Lending Club Case Study

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Agenda

- Introduction
- Business Understanding
- Approach
- Analysis
- Recommendations

Introduction

In this case study will develop a basic understanding of risk analytics in banking and financial services and understand how data is used to minimize the risk of losing money while lending to customer.

This company is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures. Borrowers can easily access lower interest rate loans through a fast online interface.

Business Understanding

- The Business problem is that investors requires a more comprehensive assessment of these borrowers than what is presented by lending club in order to make a smart business decision, by identifying new borrowers that would likely default on there loans.

- Two **types of risks** are associated with the bank's decision:
  - If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company.
  - If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company.
- This case study provides 4 years of historical data (2007 to 2011). The dataset contained information about, loan amount, interest rate, experience, grade, annual income.

- Required to define the variable that had a direct or indirect response to a borrowers to a potential to default.

Approach

Data Pre-Processing

- Dropping the columns with Null values & un-wanted columns
- Data type conversion for better representation.

Univariant Analysis

- Check frequencies of various numerical & categorical variables.
- Create some derived variables.

Bivariate Analysis

- Check how two variables affect each other
- Do correlation analysis.

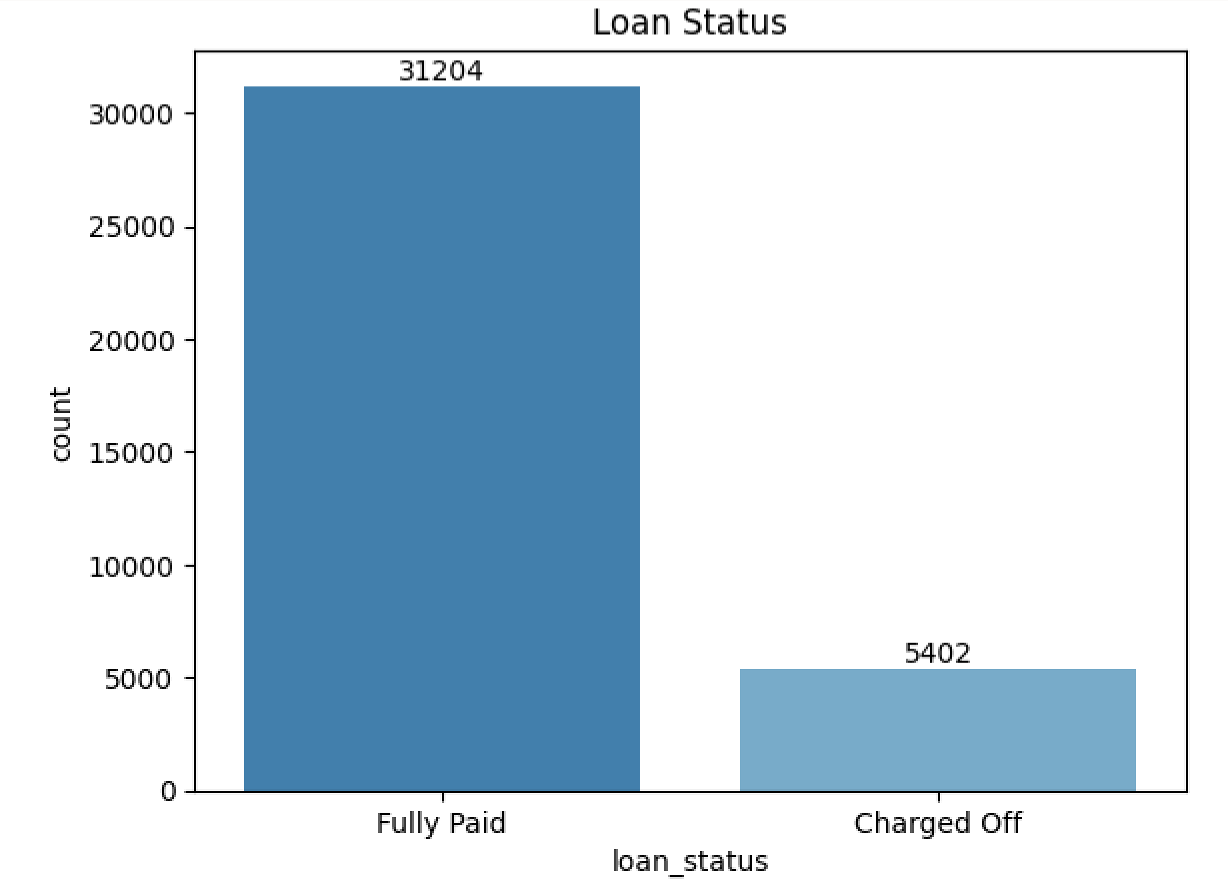
Summary

- Suggestions to avoid the financial loses.
- Insights that helps to company

ANALYSIS

Overall Loan Status Analysis

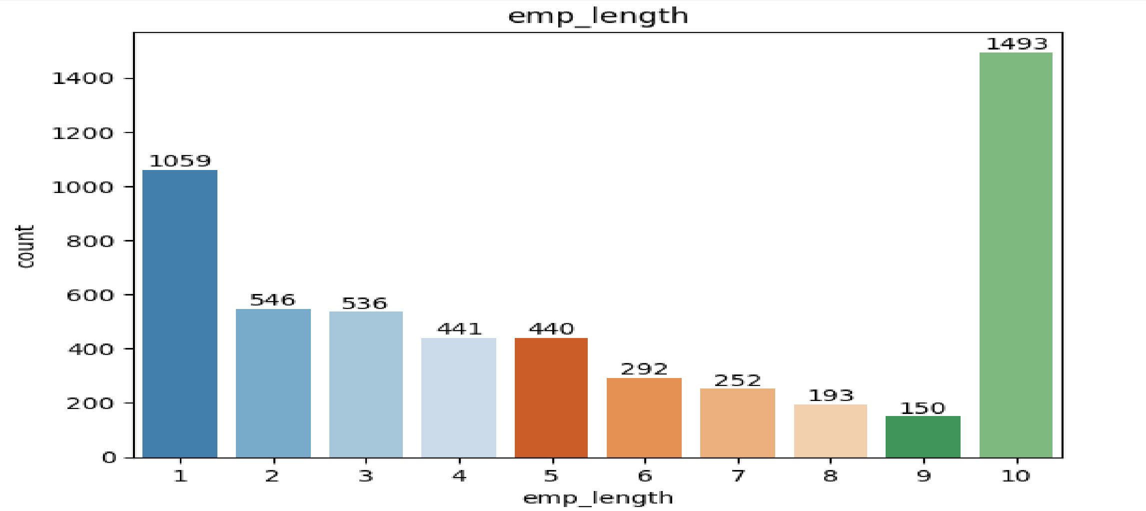
- Approximately 15% of Loans are defaulted.

