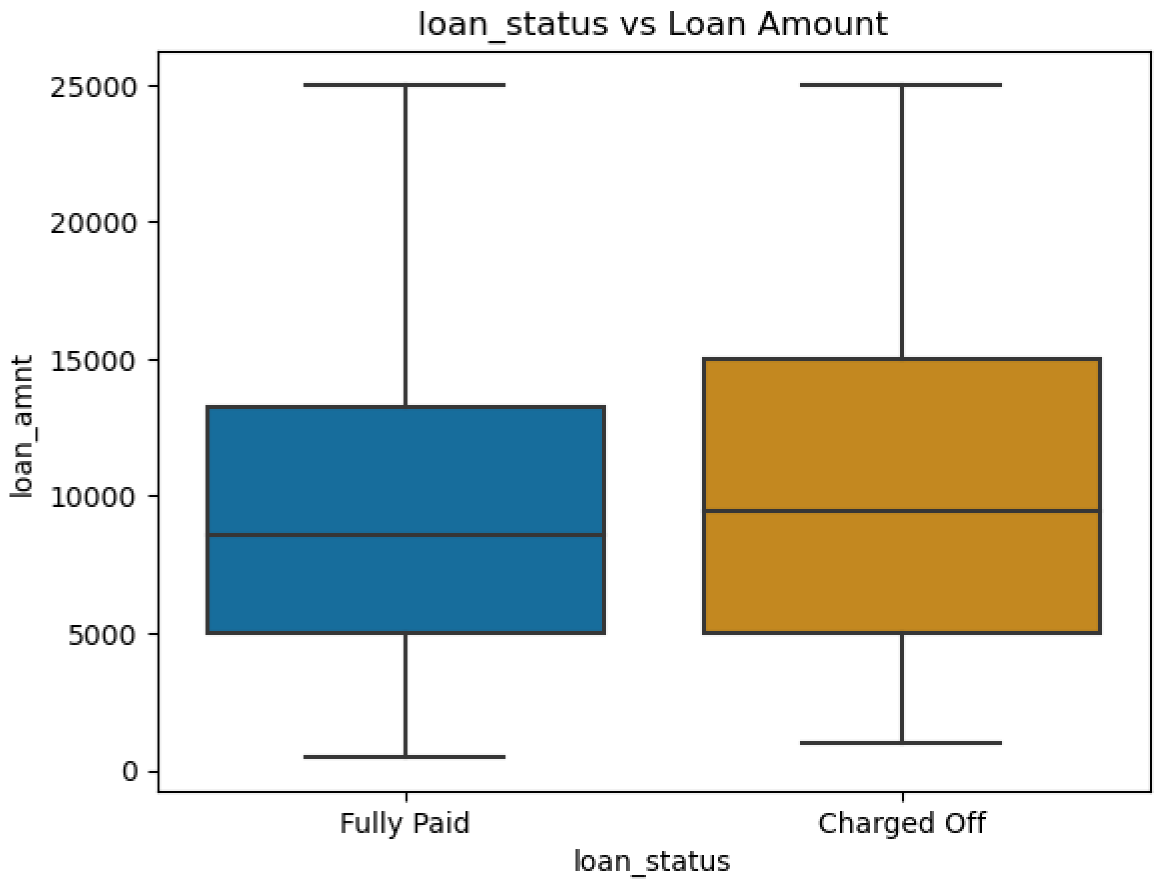
Most of the loans have 60 months tenure
As the grades increases loan amount also increases

