

INVESTMENT CASE STUDY

SUBMISSION

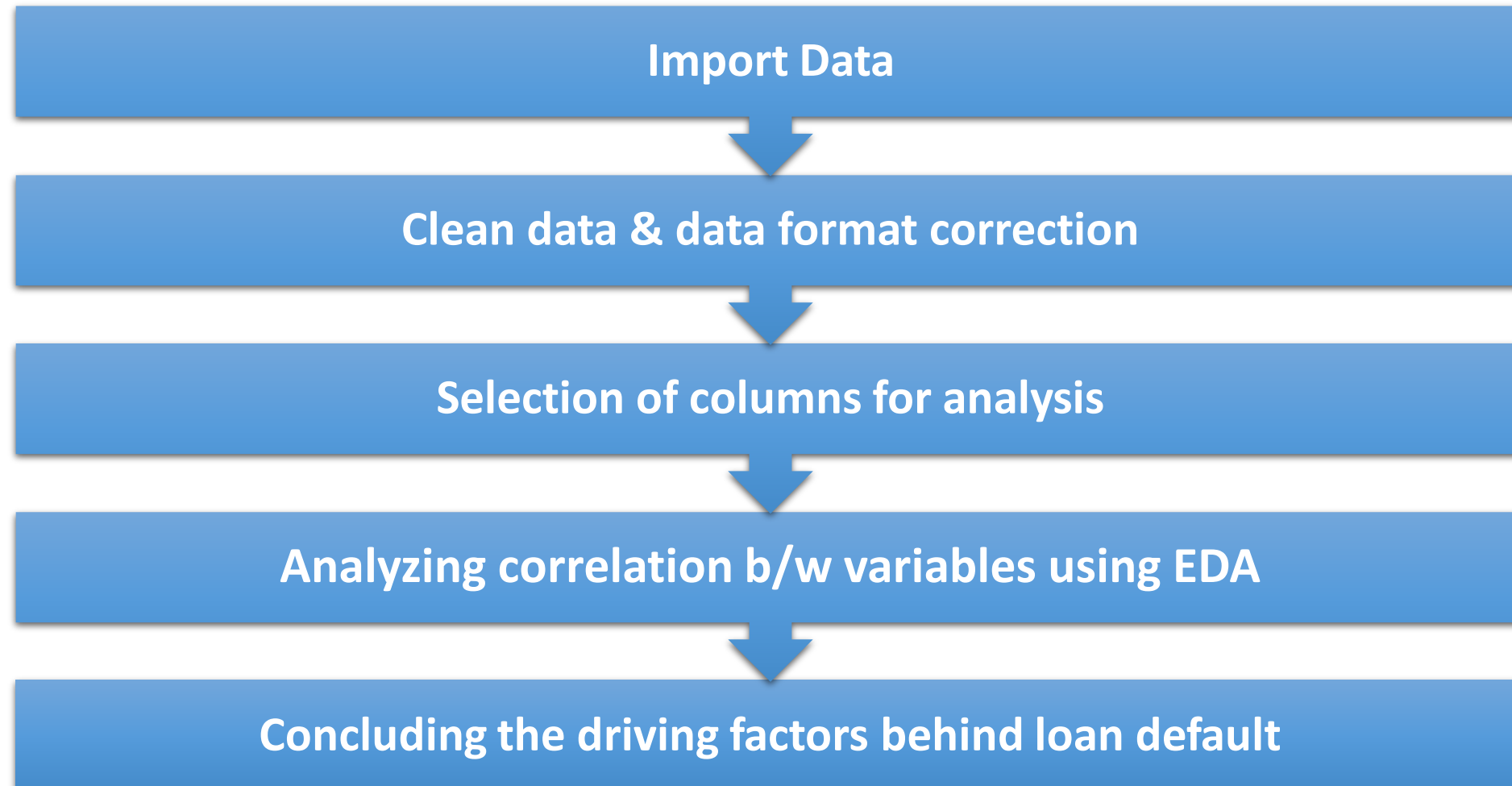
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Abstract

- Consumer 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.
- A company can go to a huge financial loss (also called the credit loss) on lending loans to 'risky' loan applicant there applicants can be called as 'Defaulters' or 'Charged Off'.
- The company therefore is mainly focusing on identifying these risky loan applicants, which can help in reducing the risk and thereby cutting down the amount of credit loss. In short what we can say is that the company wants to understand the driving factors (or driver variables) behind loan default.

