Lending Club case Study

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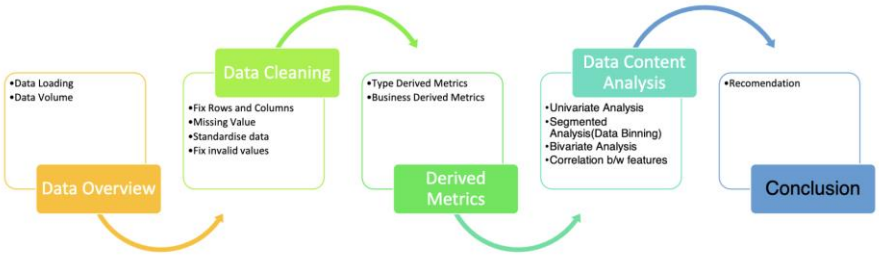
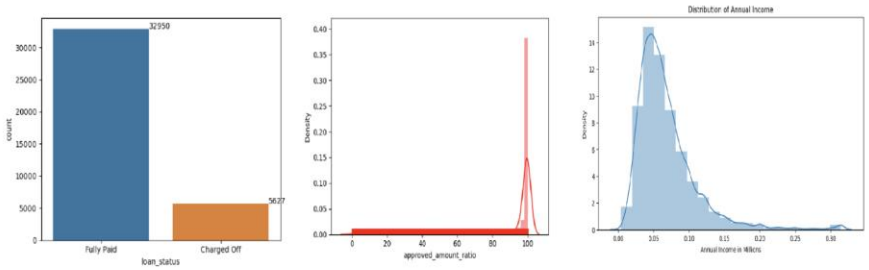
Business Objective :

The objective for case study is to identify if a loan has to be given to a person or not based on the exiting data set , where people have defaulted , based on various metrics like length of loan , employment length , debt to equity , public derogartry records , credit line utilization , reason for talking loan and based on risk they should be given a loan at higher intrest rate to reduce risk of NPA and business loss.

Problem solving methodology



Data Analysis



•only **13%** loan applicants have defaulted the loan
•**90%** of the applicants loan was approved by the investor
•Annual Income is **left skewed** normal distribution ,therefore majority burrowers have relatively low income than others

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loan_status  Charged Off  Fully Paid
term
 36 months          3073       25214
 60 months          2326        6931
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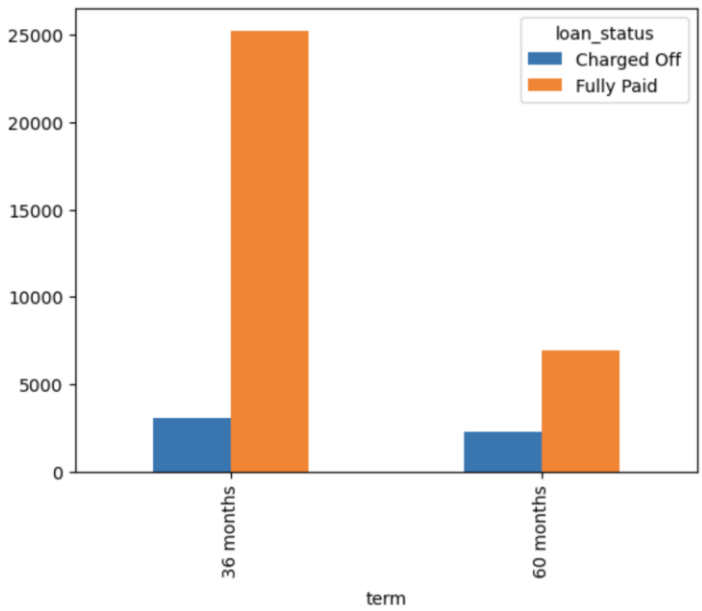
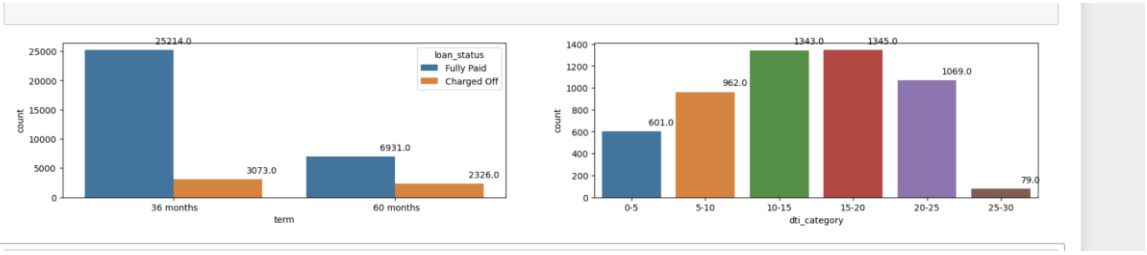


