LENDING CLUB CASE STUDY

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Problem Statement

Lending Club is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures.

Like most other lending companies, lending loans to ‘risky’ applicants is the largest source of financial loss (called credit loss). The credit loss is the amount of money lost by the lender when the borrower refuses to pay or runs away with the money owed. In other words, borrowers who **default** cause the largest amount of loss to the lenders. In this case, the customers labelled as 'charged-off' are the 'defaulters'.

The company wants to understand the **driving factors (or driver variables)** behind loan default, i.e. the variables which are strong indicators of default. The company can utilise this knowledge for its portfolio and risk assessment.

We need to identify important variables and derive conclusions from the dataset,

Problem solving methodology

Data Cleaning → Univariate Analysis → Bivariate Analysis → Results

Data Cleaning

- Importing the data .
- Drop the columns having null and redundant values.
- Describing and understanding the data
- Convert columns to standard values.

Univariate Analysis

- Check the type of variable i.e. Categorical or Numeric.
- Frequency and count plots
- Create derived variables accordingly, plot graphs.

Bivariate Analysis

- Look for correlations with variables in pair.
- Analyzing joint distributions

Results

- Display the analysis in clean, simple and understandable format.
- Derived results from analysis

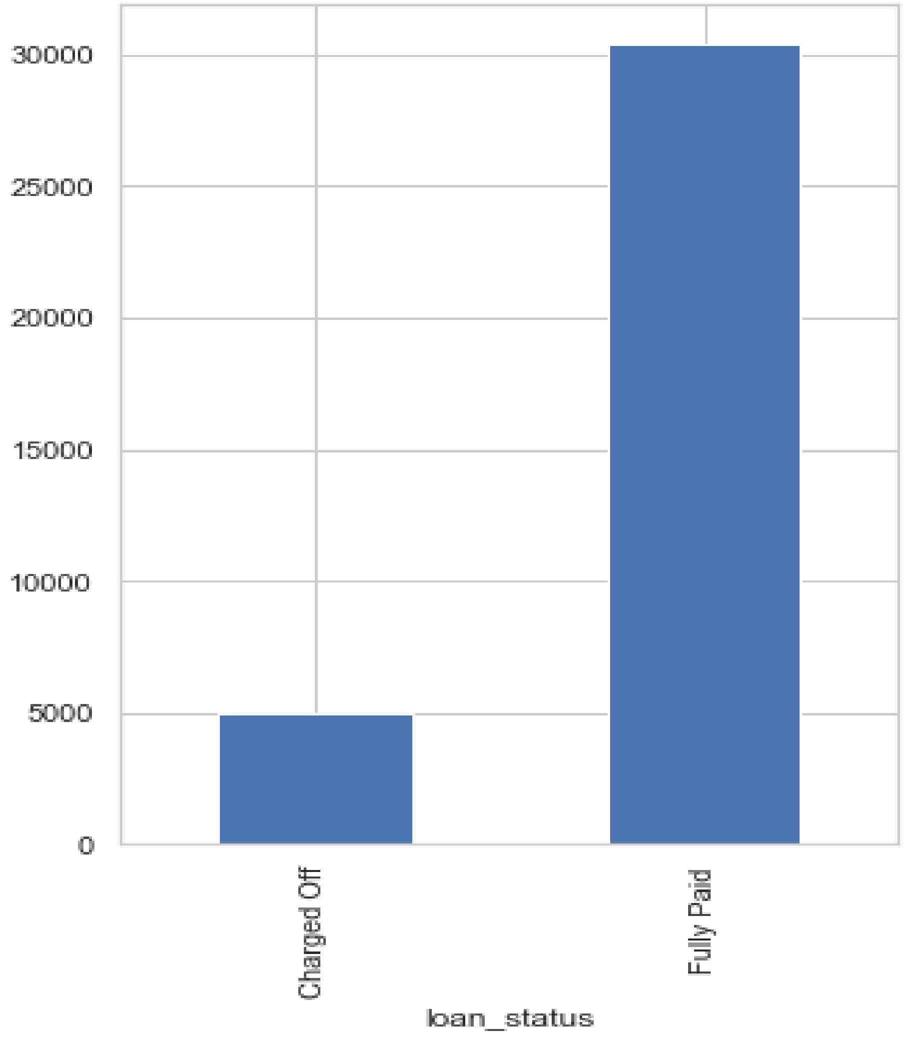
Analysis Approach

1. The approach is to understand the variables and remove the variables that will not help us in our analysis.
2. We then divide our approach based on
   a. Loan attributes.
   b. Customer attributes

