LENDING CLUB CASE STUDY SUBMISSION

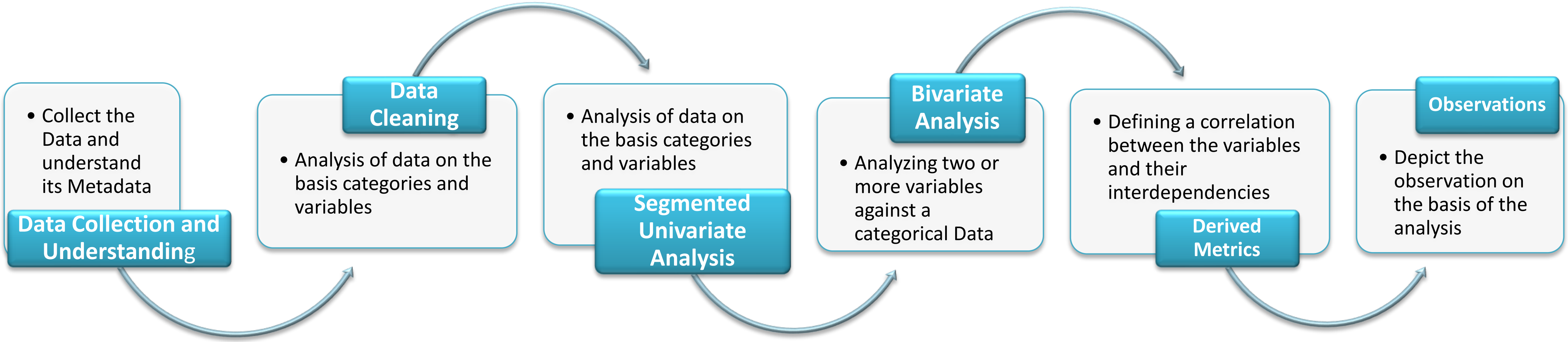
Group Facilitator : Rahul Aggarwal
Team Member : Ruchi Ghiya

Business Understanding

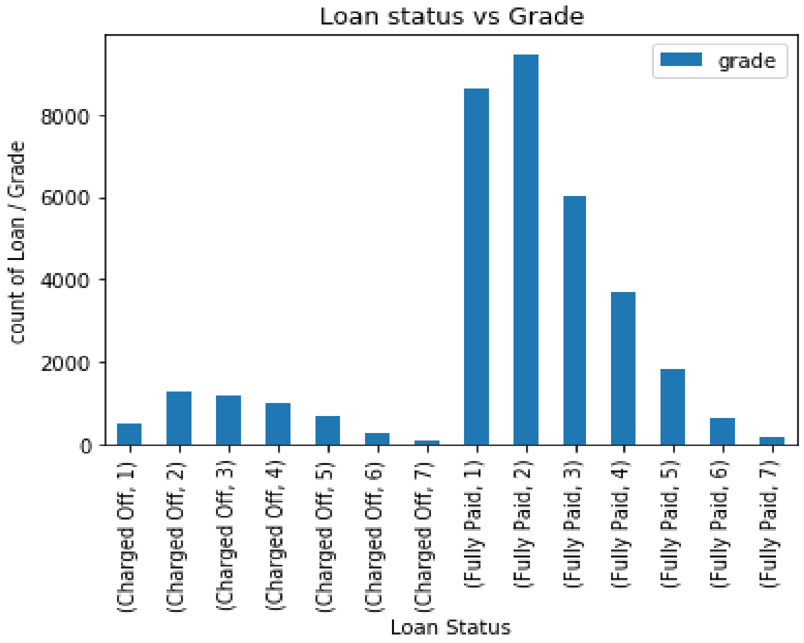
As Lending Club specialises in lending various loans to urban customers.
As an financial organization, Lending club want to profile application to identify below factor:

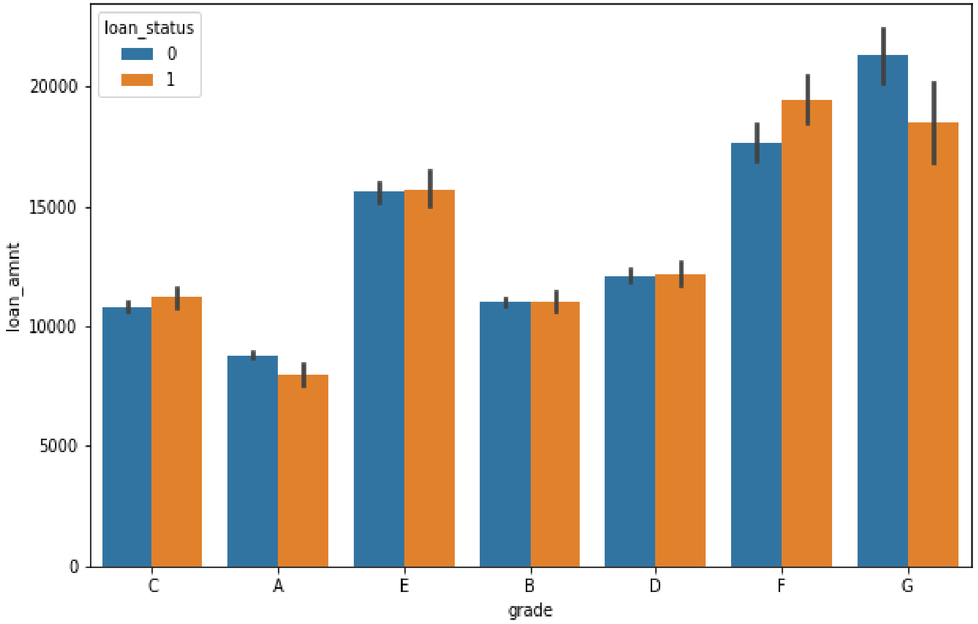
- What is the risk of Applicant not paying loan.
- Which application should be accepted or rejected.
- What are the factor drives the applicant to be a defaulter.
- How organization can minimize the risk if an applicant turns out to be a defaulter.
- How organization can curb the Financial loss and Business loss