Problem solving methodology – Flow Chart

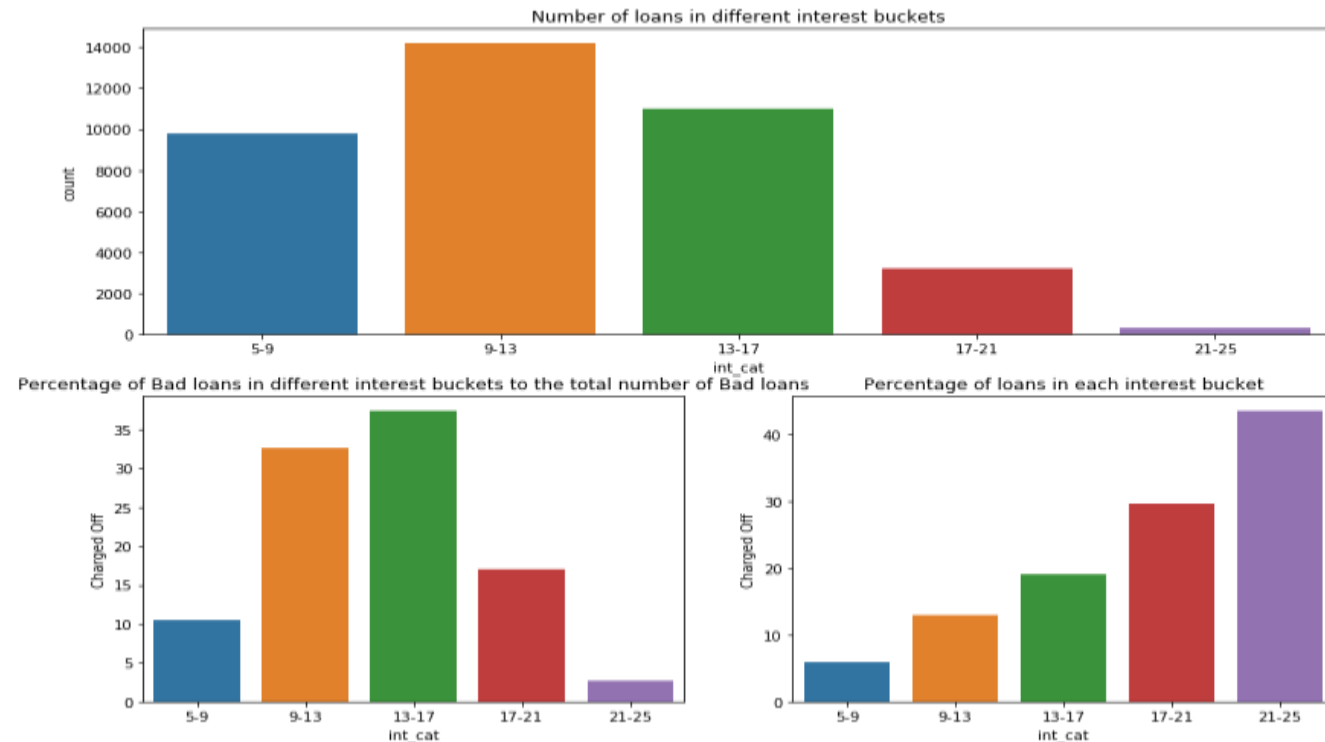


Business model and assumptions

- The business model of lending corporation is that any borrower can apply for a loan and those loans are sanctioned based on certain parameters. Investors choose the borrowers in whom they want to invest and the interest paid by the borrower is earned by the investor. There are certain things to be noted:
 - Credit score is pulled for every loan applicant and it is main basis to see if a loan can be sanctioned to the applicant. Depending on the credit score each applicant is given a grade from A to G and each grade is again classified into different sub-grades
 - There is a maximum cap for amount of loan that can be obtained in each grade and if the applied amount is greater than the max cap, then grade of loan is appropriately adjusted. There are also other factors which can affect the grade of loan like term of loan, DTI, number of open accounts etc.
 - Interest for loans depends on the grade and sub-grade of the loan, i.e. loans which are assumed to be of lower risk are given a higher grade (from A to G) and higher risk loans are given a lower grade and the interest of the loans increases as we move from higher grade to lower grade (A to G)
- Since interest rate depends on grade of the loan we can consider a very high correlation between those two columns and hence any one of them can be ignored for the analysis
- Since credit score plays a pivotal role for deciding the base grade of the loan, we can safely assume that those parameters of applicant which are used to calculate the credit score will have high correlation with the grade
- Generally credit history, debt to credit ratio or revol_util, length of credit history are some factors which affect the credit score

