

Lending Club Case Study



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**"A loan can be a rope to pull
you out of trouble, or it can
be the noose that hangs you."**

— Anon



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PROBLEM STATEMENT

- 1 This describes the problem statement for the case study and the data driven approach.

UNIVARIATE ANALYSIS

- 2 This describes the unique character of every individual feature.

BI-VARIATE ANALYSIS

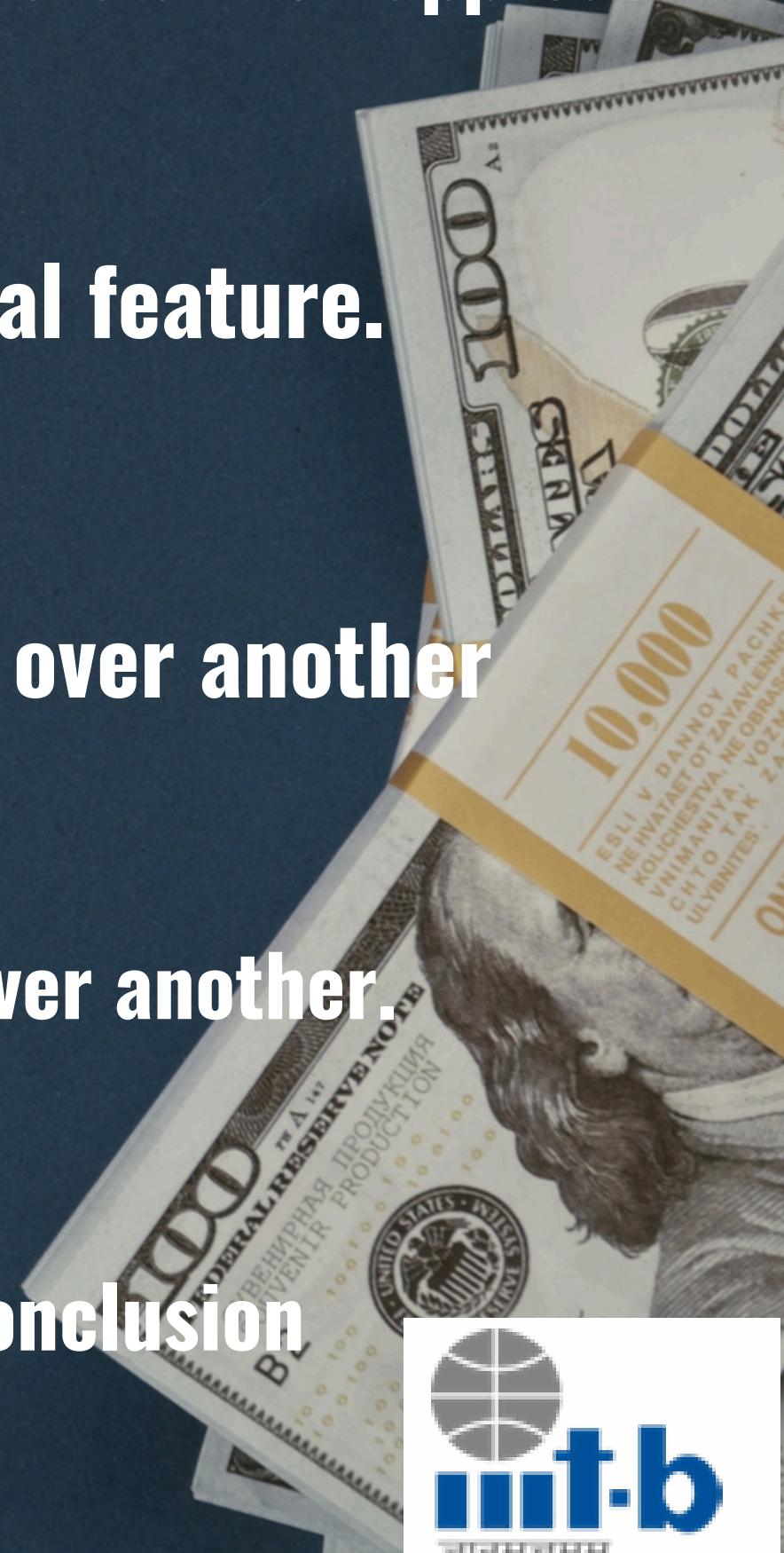
- 3 This describes the behavior or influence of one feature over another

MULTI VARIATE ANALYSIS

- 4 This describes the behavior or influence of one feature over another.

CONCLUSION

- 5 This part describes the inference of the analysis with conclusion and recommendation.





PROBLEM STATEMENT AND APPROACH.

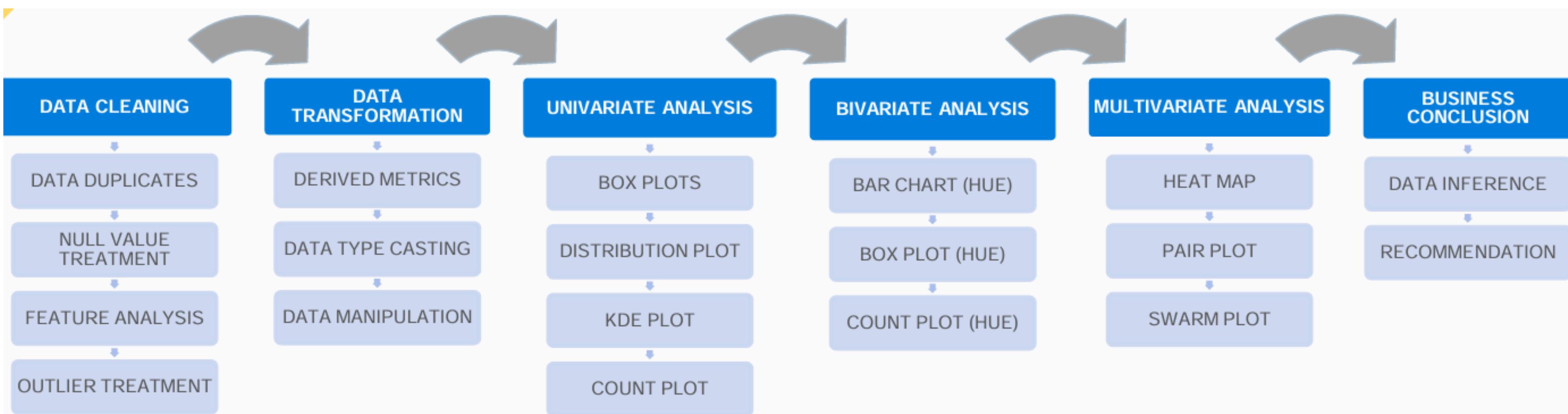
PROBLEM STATEMENT HISTORY

Lending club provided interest-only loans affordable to subprime borrowers is one of the main causes for 2008 Global Financial Crisis.

STATEMENT

Lending a loan is risky decision that a company takes and the borrowers who default cause the largest amount of loss to the lenders, reduces lender's cash flow. Identifying those risky applicants helps in cutting down the amount of credit loss to the organization.