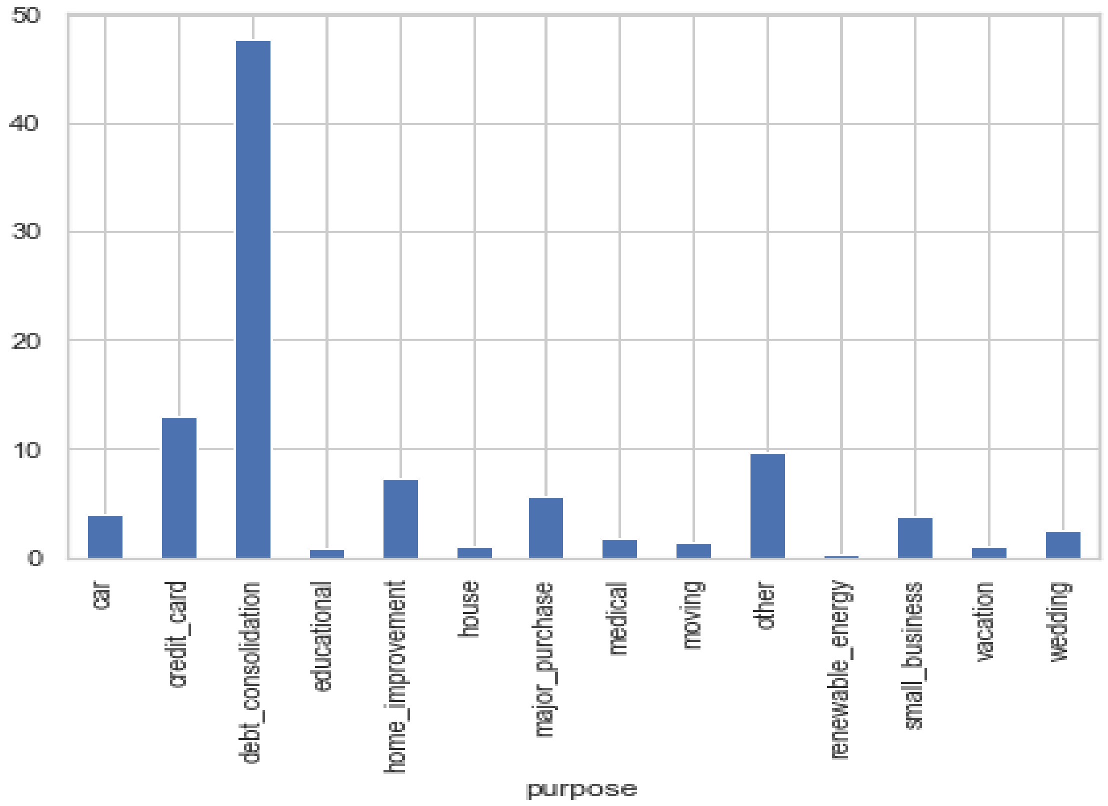
3. Based on this approach we have identified some observations which can help us derive some conclusions for our Lending Club.

Analysis –Loan Status

- Around 14% of loans are defaulted.