Analysis Strategy



Data Graphs Loan Status Vs Grade





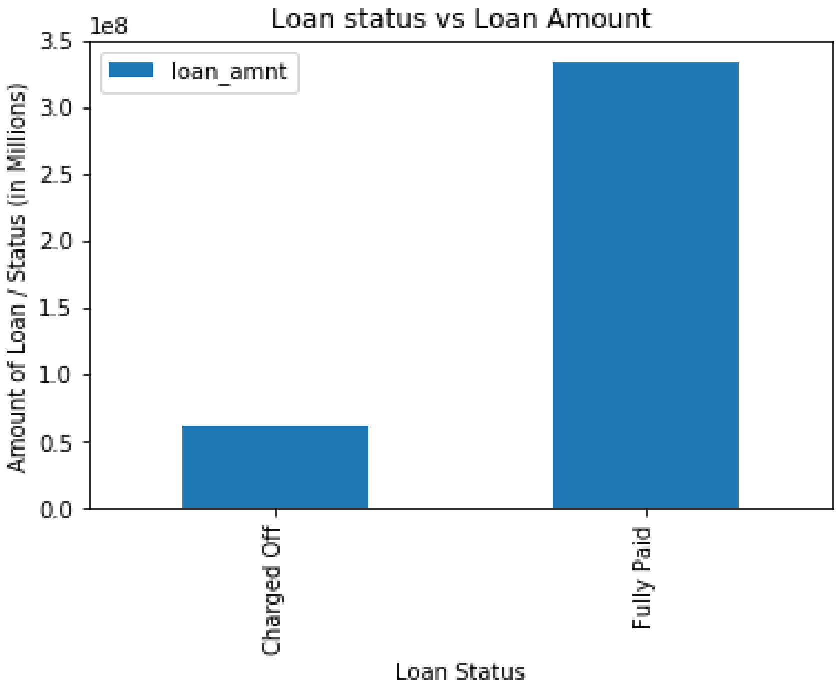
Inferences

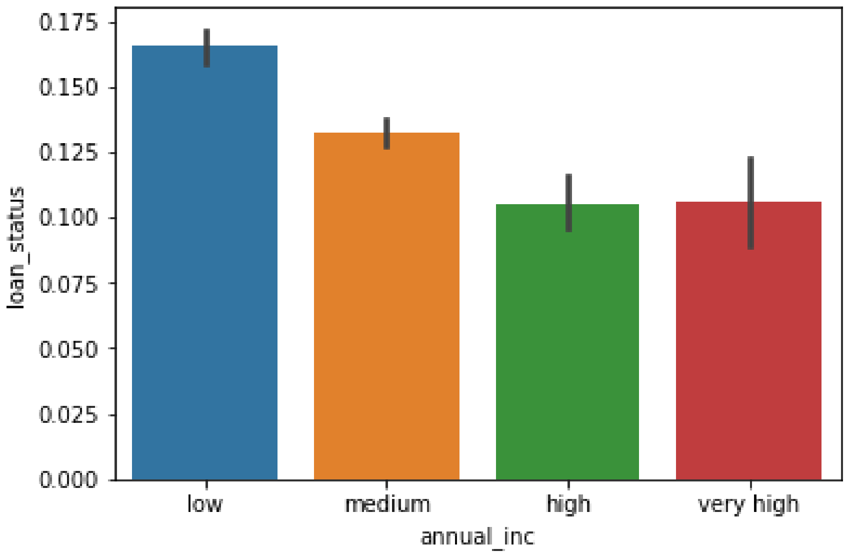
- We get number of the fully paid loans are from Grade rank 2 (Grade B)
- We get the number of charged off loans with respect to grade of applicants.
- Based on the grade we can identify whether an applicant will be a defaulter or not.

Inferences

- The above graph shows the trend which grade has larger share of loan amount.
- The above graph also provide comparison of amount for defaulter and fully paid applicants.
- It can be clearly seen that Applicant from Grade F & G are higher in defaulter category.