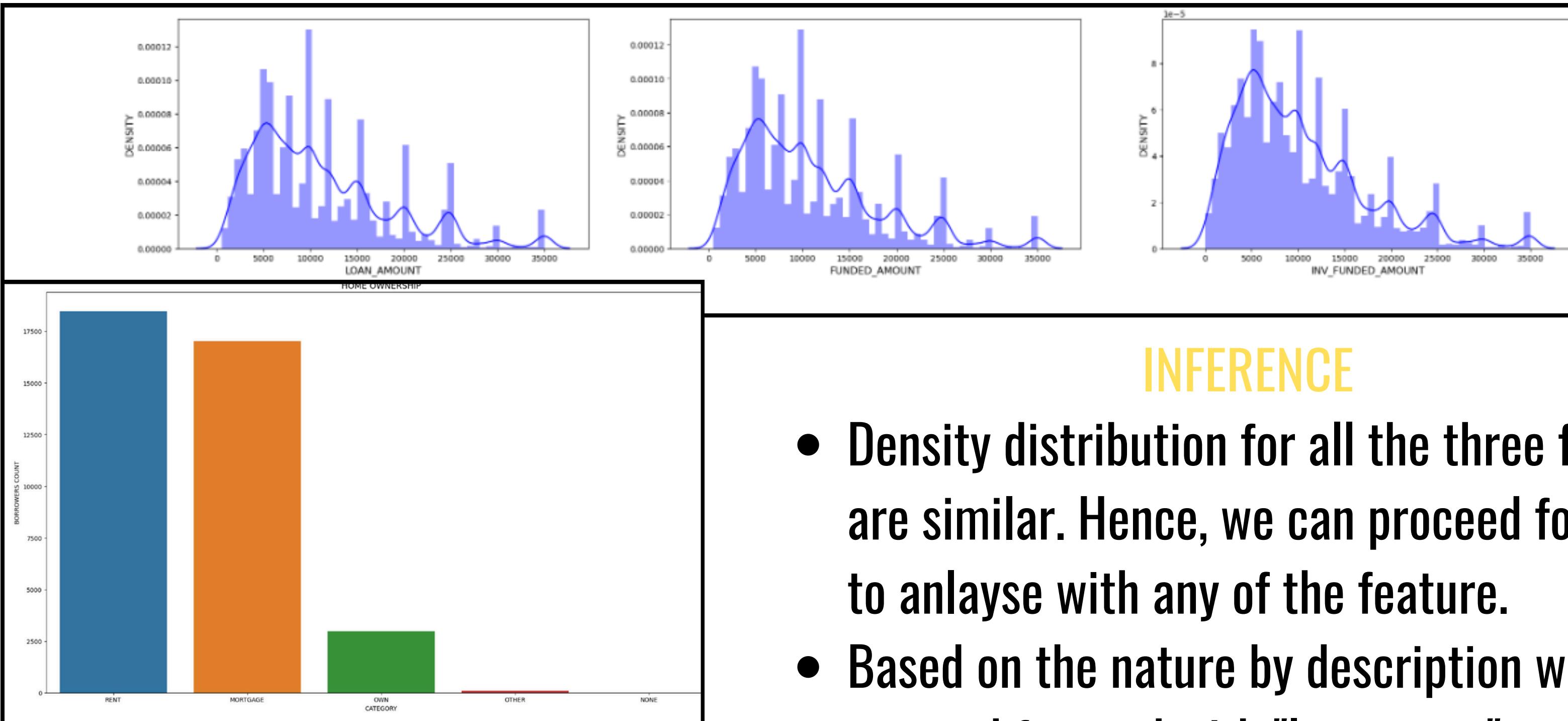
APPROACH





UNIVARIATE ANALYSIS

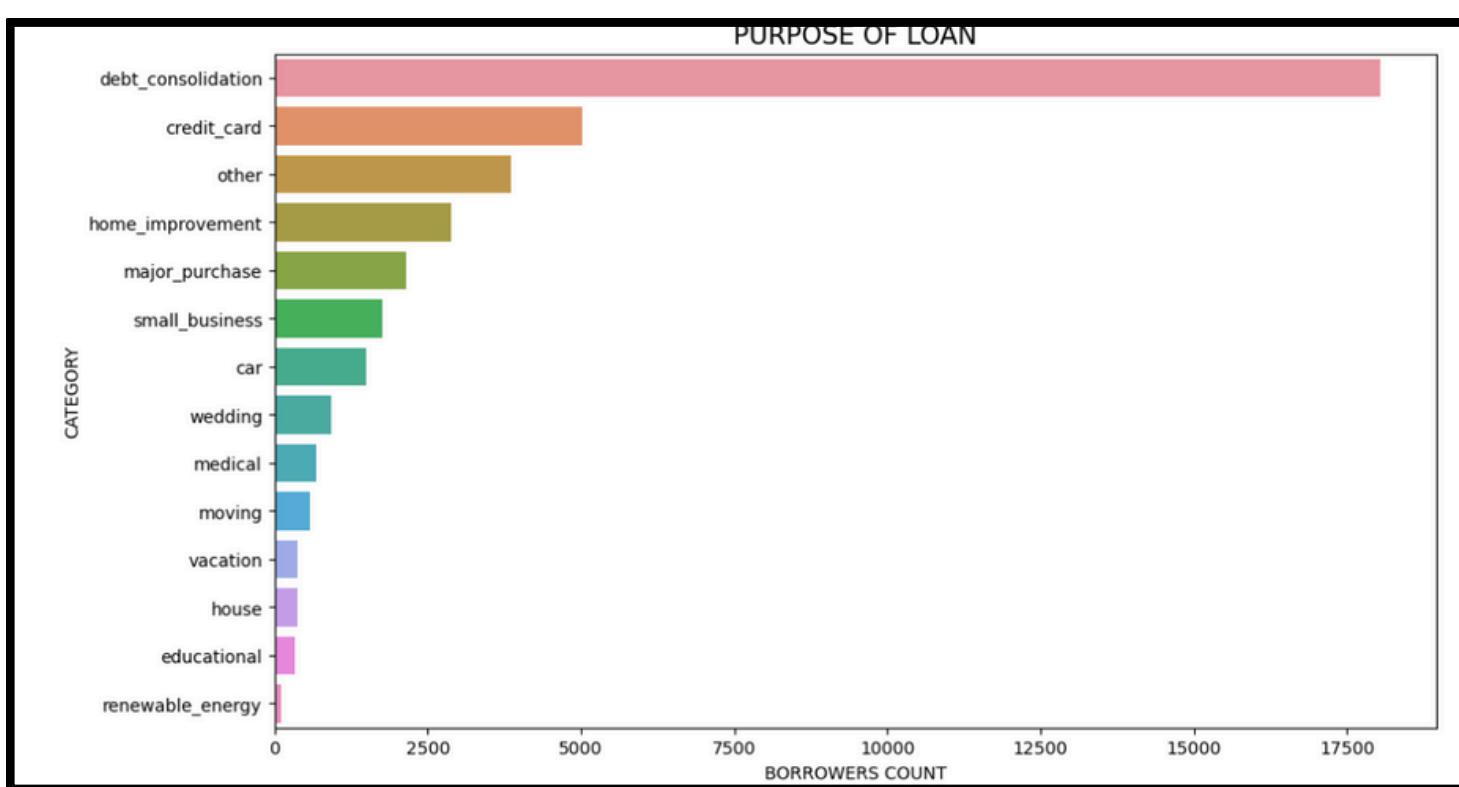
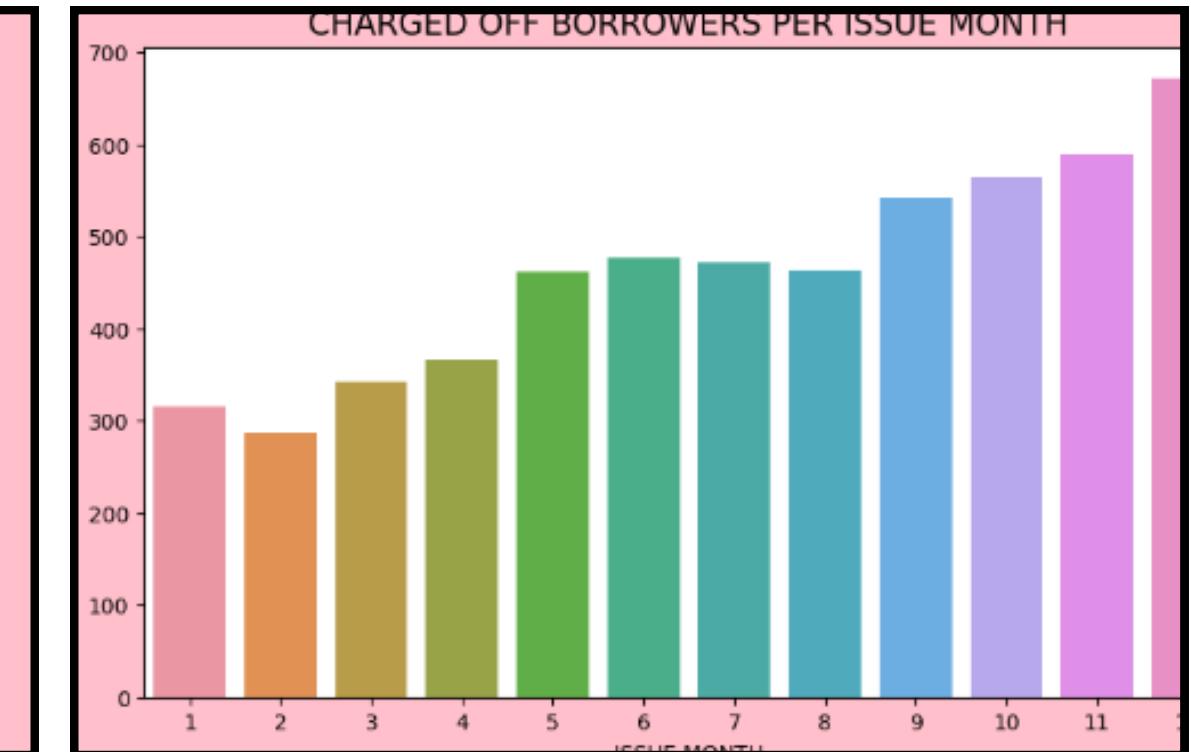
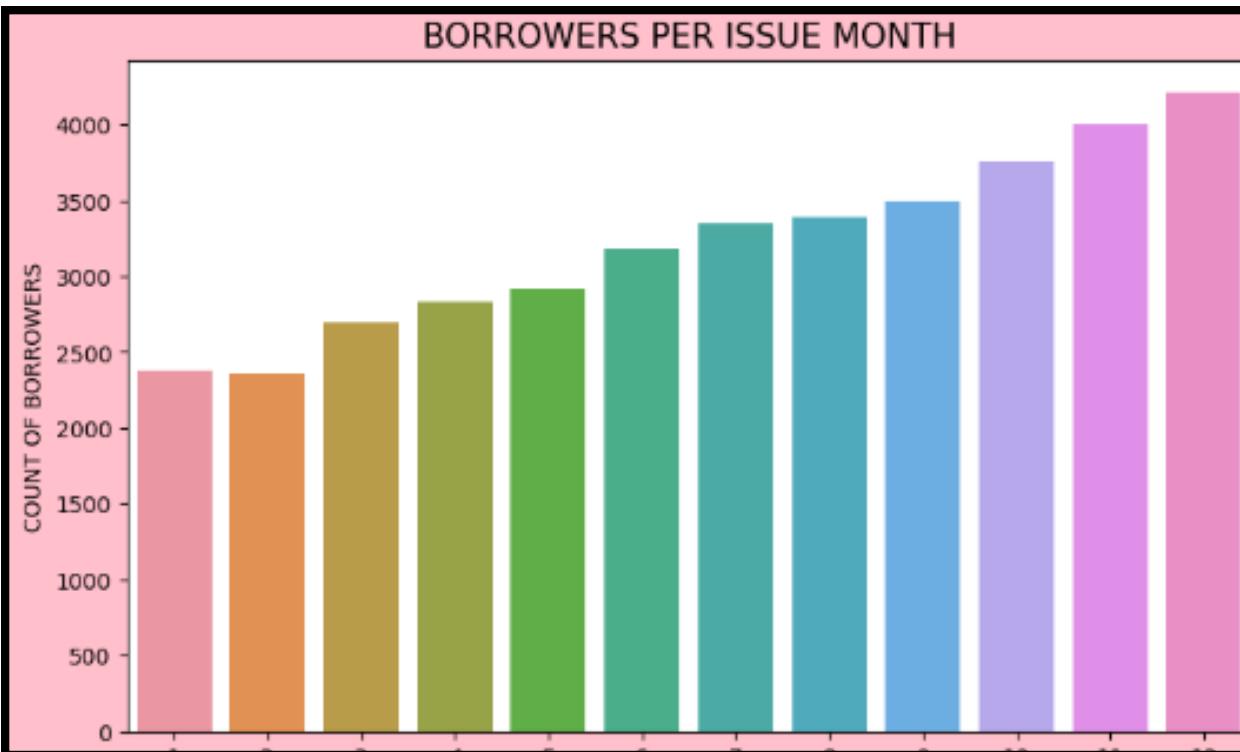
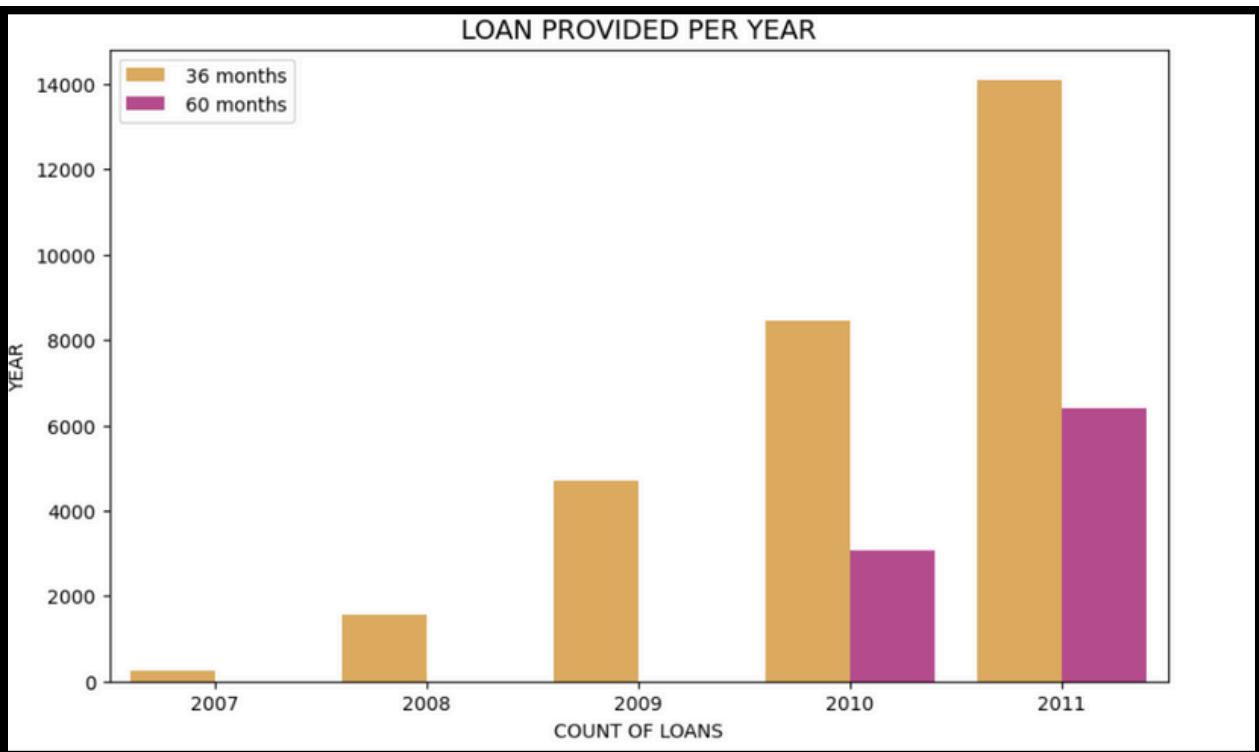
UNDERSTANDING OF UNIVARIATE ANALYSIS