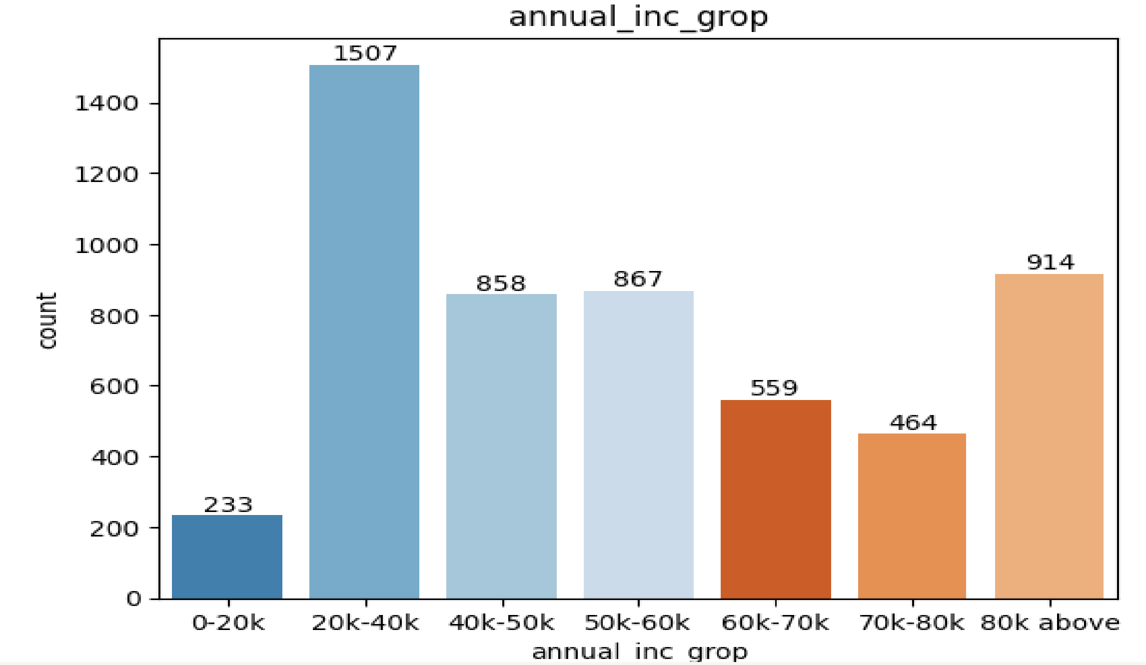


Analysis of charged-off loans

- The higher rate of loans charge-off typically occurs when the barrowers employment length is 10 years.

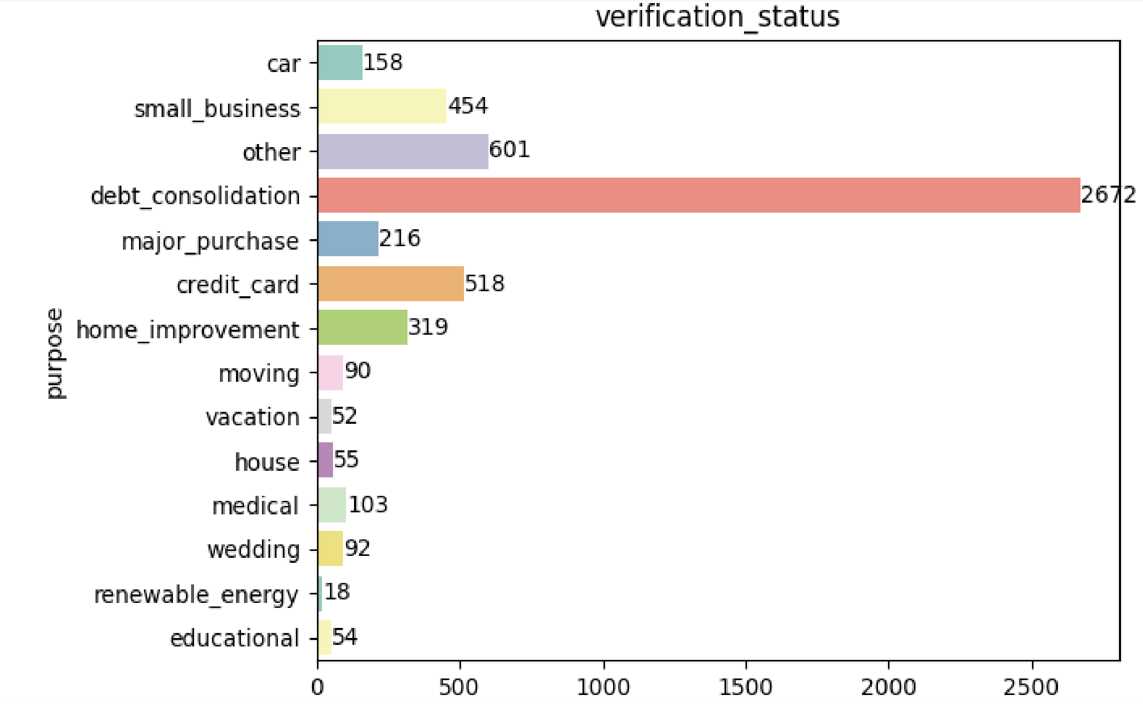
- Loans are charged off most frequently when applicants have salary within the range of 20k-40k