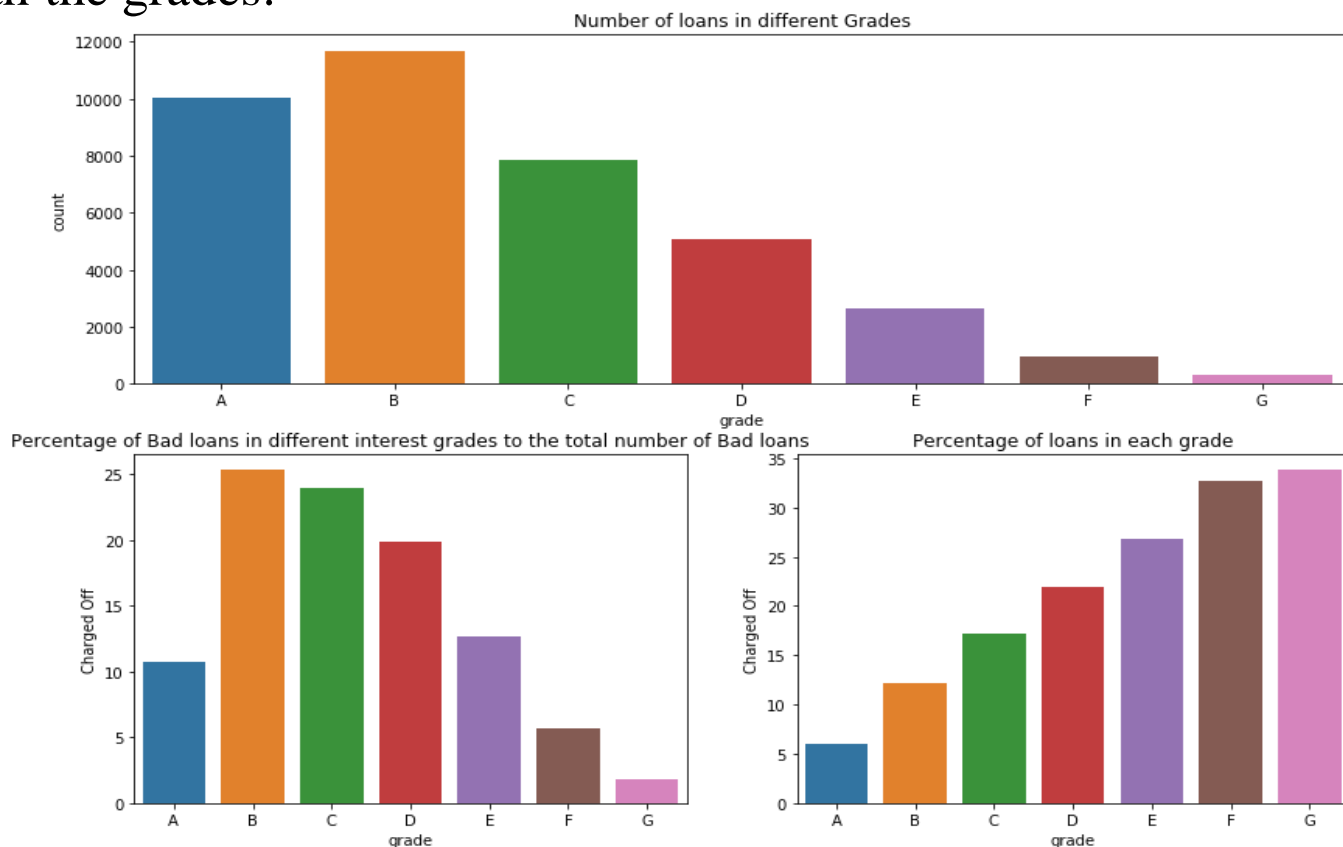
Analysis - Interest rate

- Interest rate is bucketed to gain more insights.
- As seen from the plot 1, the highest number of bad loans is around medium sized interest bucket. We can see that about (%35) of total bad loans in 13-17 bucket.
- From plot 3 we can see that percentage of bad loan in each bucket increases as the interest increases.

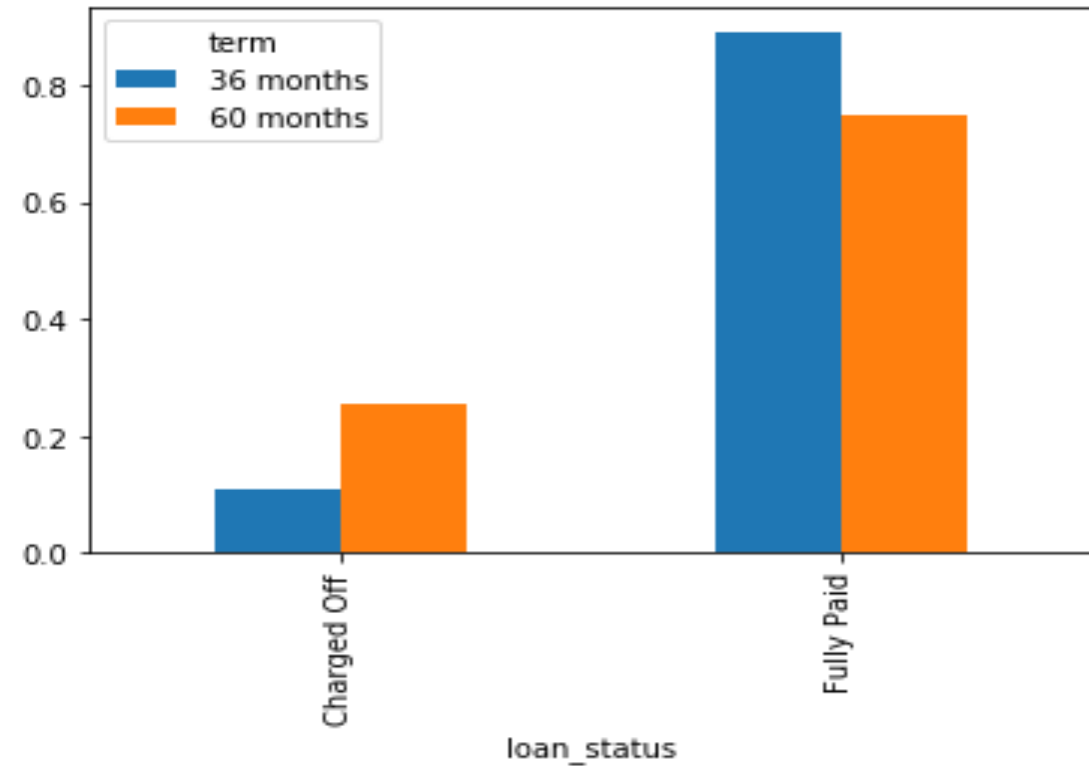
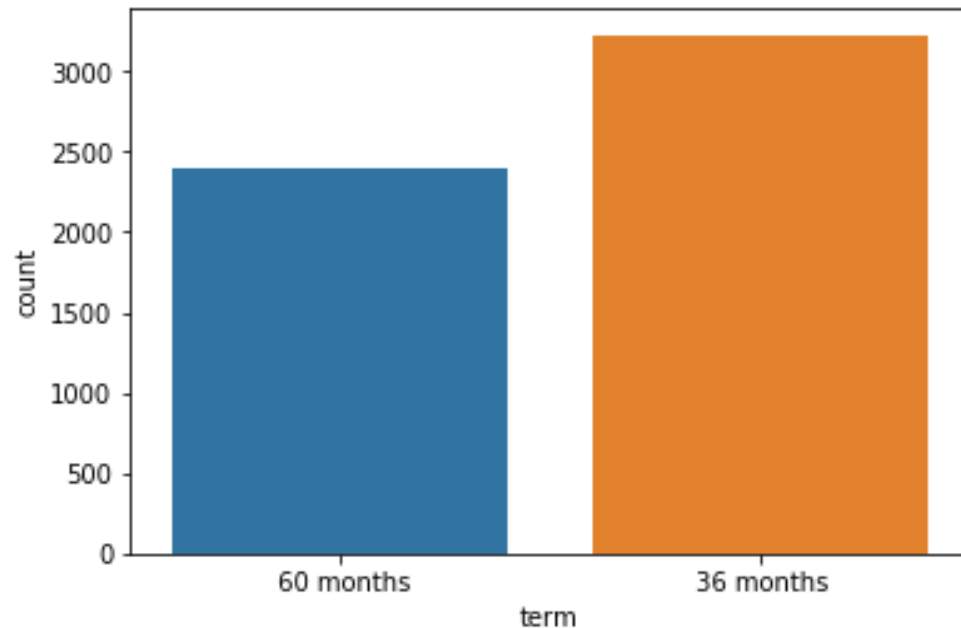


Analysis: Grade and sub grade

- The total number of loans in each grade seems to increase from A to B and thereafter decrease consistently.
- From plot 3 we can see that the percentage of bad loans increases as we move from A to G grades. This seems to be the same trend as the interest rates.
- The same trend is followed by sub grades as with the grades.