INFERENCE

- Density distribution for all the three features are similar. Hence, we can proceed forward to analyse with any of the feature.
- Based on the nature by description we will proceed forward with "loan_amnt".
- Proportion of borrowers who owns a house is significantly less.

LOAN AMOUNT & IT'S TENURE



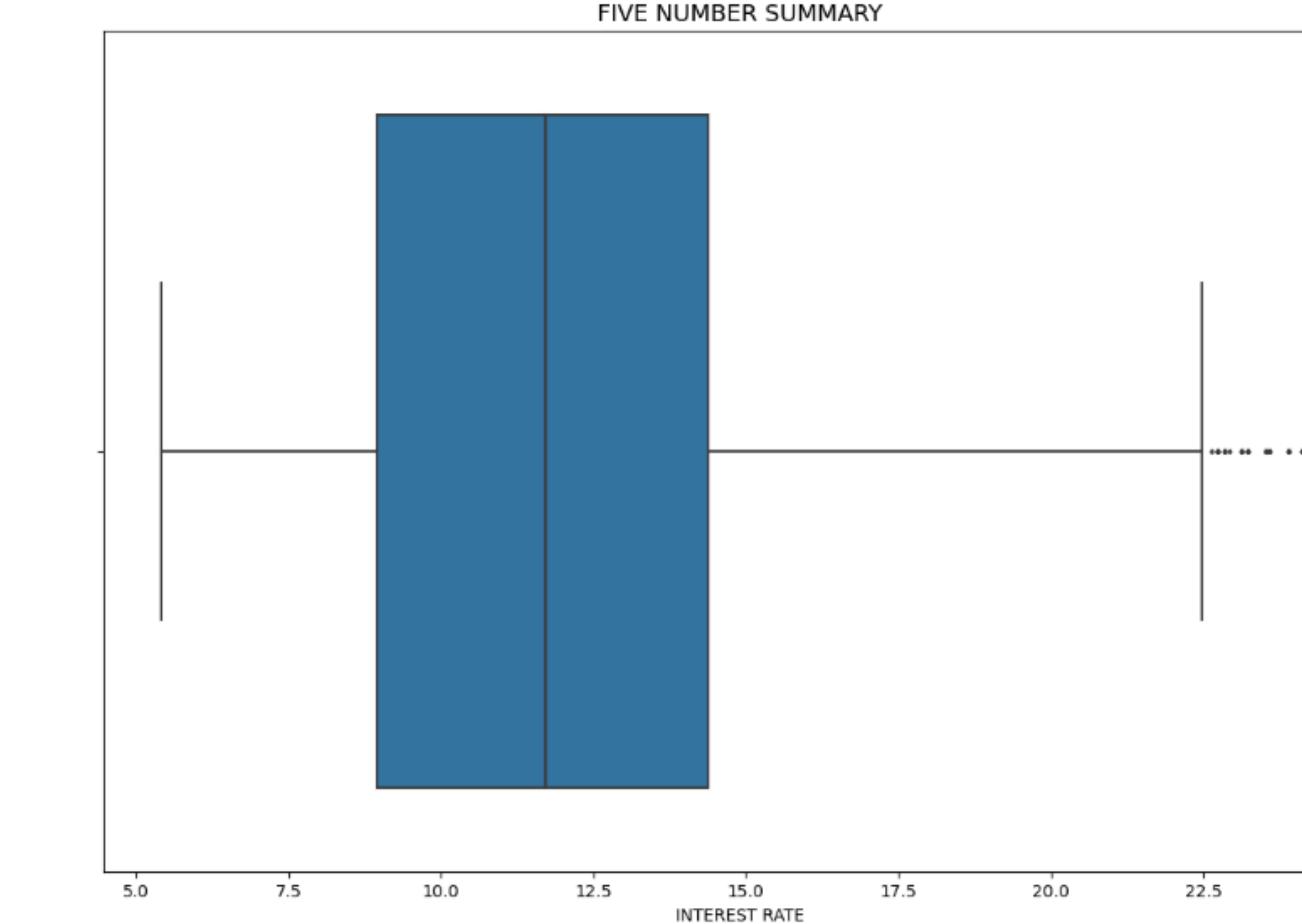
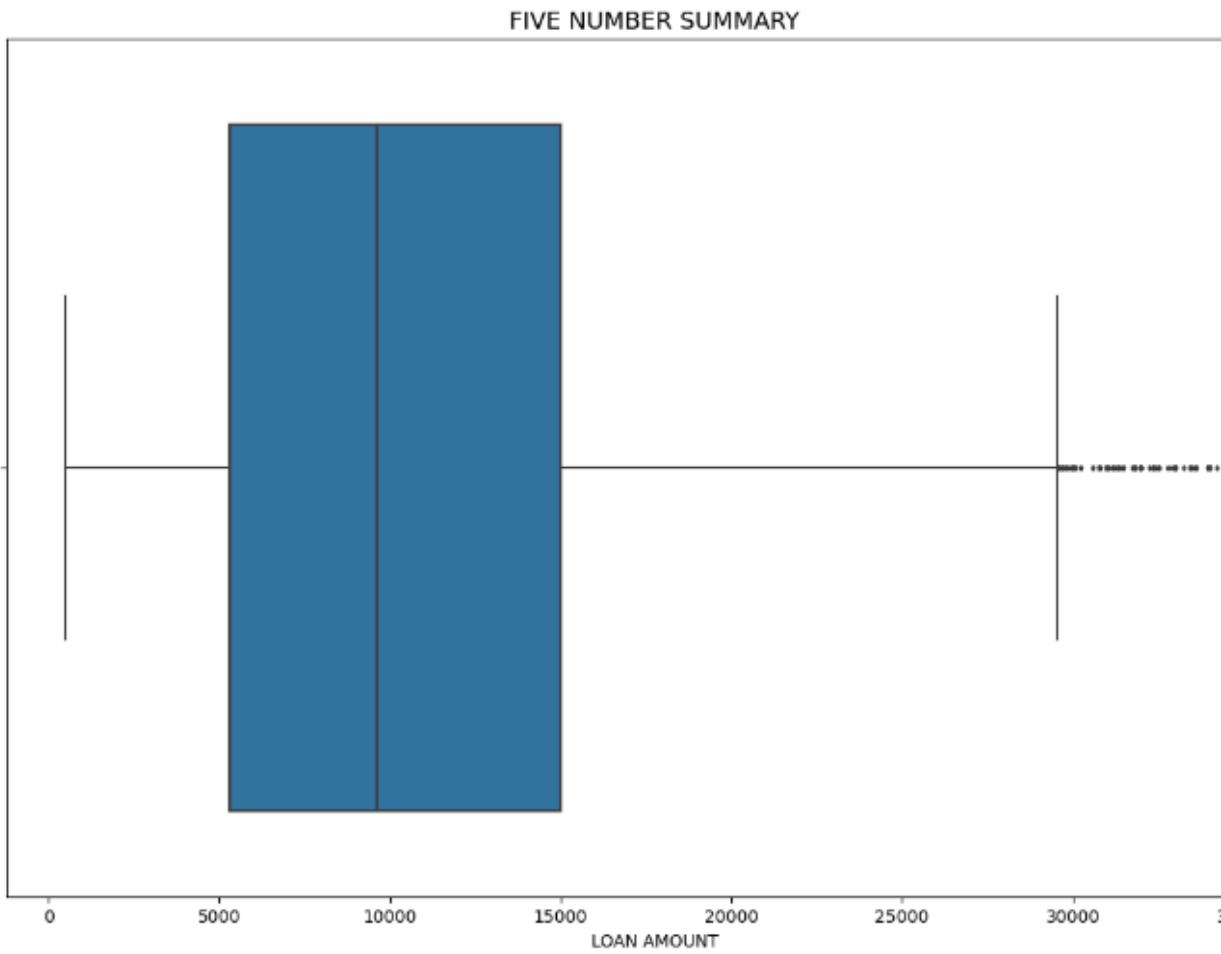
INFERENCE