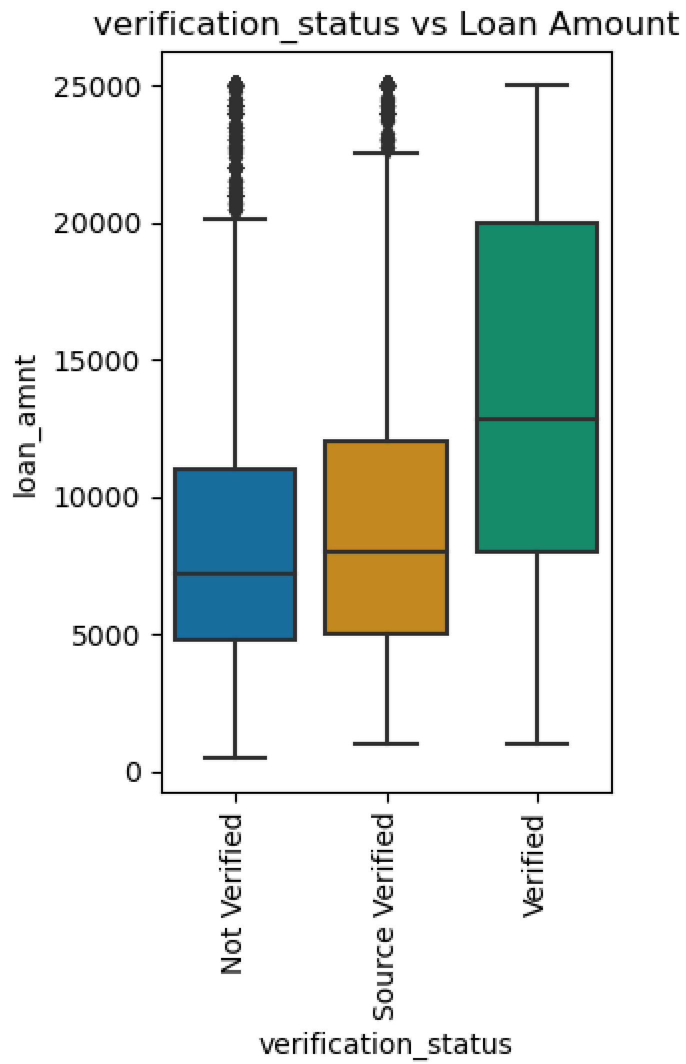


Applicants who have 10+ years of experience (or employee length) have taken more loan compared to the applicants having <1 year.



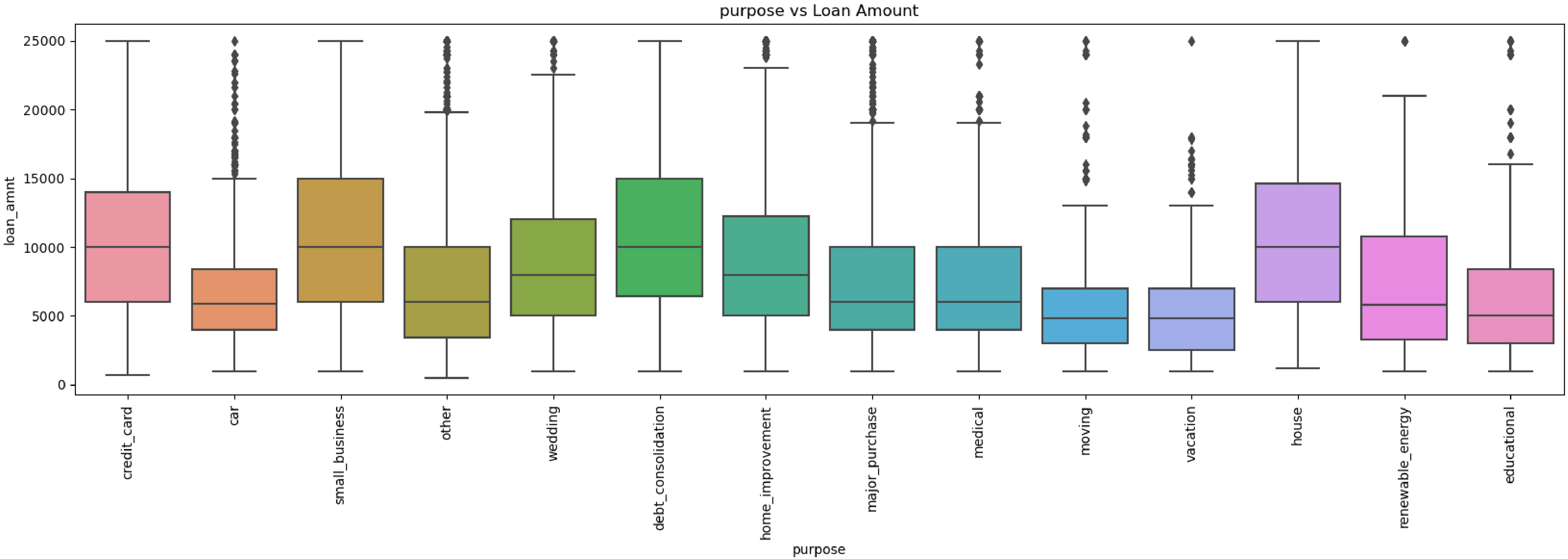
Applicants who has kept something for mortgage have borrowed more loans.