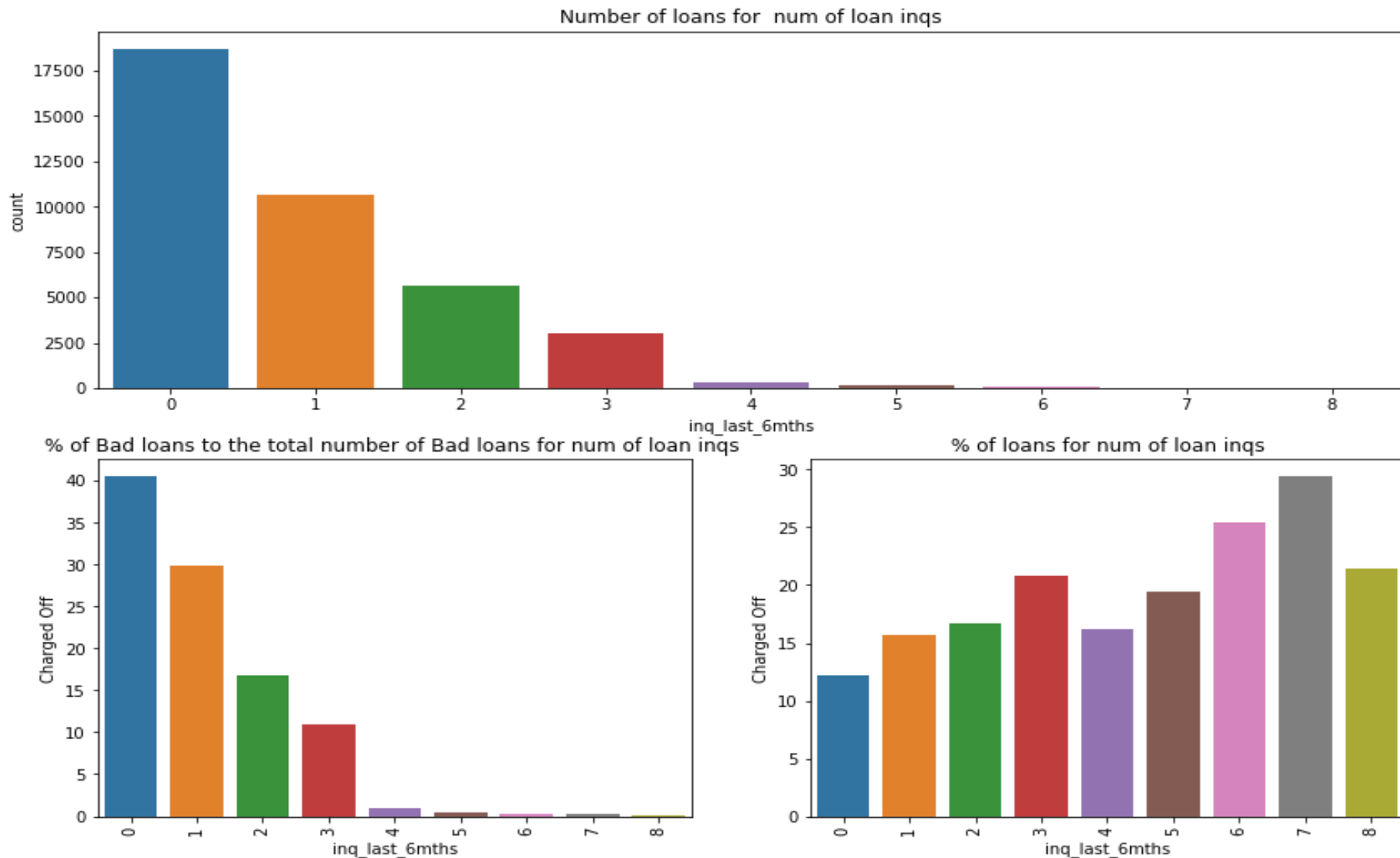
Loan Term :



- We can see that a large number of loans provided are for a duration of 36 months (about 75%). The percentage of bad loans is higher in 36 months (about 58%) when compared to the 60 months (about 42%). Even though the number of bad loans is higher for 36 months, the tendency of a loan being a bad loan is higher in 60 months tenure. This is due to the reason that the number of loans with 36 month tenure is very high when compared to 60 months