For each year number of borrowers keep increasing and they opt for 36 month tenure.

Loans approved on Q4 are most likely to default.

Most of the borrowings happen for debt consolidation and credit card bill payment.

LOAN AMOUNT & INTEREST RATE



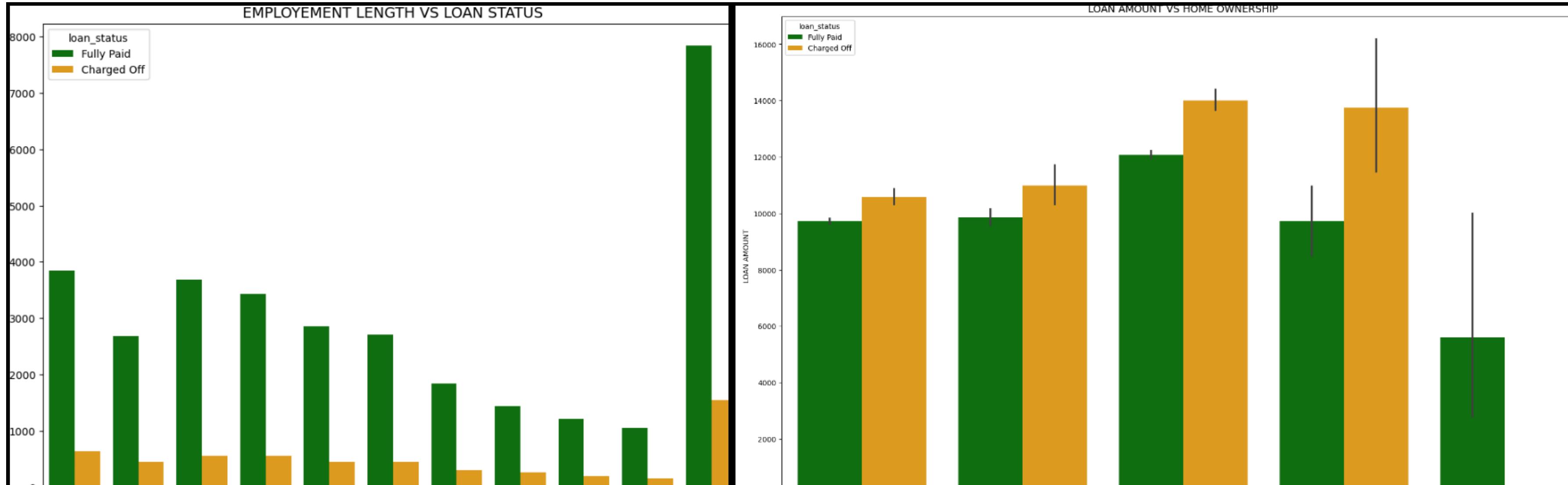
Inference

- Most borrowers prefer to get a loan amount between 5000 to 15000.
- Almost all the borrowers get interest rate between 9% to 14%