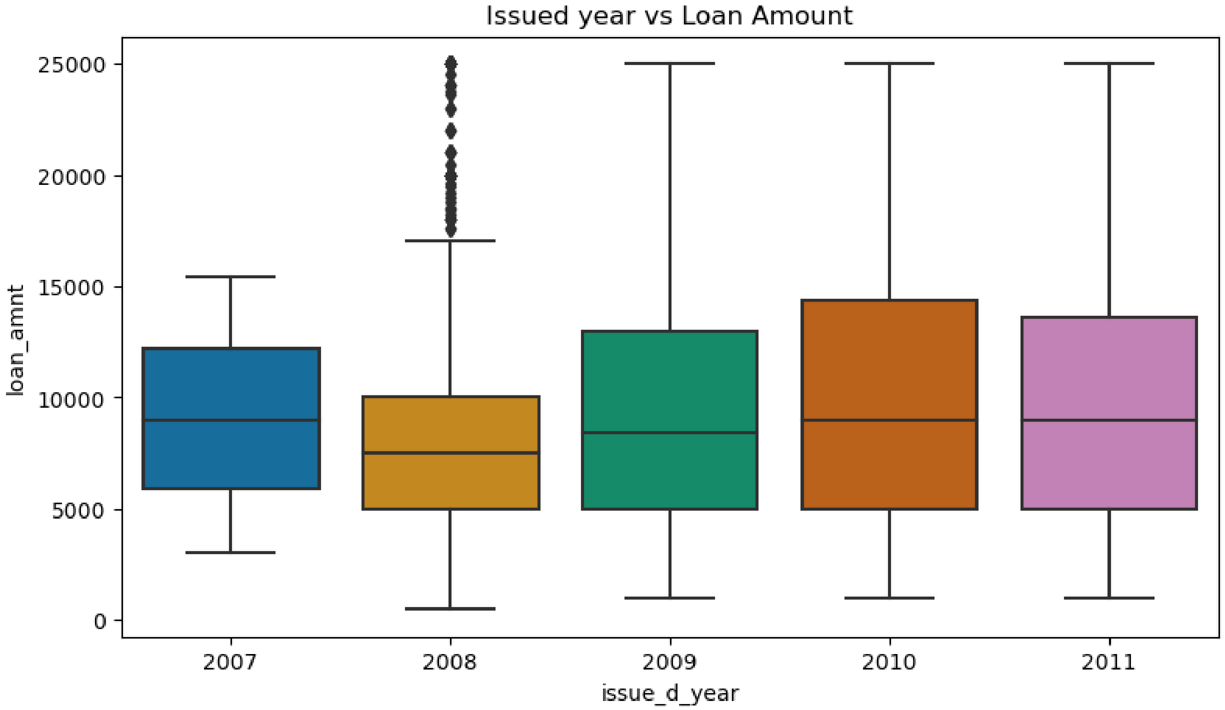


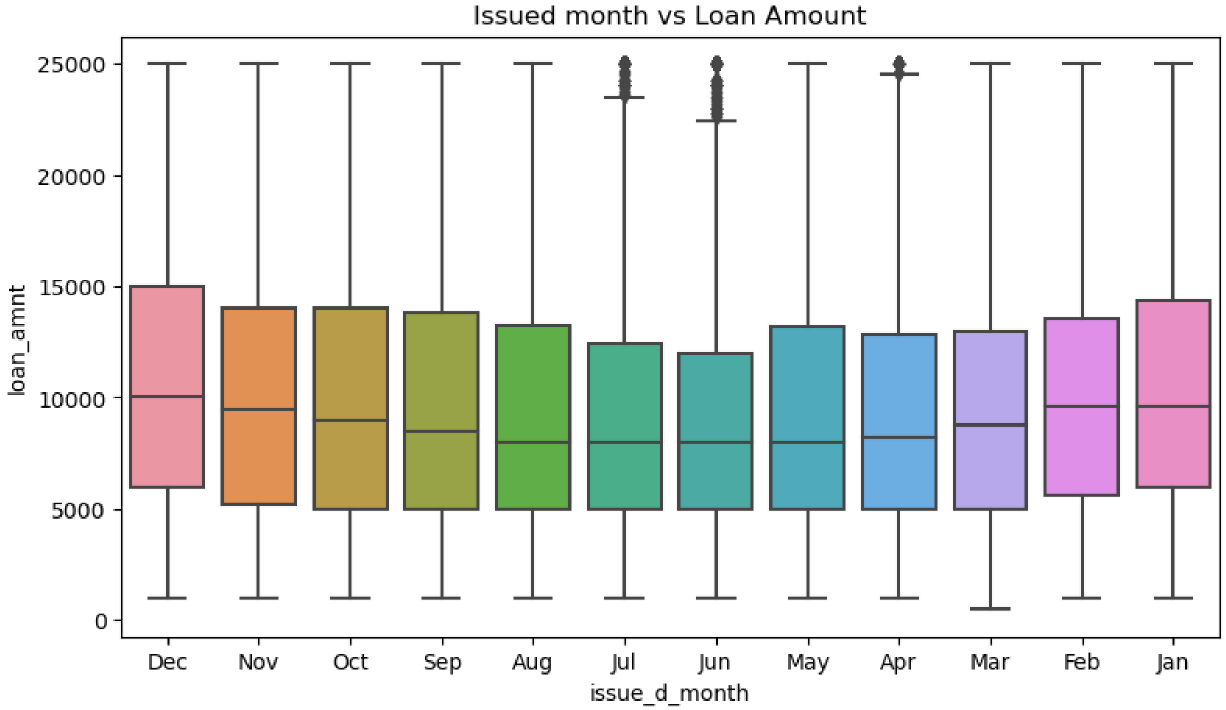
Surprisingly, most of the loan applicants are verified.