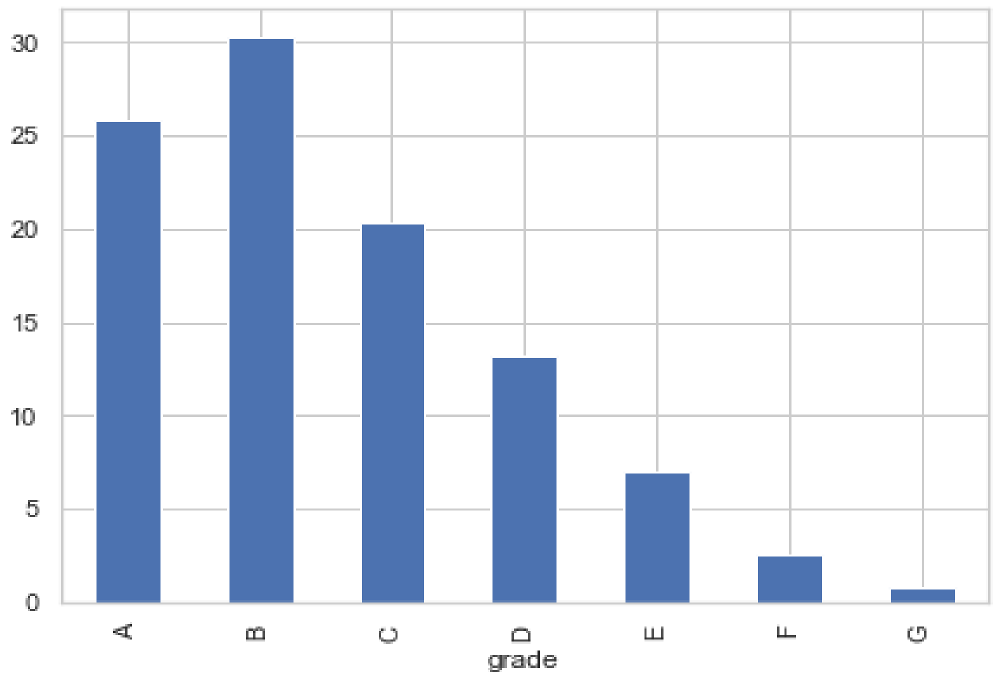


Analysis – Loan purpose & types

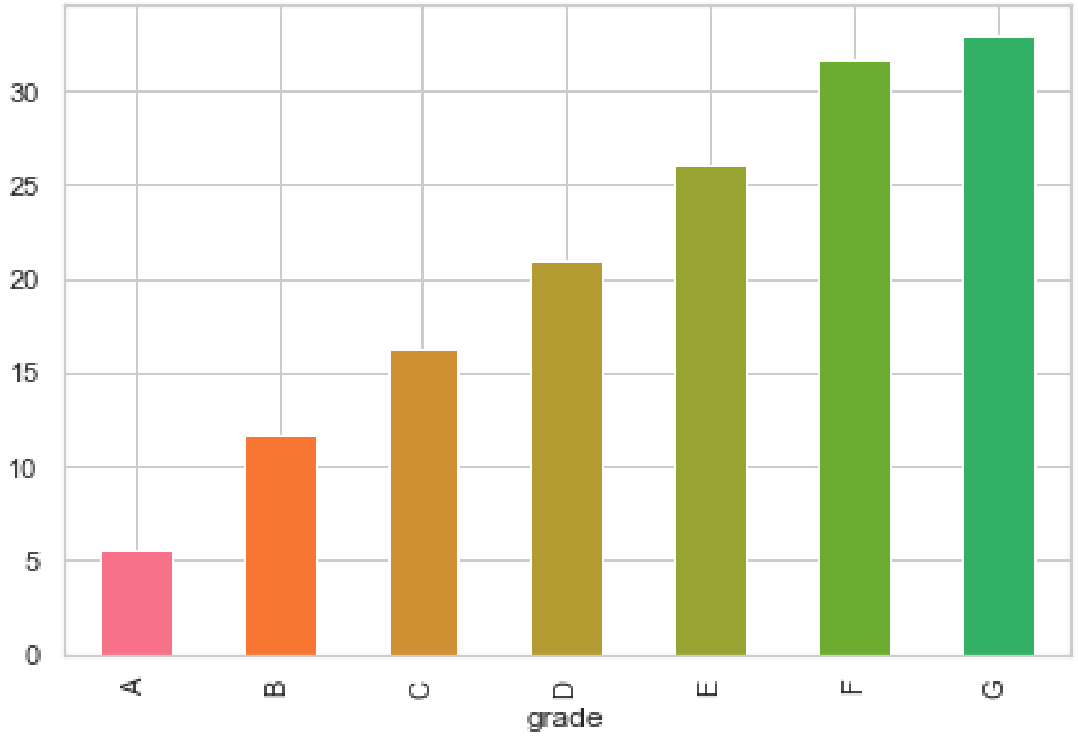


Most loans are issued for purpose of debt consolidation followed by credit card.

Most loans issued are of quality A and B.

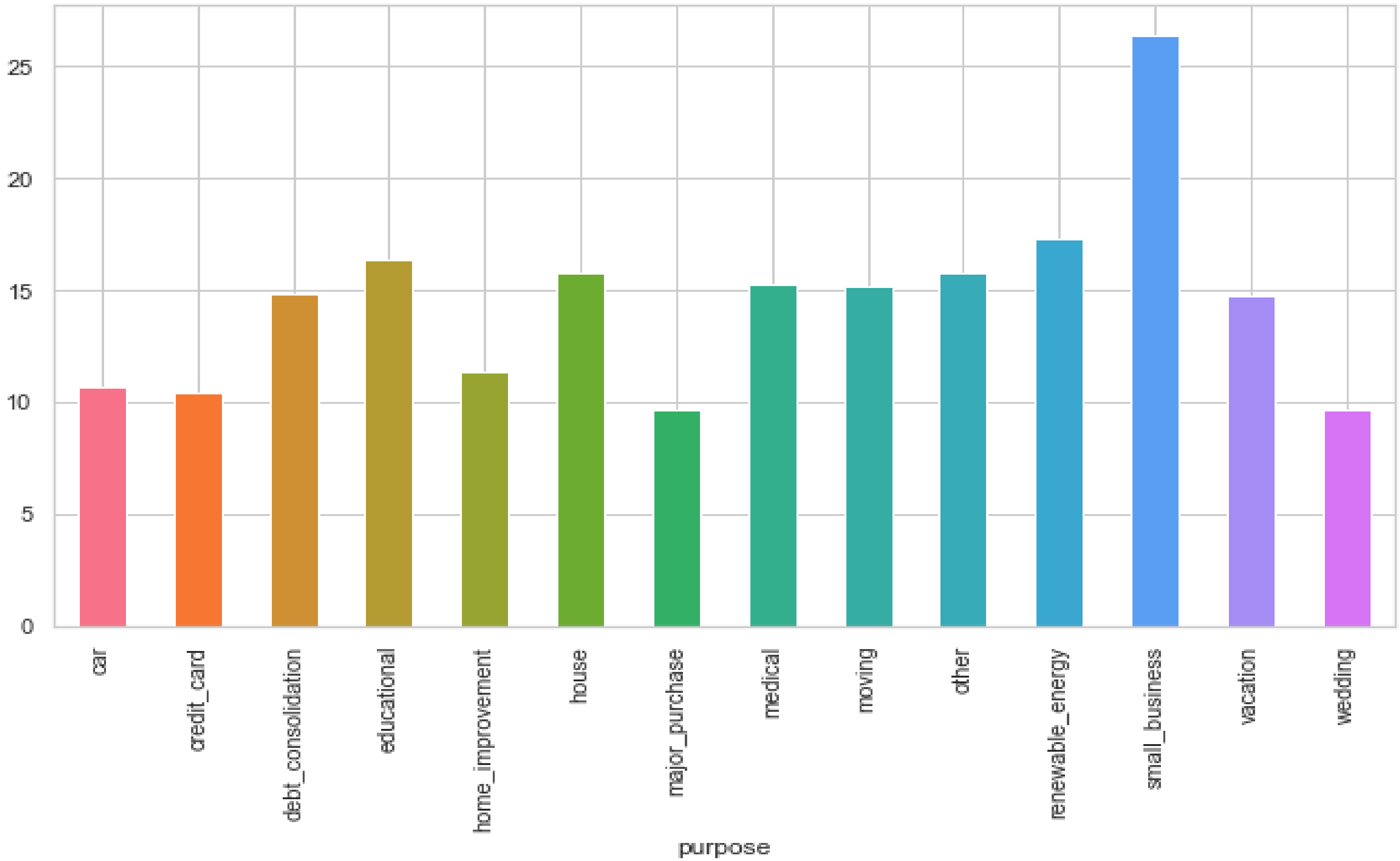


Analysis – Loan purpose & types(continued)