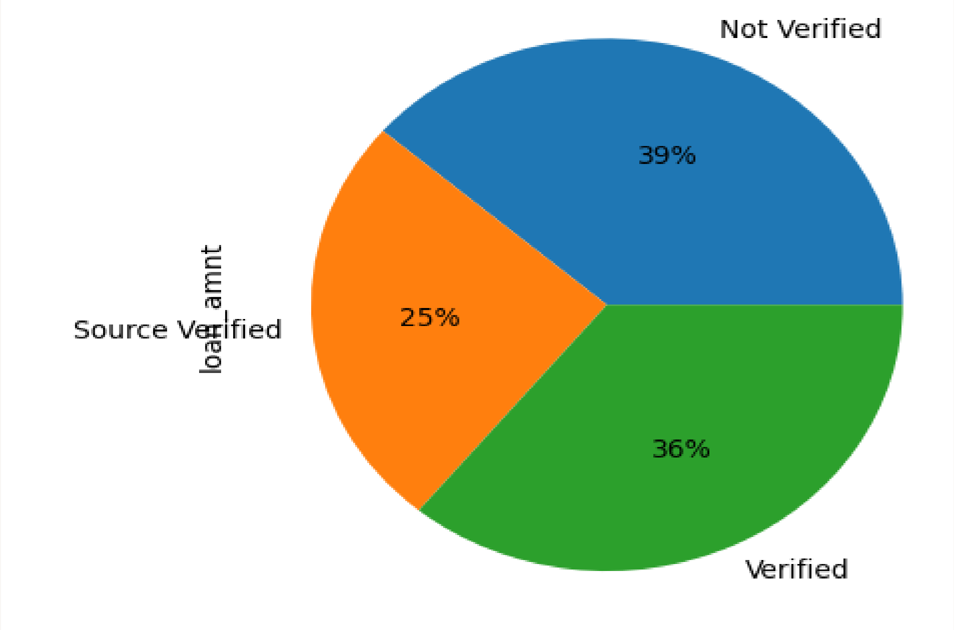




Analysis of charged-off loans

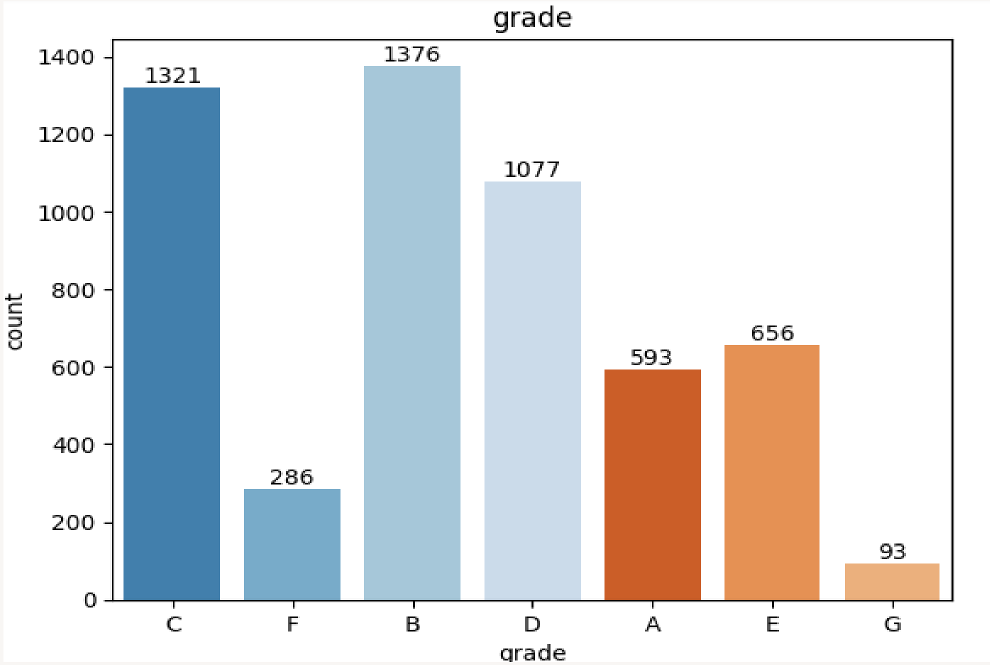
- Significant proportion of loans are used for debt_consolidation.
- Unverified loans results in 39% of defeat rate.

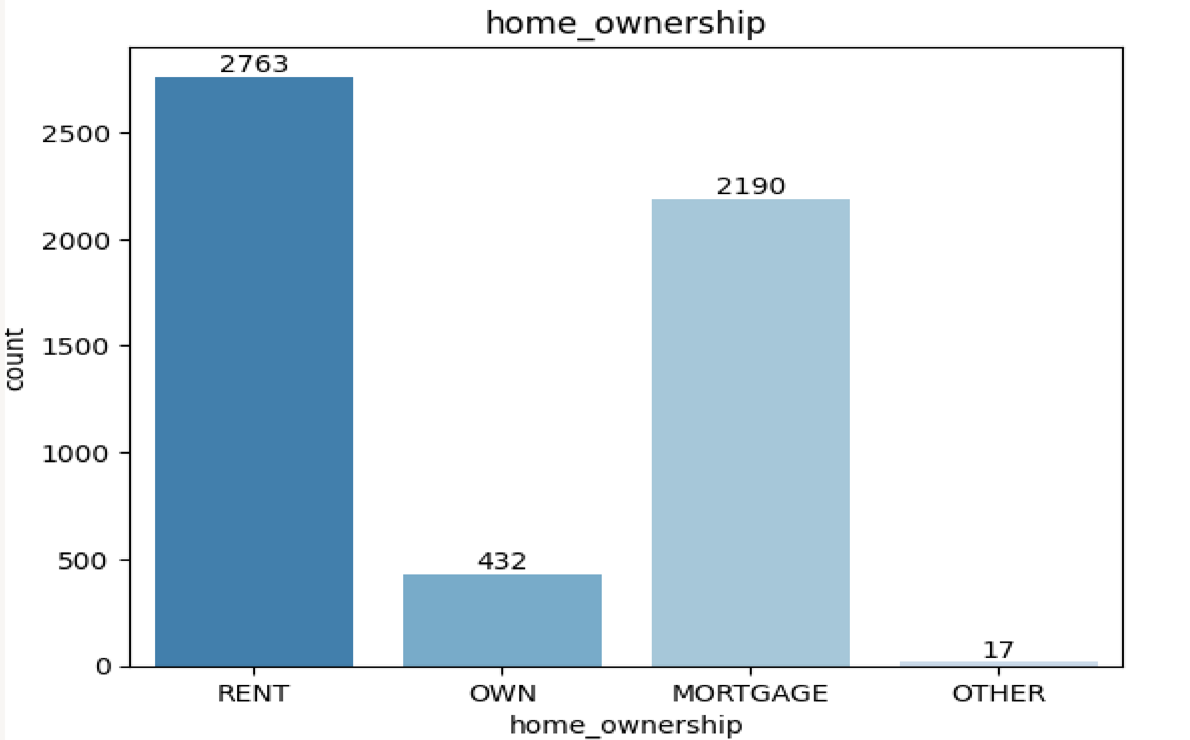




Analysis of charged-off loans

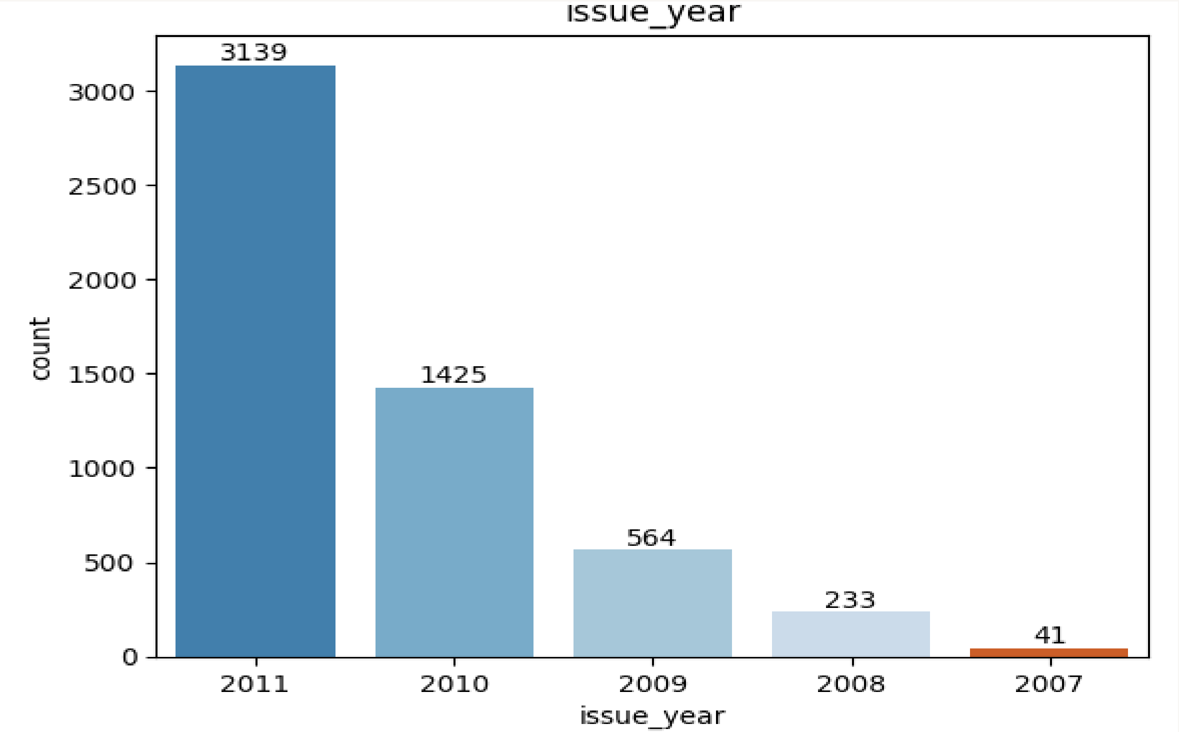
- The most of loans are charged off when the employment grade is categorized as B & C and applicant home ownership of RENT & MORTGAGE.