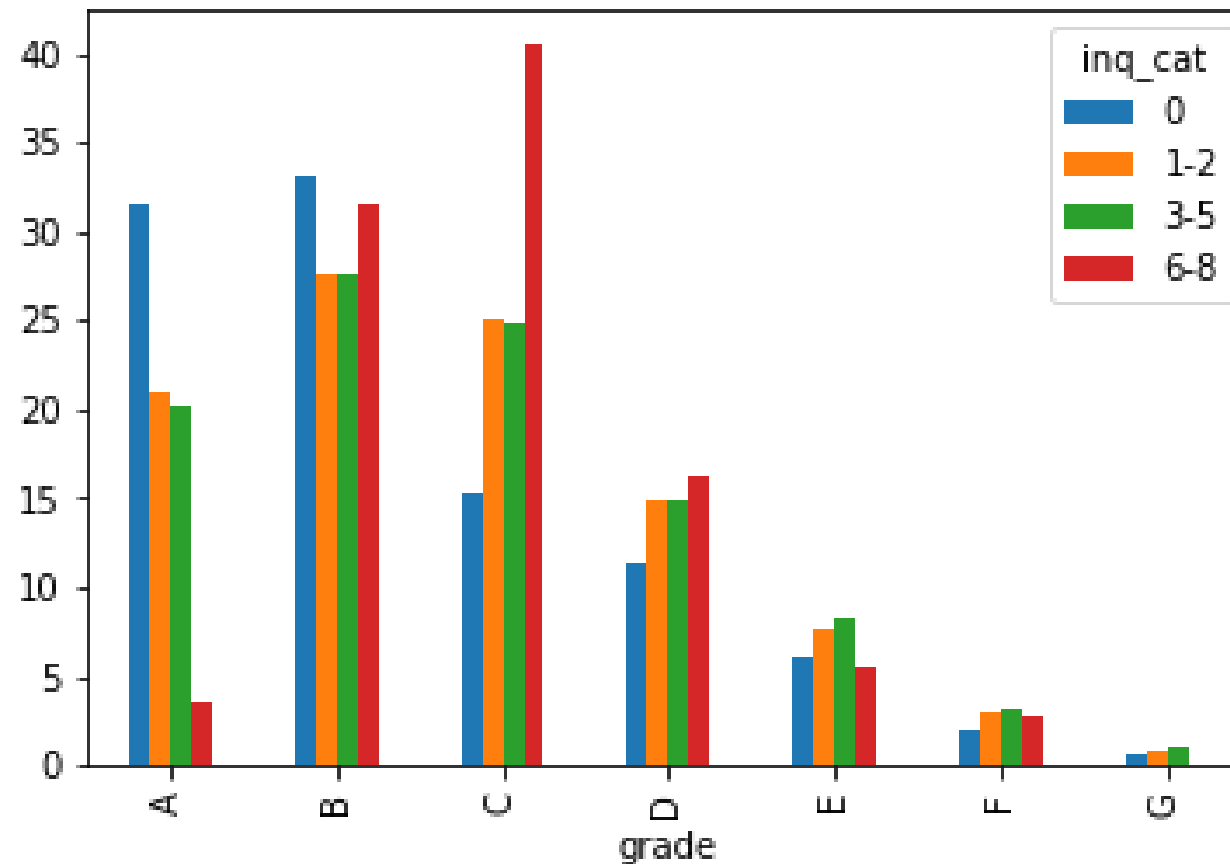
Number of loan inquires in last 6 months

- As the number of loan enquires increases the percentage of bad loans tend to high



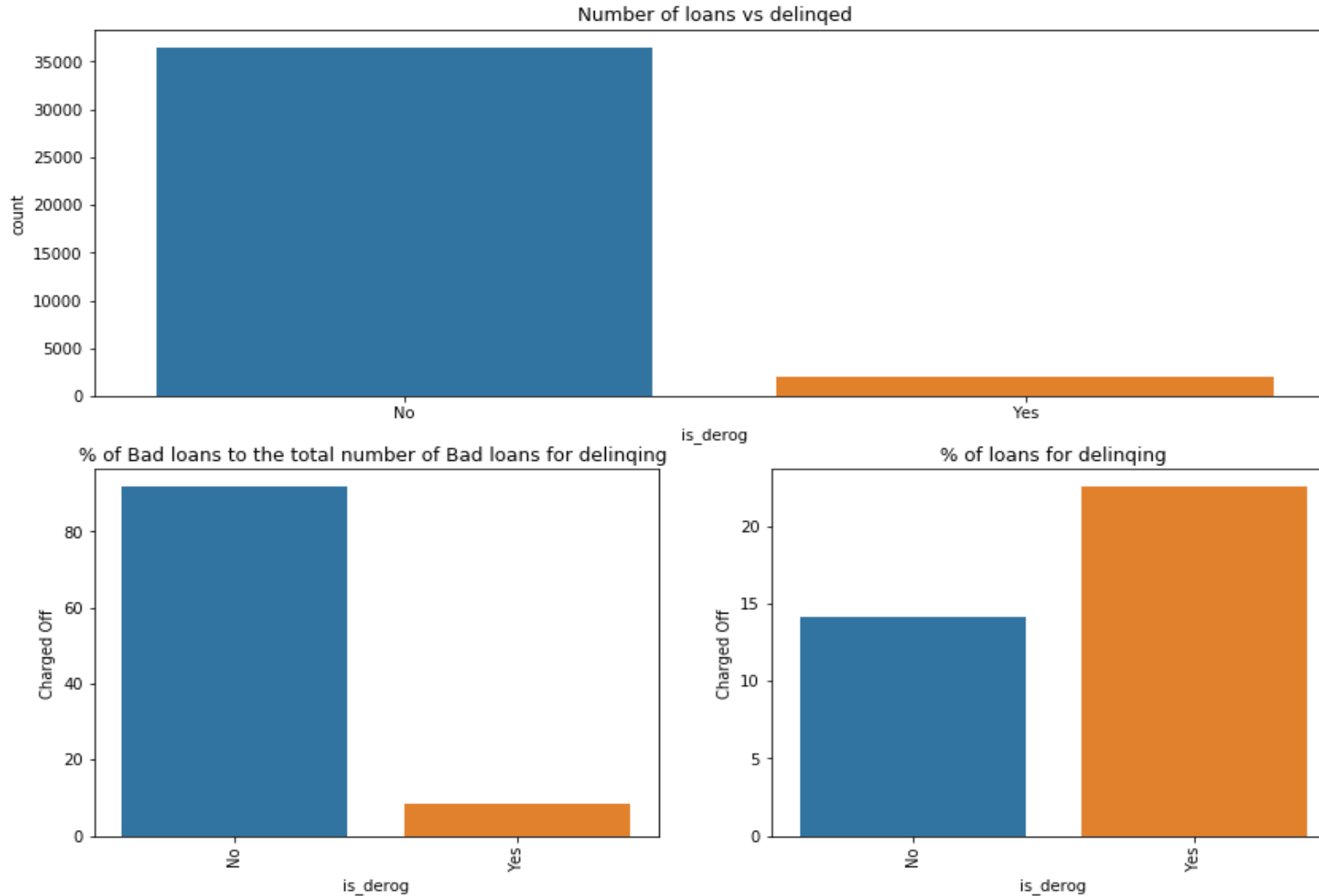
Grade vs Num of Inquires :

- Majority of requests with loan inquiries more then 5 tend we fall less in top grade loans.