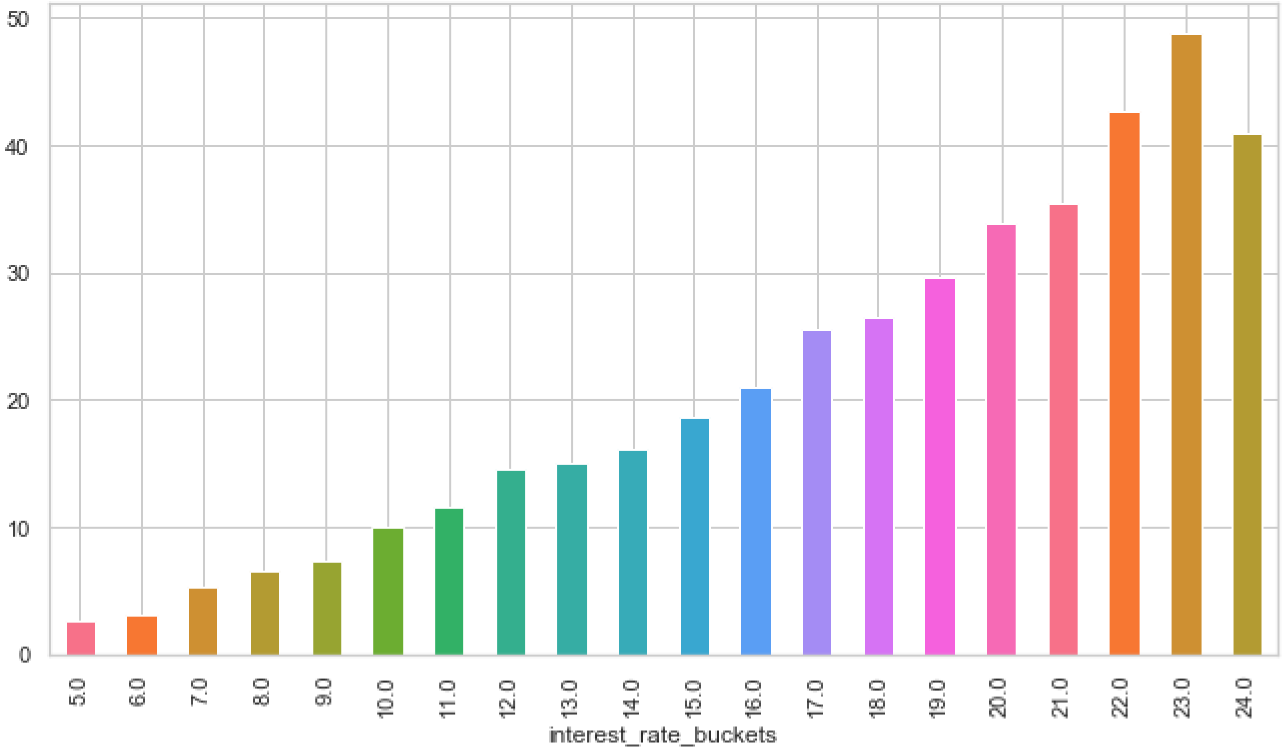
Percentage of default goes on increasing as the grade goes on decreasing.