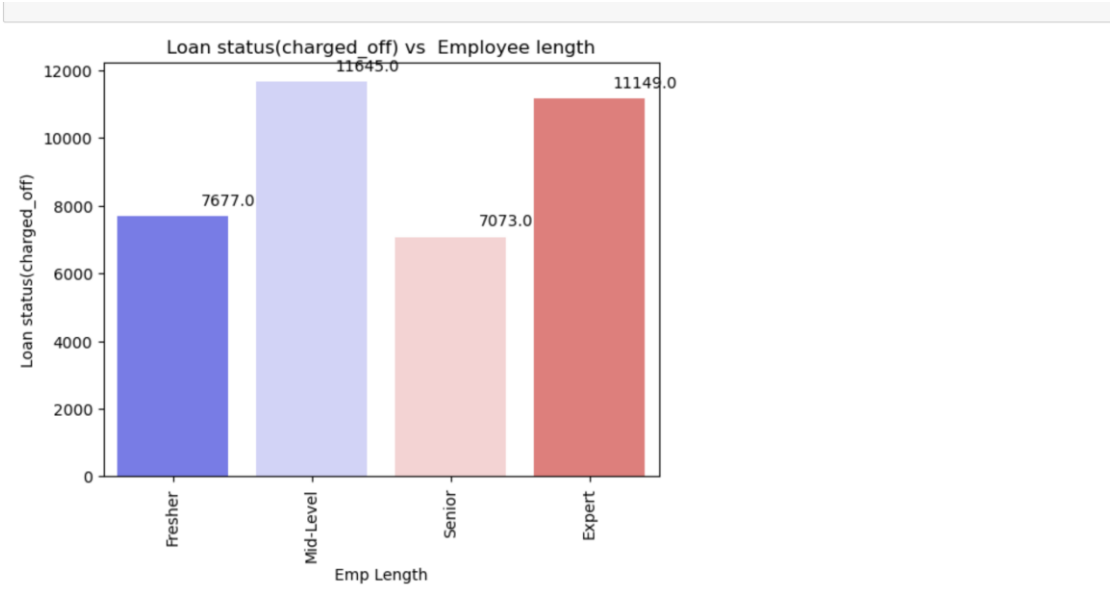
It shows people with 60 months have more tendency for not paying loans and getting charged off compared to 36 months term.

With debt to equity. Higher debit to equity means more risk to pay liabilities .now lets see it with data .