Number of derogatory records :

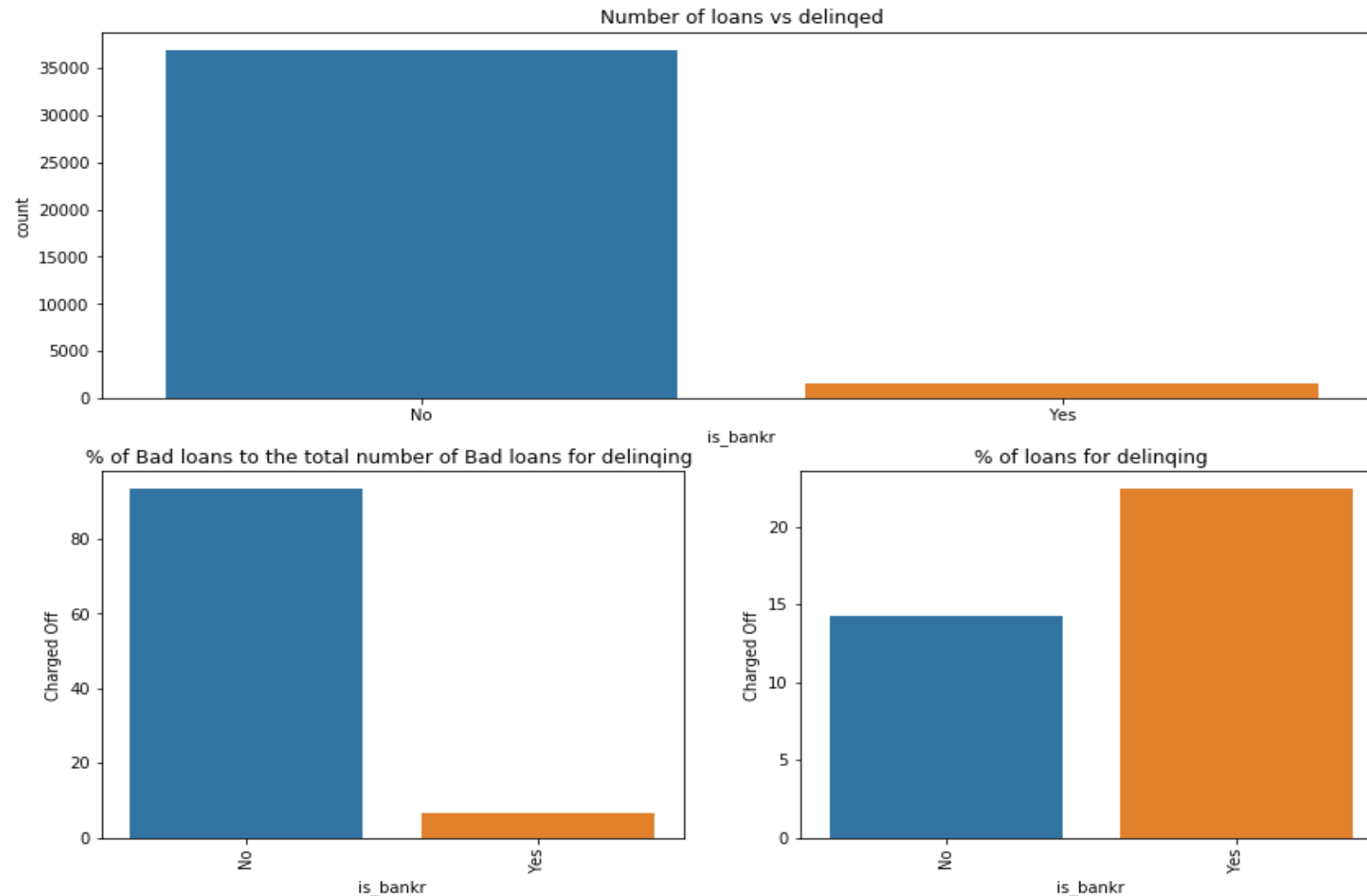
- If a person has a public derogatory record then the change of him defaulting is significantly higher (about 8%)



- A new categorical variable named 'is_derog' is created such that,
- No : if pub_recs = 0
- Yes : if pub_recs > 0

Number of records of Bankruptcies :