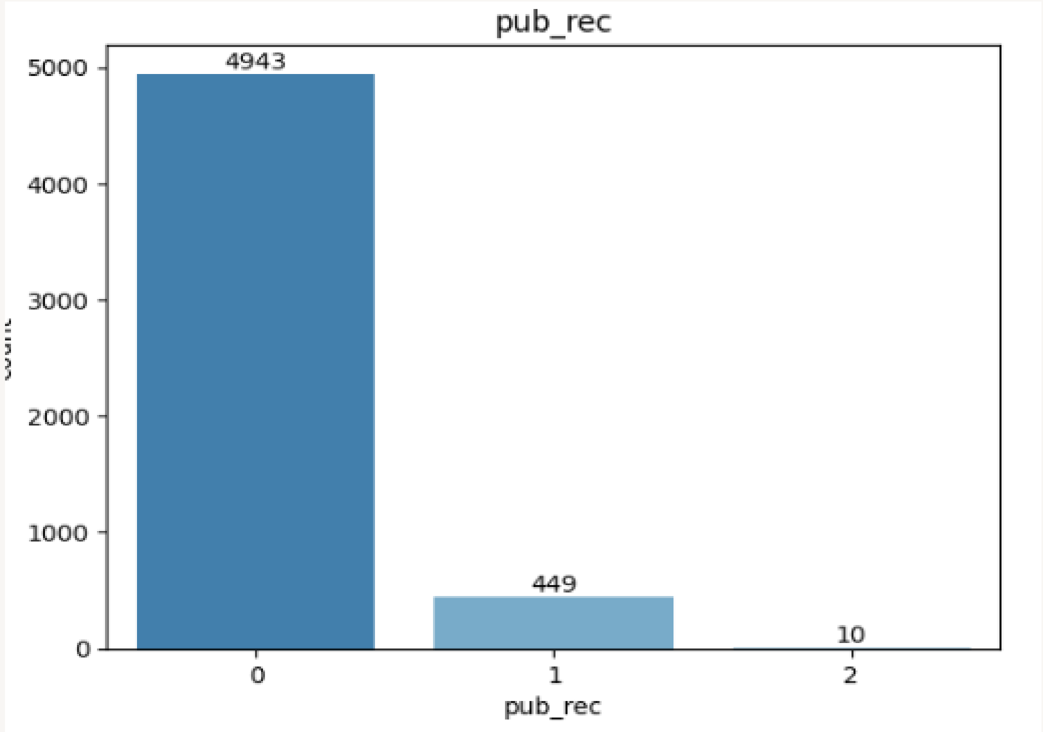




Analysis of charge off loans

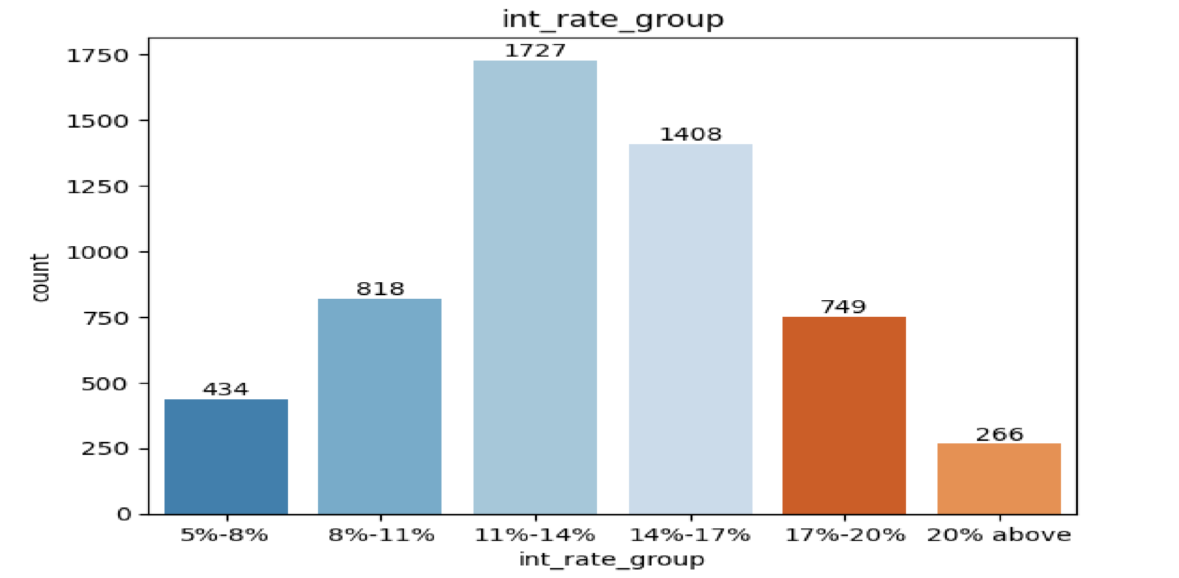
- Loans are charged-off when loan issue year 2011 & pub rec is 0