Data Graphs Loan Status





loan status
0-Fully Paid
1-Charged Off

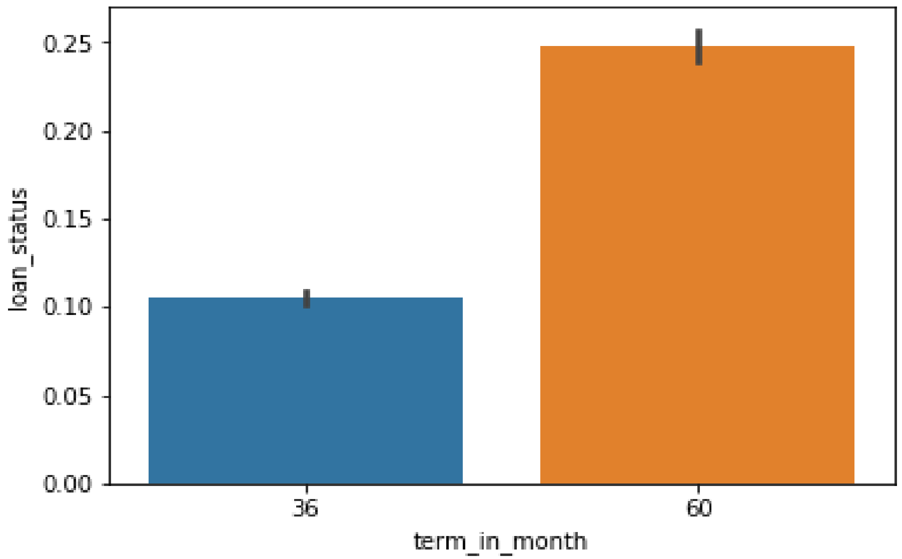
Inferences

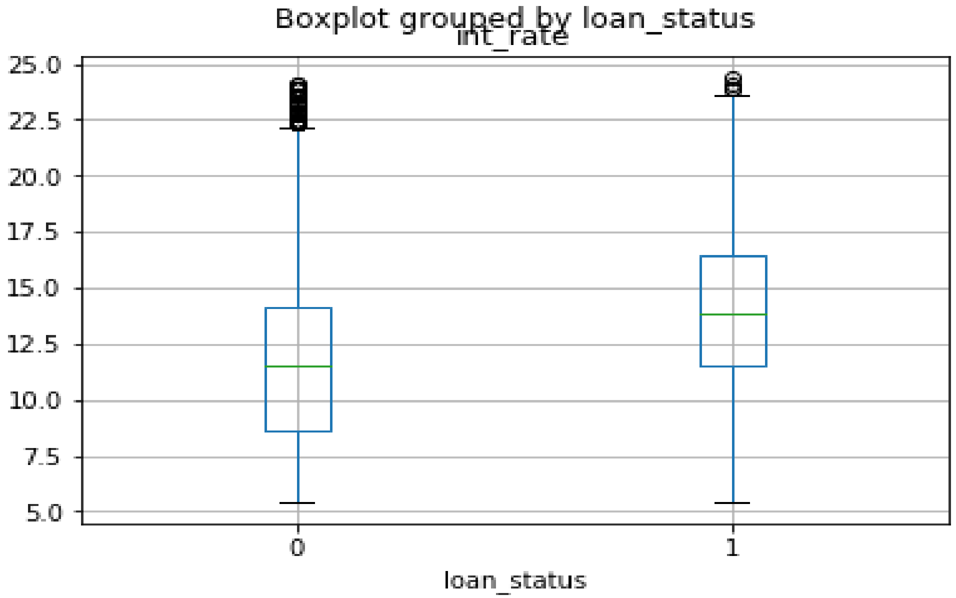
- We get the amount (in dollars) that are charged off by company
- The charged off loan amount is ~0.5Milion which is 14% of the total amount of loan provide by company.

Inferences

- Above graph shows comparison between the Annual income and Loan status.
- We can clearly see that lower the annual income higher the chance for an applicant to be a defaulter.