Charged Off applicants have higher amounts of loan than Fully Paid ones.



The main purpose behind loans taken by the applicants were for small businesses or for debt consolidation.

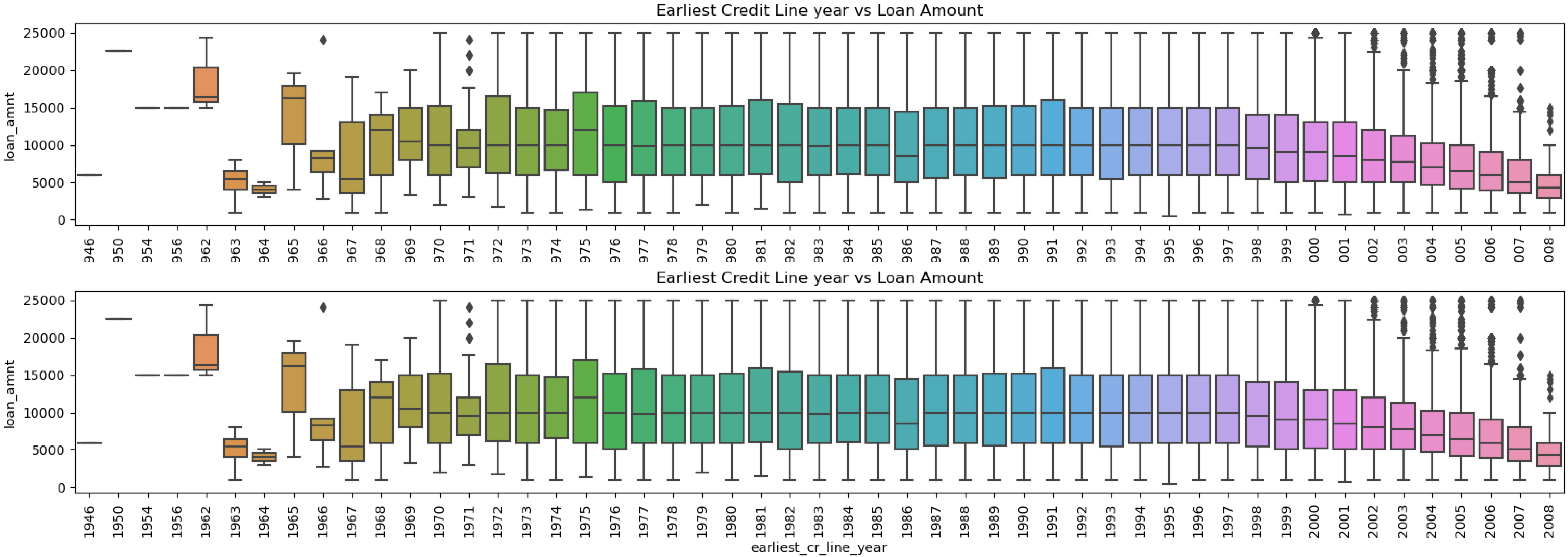




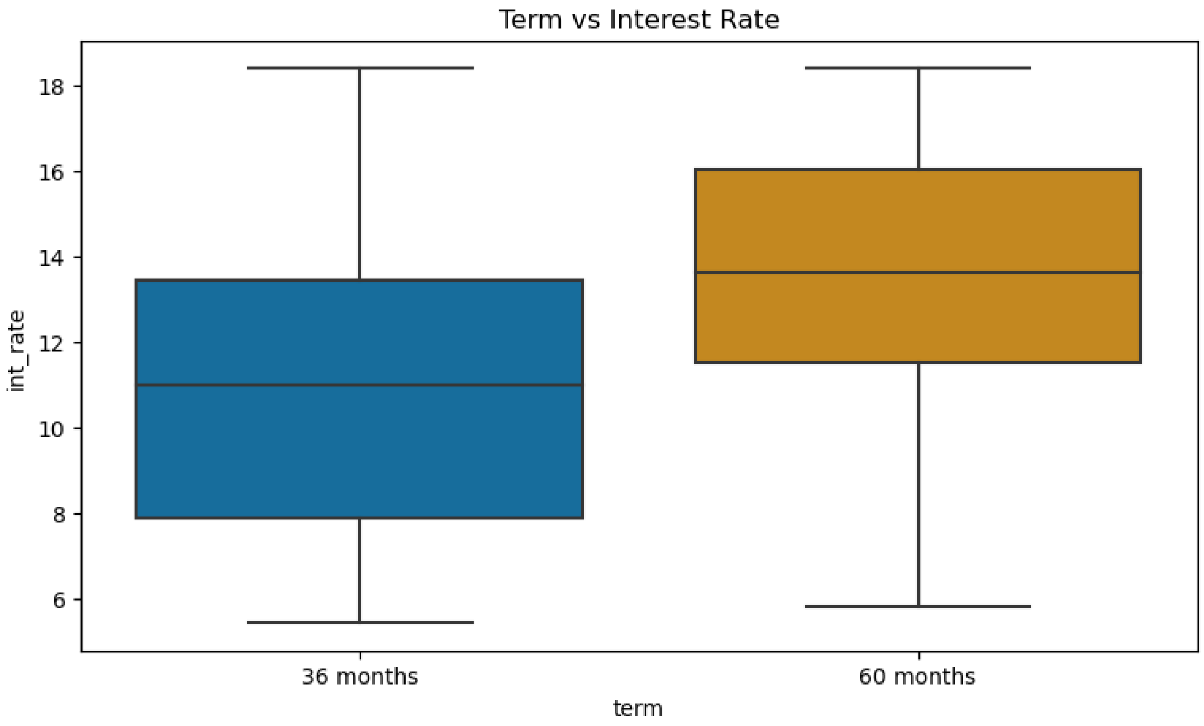
The median loan amount in each year did not change much but the distribution is more spread as the years increase, which means people have taken different loan amounts in each year.