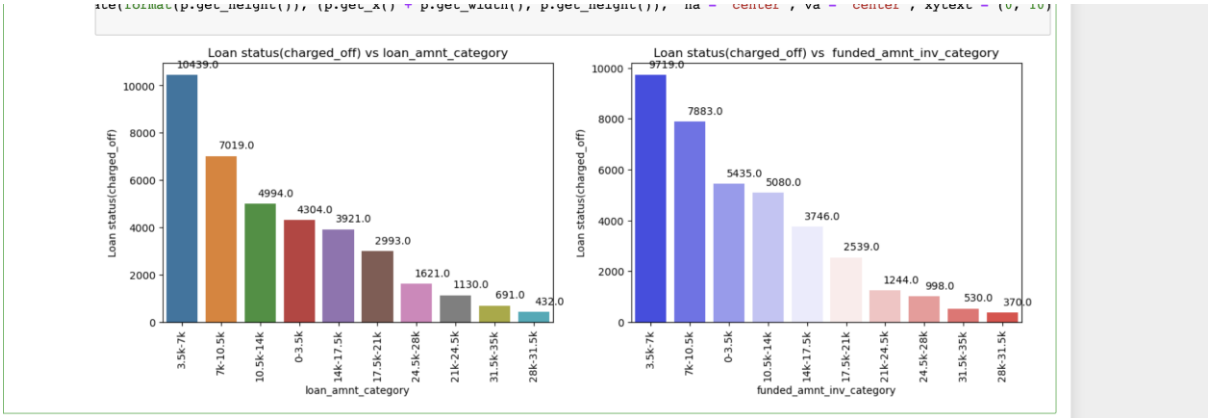
Majority of defaulters are in 10-20 range .

Loan status vs employee length



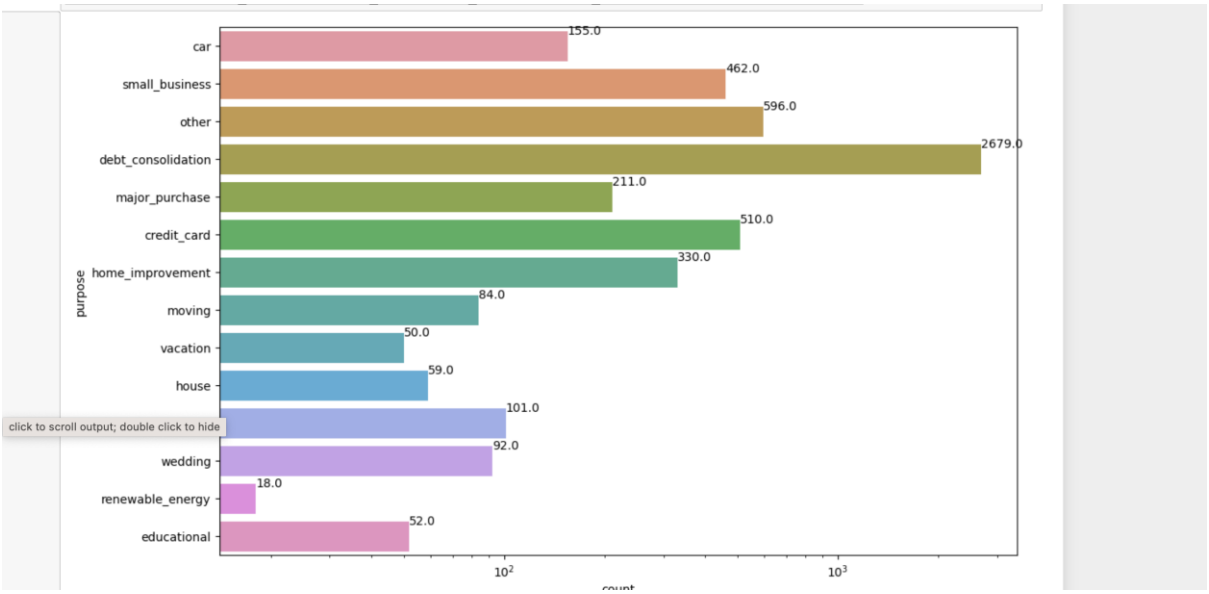
Max people who have defaulted are either mid level or expert category employees