Data Graphs Tenure and Interest Rate





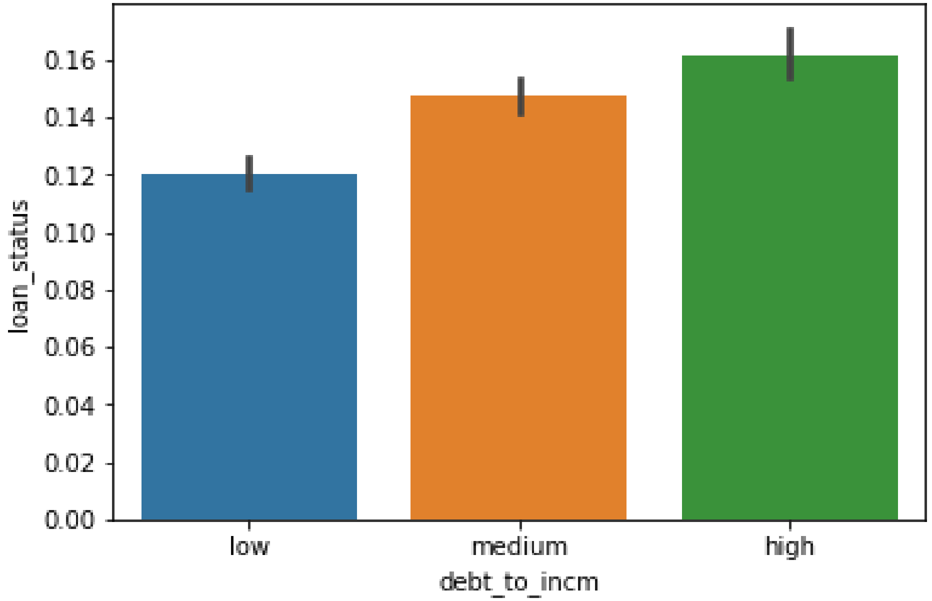
Inferences

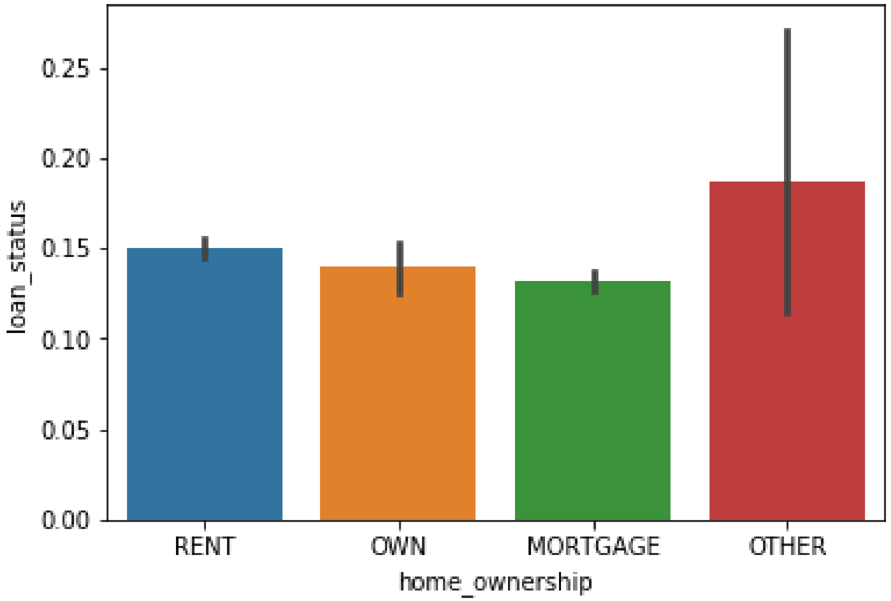
- Above graphs shows the comparison between the tenure of loan and status of loan.
- We can clearly infer that higher the tenure for loan, higher the chances of applicant to be defaulter.

Inferences

- Above graph shows comparison between rate of interest and Loan status.
- It can seen here that company have already started a good practice of providing loan at higher interest rate to defaulter, in order to reduce the financial loss.