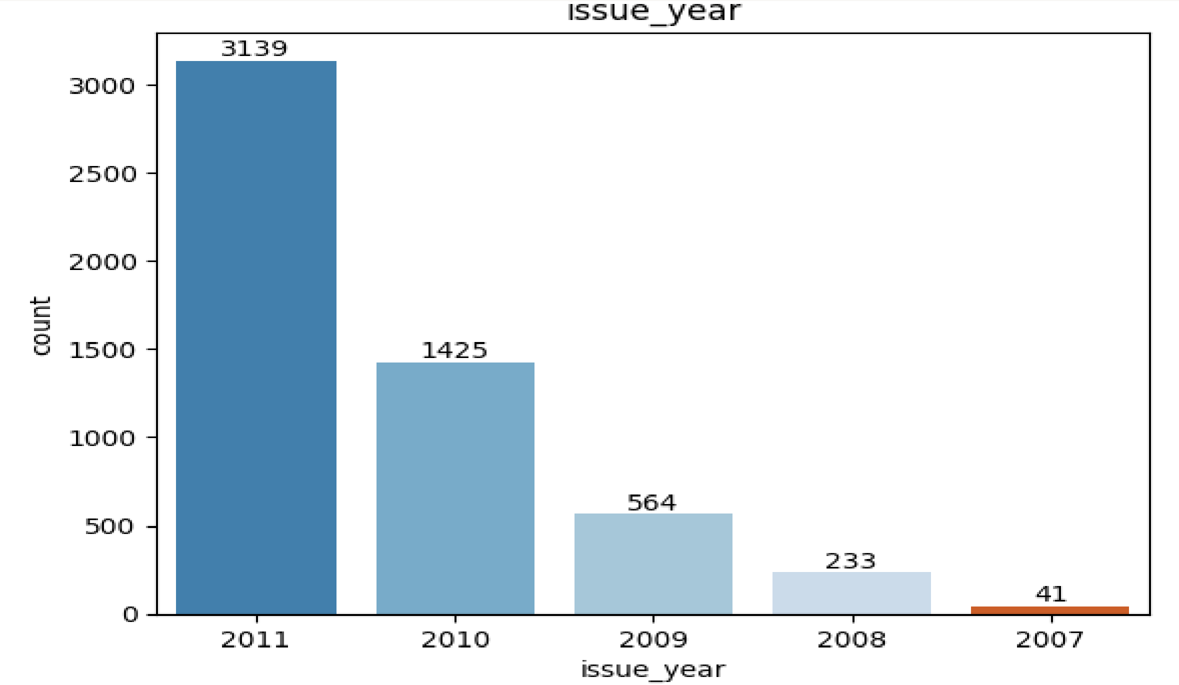




Analysis of charge off loans

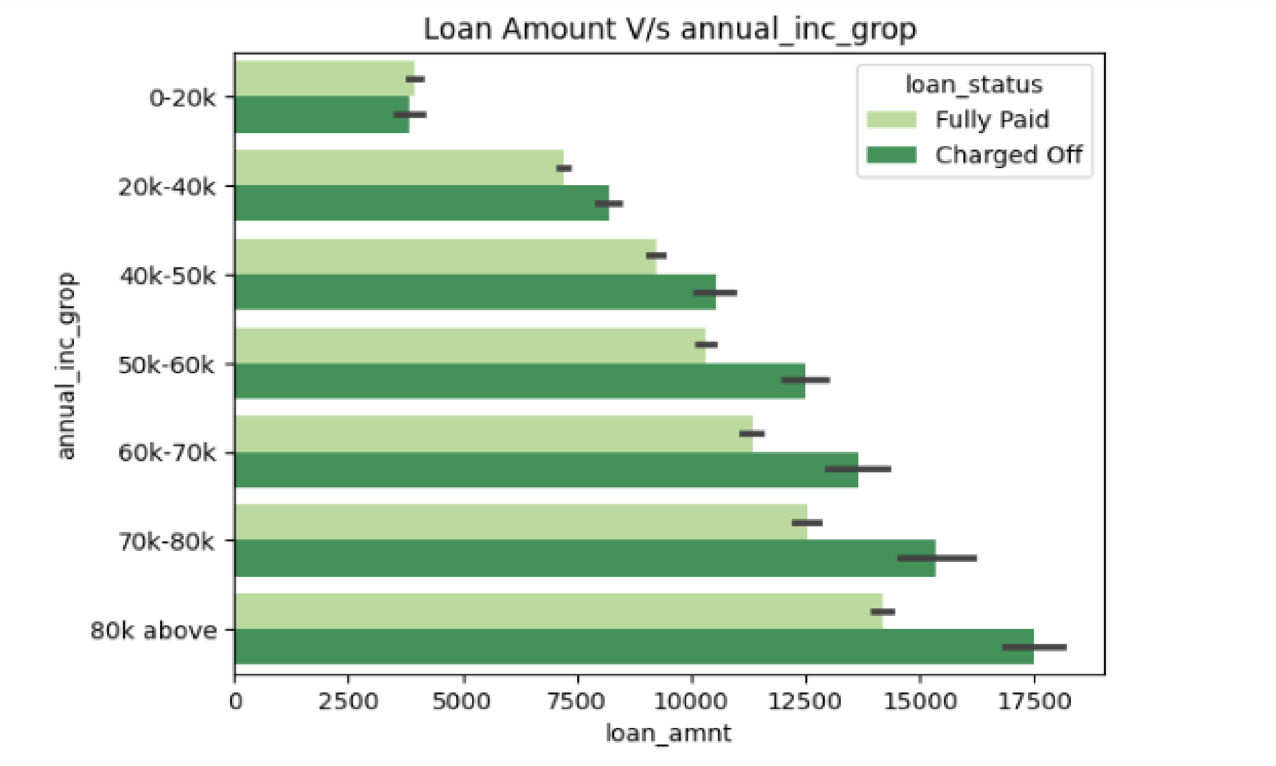
- The majority portion of loans are charged off when interest rate is between (11% - 17%) and loan issue year 2011.