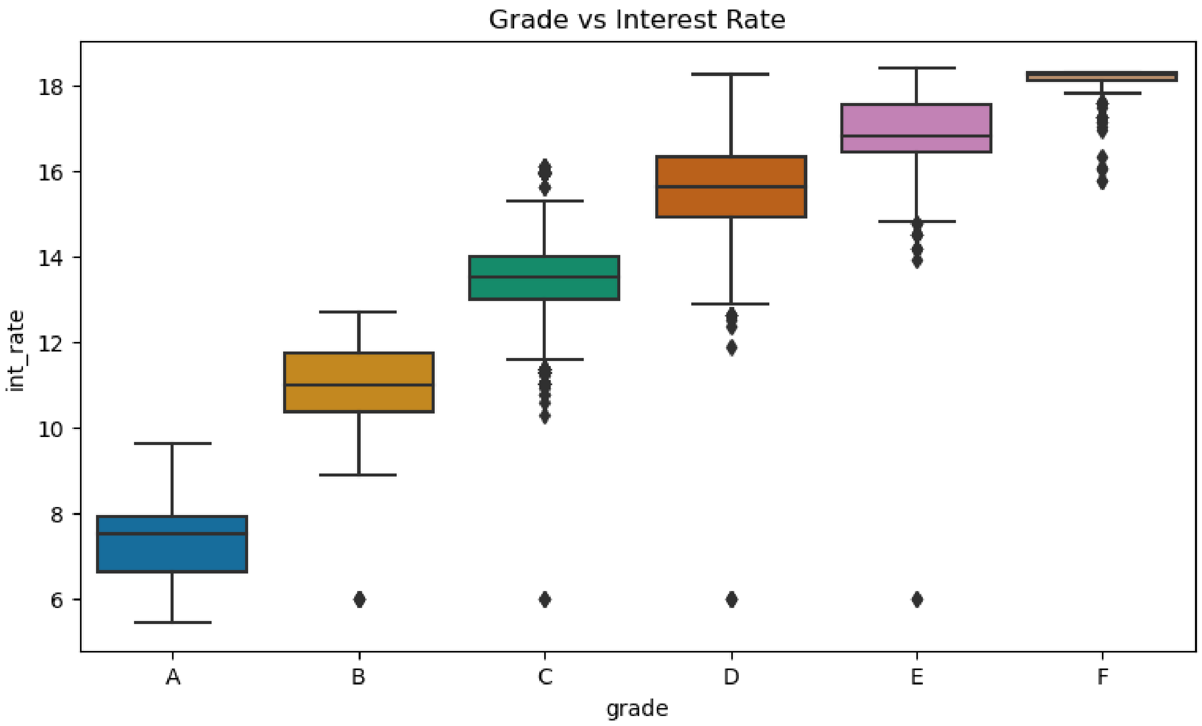
Most of the loan applicants have taken higher loan amount in 2008 which are plotted as outliers.

Loan borrowers took almost similar amounts in all the months except in December which is higher.