BIVARIATE ANALYSIS

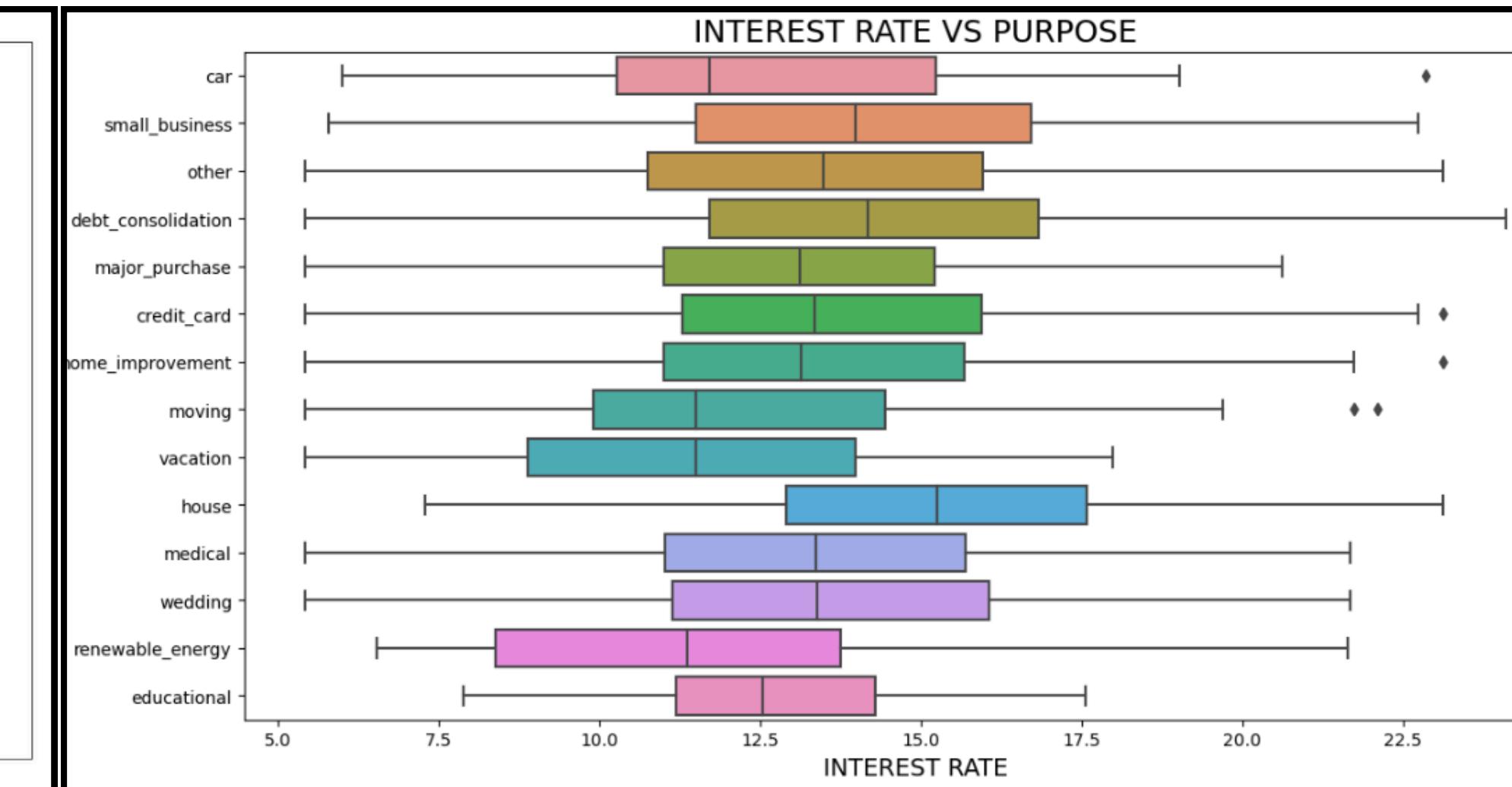
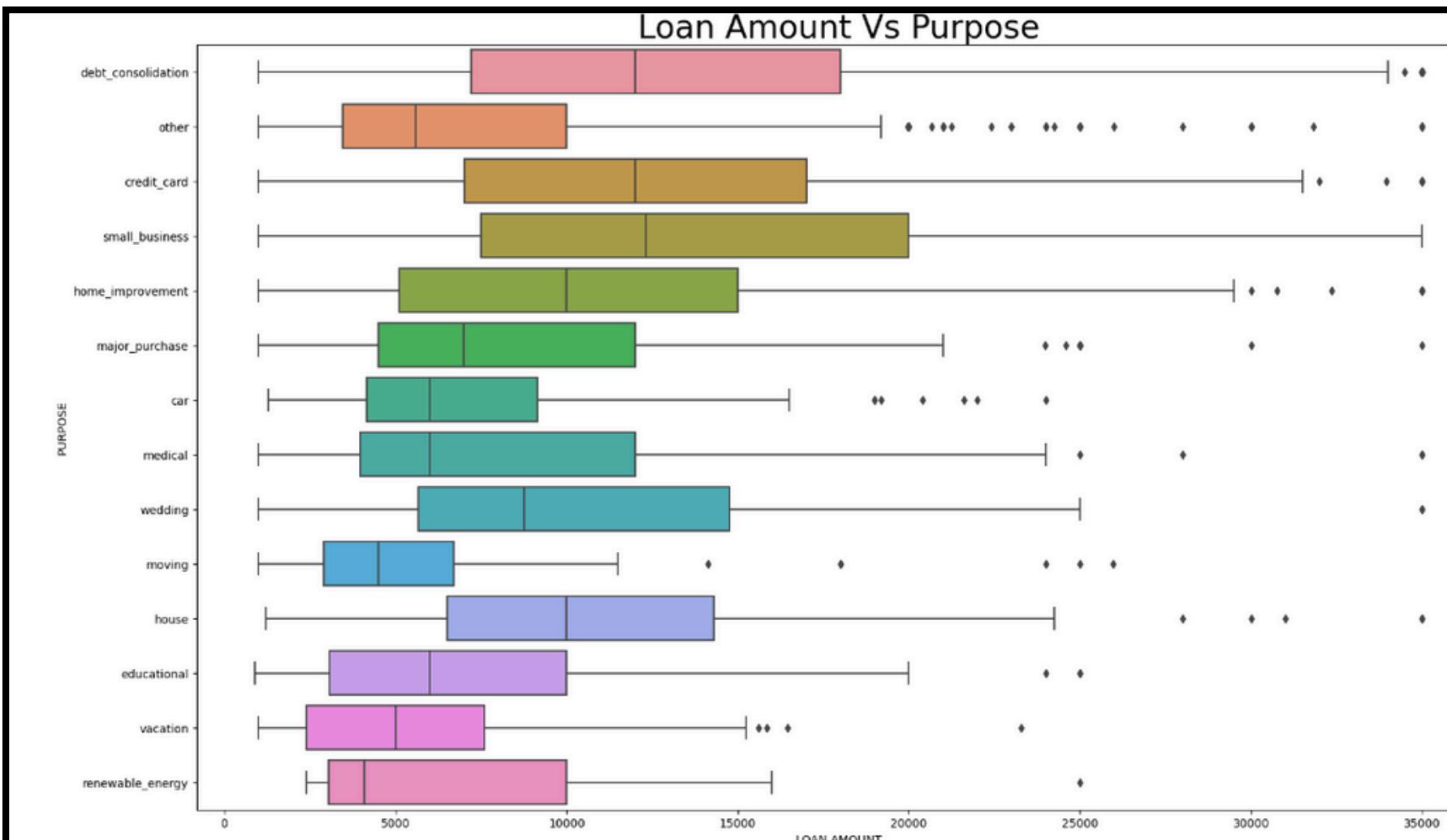
EMPLOYMENT LENGTH & HOME OWNERSHIP



INFERENCE

- Borrowers with 10+ years of employment length are more likely to charge off.
- Borrowers living on mortgage with loan amount greater than 12k are likely to charge off.

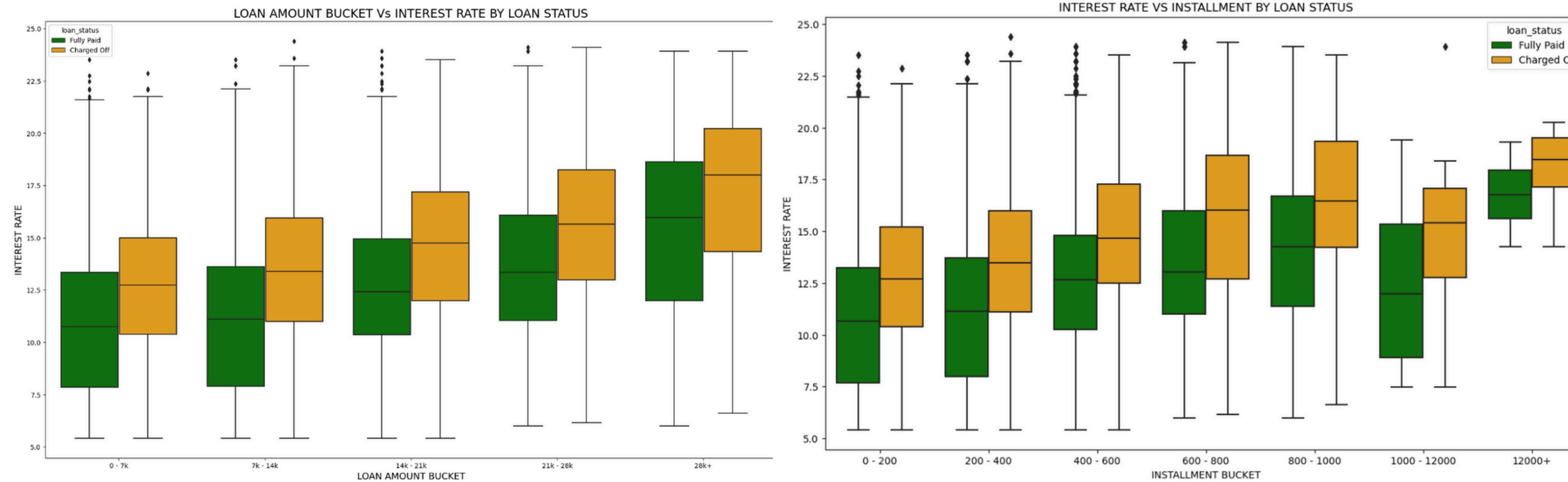
INTEREST RATE BASED ON LOAN AMOUNT & DIFFERENT PURPOSES



INFERENCE

- Loan for debt consolidation, credit card, small business with average loan amount greater than 12000 are more likely to default.
- Loan provided for house, debt consolidation, small business with highest interest rate are more likely to charge off.