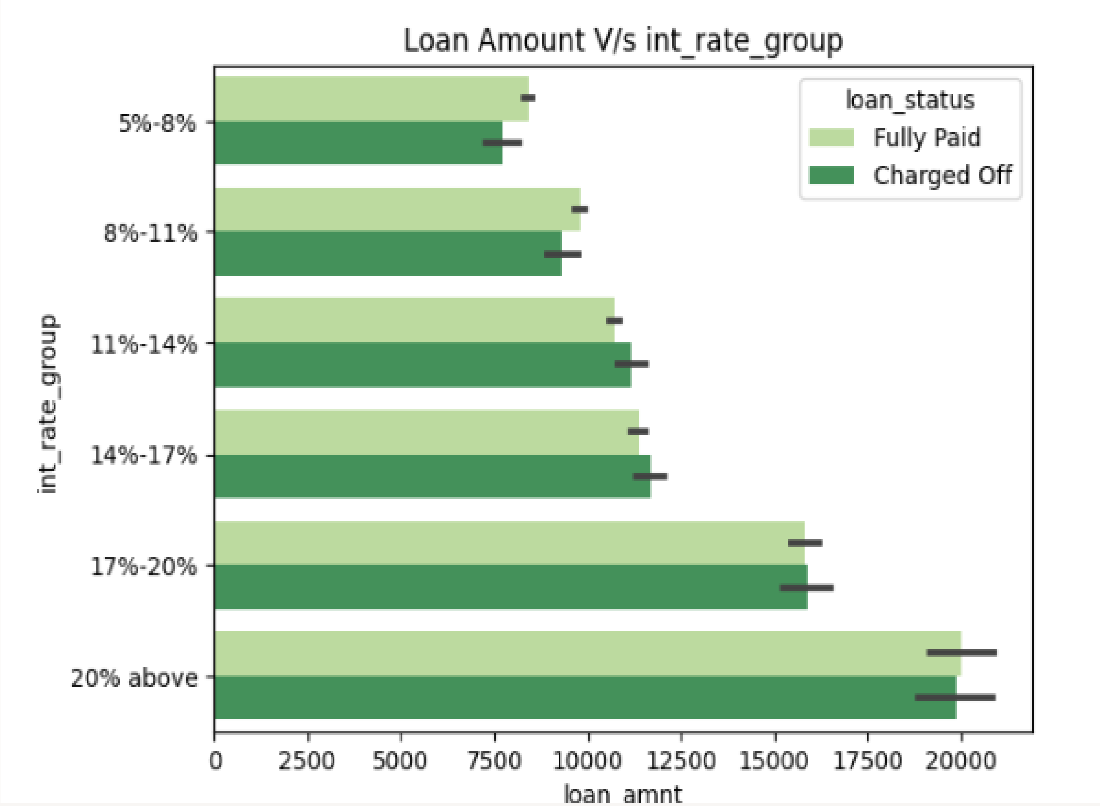




Analysis of Loan Amount

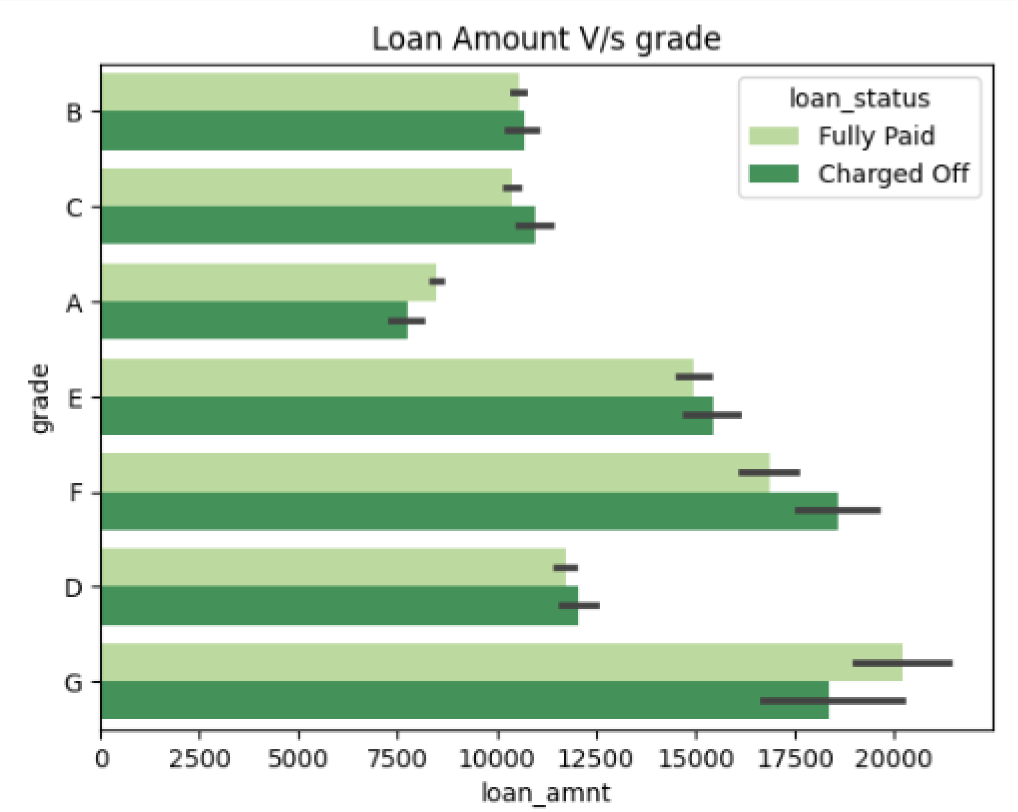
- Higher the loan Amount is charged off with salary >80k