Data Graphs DTI and Home Ownership





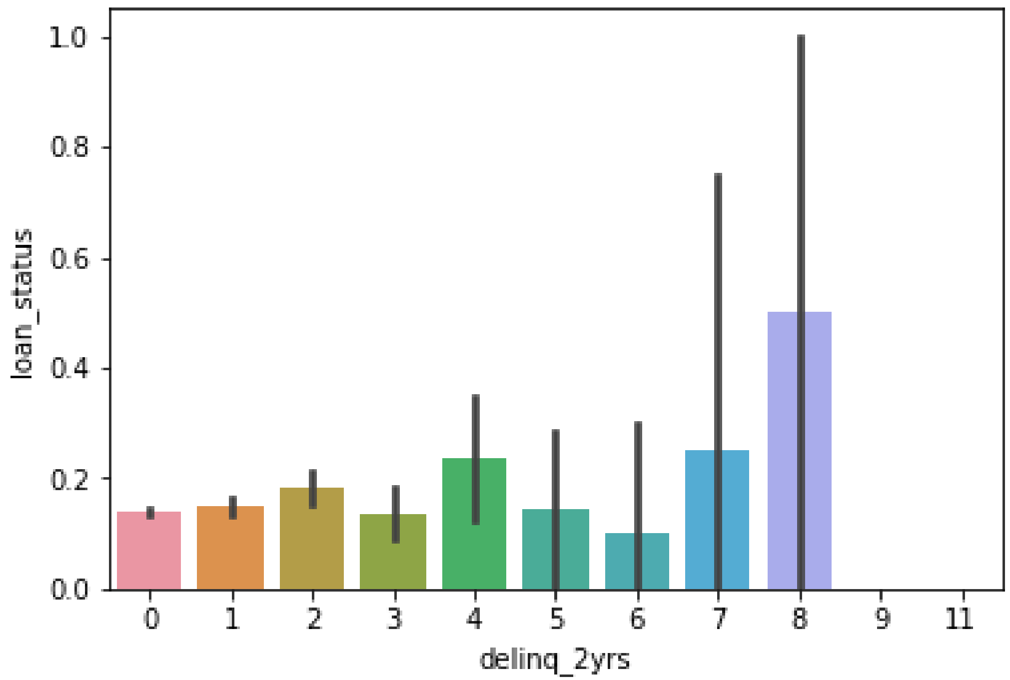
Inferences

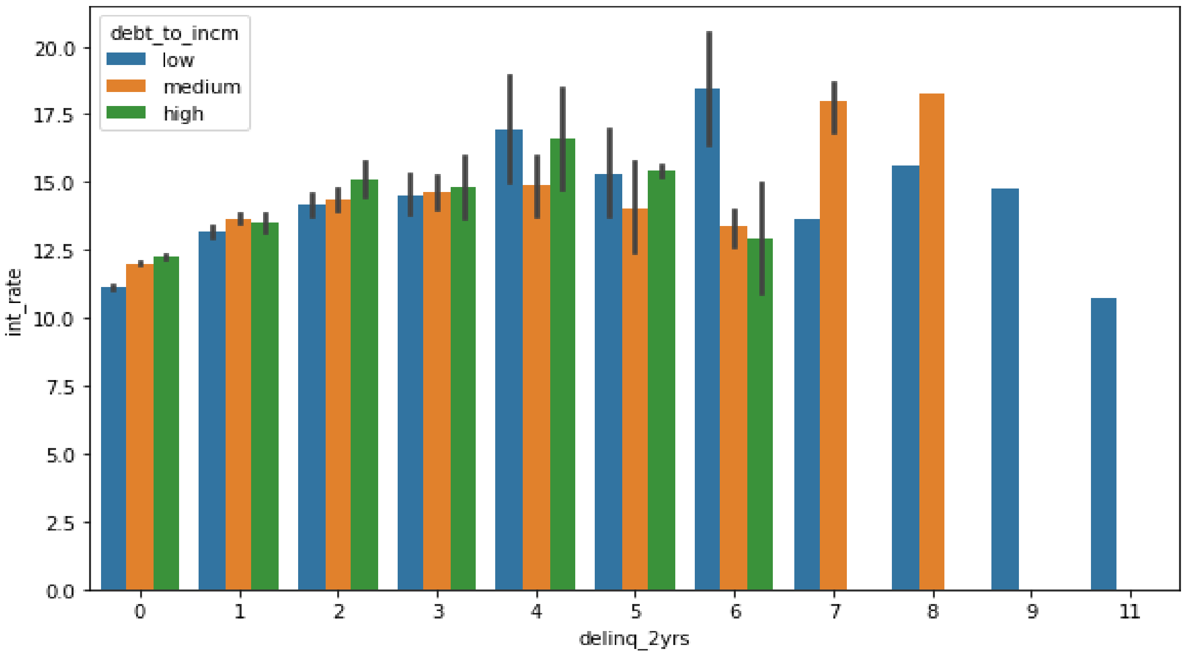
- Above graphs shows the comparison between debt to income and status of loan.
- We can clearly infer that chances of loan applicant with higher debt to income ration turning defaulter are high.

Inferences

- Above graph shows comparison between home ownership and Loan status.
- It can observe Applicant having rented or other type of ownership having more chances of turning to be as defaulter.