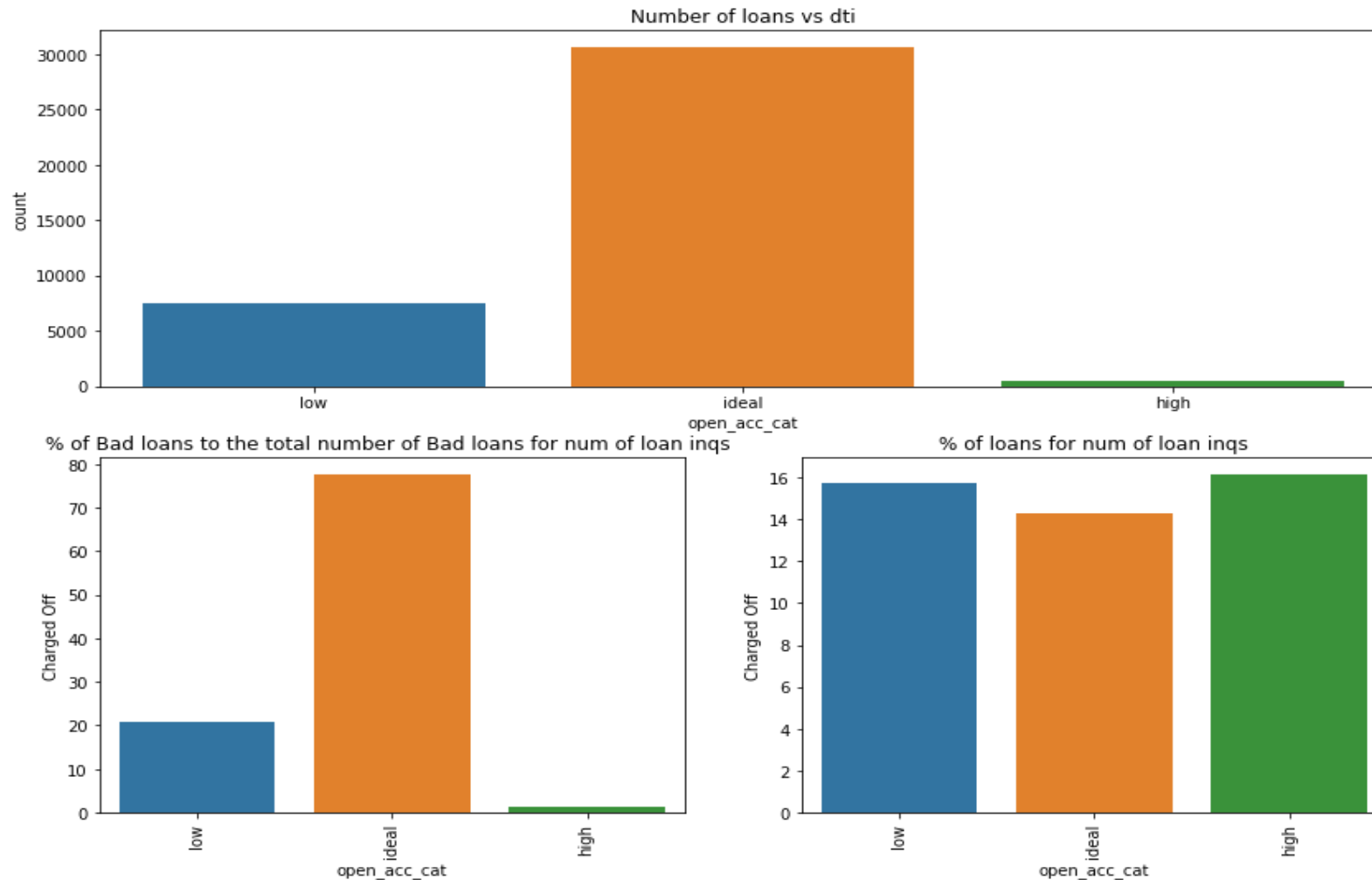
- If a person has a public bankruptcy record then the change of him defaulting is significantly higher (about 8%)



- A new categorical variable named 'is_bankr' such that ,
- No : if pub_rec_bankruptcies = 0
- Yes : if pub_rec_bankruptcies > 0

Number of open credit files (1/2)

- Having open accounts less than 6 or more than 21 causes a higher percentage of loans to be defaulted