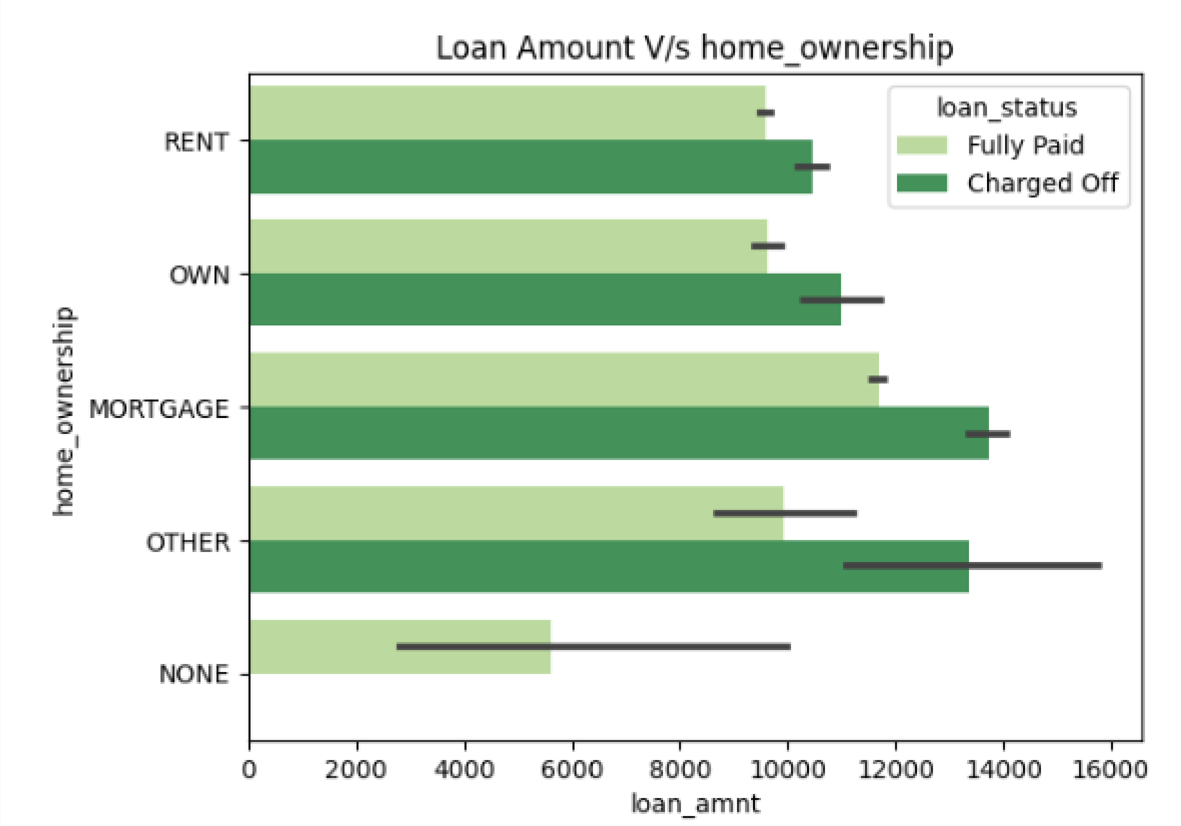




Analysis of Loan Amount write off

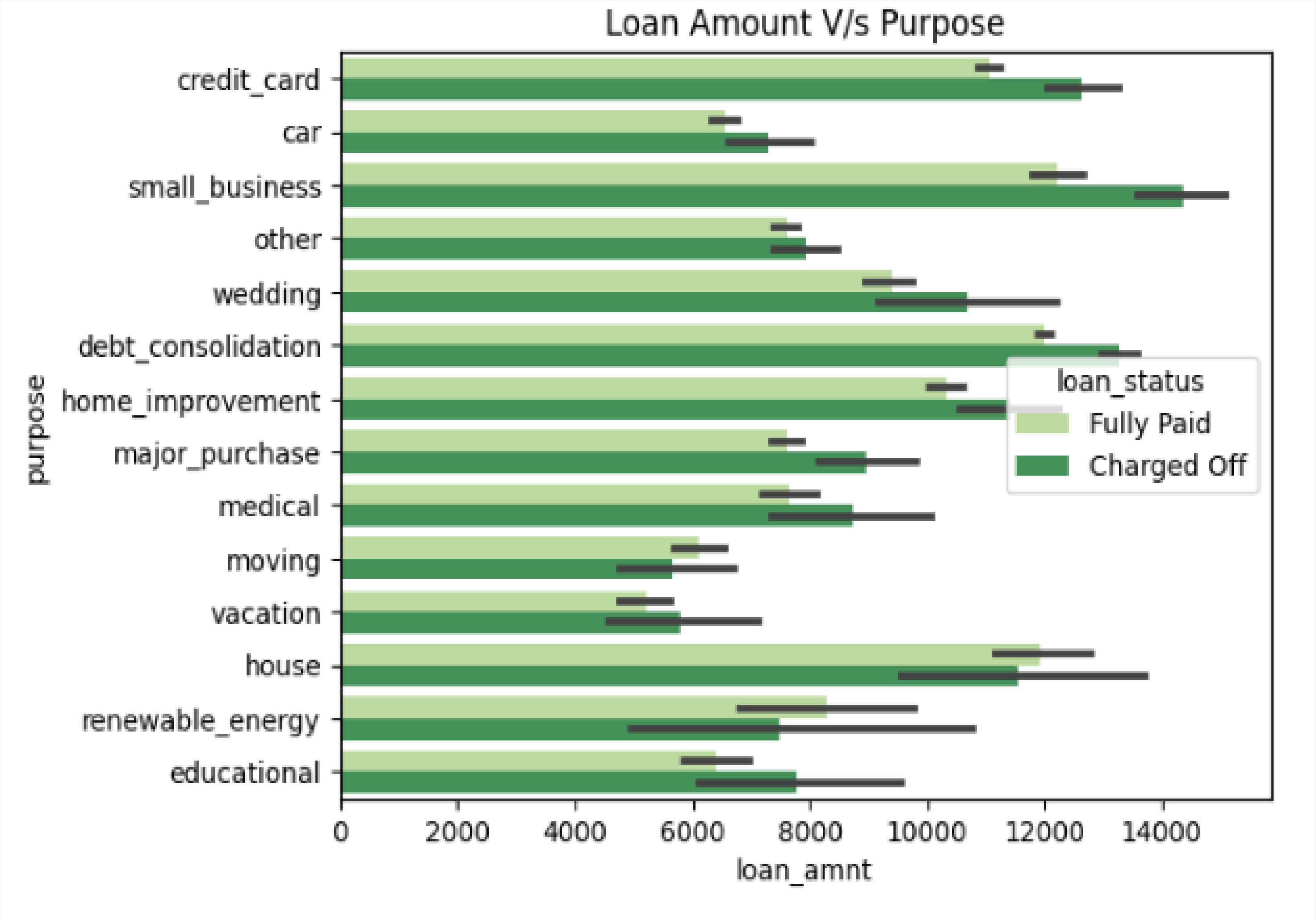
- Loan amount write off for grade F Mortgage loans.