Data Graphs Delinq 2 Years





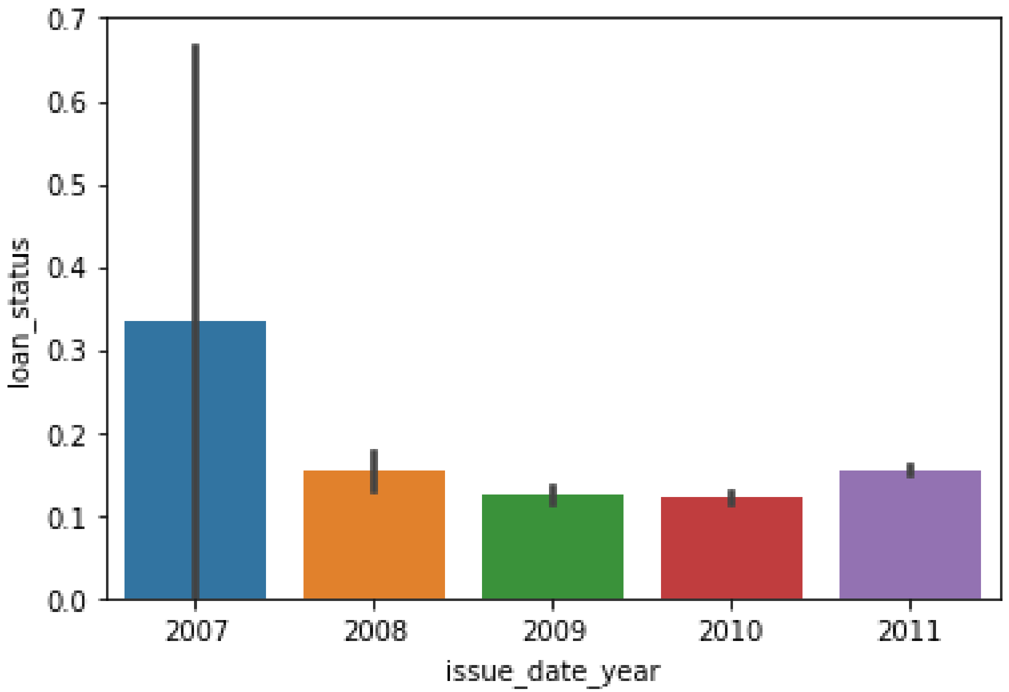
Inferences

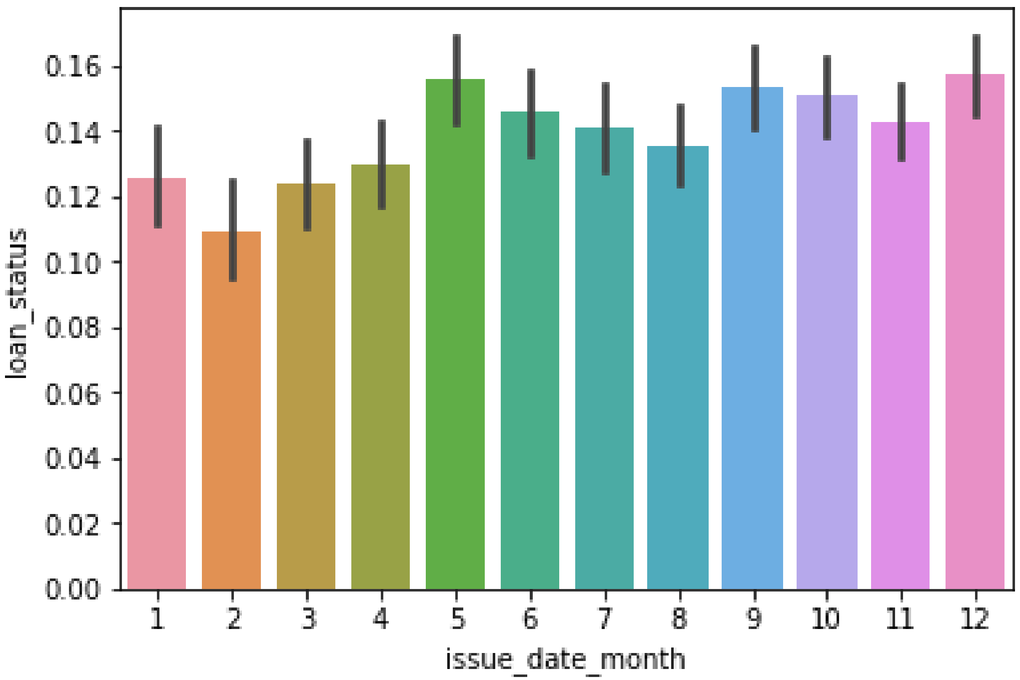
- Above graphs shows the comparison between delinq in 2 year and status of loan.
- Delinq in 2 years provides the information of how many installment missed by an Applicant and above graphs shows the trend with higher value for delinq 2 years value are more prone to be defaulters.

Inferences

- Above graphs shows the comparison between delinq in 2 year and status of loan with respect to DTI.
- Above graphs shows the trend with higher value for delinq 2 years value are more prone to be defaulters also the DTI starts to diminish as delinq value rises.
- Making applicant more prone to be defaulter.