Analysis – Loan purpose



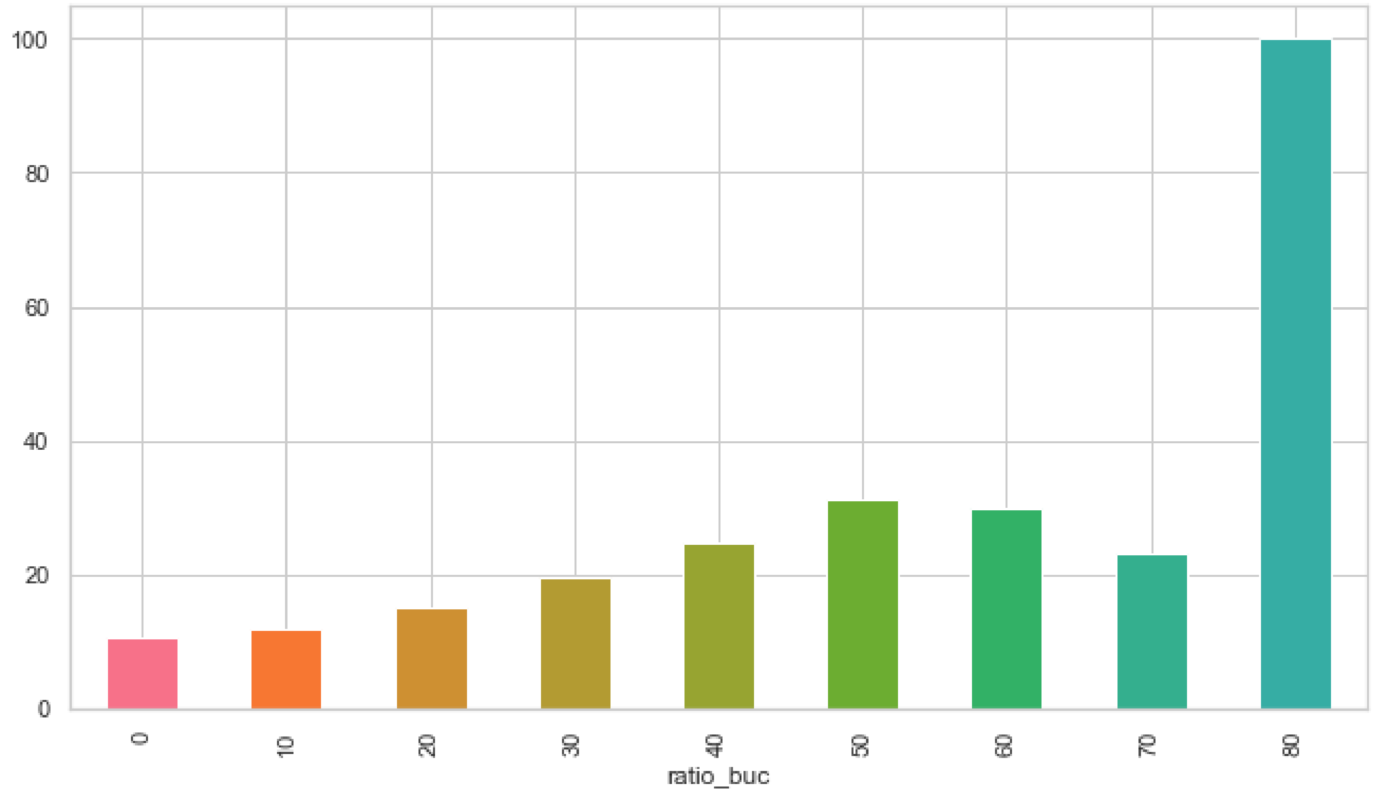
More than 25% of the loans have been defaulted for taking up loan for small business.

Analysis – Interest Rate



As the interest rate goes higher ,the default percentage goes higher

Analysis – Income to Loan amount ratio



Upto 20% of the ratio, loan defaults are low.

After 30%, loan defaults rise.

At 80% , defaults are extremely high.