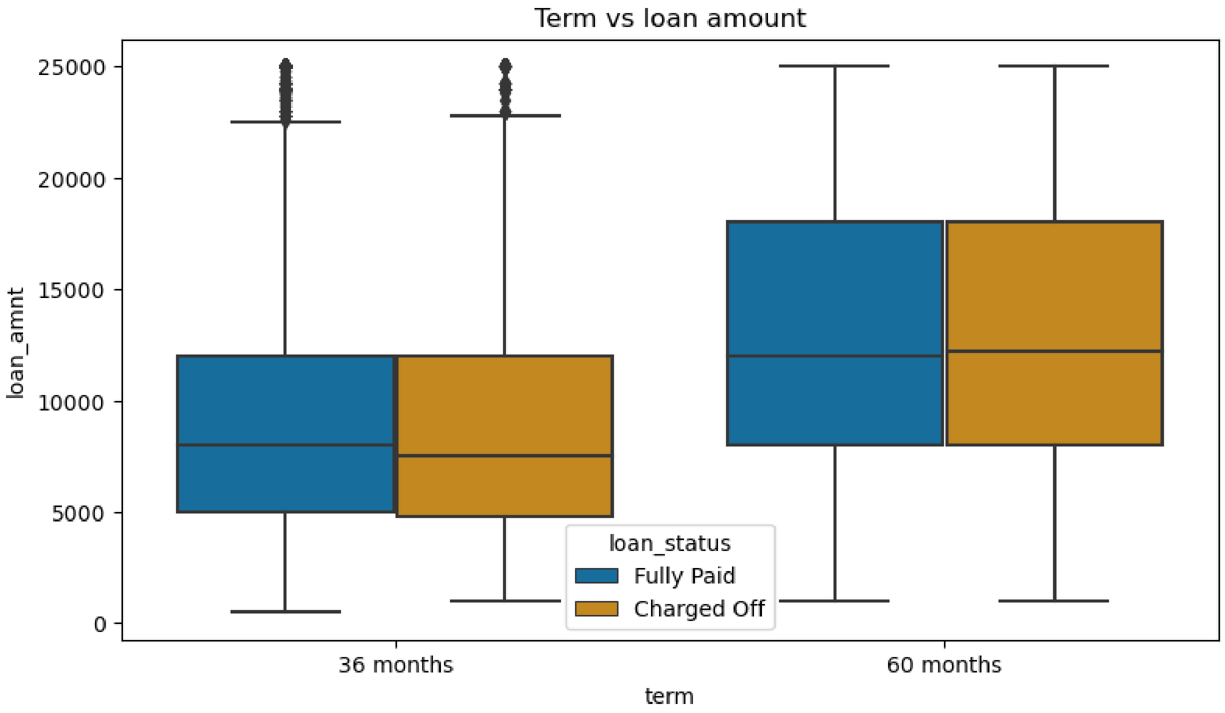
Borrowers who go earliest credit line in 1975 got wide spreaded amount of loans than others.