Data Graphs Issue Date





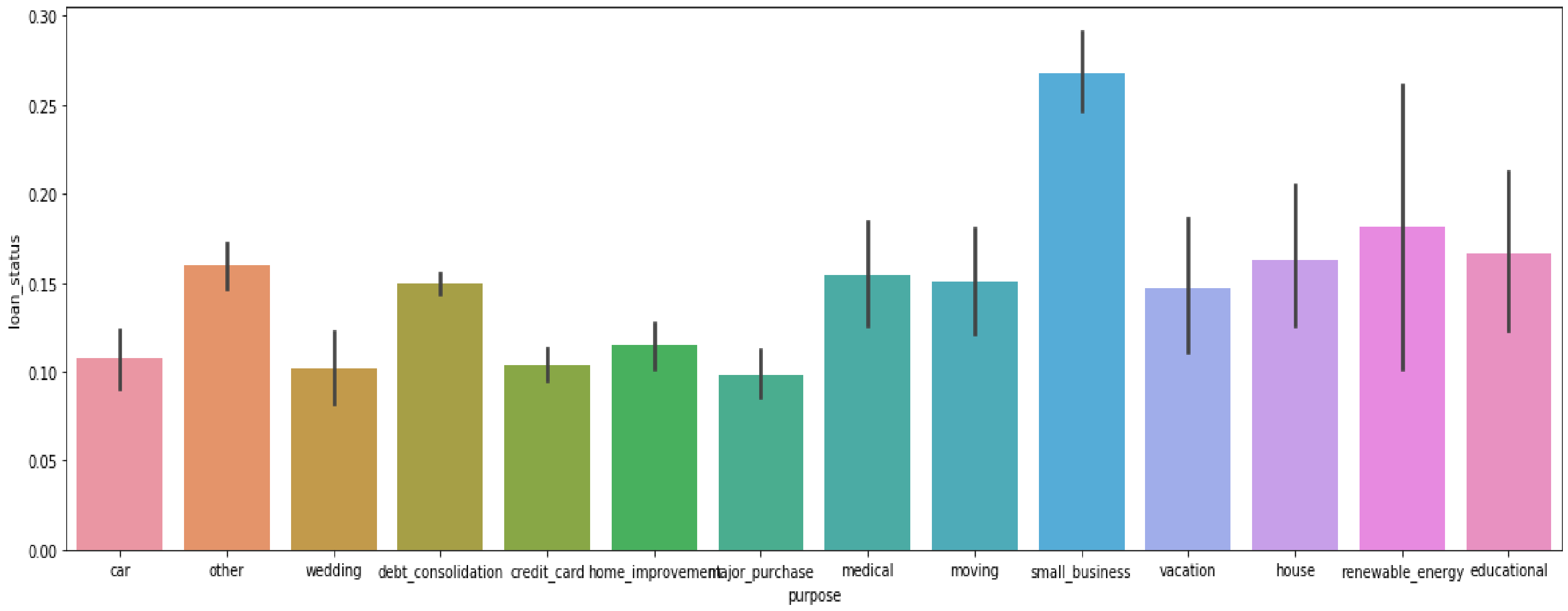
Inferences

- Above graphs shows the comparison between status of loan and Issued Date years.
- Above graphs shows the trend that loan that were approved in year of 2007 having more number of defaulter applicant.
- Post 2007 the trend decrease for 2008-10 then in 2011 the number of defaulters increase.
- Assumption : Defaulter for the year of 2007 may have lost their job in 2008-10 economics crises causing them to turn as defaulter.

Inferences

- Above graphs shows the comparison between status of loan and Issued Date months.
- Above graphs shows the trend that loan that were approved for the month of May and December are turning defaulters.
- Assumption : The reason for these Defaulter may be they spend on Summer and Christmas Vacations but failed to repay the loan lately.

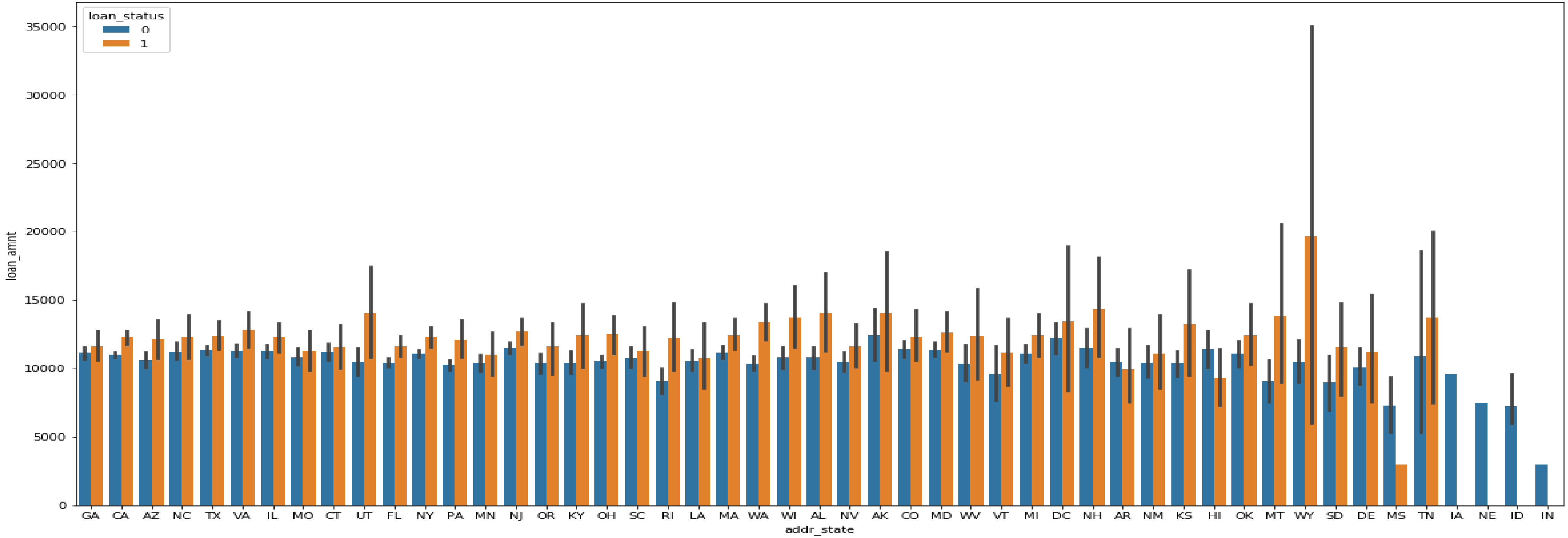
Data Graphs Loan Purpose



Inferences

- Above graphs shows the comparison between the purpose of loan and status of loan.
- We can clearly infer applicants who are applying loan for small business are tend to be defaulters.
- Hence the company can keep interest rate higher for such type of loans.