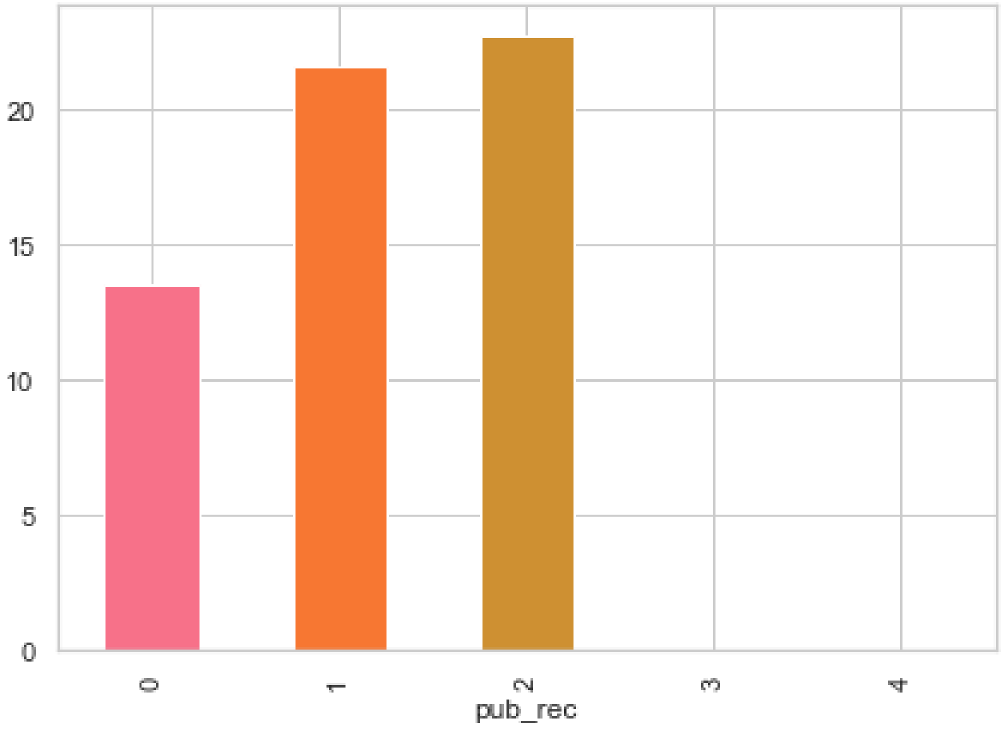
Analysis – Public Record

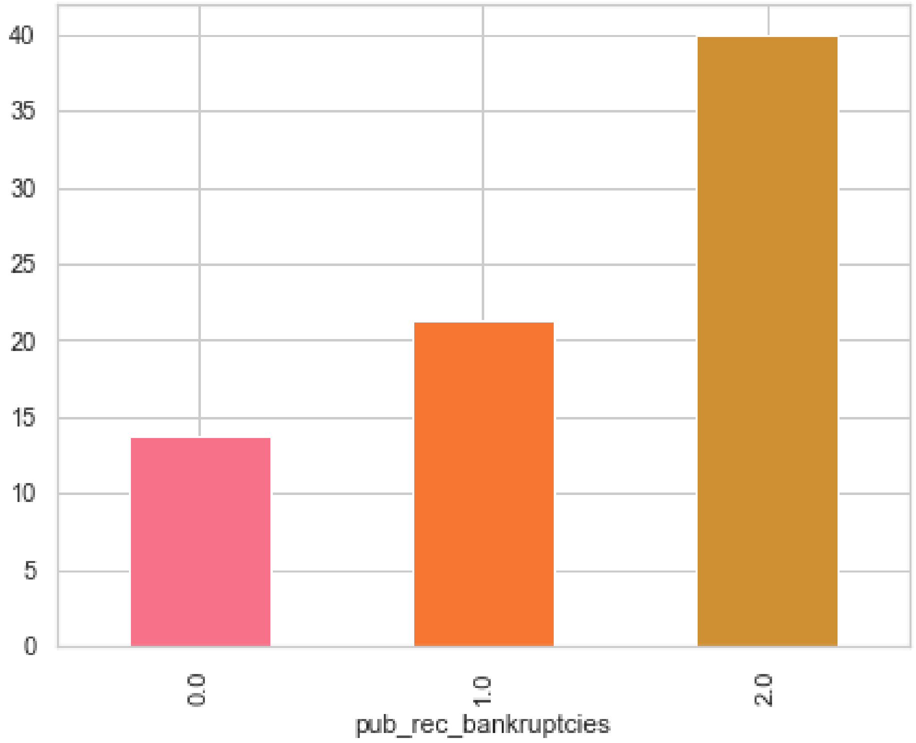
- Almost 94% do not have any derogatory records.

- % of Charged off loans increases significantly, even if , the person has 1 derogatory record.

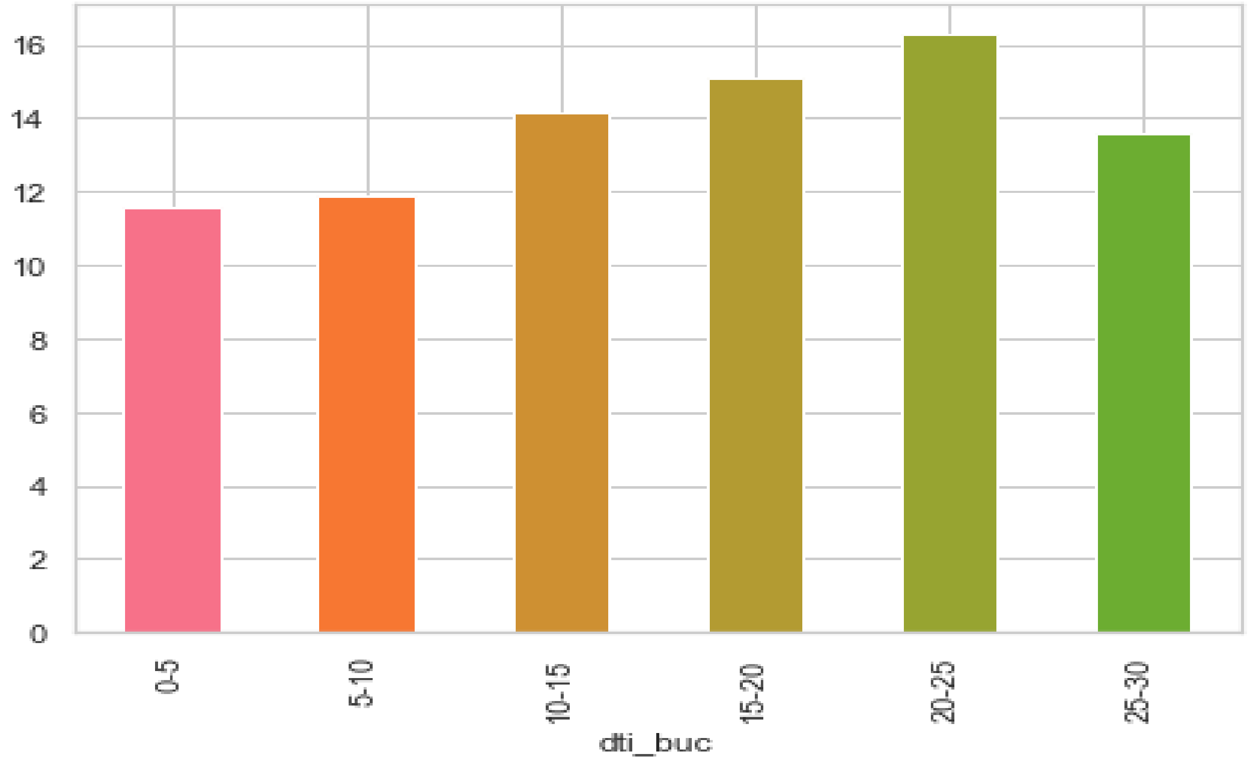
- % of Charged off loans increases significantly, even if , the person has 1 bankruptcy .record.