INTEREST RATE & CHARGE OFF

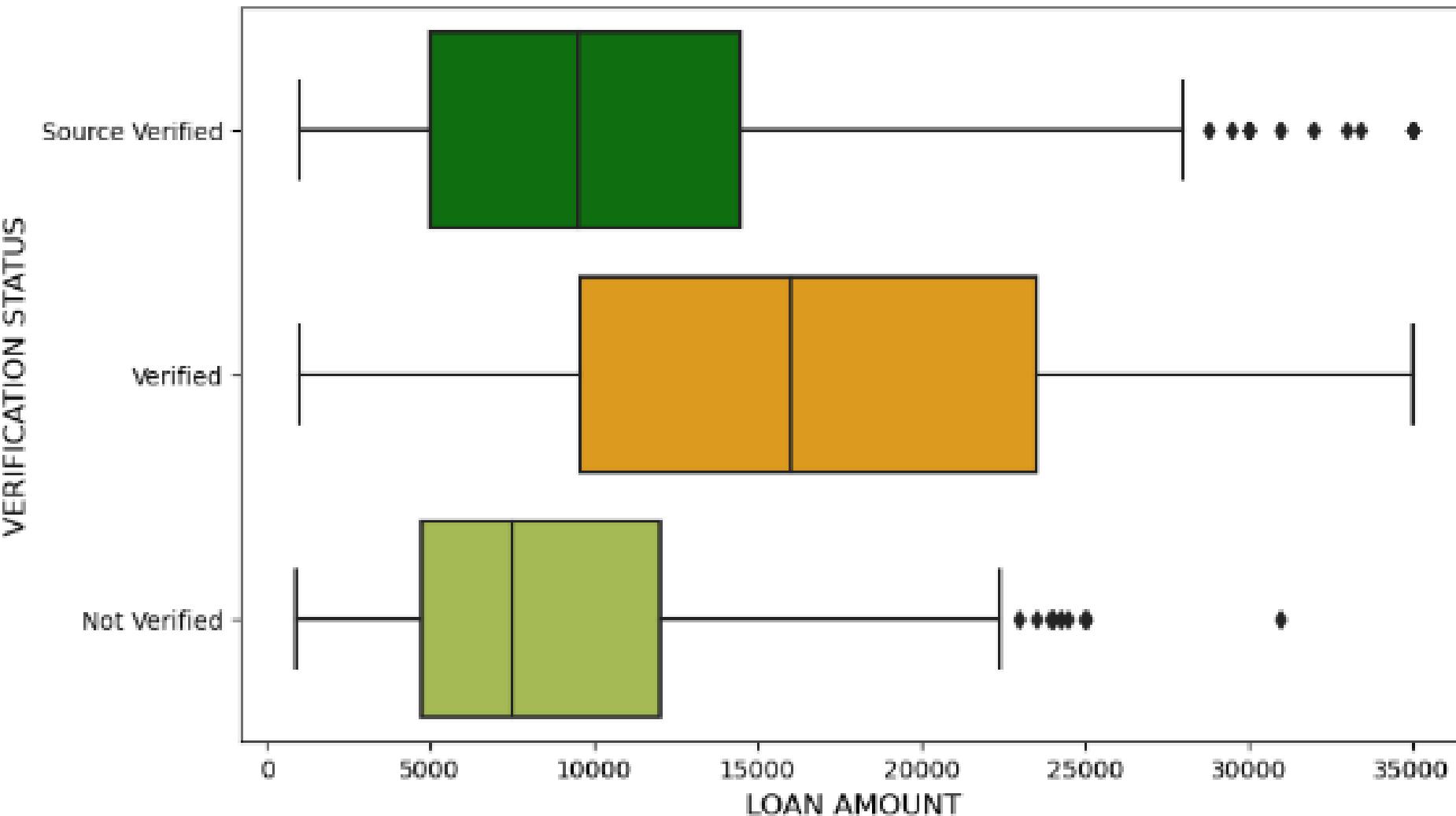


INFERENCE

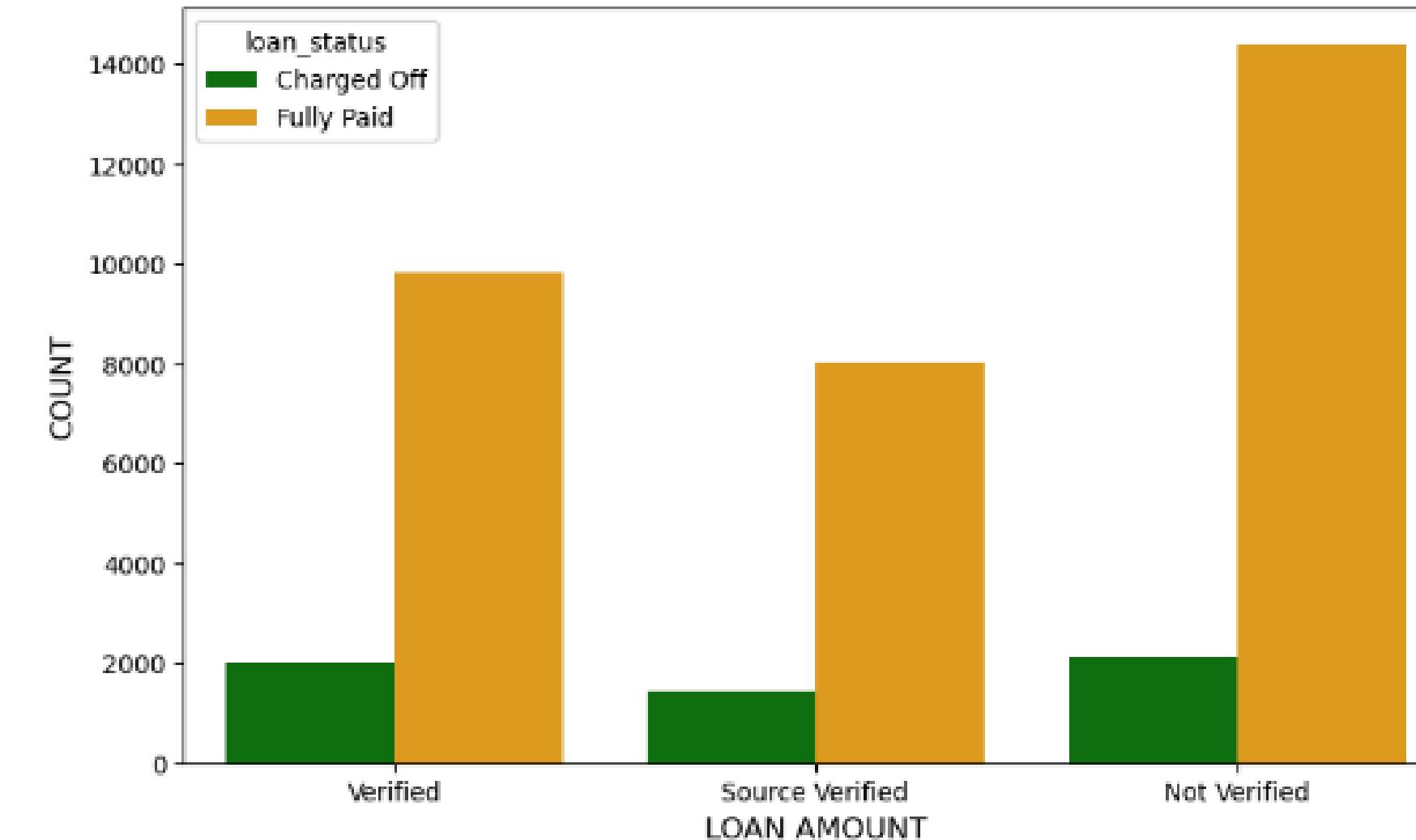
- Loan with highest interest rate in all buckets are more likely to charge off.
- As the number of installment increase the borrowers with high interest rate are most likely to charge off