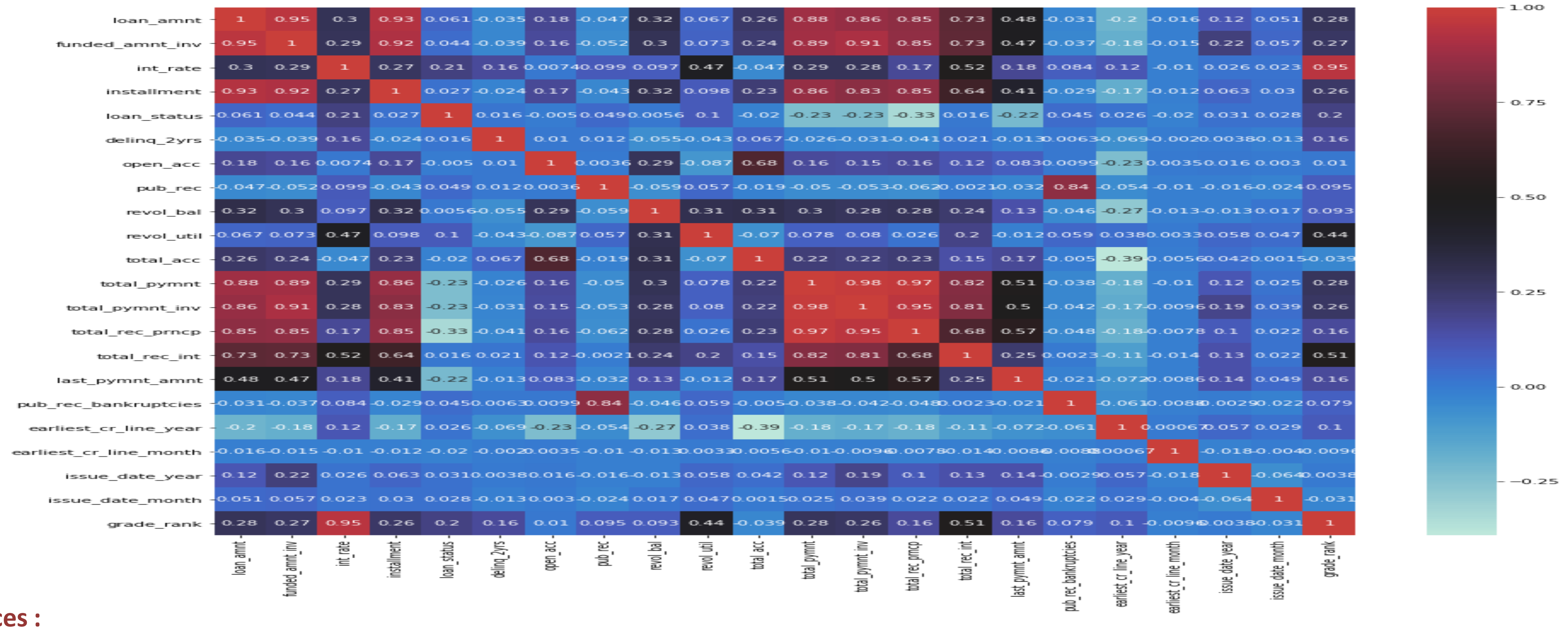
Data Graphs Demographics



Inferences

- Above graphs shows the comparison between the State of applicant and loan amount with respect to loan Status.
- We can clearly infer applicants who are applying loan from State WY (Wyoming) are on higher risk for company they can turn to be as Defaulter.
- Hence the company can keep interest rate higher while doing business from WY state.

Heat Map



Inferences :

1. Loan amount is correlated to last payment amount with r factor.48, as expected
2. Interest rate is highly correlated to revolve util with r factor of .47, which shows that company is charging the defaulter with higher rate of interest.
3. Interest rate is highly correlated with grade rank, as we have also seen in graphs above.
4. Loan amount revolve balance are correlated with r factor .32 - This is not good as it suggests that higher loan amount is being approved to riskier borrowers.
5. Delinq 2yrs is totally un-correlated with public record of bankruptcy. Therefore they represent distinct features with individual predictive value.
6. Revolve util is inversely or un-correlated with earliest credit line year. We depict that these two features are independent.

Defaulter Driving Factors

- Lower Income group, lower the income higher the chances of Applicant turning into defaulter.
- DTI, as the parameter increases the risk of Applicant turning into defaulter increases.
- Months like May and December shows more defaulters . This could be due to holiday season, applicant tend to get the loan but failed to repay.
- Purpose of loan, we have identifies most of the defaulter are from Small Business type of loan category.
- State of applicants, we have identify that Wyoming state has more defaulters, applicants having rented or other type of home Ownership are more likely to be Defaulters.

Recommendation

- To provide the loan at higher ROI to lower income group Applicants. This may lead to business loss as lower income group do not want to lend money at higher rate.
- To overcome the listed factor company should provide loan for less amount and for less tenure, which will reduce the risk of financial loss.
- For applicants having high DTI Company should provide loan at higher ROI.
- Our recommendation is to verify the purpose of loan before approval. On the basis of this company can decide the rate of interest and tenure of the loan.
- Company should consider Applicants parameter like state , home ownership , employment length before approving the application and deciding the amount, tenure and interest rate for the loan.