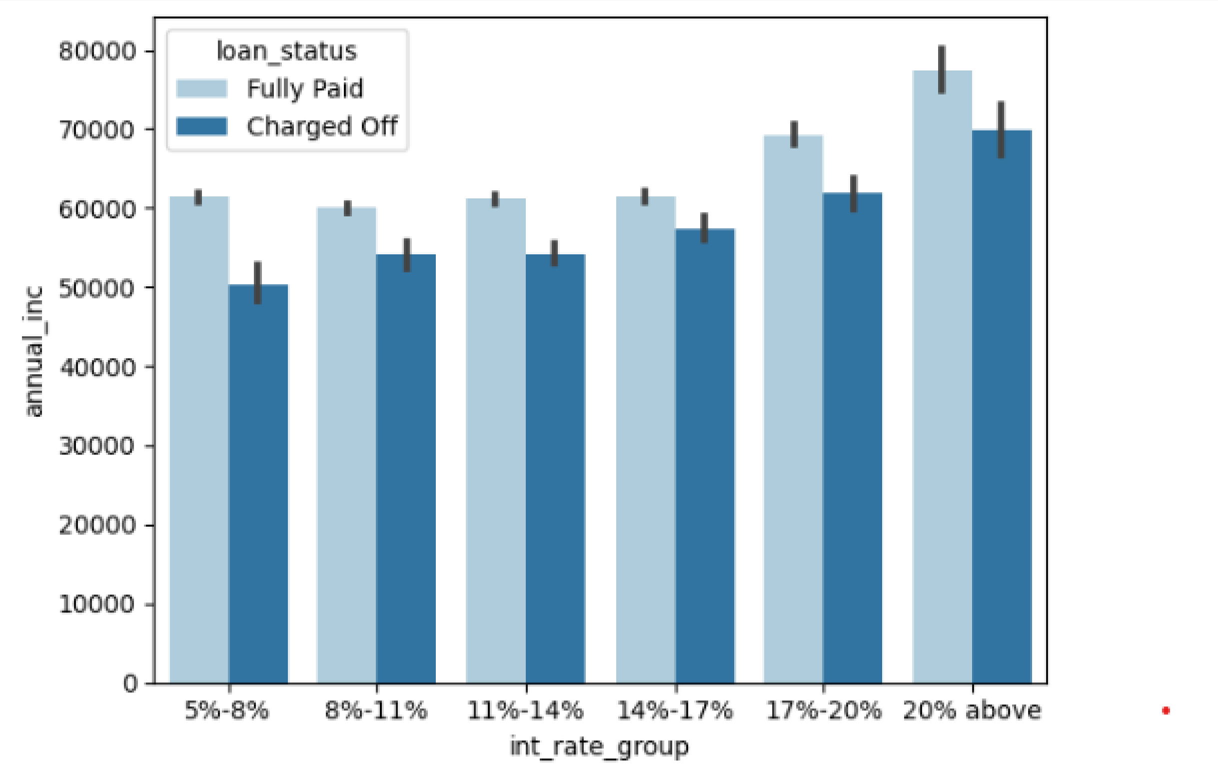


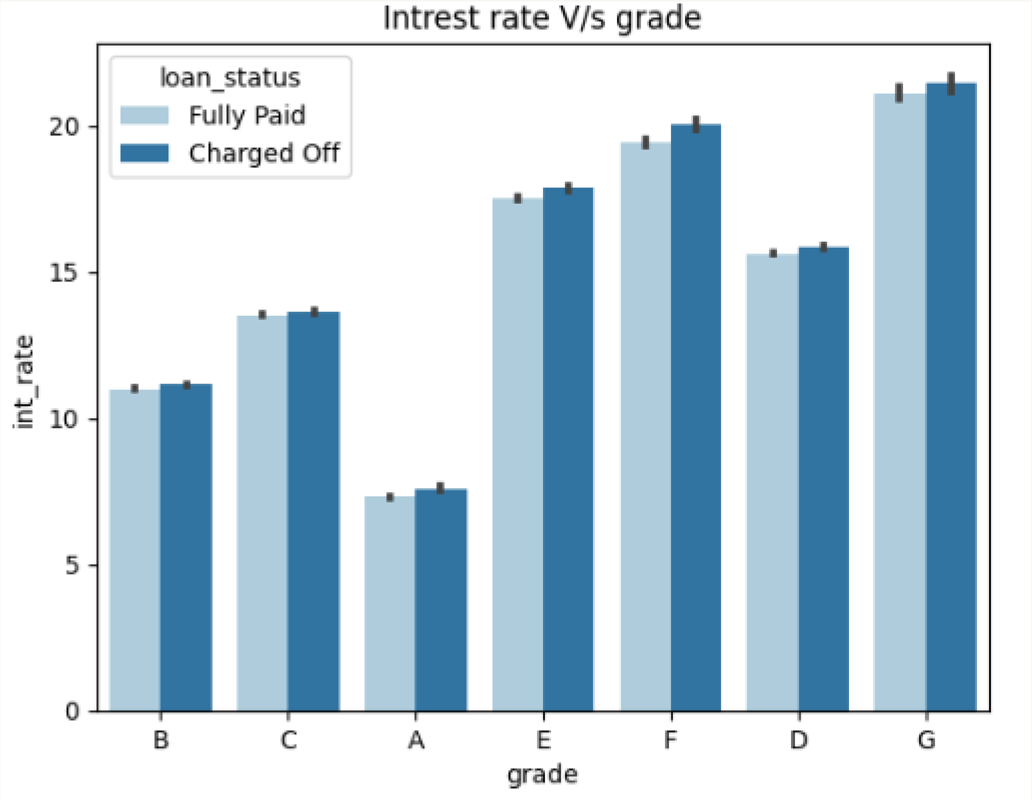
Analysis of Loan Amount V/s Purpose

- Write off amount is higher at the small business followed by debt_consolidation.

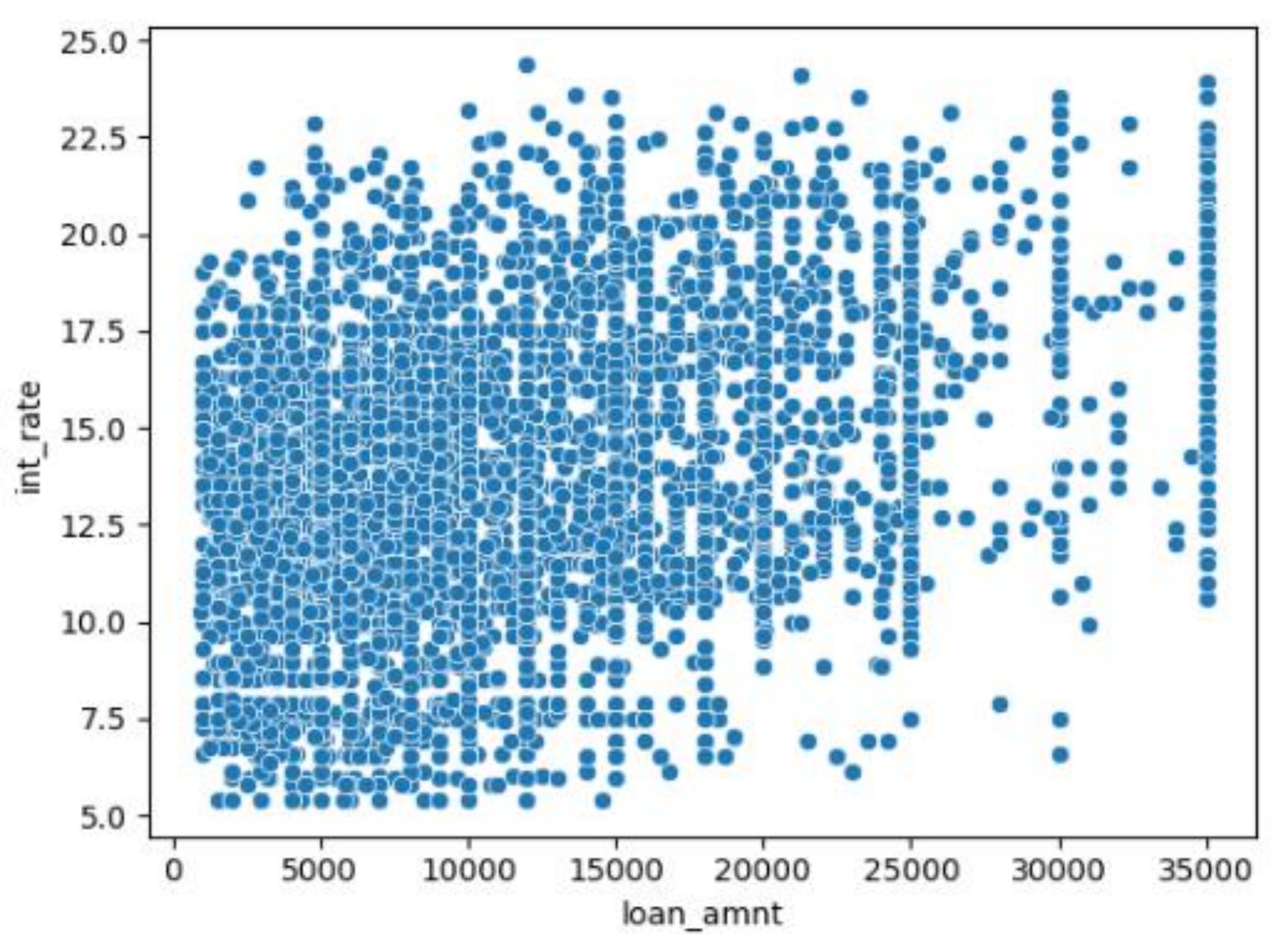


Analysis on interest rate





Analysis of interest rate



Recommendations

- Reduce the number of approvals of loan amount where purpose is small business.
- Stop Approving the higher volume of loans where purpose is debit_consolidation.
- Reduce the number of approval for grade F & G, since already interest rate is high on these grades.
- Stop approving the loans where employee length is 10 years & above.
- Stop approving the loans where public records is zero.
- Start charge for the higher interest rate for loan amount 5k - 10k or reduce the loan approvals.

Thank you

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