LOAN AMOUNT , GRADE & CHARGE OFF

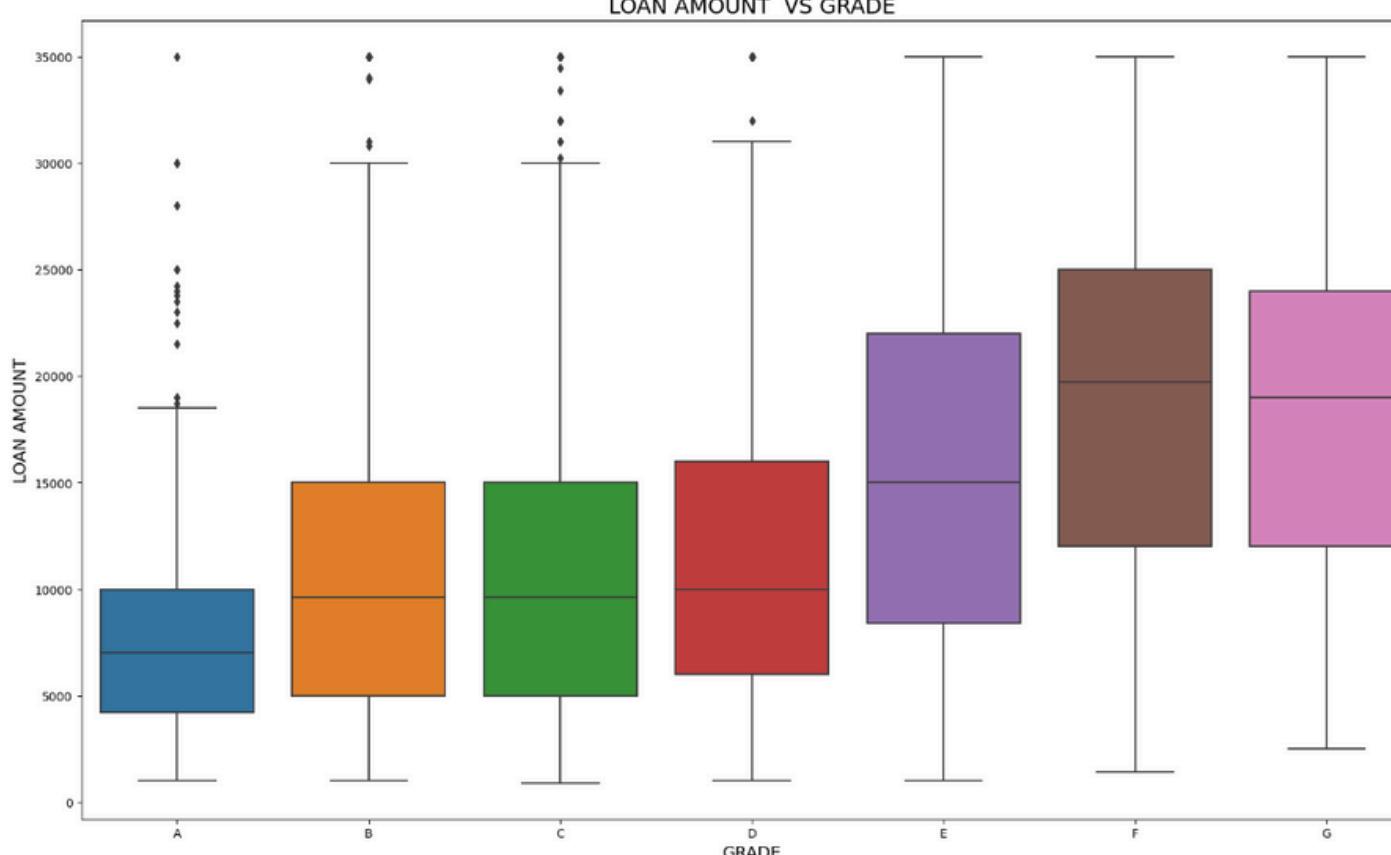
LOAN AMOUNT VS VERIFICATION STATUS



LOAN AMOUNT VS COUNT



LOAN AMOUNT VS GRADE



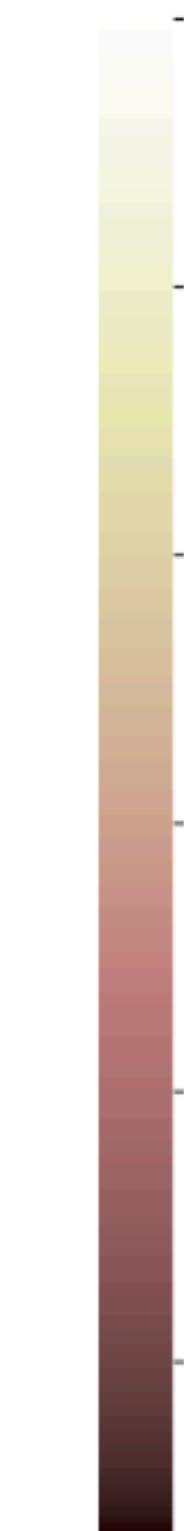
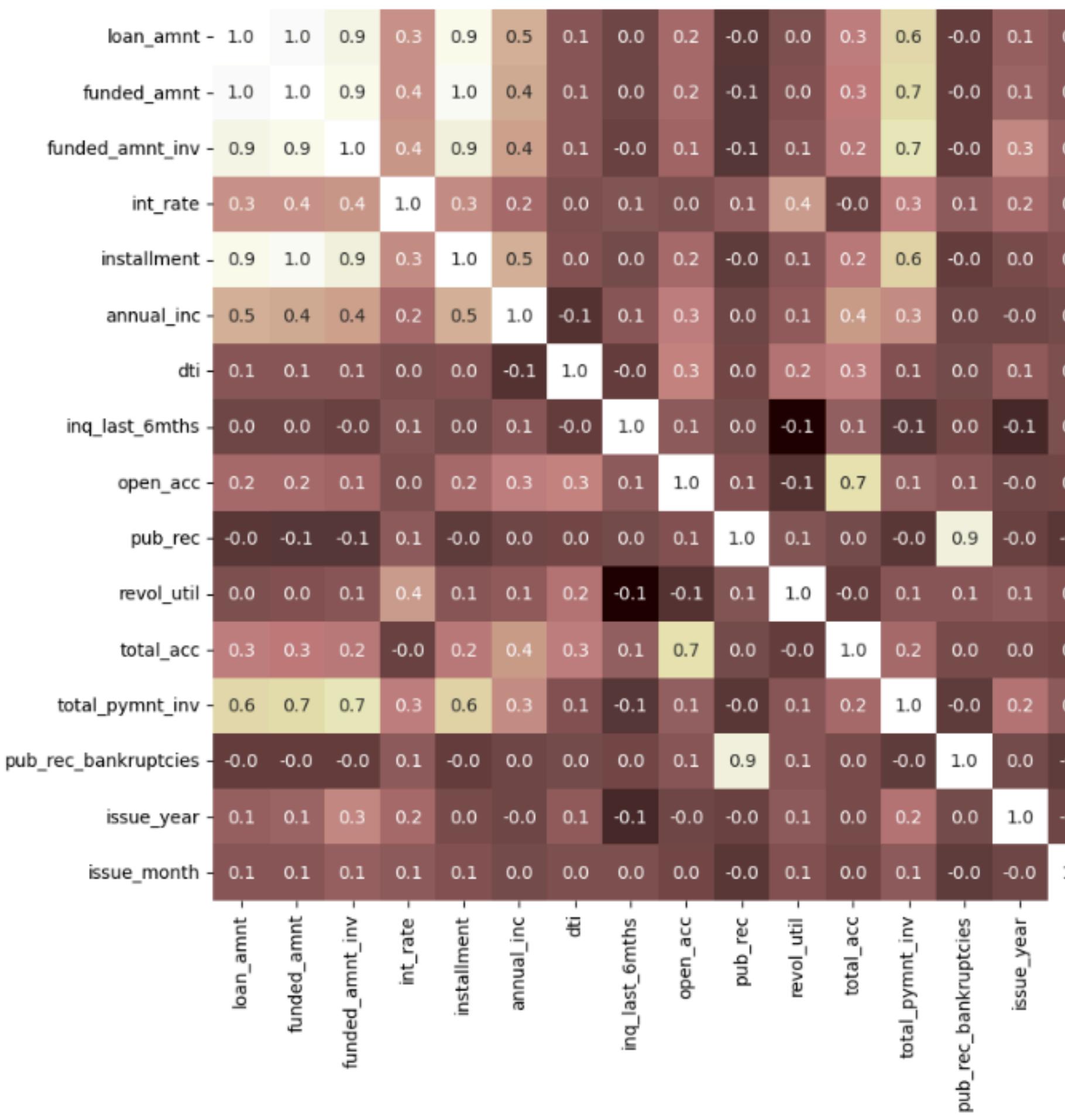
INFERENCE

- Borrowers with verification status "not-verified" has loan amount with 5k to 12.5k are more likely to charge off.
- Borrowers with verification status "not-verified" and "verified" has a equal proportion in charge off.
- Borrower within grade E,F,G and with average loan amount greater than 15000 are more likely to charge off.