- Both records are highly correlated.





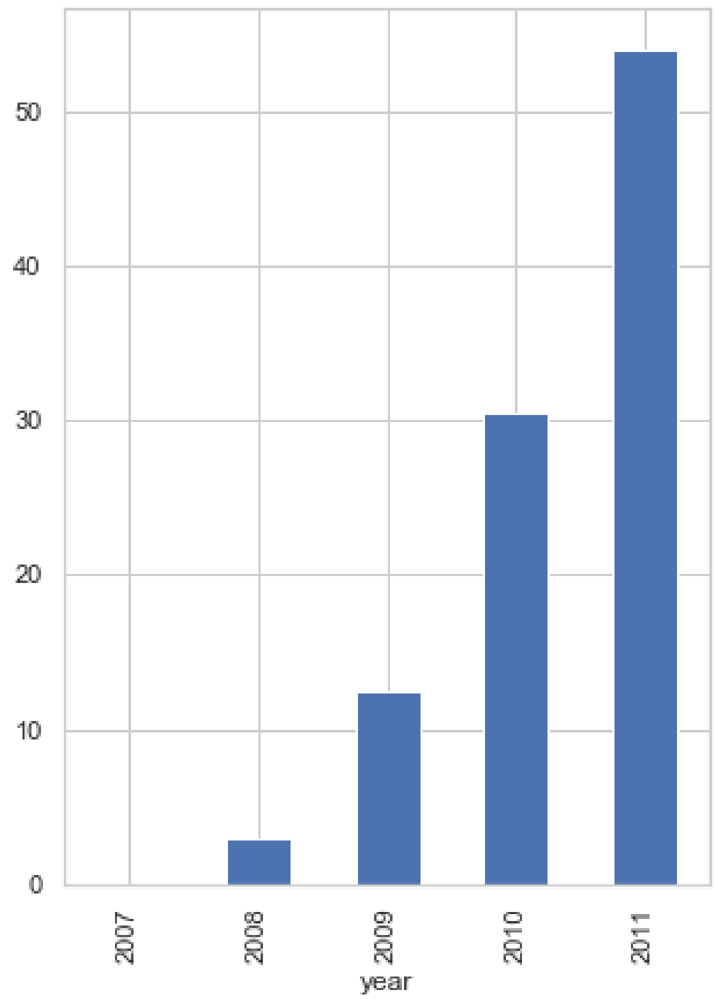
Analysis – DTI ratio



The % of defaulted loans rise with increase in dti ratio.

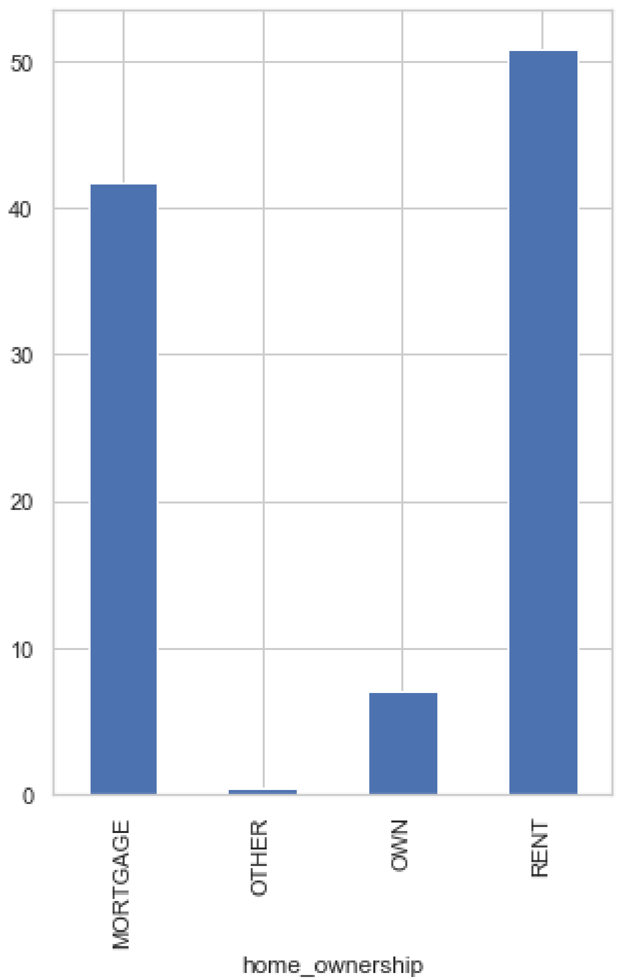
Dti ratio >20% is quite risky.

Analysis – Issue year & home ownership



- No.of loans issued has increased exponentially over the years.