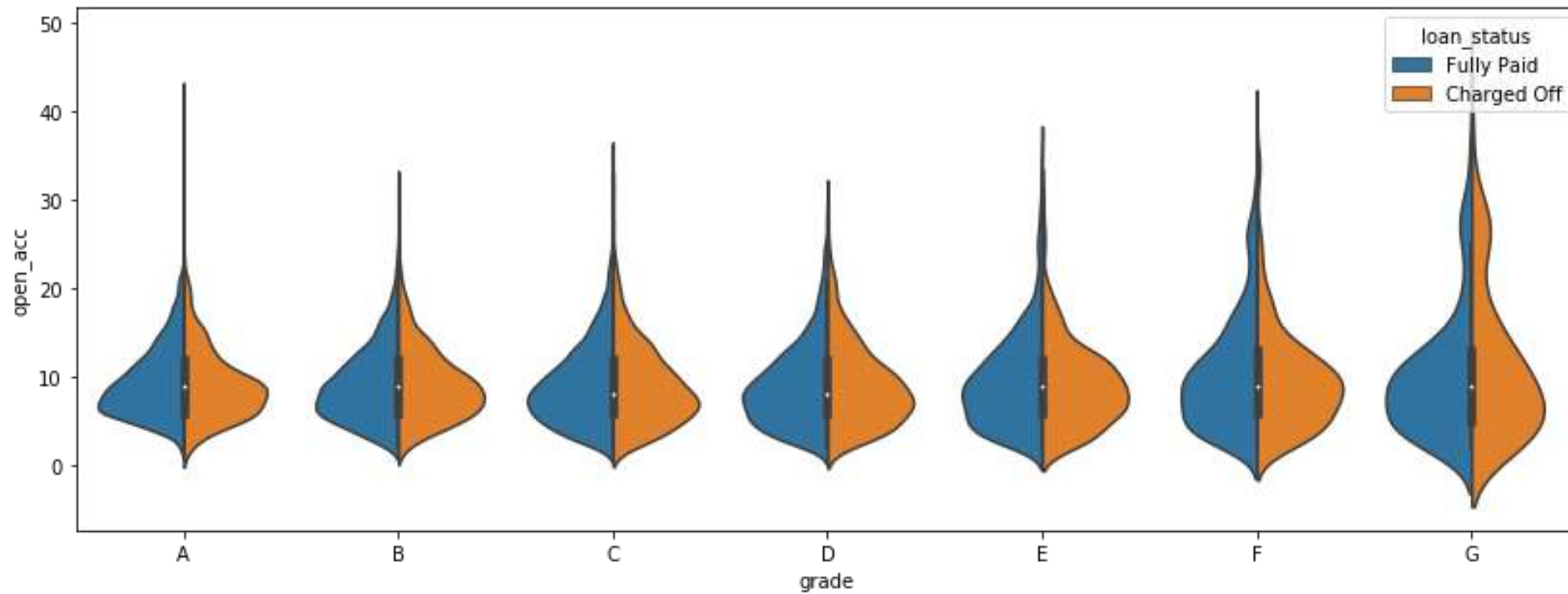
low : $\text{open_acc} \leq 5$

ideal : $5 < \text{open_acc} \leq 21$

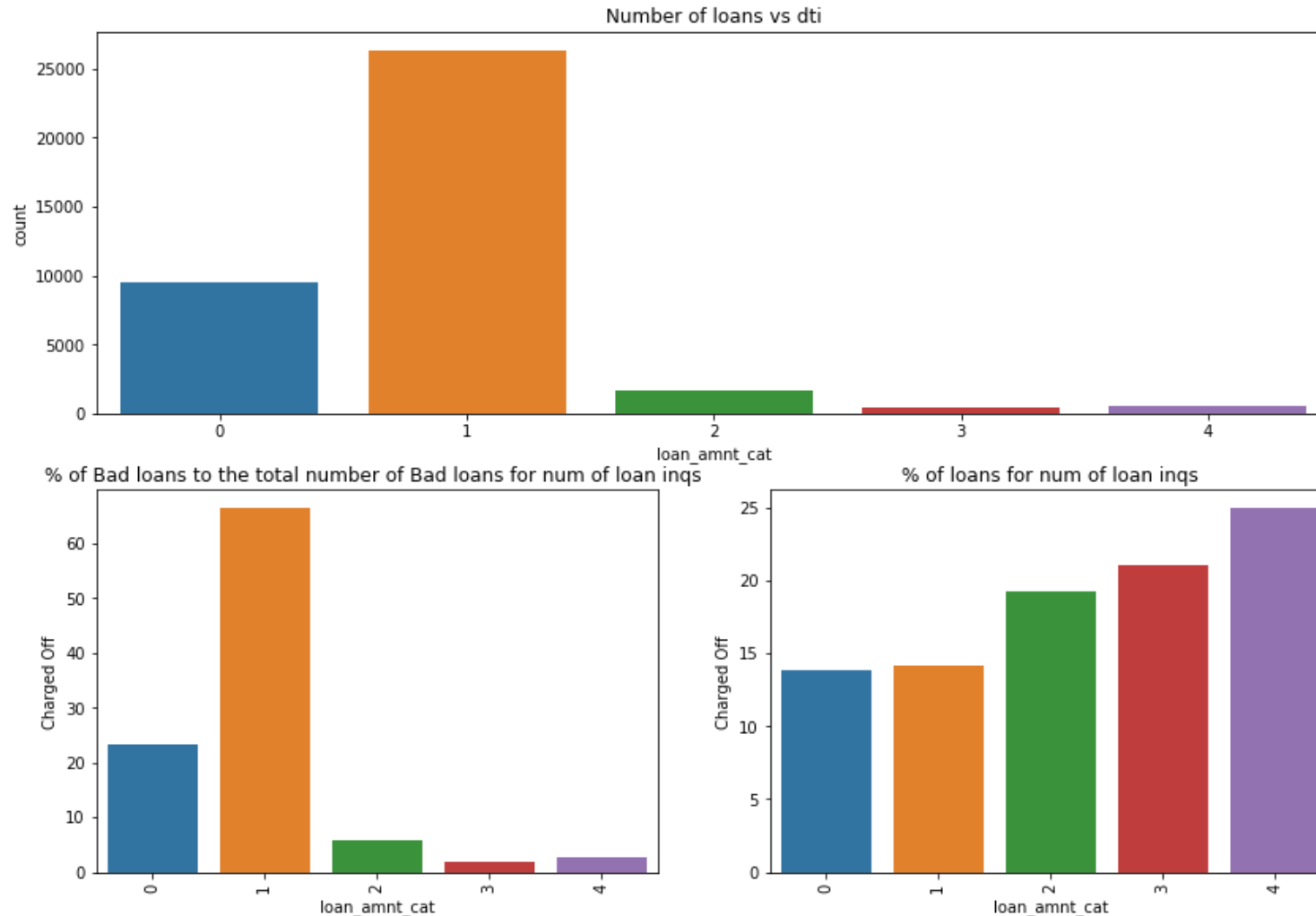
high : $\text{open_acc} > 21$

Number of open credit files (2/2)

- Also the accounts with very few or very high open accounts tend to fall into lower grade loans and since they are prone to being bad loans, the percentage of bad loans is higher in these categories



- As loan amount increases the tendency of defaulting a loan also increases. This is partly also because of having higher interest rates as we move down the grades



0 : $\text{loan_amnt} \leq 5000$

1 : $5000 < \text{loan_amnt} < 25000$

2 : $25000 \leq \text{loan_amnt} < 30000$

3 : $30000 \leq \text{loan_amnt} < 35000$

4 : $\text{loan_amnt} \geq 35000$

Conclusion

- The conclusion for which can draw from our analysis and can suggest the below given points to the Consumer Finance Company are as given below:
- 1.The Company should make sure that Loans applicant Gross Income should be verified properly.
- 2.The Company should make sure that Loan given for to the applicant should mostly be for 30 months, any applicant exceeding their loan term days more than 30 must provide an equivalent mortgage.
- 3.The Lender needs to be very careful while lending loans in states like Nebraska and Nevada's these stats have the highest Default percent
- 4.States like California followed by Florida and New York has he highest count of defaulters, hence company should strictly do the verification properly before lending them loans.
- 5.Company must be careful and should have high interest rate for loan applicant who has taken loan for small_business purpose, and debt consolidation as loans taken for these purpose leads to huge loss to lenders if the business loan (for which loan as taken) doesn't do well.
- 6.Loans with Grade as G are more likely to be defaulted.
- 7.Borrowers employed for 10+ years are most likely to be defaulted.