Loan status against loan_amnt_category



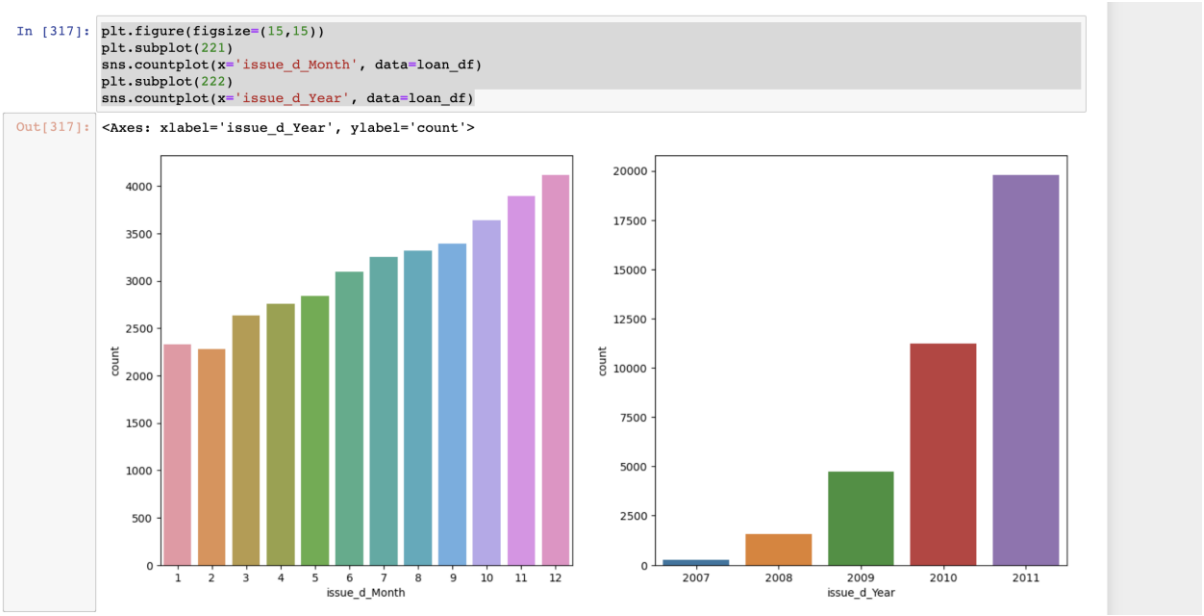
People with amount around 3.5 to 7K have defaulted the most .

Now lets check the reasons for these loans .



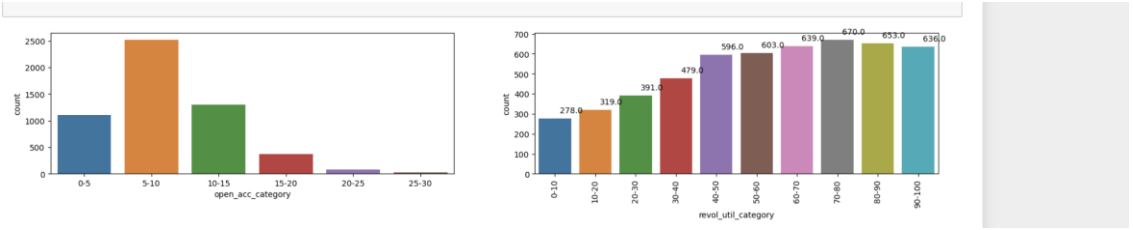
People who took loans for debt consolidation defaulted the most.

Against issued month and year :