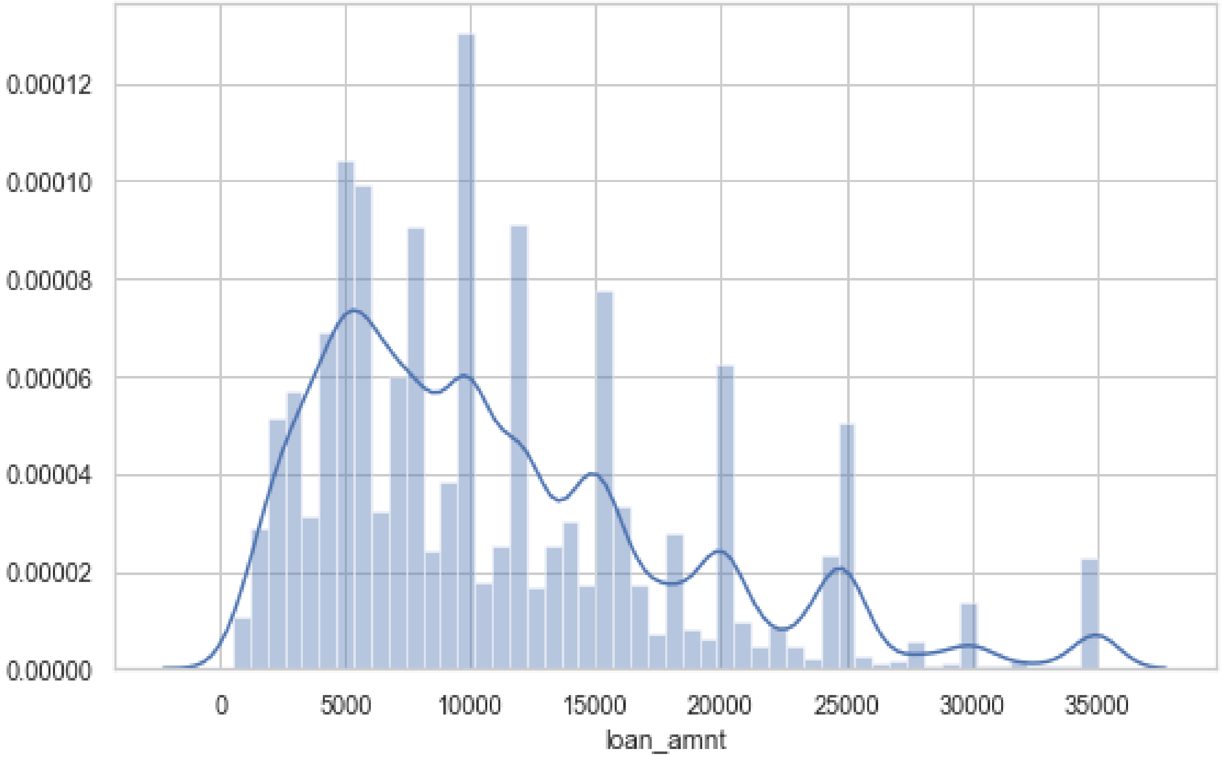
- Most people who have issued loan either have mortgaged home or rental home.

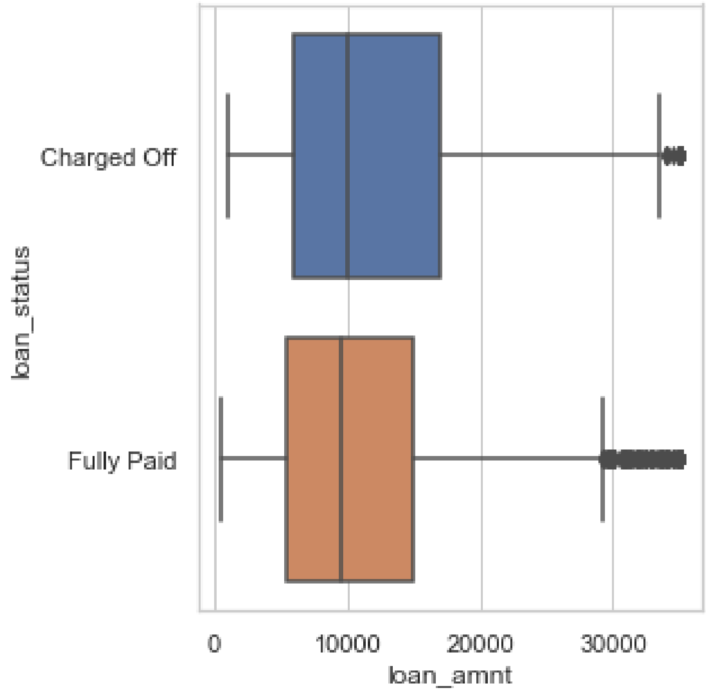


Analysis – Loan amount

Most loans are issued in multiples of 5000 , as they are rounded off. We can observe the spikes.

Median for Charged off loans is greater than fully paid loans.





Conclusions/Recommendations

From the observations we have derived some conclusions as listed below:

1. Stop approving loans for people who have amount/income ratio greater than 30%.
2. Reduce the number of approvals for people who have taken a loan to set up small business and purpose of debt consolidation. They are likely to default.
3. Stop approving loan to people who have public derogatory record or bankruptcy record.
4. Increase approval rates of A,B grades and avoid approving loans with E,F grades, they are likely to default.
5. Loans with very high interest rate likely get charged off. Either try reducing the interest rate or don't approve the loan.
6. Avoid approving loan with dti ratio greater than 20%.
7. Inspect the application who have rented houses.
8. No. of loans approval is increasing exponentially for the Lending Club with each year, which indicates the club has a great growth.