MULTIVARIATE ANALYSIS

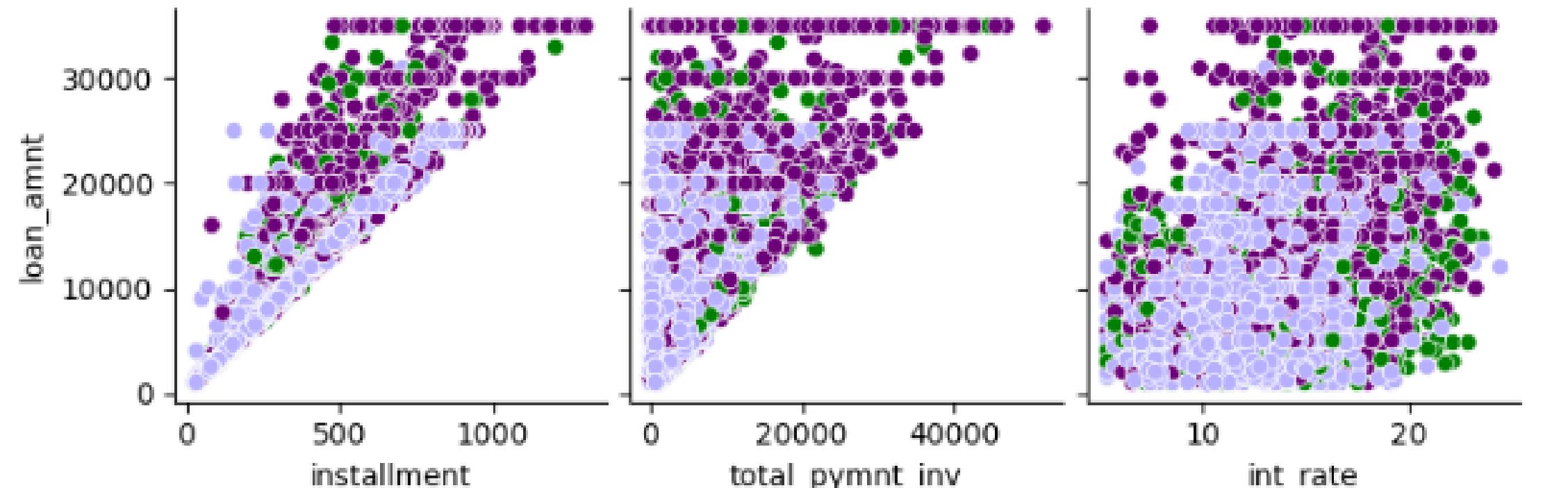
HEAT MAP - MULTIVARIATE ANALYSIS



INFERENCE

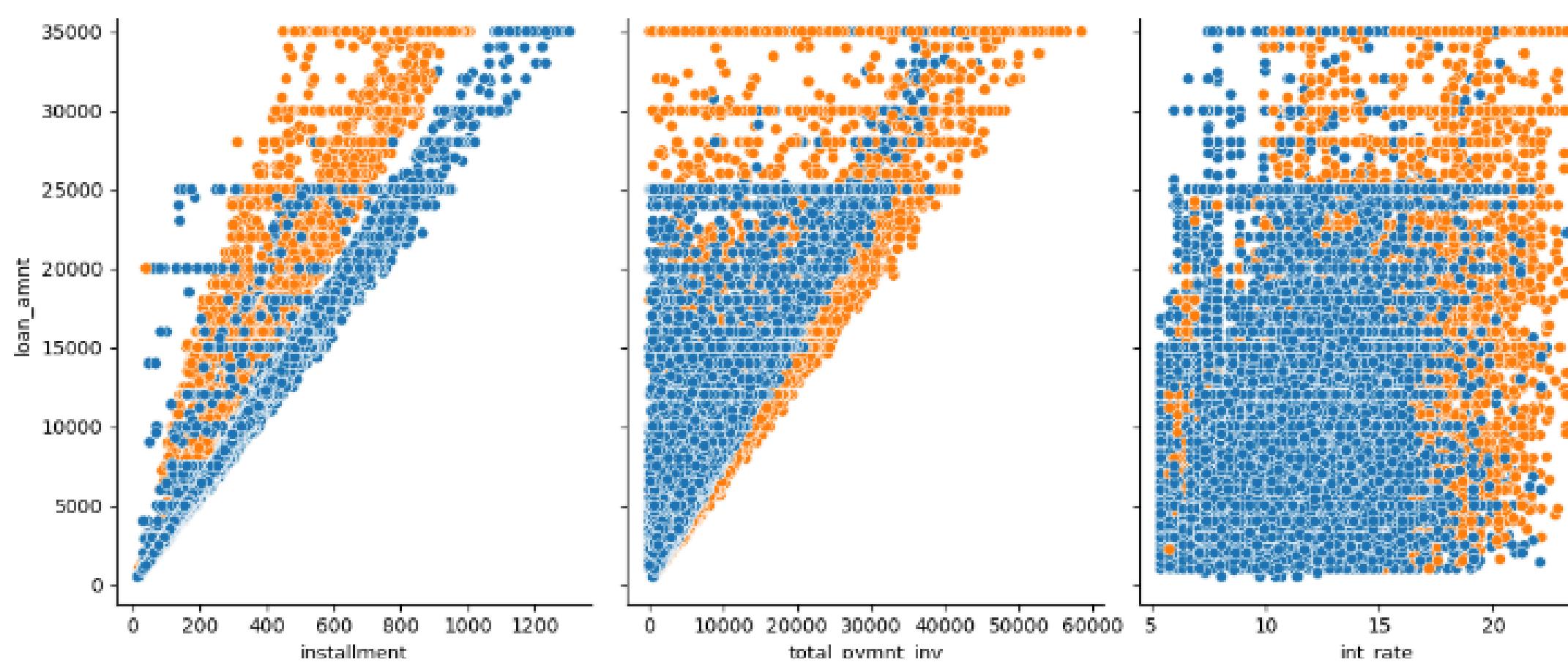
- loan_amnt has strong positive correlation with installment, total_payment_inv.
- loan_amnt has intermediate positive correlation with annual_inc, int_rate, total_acc.
- open_acc has strong positive correlation with total_acc.
- pub_rec has strong positive correlation with pub_rec_bankruptcies

LOAN AMOUNT & VERIFICATION STATUS



INFERENCE

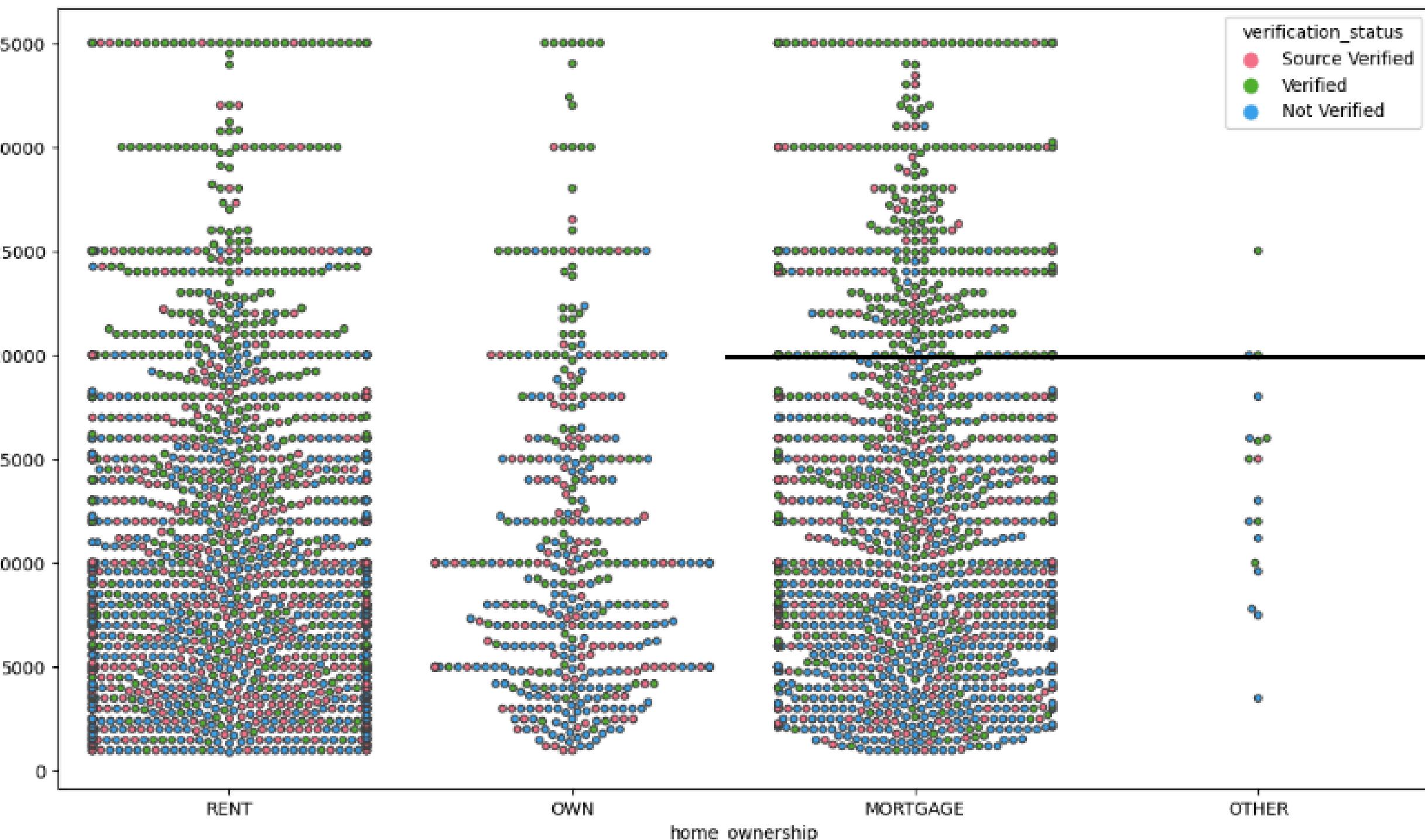
- When the loan amount increases, number of installment, total_pymnt_inv, int_rate also increases.
- Borrowers with verification status "Not-Verified" are most likely to get loan less than 25k (Charge off).
- Borrowers with verification status "Verified" are most likely to get loan greater than 25k (Charge off).



- Borrowers with lower term has higher installments comparatively.
- Borrowers with 60 months term has highest share to total_pymnt_inv.

LOAN AMOUNT & HOME OWNERSHIP

INFERENCE



- Across all categories of home ownership, borrowers with loan amount less than 25k are most like to be source verified.
- Across all categories of home ownership, borrowers with loan amount greater than 25k gets verified.



CONCLUSION

CONCLUSION

- Borrowers with high interest and 10+ years of employment length.
- Borrowers living on mortgage with loan amount greater than 12000.
- Loan for debt consolidation, credit card, small business with loan amount greater than 12000.
- For any loan amount provided with an average interest rate higher than 13%.
- Loan provided for house purpose with average interest grater than 15%.
- Loan provided with an average of 12.5% interest rate for 36months of tenure.
- Loan provided with an average of 16.5% interest rate for 60months of tenure.
- Average loan amount greater than 15000 with grade E, F, G.
- Installments between 800 - 12000 with average interest greater than 15%.
- Average interest rate of 17% with installment greater than 12000.



RECOMMENDATION



- Limit the loan amount to 12000 to applicants with ownership of mortgage. This also show financial staus of risky applicant.
- To encourage small business and also keep investors less risked, the rate of interest for applicants can be reduced around 2%.
- Increase the rate of interest by 0.5% to the loan amount for applicants whose purpose is moving ,as the loan amount is less and are more likely to repay.



THANK YOU