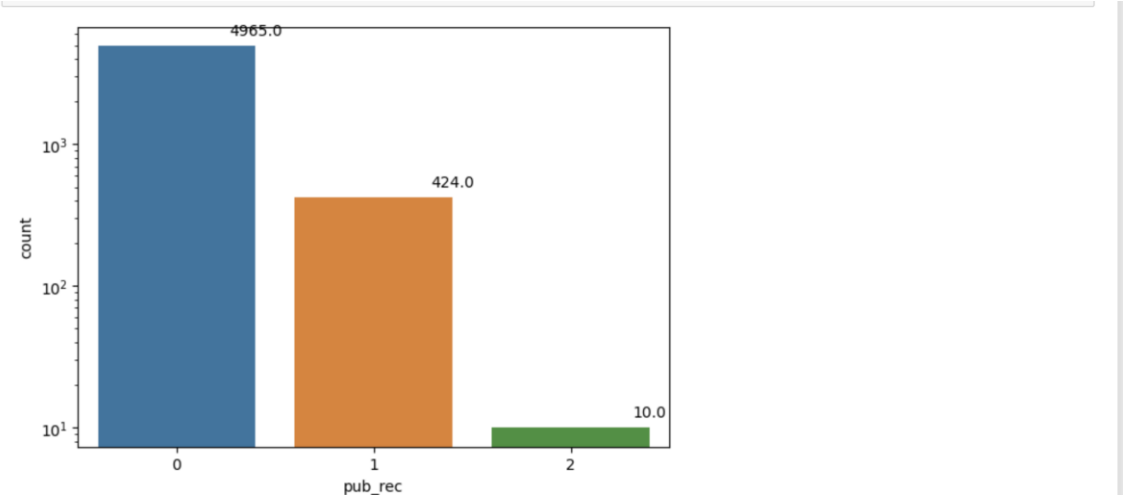
People defaulted the most during the us debt ceiling crisis , hence it should be a outlier to analysis if loan can be given or not . since it's a financial crisis and probably people lost jobs and hence they defaulted .

Against open accounts and how much credit line has been used .



People with 5-10 open back accounts have defaulted the most and also who have have taken more than 40 percent of the available credit .

Against pub_rec i.e Number of derogatory public records . since we equated the data where no public records were present as 0 hence we ignore this but for pub_rec as 2 , people defaulted . hence we should try to be vigilant if a person has derogatory public records.



Against grade :

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In [325]: gsize=(12,7))
_numeric(loan_df.sub_grade.apply(lambda x : x[-1]))
, order = ['A', 'B', 'C', 'D', 'E', 'F', 'G'] , hue = 'sub_grade',data = loan_df[loan_df.loan_status == 'Charged Off'])
```

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Out[325]: <Axes: xlabel='grade', ylabel='count'>
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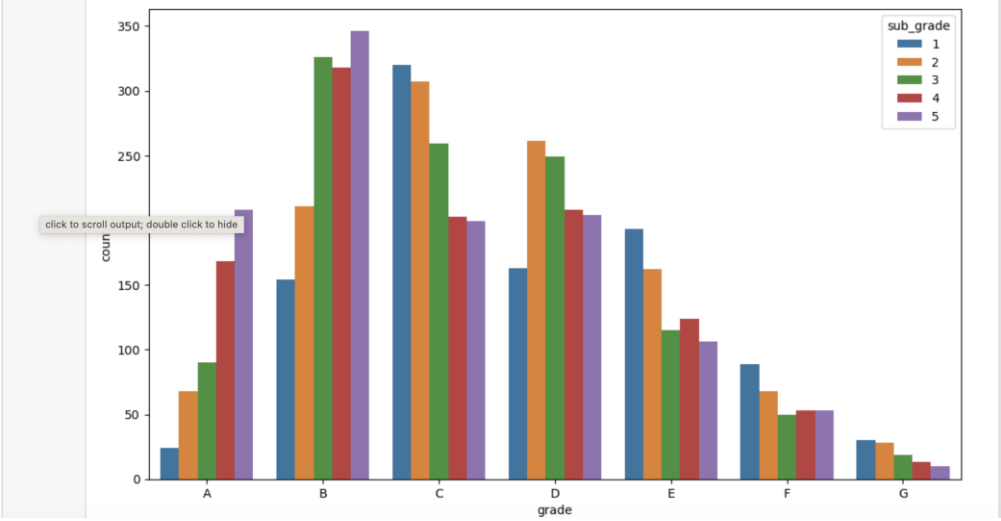

People with GRADE a,B,C have defaulted the most .

Conclusion for not being given a loan :

1. Debt to equity should not in range 10-20
2. Reduce loan term from 60 months to 36 months .
3. If credit line is more than than 40 percent , the reason for taking loan should be review aggressively.
4. People who are talking new loan for clearing of existing loans should not be given a loan .
5. People falling in GRADE a,b,c should be reviewed extensively for loans.