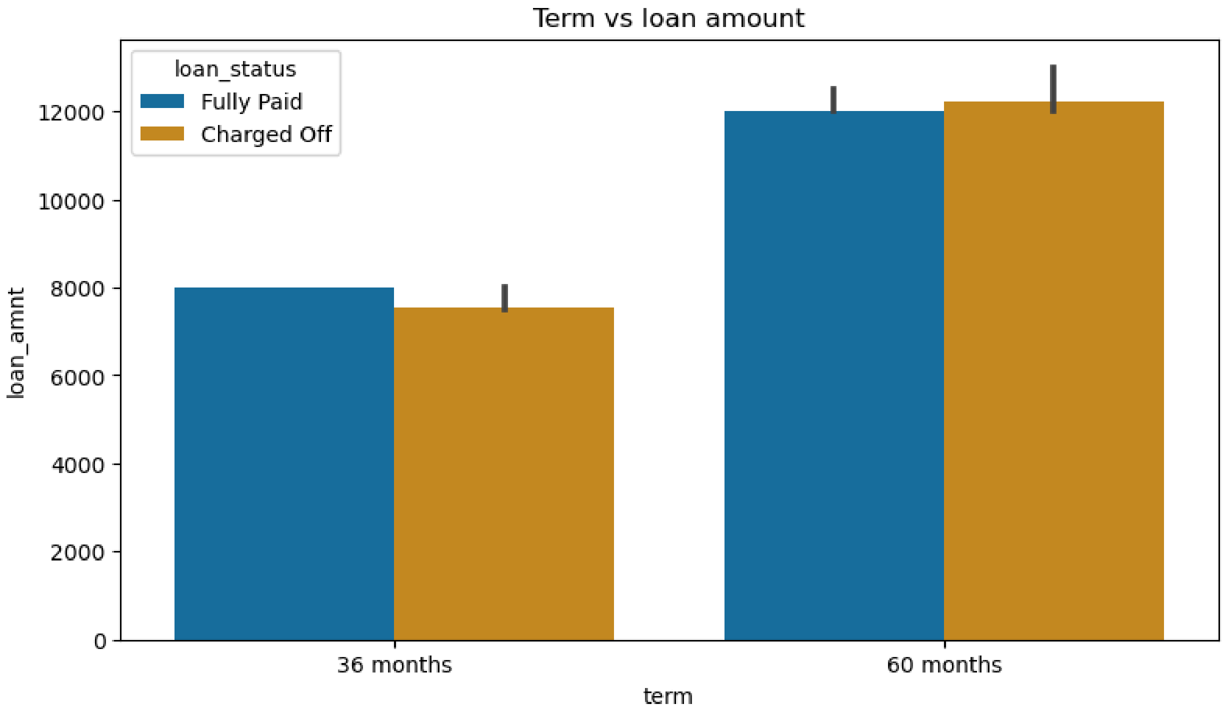




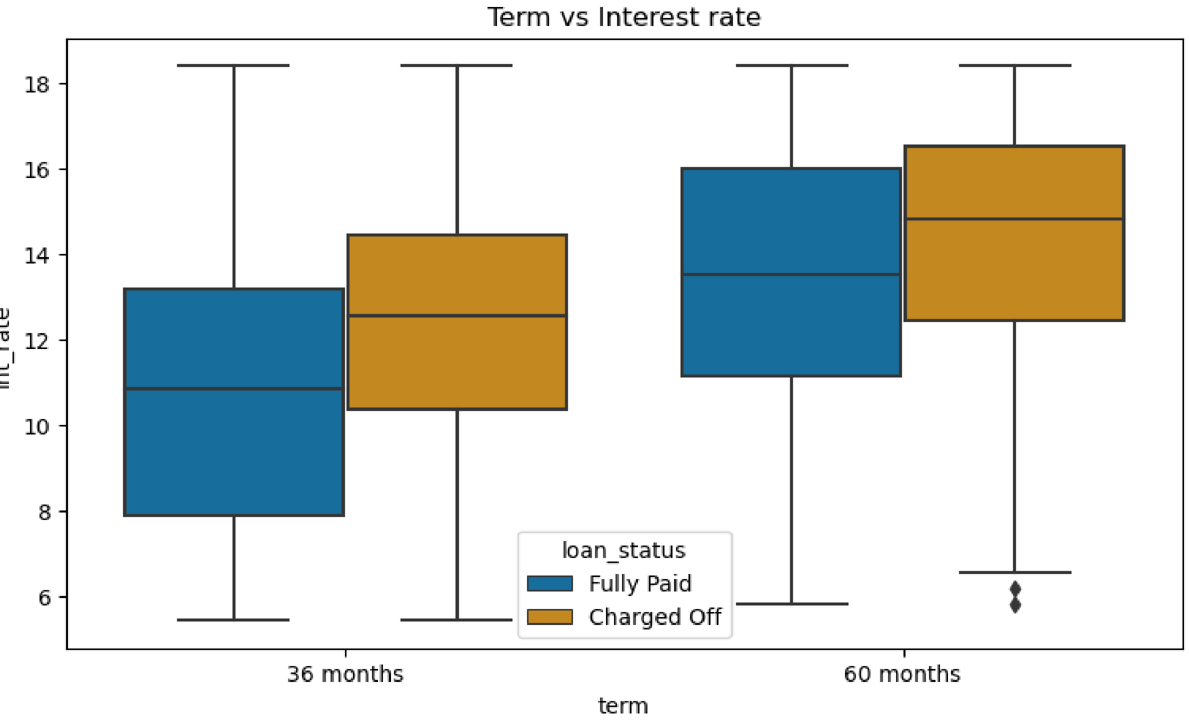
The interest rates are higher for Higher tenure loans. And Also Interest Rates are Higher as Grades are Lowering (A to G).

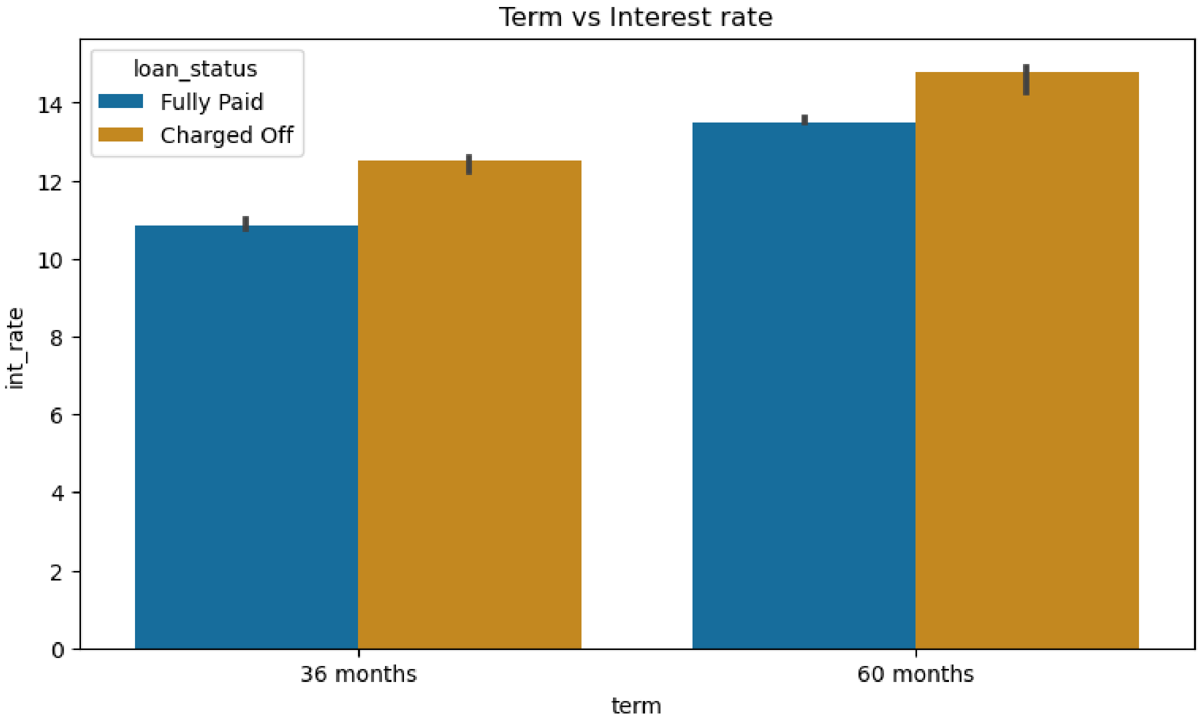
Bivariate Analysis





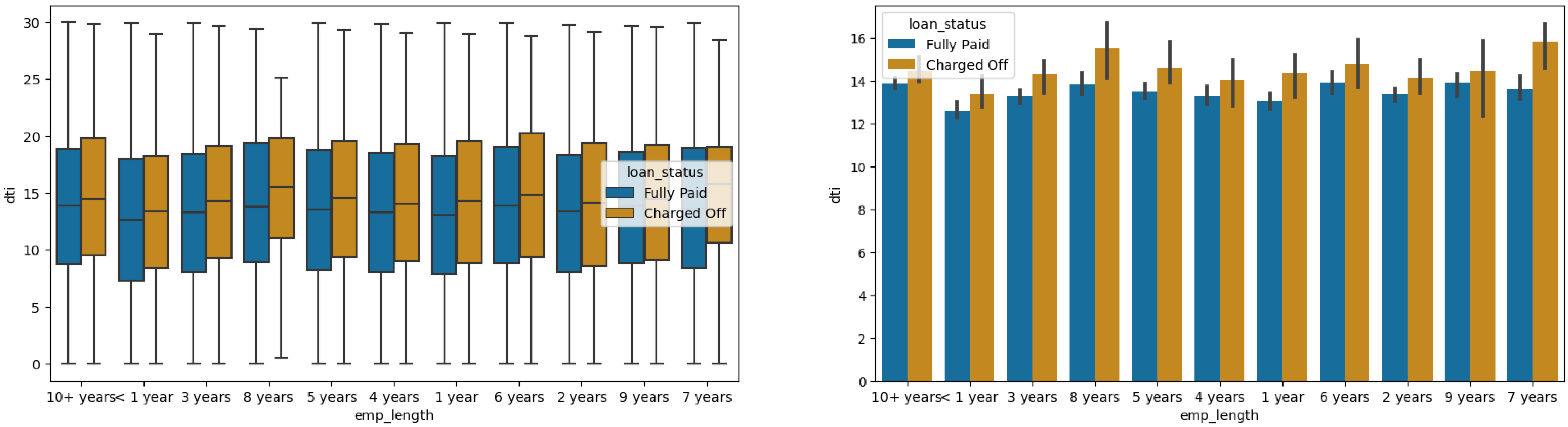
Loan amount does not serve any significant purpose in analysing w.r.t terms as they both have equal distribution for 36 and 60 months





For higher interest rates the defaulters rate is higher in both 36 and 60 months tenure.

emp_length vs DTI



Employment Length and DTI are not showing any patterns towards defaults.

Final Conclusions:

- Lending club company should reduce the high interest loans for 60 months tenure, they are prone to loan default.
- Grades are good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to Low grade (G to A).
- Lending Club should control their number of loan issues to borrowers who are from CA, FL and NY to make profits.
- Small business loans are defaulted more. Lending club should stop/reduce issuing the loans to them.
- Borrowers with mortgage home ownership are taking higher loans and defaulting the approved loans. Lending club should stop giving loans to this category when loan amount requested is more than 12000.
- When employment length is 10yrs and loan amount is 12k-14k, defaulters are expected more.